

The intermediary role of farmer organizations:
Stimulating innovation in developing countries



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Abstract

Abstract (English)

This research focuses on the intermediary role of farmer organization in agricultural innovation systems of developing countries. The goal is to increase understanding and elaborate on existing literature on innovation intermediaries. Two case studies with farmer organizations in Moldova and Peru are conducted to acquire these new insights. The farmer organizations as innovation intermediaries are analysed by the actor-mechanism matrix: a guidance tool developed in a pre-study for this research. This tool shows the actors that can make a contribution to innovation amongst farmers in the agricultural systems of developing countries. Furthermore it shows what support mechanisms these actors can apply to stimulate innovation. Six support mechanisms are identified: 'technological & agronomical support', 'marketing & business support', 'financial support', 'lobbying activities', 'institutional support' and 'collaboration support'.

This actor-mechanism matrix gives insight in both the functions and structure of intermediaries, because it includes both the collaboration between resource providers and intermediary and between intermediary and client. The insights from using the matrix in the two case studies broaden the understanding of innovation intermediaries in multiple ways. One of the most prominent new findings is the inclusion of intermediation between institutions and clients in the intermediation process.

The actor-mechanism matrix has proved to be a useful framework for analysing intermediaries. Future research that uses this tool is required to further strengthen both the tool and the understanding of innovation intermediation.

Abstract (Dutch)

Dit onderzoek richt zich op de intermediaire rol van boerenorganisaties in agrarische innovatiesystemen van ontwikkelingslanden. Het doel is om een nieuwe toevoeging te doen aan de literatuur over innovatie intermediairs. Twee case studies met boerenorganisaties in Moldavië en Peru zijn afgenomen om deze nieuwe inzichten te identificeren. De boerenorganisaties als zijnde innovatie intermediairen zijn geanalyseerd met behulp van een actor-mechanismen matrix, een tool ontwikkeld in een pre-studie van dit onderzoek. Deze matrix geeft de actoren weer die een bijdrage kunnen leveren aan innovatie onder boeren in het agrarische innovatiesysteem van ontwikkelingslanden. Daarnaast geeft het aan met behulp van welke ondersteuningsmechanismen de actoren een bijdrage kunnen leveren aan innovatie. Zes ondersteuningsmechanismen zijn geïdentificeerd: 'technologisch & agronomische ondersteuning', 'marketing & bedrijfsondersteuning', 'financiële ondersteuning', 'lobby activiteiten', 'institutionele ondersteuning' en 'samenwerkingsondersteuning'.

Dit actor-mechanisme matrix geeft inzicht in zowel de functies en structuur van intermediaire organisaties, omdat het zowel de samenwerking en interactie bevat tussen aanbieders en de intermediair en tussen de intermediair en de cliënt. De inzichten verkregen door het gebruik van de matrix in de twee case studies verbreden het begrip van innovatie intermediairs op meerdere manieren. Eén van de meer prominente nieuwe bevindingen is dat handelen als tussenpersoon tussen instituties en de cliënt onderdeel uitmaakt van het intermediaire proces.

Het actor-mechanisme matrix blijkt een nuttig raamwerk te vormen voor het analyseren van intermediaire organisaties. Toekomst onderzoek dat gebruikt maakt van deze tool kan de matrix verbeteren en het begrip over innovatie intermediairs verhogen.

1. Introduction

Different regions and nations in the world are faced with poverty. Many of the developing countries are lacking behind on the developed nations in Europe and the USA, in terms of wealth and income levels (Worldbank, 2012a, 2012b). To reduce this gap between rich and poor nations, several organizations in developed countries are concerned with providing development assistance. This assistance used to be based on money and food provision, but recently the emphasis is shifting towards organizational strengthening and innovation (Ellerman, 2005; Fagerberg et al., 2009). According to literature on innovation, this shift is promising, because innovation is seen as one of the key drivers of entrepreneurship and economic growth in a region (Romer, 1986, Nadiri, 1993, Hekkert et al., 2007, Baumol, 1968, Audretsch, 2007). As empirical evidence suggests, this also goes for developing countries (Fagerberg et al., 2009). The results show that previous developing countries that actively aimed at innovation, such as South Korea, Taiwan and Singapore, managed to become significantly more developed.

An organization type that makes important contribution to innovation and development in developing countries is farmer organizations. Farmer organizations are membership organizations, of which the farmers are the members. This means that farmer organizations are directly represented by the farmers. They provide innovation support by diffusing knowledge to their member farmers, through government lobby, stimulating collaboration and by encouraging market access and commercial agricultural development (Chirwa et al., 2005; Morris et al., 2000). The activities performed by the farmer organization are thus not only directly contributing to the capabilities of the farmers, but the farmer organization also fulfills an intermediary function between the broader innovation system and the farmer. This intermediary function is very important, especially in developing countries, because in many cases the farmer itself is less capable to arrange and maintain collaborations. The farmer organization as an intermediary between the farmers and the broader innovation system can help the farmers with such collaboration by finding willing partners, formalizing agreements and bridging the cultural and cognitive differences between the farmers and collaborating organizations (Howells, 2006; Klerkx & Leeuwis, 2008a). In depth research in the role of farmer organizations in stimulating innovation and their role as intermediary is however lacking. By identifying how farmer organizations interact and collaborate with other organizations and institutions from the broader innovation system in providing innovation support to farmers, more in-depth understanding on both farmer organizations and innovation intermediaries can be achieved.

Even though there are other intermediaries active in developing countries, the farmer organizations make a large contribution to the overall development. The agricultural sector is the main income and employment source for the population of developing countries (Worldbank, 2012c; Feder et al., 1985). Furthermore, agricultural expenses often account to more than half of their income (Hammond et al., 2007). This means that especially agricultural development assistance as provided by farmer organizations can make a large contribution to poverty reduction within developing countries (Klerkx et al., 2009). An additional reason to select the agricultural sector as a research focus is that innovation is seen as the main driver for the agricultural sector in developing countries (Klerkx et al., 2009; Slavo, 1999; Feder et al., 1985). This emphasizes the societal need of insights on farmer organizations as innovation intermediaries in the agricultural sector of developing countries.

There are also theoretical reasons to focus on farmer organizations as intermediaries in developing countries. Most of the innovation theories and research on intermediaries for example, have been oriented and based on developed countries (Lundvall et al., 2009; Howells, 2006). Findings in these studies are therefore only partially applicable to developing countries (Tödling & Trippel, 2005), because innovating in the context of developing countries is different from innovating in Western nations (London & Hart, 2004). This is mainly caused by the differences in economic

structure and institutional context (Hammond et al., 2007; Arora & Romijn, 2009; Lundvall et al., 2009).

In contrast to most other innovation theories, the innovation system literature focuses specifically on these differences in economic structure and institutional context (Hekkert et al., 2007; Ernst, 2002). This theory is concerned with the interactions amongst structural elements such as actors, institutions and technological factors (Suurs, 2008). It is however recognized that different structural elements can fulfill the same function within the system and thereby contribute to innovativeness (Hekkert et al., 2007). Empirical evidence on the developed countries has shown which structural elements can contribute to innovation. Empirical evidence on the structural elements which are of importance for developing countries is however scarce. Even the innovation system literature that does exist in this regard, seems to show conflicting results and pays only limited attention to how the different elements actually influence innovation (Lundvall et al., 2009). This lack in understanding the mechanisms becomes even more prominent with regard to the agricultural sector, because a large part of the literature focuses on manufacturing industries, processing industries or innovation in general. Therefore research into the structural elements and mechanisms which they apply to stimulate innovation in agricultural innovation systems of developing countries can make an important contribution to better understanding innovation systems.

Approaches based on innovation system literature are however to a lesser extent applicable in the context of intermediation. Such approaches tend to focus on stimulating innovation within the whole system and to a lesser extent how the system can contribute to innovation within one actor type. Due to the interdependency of the system, the innovation system theory does not allow for research into such an independent subset (Carlsson et al., 2002). The intermediation process is such a subset because it only includes the collaborations and interactions between resource providers and the intermediary and between the intermediary and clients (Bessant & Rush, 1995), thereby mainly stimulating innovation amongst the clients.

This research will help to fill in both gaps in literature. On the one hand the understanding of innovation and innovation systems in developing countries will be increased and on the other hand an in-depth analysis on the intermediary role of farmer organizations within the innovation system of developing countries will be conducted. Thereby it leads to better understanding of farmer organizations and the intermediation process.

To obtain the required insights this research will combine theoretical insights on innovation in developing countries, insights from experts on innovation, agriculture and developing countries and empirical insights from farmers and farmer organizations in two different developing countries (Moldova & Peru). These combined insights allow answering the main research question:

RQ: How do two intermediaries from developing countries fulfill their intermediary role in the innovation system?

The objective of this research question is to identify how the farmer organizations in the case study fulfill their intermediary role. This role can be defined as a combination of the innovation supporting activities performed by the farmer organization and the activities that contribute to linking the important elements in the larger innovation system to the farmer. To provide answer to the research question three sub-questions were formulated:

SQ1: How do structural elements in the agricultural innovation systems of developing countries play a role in stimulating innovation amongst farmers?

The first sub-question is meant to identify which structural elements are active in the agricultural innovation system of developing countries and additionally to understand how they can make a contribution to the innovative capacities of the farmers. The answer to this question is important,

because it helps to determine with which organizations and institutions farmer organizations can interact.

It should be noted that this sub-question will not be answered by innovation system literature, because such literature puts focus on stimulating innovation within the whole innovation system and to a lesser extent how innovation can be stimulated within one actor type: the farmer. Due to the interdependency of the system, innovation system based approaches do not allow for research into independent subset such as the intermediary process between resource providers, farmer organizations and farmers (Carlsson et al., 2002). An additional reason for this choice was that the innovation system literature was rooted in developed economies, while innovation systems in developing countries differ from their developed counterparts (Lundvall et al., 2009). As a consequence the innovation system literature has clear limits in usability for the purpose of this research paper.

A different approach was thus selected. To obtain the required insights for this sub-question several expert interviews were conducted. These interviews were structured and guided by insights obtained from literature (also from innovation system theory). The experts are asked which structural elements can make an important contribution to innovation amongst farmers in developing countries and how they make this contribution. The results of this pre-study will be used as guidance in identifying interactions and collaborations between the farmer organization and these elements.

SQ2: How do the farmer organizations in Moldova and Peru mediate between farmers and the broader innovation system while conducting innovation supporting activities for farmers?

The second sub-question is meant to identify what activities the farmer organizations studied perform to stimulate innovation amongst farmers and to determine how they do so. The answer to this sub-question does not only encompass the activities performed, but also entails how the other elements from the broader innovation system have been incorporated into the activities. This sub-question thus also tries to emphasize the link between the innovation system and farmers as established by the farmer organization.

To obtain the required insights, interviews have been conducted with farmers, staff members and board members of farmer organizations. The questions will partly be based on the outcome of sub-question 1. It was asked what type of support the farmer organization provides to the farmers and how different structural elements contributed to this support. Additionally the collaboration and interaction between the farmer organizations and the structural elements mentioned in the expert interviews was asked for.

SQ3: How can the intermediary role of the farmer organizations in Moldova and Peru broaden the theoretical understanding of innovation intermediaries?

This sub-question will shed light on how the empirical findings elaborate on theory on intermediaries. This sub-question will be answered by first comparing the findings with scientific literature and then elaborate on theory with new findings. By answering this sub-question it becomes clear what new insights on intermediaries are derived from this study.

By answering all three sub-questions, an answer to the main question is formulated. Both the intermediary function of the farmer organization between the agricultural innovation system and the farmers, as the activities and mechanisms which they apply to strengthen innovation amongst their member farmers, will form the basis for this answer. Elaborations to former scientific literature will primarily be used to highlight the prominent findings.

The following chapter will provide some additional insights on farmer organizations and the innovation system theory. This chapter includes a literature overview of structural elements of

importance for innovation in developing countries. This overview will be used to guide data collection later on in the research. Chapter three is the methodology, which covers aspects such as case selection, case background and data collection. Chapter four, the operationalization, will further explain how the collected data results in the answers to the sub questions. The answer to sub-question 1 and the outcome of the expert interviews will be provided in chapter five. Chapters six will contain the results of the interviews held in Moldova and Peru. This results chapter focuses on answering sub-question 2. The analysis (chapter seven) will be used to compare the findings with literature and highlight how it elaborates on existing innovation intermediary literature. This section provides the answer to sub-question 3. Chapter eight reflects upon some of the choices made in this research and implications for future research. The final chapter, chapter nine, aims to provide an answer to the research question based on the findings of the results and analysis.

2. Theory

This section provides explanation on farmer organizations, innovation systems and network brokers & intermediaries. First the difference between cooperatives and farmer unions will be explained. Then a short overview of innovation systems literature is provided, which both explains about structural elements which are important in developing countries and tells about functions and the role which these elements can play. The section concludes with theoretical background on intermediaries and network brokers in innovation systems.

2.1 Farmer organizations

There are two main types of farmer organizations: farmer unions and farmer cooperatives (Agriterra, 2010). The difference between the two types is that cooperatives are often established by farmers that produce the same commodity, in order to sell their produce together and therefore get a higher price (Agriterra, 2011). The often larger and more independent unions do not act as market player, but are more concerned with supporting the farmers and voicing their needs to external parties such as the government (Bratton, 1994). Both the farmer unions and the farmer cooperatives are membership organizations, where the farmers are the members (Agriterra, 2010). In several cases however, the members of a union are the cooperatives and not the individual farmers. The difference between cooperatives and unions is illustrated in example 1.

Example 1

In Africa there is a small village. In this village several inhabitants have only one cow. These inhabitants are the farmers, but because they produce very little milk by themselves, they can't get a good price for their produce. Therefore they created a cooperative for the village. They do the marketing and sales of their milk together. The cooperative is however unable to voice their needs to the government with an effective lobby, therefore the village cooperative joined the larger union, which has villages all over the country as its members.

The cooperatives are mostly focused on one commodity, because they act as market players that can obtain higher income through collaborate sales (Agriterra, 2011). Farmer unions on the other hand do not necessarily have to focus on a single commodity. They can for example also focus on fruits instead of only grapes, or even on the entire agricultural sector. Another difference in focus between cooperatives and unions is the geographical region. Cooperatives are often focused on a small geographical area, because of market collaboration between the farmers. Farmer unions on the other hand can cover regions, nations and even multiple nations at once.

In this research, the focus is on the farmer unions and their member cooperatives, because they have an active and innovation supportive role. They can stimulate innovation amongst farmers by diffusing knowledge to their members, through government lobby, seminars, trainings, stimulating collaboration and by encouraging market access and commercial agricultural development (Agriterra, 2010; Chirwa et al., 2005; Morris et al., 2000). In doing so, they also involve and interact with other external actors in the innovation system.

2.2 Innovation systems

The basic idea of an innovation system is that innovation and diffusion of technology is not only an individual but also a collective act (Hekkert et al., 2007). It takes place in a broader societal structure that includes firms, knowledge organizations, financing organizations and legislative bodies (Suurs, 2008; Bergek et al., 2008). It basically includes all actors that influence innovation within the system. A central notion in the innovation system theory is however that not just actors can construct and obstruct innovation systems, other structural elements such as institutions and networks can as well (Bergek et al., 2008). Institutions are here defined as the rules within the

system (Suurs, 2008). These can include formal rules such as laws and regulations, but also informal rules such as culture and routines (Bergek et al., 2008).

All actors and institutions however do not only make an independent contribution to the innovation system. It is the relationships between actors and institutions that make these structural elements form a system (Suurs et al., 2008; Lundval, 2007). In a matter of speaking these types of relationships and networks can thus also be seen as structural elements by itself (Bergek et al., 2008).

2.2.1 Structural elements

Most research on the structural elements within a system is however conducted for developed countries. Literature on innovation systems in developing countries is scarcer. Following this limited strand of literature it becomes clear that several elements are of importance for developing countries. These elements are grouped in four themes: "market collaboration", "knowledge & education environment", "business environment" and "country conditions". These themes are created for the purpose of this research because each of the themes encompasses structural elements which share some similarities.

Market collaboration:

Following literature on developing countries it becomes clear that market collaboration is crucial for innovation in developing countries (Goedhuys, 2007; Edquist, 2004). Market collaboration is collaboration between private organizations active in the same value chain. Especially collaboration between local firms and multinational processors/suppliers is seen as beneficial to innovation (Archibugi & Pietrobelli, 2003, Ernst, 2002, Simanis & Hart, 2008). The underlying idea is that the local company can tap into the knowledge and research systems of the multinational company (Aubert, 2005; Ernst, 2002). This new knowledge can then be used by the local firm to make new products or processes.

Next to international collaboration with other segments in the value chain, local collaboration within the same value chain segment is also important for innovation. It can help with resource obtainment, risk sharing and knowledge sharing (Goedhuys, 2007; Veling & Peine, 2012). On the one hand, this is crucial for creating a stable production and distribution system, but on the other hand it is also needed to allow for development and improvements in products, services and processes.

Knowledge & education environment:

Low educational levels are perceived as a significant barrier to innovation development and diffusion (Aubert, 2005). The underlying idea is that a certain knowledge level and understanding (absorptive capacity) is required to recognize value of new external information, to assimilate it and use it to commercial ends (Cohen & Levinthal, 1990; Fosfuri & Tribo, 2008; Aubert, 2005; Lundvall et al., 2009). The absorptive capacity can be increased by both academic and practical education and experience. Especially this practical and embedded knowledge is of importance in developing countries (Archibugi & Pietrobelli, 2003; Lundvall et al., 2009). This means that entrepreneurs and employees need continuous training and exposure to best practice examples (Ceglie & Dini, 1991; Lall & Teubal, 1998).

Extension service providers play an important role here. They can help with providing trainings and (in field) information exchange (Anderson & Feder, 2004; Aubert, 2005; Klerkx et al., 2009; Feder et al., 1985). In doing so, it can be an important driving force for knowledge, innovation and development (Rivera & Sulaiman, 2009; Klerkx et al., 2009).

Next to education, collaboration between entrepreneurs and research organizations is also important for innovation (Archibugi & Pietrobelli, 2003; Crane, 1977; Lundvall et al., 2009). Most research and R&D spending in developing countries is done by universities, while private firms perform only relatively little technological research (Crane, 1977; Lundvall et al., 2009). Public-private linkages thus allow firms to tap the vast amount of knowledge created in universities.

Business environment:

There is clear evidence that the quality of the business environment influences innovation performances (Aubert, 2005). Amongst the different article, the financial institutions are often mentioned as an important part of the business environment (Federer et al., 1985; Goedhuys, 2007; Sleuwaegen en Goedhuys, 2001). They can help to finance technological investments (Federer et al, 1985).

Next to financial organizations the government also influences innovation through its regulations and institutions. Especially the rules in relation to business formation, the conditions for business failing and the consequences of failure are central for innovation, because they determine to a large extend the business entry and exit (Metcalf & Ramlogan, 2008). Besides the entry and exit regulations, investment regulations determine the potential profits of an investment and thereby it influences which and if innovations are produced.

Other important regulations of influence for developing countries are (international) quality standards (Aubert, 2005; Metcalfe & Ramlogan, 2008) and competition laws (Ernst, 2002). Quality standards can for example especially hamper the export of developing countries. Competitions laws are also of importance, because it is stated that firms only invest in productivity enhancing technology, learning and innovation if competition and regulatory reform force them to do so (Ernst, 2002).

Country conditions:

In many developing countries the population lives in difficult to reach rural areas (Anderson & Billou, 2007). A good infrastructure is needed to reach these potential customers. Such an infrastructure can be divided in a transportation infrastructure, such as roads and trains, and information/communication infrastructure, such as internet and telecommunication access (Aubert, 2005). A sound transportation infrastructure is crucial for product distribution, but also important for marketing and collaboration aspects (Pralhad, 2012; Hammond et al., 2007). An information infrastructure is mainly important for collaboration and marketing (Pralhad, 2012). Poor access to infrastructure is thus also negatively influencing medium sized firms (Sleuwaegen & Goedhuys, 2001; Kistruck et al., 2012).

Culture is also related to innovation, culture is especially important for successful collaboration and product adoption (Kedia & Bhagat, 1988; Arora & Romijn, 2009). According to theory (Kedia & Bhagat, 1988; Everdingen & Waarts, 2003; Mueller & Thomas, 2005) cultures can differ on four aspects and successful collaboration requires matching cultures. These aspects are: uncertainty avoidance, individualism/collectivism, power distance and status importance.

The literature on these above mentioned structural elements is however shallow and therefore requires deepening. These identified structural elements will be used to design expert interviews, which are meant to deepen and strengthen the findings from earlier literature. Additionally, the expert interviews will allow specifying the findings from literature to the agricultural sector. The expert interviews will thus be used to learn more about the agricultural innovation system of developing countries, where the farmer organizations are a part of.

2.2.2 Functions & role

It is inappropriate to talk only about the structural elements which make up an innovation system (Bergek et al., 2008). It is more so about how these elements contribute to stimulating the innovation process with learning and competence building (Lundvall, 2007; Bergek et al., 2008). As Bergek et al., (2008, p. 409) puts it, *"how do we know whether the existence of a particular actor network is a strength or a weakness, without identifying its influence on the innovation process and its key sub-processes?"* The more functional approaches on innovation systems try to explain how innovation systems can be strengthened (Bergek et al., 2008; Hekkert et al., 2007). They propose a set of functions which structural elements can fulfill. Amongst these functions are entrepreneurial activities, knowledge creation, knowledge diffusion, guidance of search, resource mobilization, market formation and the creation of legitimacy (Hekkert et al., 2007). If structural

elements positively contribute to one of these functions, they make a positive contribution to the innovation system and thus to innovation.

The role which is spoken of in this research is however not the same as the functions of innovation systems. This role is supposed to explain how the different structural elements fulfill the functions of the system, and thus contribute to innovation. Additionally, the role might also explain how structural elements help other elements to fulfill a function. The latter is thus more about the intermediary role that a structural element, such as a farmer organization can fulfill.

2.3 Knowledge brokers & intermediaries

Some research into the functioning of network brokers as intermediaries in developing countries has already been applied (Klerkx et al., 2009). The role of farmer organizations is however much broader and different from the role of network brokers in general. Where network brokers are mainly concerned with the creation and facilitation of networks (Ceglie & Dini, 1991; Klerkx et al., 2009; Hadjimanolis, 2000), farmer organizations more actively involve external parties and stakeholders in the supporting services they provide to the farmers (Chirwa et al., 2005; Morris et al., 2000). It is thus not merely about bringing system actors and farmers together, but also about utilizing the resources and capabilities within the system for the farmer's purposes. The activities that the farmer organization conducts in this interaction between farmer (client) and farmer organization (intermediary) are called functions by intermediary research (Howels, 2006). These functions or mechanisms are an important part of the role of intermediaries.

Next to the interaction between farmers and farmer organization, it is also important to look to the link between farmer organization and resource providers (Klerkx & Leeuwis, 2008a). This is important because the farmer organizations act as intermediaries between the farmers and the resource providers of the broader innovation system. By doing research into this link, the structure of intermediation becomes more apparent. This structure entails the resource flows from the resource providers to the farmer organization to the farmers.

3. Method

This research consists of two empirical parts. The first part is meant to increase the understanding of structural elements that can play an important role in influencing innovation amongst farmers in developing countries i.e. to better understand the agricultural innovation system of developing countries. This empirical step is based on interviews with experts on innovation, agriculture and developing countries. This combination of expertise results in a general understanding of which structural elements can play an important role in stimulating innovation amongst farmers in developing countries and how they can make this contribution. Hereby it will be used to answer the first sub-question.

The second empirical step consists of two case studies to highlight the role which farmer organizations can play in stimulating innovation and acting as the link between the identified structural elements of the innovation system and the farmer. For both case studies, interviews with farmers, farmer organization staff members and board members were conducted. The combination of interviews will be used to answer the second sub-question. The third sub-question is answered by using the interview results to elaborate on theory on intermediaries in innovation systems.

The method section starts by giving some background information on the agricultural sector and tries to explain why the agricultural sector was chosen for this research. The second step entails the methods of data collection for both the first and second empirical step.

3.1 Case selection

An important step of the case selection is to select the countries where data is gathered. This research investigates cases from two developing countries (NFFM-Moldova & JNC-Peru) which receive support from the Netherlands based agricultural focused development organization Agriterro. This ensures that both countries can indeed be classified as developing countries. The two countries are also selected because they are geographically dispersed. This selection criterion was implemented to ensure that the results of this study are not biased towards a certain world region. This strengthens the external validity of this research.

Theoretical sampling was used to select the two farmer organizations. This means that theory was used to guide the data collection (Bryman, 2012; Pope & Mays, 1995). According to theory, farmer organizations can fulfill an intermediary role by bringing resources from the broader innovation system to the farmers (Chirwa et al., 2005; Klerkx & Leeuwis, 2008b). Since this report aims to find new insights in intermediation, two good example cases in relation to innovation intermediation were selected. National Farmers Federation Moldova (NFFM) and Junta Nacional de Café (JNC) are renowned to be relatively strong innovation stimulating farmer organizations compared to other farmer organizations in developing countries. Agriterro identified these two as the best cases amongst the 80 farmer organizations they work with.

These organizations have also voiced their need for more innovation related support. This implies that the farmer organizations and their member farmers are willing and motivated to cooperate with this research, so that more and more reliable data can be obtained. An additional reason to select these two farmer organizations is because they both differ in the commodities they focus on. NFFM for example represents the entire agricultural sector of Moldova, while JNC is only constituent of coffee producers. This difference might lead to more insights on the role of farmer organizations as innovation intermediaries.

3.2 Case background

National Farmers Federation Moldova (NFFM) is a farmer union in Moldova. Their goal is to improve the general welfare of the rural population (Acasa, 2013). They do so by providing a broad range of support activities to their 28.000 members: the small & medium farmers (Agro-info.net, 2010). These services are mainly provided by the five regional offices of NFFM.

Junta Nacional de Café (JNC) is a farmer union in Peru, focussing specifically on coffee farming. Their goal is to contribute to the process of growth of the national coffee production by offering high quality coffee and commitment to economic and social development of Peru (JNC, 2013). The union has 44 cooperatives as its members. These cooperatives are located in fourteen coffee growing areas across Peru. Together they include more than 40.000 coffee producing families. Amongst the coffee cooperatives are the four cooperatives that are interviewed in this research. Some of these are large cooperatives (La Florida & Pangoa), while some are younger and smaller (Rio Negro & Los Chankas). These cooperatives sell the coffee of their members, but also provide other services to support the coffee production.

3.3 Data collection

3.3.1 Expert interviews

The data collection for identifying the structural elements that are important for innovation amongst farmers and how they stimulate innovation is based on expert interviews. Interviews were selected, because they are useful to obtain qualitative data from multiple respondents from multiple different organizations. The variety of experts and the organizations they represent makes field studies complicated and time-consuming. Surveys would allow reaching a larger amount of respondents, but it only allows for a limited amount of qualitative results. Additionally a smaller amount of respondents does not hamper qualitative research. Qualitative results are important in this phase of the research, because new structural elements could be identified. A semi-structured interview design was chosen because it provides direction to the interview, but allows the researcher to ask additional questions when deemed valuable or necessary for this research. Other interview types either lack the focus or the flexibility of the semi-structured design. The structure of the interview questions is based on the literature overview as provided in the theory section.

Respondents

The interviews were held with experts who have significant knowledge and working experience in the domains of innovation, developing countries and agriculture. Knowledge and expertise with innovation is seen as important because this study tries to explain the elements that are important to innovation. The domain of developing countries is added, because the developing country context differs greatly from the context of the developed world. Experts from this domain can help to judge whether the identified elements are indeed applicable in the context of developing countries. The domain of agriculture is added because this research focuses on farmer organizations and thus agriculture. They might identify sector specific influences within the elements. Their insights can also be valuable to identify focus points when interviewing the farmers in a later stage of this research.

Text box1: respondents

Only experts which are knowledgeable in at least two of the three domains were considered as respondents for this research. For each combination of domains at least two interviews were hold to ensure that there are multiple different insights provided for each combination of domains. To further increase the reliability of this

<p><u>Innovation & developing countries</u></p> <ul style="list-style-type: none"> - Respondent from BoP inc. - Respondent from Tilburg University <p><u>Innovation & agriculture</u></p> <ul style="list-style-type: none"> - Respondent from ZLTO - Respondent from NAJK <p><u>Developing countries & agriculture</u></p> <ul style="list-style-type: none"> - Respondent from Lei Wageningen - Respondent from Agri-profocus - Respondent from Agriterra <p><u>Innovation, developing countries & agriculture</u></p> <ul style="list-style-type: none"> - Respondent from Agriterra - Respondent from Wageningen University - Respondent from KIT - Respondent from Meset Consult PLC - Respondent from Friesland Campina

research and the potential amount of insights, the interviews were conducted with experts active for different organizations. This ensures that the respondents have different organizational backgrounds and therefore their combined insights are likely to cover a broader spectrum. Additionally, it was chosen to interview experts who are active in different organization types, such as: universities, research organizations, NGO's, consultancies, farmer organizations and a food processor. The list of respondents per knowledge domains is presented in text box 1.

3.3.2 Case studies

The data collection of the second empirical part, meant to identify the activities and intermediary role of farmer organizations, is also based on semi-structured interviews. Interviews were chosen because of their usefulness for obtaining qualitative data, but also because of the practical constraints which exist with other data collection methods. Data collection with surveys for example, is difficult to apply to farmers in developing countries, because these farmers are likely to have a different mind-set than Western researchers. As a consequence, they might misinterpret questions and give either wrong or no answers. By conducting an interview, the researcher is capable to give additional explanation with each question, so that the received answers correspond to the questions. Field research is neither an option, because there is a language barrier between the researcher and the respondents. In the case of interviews, this language barrier has been circumvented with the use of a translator. A semi-structured interview design was once again chosen for its combination of focus and flexibility. The interview is however more open, because the interview will mainly adapt to the answers provided by the respondent. Additionally, the interview questions will be adapted after each interview, because constant comparison between data and data collection is applied in this stage of the research. Constant comparison was also used to determine the order of interview respondents and the types of interviews conducted. Two examples of constant comparison that have been applied in this research are visualized in examples 2 & 3.

Example 2

In Moldova I started by interviewing farmers. After interviewing three farmers, it turned out that they all received support from a regional director. Even though interviews with farmers would still make useful contributions, I decided to first interview the regional director, because insights from this interview could be useful when interviewing other farmers later on. During the interview with the regional director, I asked some additional questions on the specific support that the three previous farmers mentioned.

Example 3

After interviewing multiple farmers and cooperative staff & board members in Peru, I became convinced that instead of individual interviews, a group interview might reveal more insights, because the farmers and cooperative staff & board members could then react to each other and provide supplementary information.

Respondents

The interviews are held with farmers in two geographically dispersed developing countries: Moldova & Peru. This is to ensure that the results are not biased towards a specific country or geographical region. In each country the farmer organization was asked to arrange interviews with a group of farmers. They were asked to find both innovative and regular farmers, for both types of farmers might perceive farmer organization support differently and thus provide different insights to this research. The selection of innovative farmers was based on the criteria of the farmer organizations themselves. These criteria encompassed the use of special technologies, being a successful farmer, having a model farm and having a central role within a sub-group of farmers. The amount of farmer respondents per farmer organization was set to a minimum of eight, with

the possibility to conduct more interviews if saturation was not achieved. Saturation of information takes place when new respondents give the same answers as previous ones and no new insights are obtained. Saturation of information from farmer respondents emerged in both cases after conducting nine individual farmer interviews. This means that new farmer respondents would probably not led to new insights.

Next to the farmer respondents, several interviews were conducted with farmer union staff & board members (farmers in Moldova and cooperatives in Peru). These interviews are very important, because staff & board members can give more detailed information on the activities they perform to stimulate innovation amongst their members. Additionally, these staff & board members have more insight in the collaboration with other organizations in the innovation system. Therefore they can provide better insights in the intermediary role of farmer organizations in linking farmers to the larger innovation system. A third reason to interview staff & board members is that they give more detailed information on the structure and internal functioning of the organization. For that purpose the respondents were also selected based on the responsibility of their function. Responsible board members are more likely to be aware of the internal functioning of the organization, the collaboration with third parties and the entire spectrum of services provided.

The amount of staff & board respondents to be interviewed was to be determined based on saturation of information. In Moldova, saturation took place after five interviews; amongst the respondents were a regional director, a board member, the president and the director. In Peru, total saturation could not be reached because a large part of the board was away for an international meeting. The two remaining board members were interviewed and the remaining staff members were (based on their functions and advice of the JNC board members) perceived to be non-valuable respondents. Because the unavailability of respondents was known before conducting the actual board interviews, longer interviews that contained more questions were taken. As a result the interviews still provided a sufficient amount of information.

In the case study of Peru a third type of interviews was conducted, because in this case the farmers are members of cooperatives and the cooperatives are members of the union. Therefore staff & board members of cooperatives were interviewed to give important insights in the support that the cooperatives provide to the farmers and the support they receive from the union. Respondents of four different cooperatives, which are member of the same union, were interviewed. The nine farmer respondents were all members of one of these four cooperatives. The cooperative staff & board members were selected on the responsibility of their function and their knowledge on providing support to farmers. Five individual cooperative staff & board respondents were interviewed and an additional two group interviews took place. These groups were at least consistent of a director or president, a staff member that provides support to farmers and a farmer. The group interviews allowed the respondents to react to each other and provide supplementary information. The five individual interviews and the two group interviews combined resulted in saturation of information amongst the cooperative staff & board respondents. An overview of the amount of interviews conducted in both the Moldovan and Peruvian case is visualized in table 1.

*Table 1:
conducted interviews*

	Moldova	Peru
Farmer respondents	9	9
Cooperative staff & board respondents	-	5
Group interviews	-	2
Union staff & board respondents	5	2
Total	14	18

4. Operationalization

The operationalization of this research contains some additional information on the interview questions and the means of analysis which will be applied in this research.

4.1.1 Expert interviews

Following the theoretical framework described earlier in this research, several structural elements which contribute to innovation were identified. These elements were grouped in four themes: "market collaboration", "knowledge & education environment", "business environment" and "country conditions". These themes gave to a large extend structure to the qualitative interviews which were held with the experts (appendix 1).

Per theme, the respondents were asked what relationship types, actor types and institution types contribute to innovation amongst farmers in developing countries. If the expert neglected to mention the structural elements as identified in the theory section (2.2.1), the expert was asked whether these elements also have an influence on innovation. The answers to these questions were important to identify the structural elements which according to experts are important determinants for innovation amongst farmers in developing countries.

The experts were also asked to explain how these mentioned relationship types, actor types and institution types make their contributions to innovation. This question is important to identify new mechanisms and better understand previously identified mechanisms on how the structural elements stimulate innovation. These identified mechanisms are referred to as support mechanisms in the remainder of this report. These support mechanisms give an indication on how innovation intermediaries such as the farmer organization can interact and collaborate with the structural elements.

After these theme related questions, the experts were asked whether they believe that other structural elements outside of the previously mentioned themes make a contribution to innovation amongst farmers in developing countries. If the experts mention a structural element, they were asked to elaborate on how this element influences innovation. These questions were asked to potentially identify elements and their mechanisms which do not fit in the themes used in the theory section. Hereby it allows identifying additional structural elements with which the farmer organizations could interact and collaborate to provide innovation support to the farmers.

The aggregated expert interviews resulted in an actor-mechanism matrix (Chapter 5.2). This is a matrix that shows the way in which innovation amongst farmers can be stimulated by the structural elements. The structural elements are grouped in actor types and each actor type can stimulate innovation amongst farmers with up to six different support mechanisms. As mentioned before, these support mechanisms are ways in which the actor types can contribute to innovation amongst farmers.

4.1.2 Case studies

To get the insights on the intermediary role of farmer organizations, the actor-mechanism matrix identified in the pre-study was used as a guideline (5.2). Since the matrix shows how different actor types can stimulate innovation, it gives an indication on with what types of actors the farmer organizations can collaborate with in providing the different support mechanisms to the farmers.

Most of the interview questions (appendix 1) were based on this matrix, which will be elaborated upon in chapter 5. Three types of respondents were interviewed in this research: farmers as clients of intermediary services, staff & board members of cooperatives as intermediary organizations in Peru and staff & board members of farmer unions as intermediary organizations in both Moldova & Peru. Originally interviews with resource providers were supposed to become the fourth type of respondents for this research, but after two interviews in Moldova it turned out that

such respondents were both unwilling to cooperate and unable to provide useful insights in the intermediation process. Therefore it was decided to focus on the three other types of respondents.

Farmers were asked how and if the farmer organization fulfilled the six support mechanism. These support mechanisms have been identified in the pre study and are further elaborated in chapter 5. The six support mechanisms are: 'technical & agronomical support', 'marketing & business support', 'financial support', 'lobbying activities', 'institutional support' and 'collaboration support'. If the farmer did not elaborate on how the support mechanisms were fulfilled or with whom the farmer organization interacted/collaborated in doing so, some additional questions were asked to potentially identify this. After all support mechanisms were asked for, the farmer was asked if he received any other type of support.

However, because farmers might not understand everything in relation to innovation, two test interviews with farmers in the Netherlands were conducted before the actual interviews took place. Based on these examples the final interviews were slightly modified, so that they were easier to understand. The main change was to limit the use of the word innovation and ask questions directly related to the support mechanisms.

In the case of Peru there is a cooperative structure: meaning that the farmers are all united into cooperatives while the cooperatives are united into a farmer union. This had implications for this research. On the one hand it has a positive influence because it leads to different and additional insight. On the other hand it means that different interview questions are required for the cooperative staff & board members in order to obtain these additional insights.

Cooperative personnel were asked how they provide support corresponding to each of the supporting mechanisms. Then they were asked to elaborate on how they collaborate in giving this support (type 1). After all questions were asked in relation to all the support mechanisms, the cooperatives were asked if they provided any other type of support.

To check if the cooperative personnel mentioned all the relevant collaborations and interactions, they were asked how they collaborate with each of the actor types mentioned in the actor-mechanism matrix (type 2). It should be noted that these questions are different from the previous ones, because they do not focus on collaboration in relation to specific support mechanisms, but on collaboration in general. As a consequence the cooperative might mention collaborations that the cooperative might not perceive as relevant to a support mechanism, while it actually does. Example 4, which is based on a conducted interview, shows how these question types differ and how the second question can lead to new insights on collaboration regarding one of the supporting mechanisms.

Next to asking the cooperative how they support their member farmers, they are also asked how they receive support, according to each of the support mechanisms, from the farmer union. The cooperatives are also asked to elaborate on with whom the union collaborates in giving them this support. Even though the support identified in this way does not end up with the farmer directly, it will end there eventually through the support provided by the cooperative (type 3).

Example 4

Type 1:

Q: How do you provide technological & agronomical knowledge to your member farmers?

A: We provide trainings and seminars.

Q: With whom do you collaborate in giving these seminars?

A: We invite specialists from Columbia to give these training.

Type 2:

Q: How do you collaborate with universities?

A: We provide graduate students the possibility to do their internship on the farm of our members. Both the student and the farmer can learn from each other.

Type 3:

Q: Do you receive technological & agronomical knowledge from the union?

A: yes.

Q: How is this support provided?

A: They provide trainings in order to train our supervisors to give agronomical support to farmers.

Q: With whom do they collaborate in giving these trainings?

A: They use university experts to give these trainings.

The farmer union in Moldova was asked partly the same questions as the cooperatives from Peru (type 1 and 2 questions). The main difference is that they are not a member of an overarching organization, such as the cooperatives are members of a union. Therefore the type 3 questions are irrelevant for farmer unions.

The interview questions for the Peruvian union differ slightly from the questions for the Moldovan one. The difference is that the questions are not asked to identify support to farmers, but rather to identify support to their member cooperatives and with whom they collaborate in providing this support.

4.2 Analysis

The expert interviews were analyzed qualitatively based on a method of thematic content analysis as described by Burnard (1991). This method has been adapted from the grounded theory approach as proposed by Glaser & Strauss (1967) and Corbin & Strauss (1990). The Burnard method was selected as inspiration because it is specifically created to analyze interview transcripts. This Burnard (1991) method exists of multiple steps, which to a large extent have also been applied in this research. The first applied step is open coding of the interview transcript. The second step is collapsing these codes into broader overarching codes. A third applied step entails discussion between the researcher and two other researchers that independently try to create a coding system by themselves. This is to prevent for researcher bias. As a result of this discussion some changes were made in the final set of codes. A fourth step was to see if all useful information from the interview transcripts matched this final list of codes. A fifth step was to sort all the insights from the interviews and to start the writing process once all information on the same code was brought together.

A total of 32 interviews were conducted in the developing countries Moldova and Peru. The downside of conducting interviews in a developing environment is that the respondents spoke Romanian and Spanish. Therefore translators had to be used to conduct the interviews. As a result of the language conversions the word by word information is lost. As a consequence only the main points of their answer, what was translated by the translator can be used. Therefore it was decided not to make word by word transcripts of what the translator said, but to put the main points in a excel table. This table is structured in such a way that the questions are represented by rows and

the respondents by columns. Each mentioned main point fits to the question asked in the corresponding row and the respondent in the corresponding column.

The results of the interviews are elaborated per case study, in such a way that supporting activities of the farmer organizations are elaborated upon per support mechanism derived from the expert interviews. All structural elements which were stated to make a contribution to the support mechanisms are mentioned in the result section.

After the separate case study results the results are analyzed and new insights are highlighted. This will be used to elaborate on existing theory about innovation intermediaries.

5. Expert interviews pre-study

5.1 Innovation support mechanisms & actor types

5.1.1 Support mechanisms

The insights obtained from the expert interviews contain a list of multiple important structural elements that each can have an influence on innovation amongst farmers in developing countries. Amongst these elements there are actors, institutions and networks. Following the experts their answers, it became apparent that there are six different types of support that these structural elements can provide to stimulate innovation amongst farmers. These six different support types are named support mechanisms.

Four of these support mechanisms are forms of direct support provided to the farmers: 'technological & agronomical support', 'marketing & business support', 'financial support' & 'collaboration support'.

The support mechanism of technological & agronomical support encompasses all activities performed to enhance the technical & agronomical knowledge of farmers. Marketing & business support does not only entail the provision of market & business related support, but also more active support to help the farmer get their input materials and sell their produce. Financial support is mainly the provision of financial products or free goods, however it also encompasses support with attracting such financial products. Collaboration support is important because it allows the farmers to achieve innovations as a group which cannot be obtained by the farmers as individuals. Even though all types of collaboration can be important for innovation, the focus will be put on supporting collaboration amongst farmers, because all other types of collaboration can be included in the other supporting mechanisms.

Actors and networks on the other hand can also try to influence the institutions. Thereby they help to create an environment in which the other four supporting mechanisms are stimulated. Therefore there are two additional, more indirect support mechanisms that actors and networks can use to stimulate innovation: 'lobbying activities' and 'institutional support'.

Lobbying activities are about the activities which are conducted to influence the government and the governmental institutions. Activities to influence the non-governmental institutions are part of the institutional support mechanism. This mechanism entails influence and action based on infrastructure, culture, history, war and other non-governmental institutions.

This separation between lobbying activities and institutional support was made because influencing governmental institutions is done in a way that is different as to influencing the other institution types. Lobbying activities almost always involves interaction with the government that is responsible for the governmental institutions. There is no such responsible organization for the non-governmental institutions and therefore the support activities between the two support mechanisms differ.

5.1.2 Actor types

The structural elements that can fulfill the above mentioned structural elements have to a large extent been grouped into actor types. Institutions and networks elements are already incorporated in the "lobbying activities", "institutional support" and "collaboration support" mechanisms.

Nine different actor types have been identified. There are knowledge institutes, which comprise of both universities and other research institutes. There are value chain actors, of which mainly suppliers and processors make a contribution. The farmer organizations are both farmer unions and cooperatives, while farmers as an actor type comprise the support provided by farmers organized in a different way. The government includes not only central government, but also regional and local ones. Donor organizations are mainly interest groups and development support organizations. Consultants are private institutes that do research and/or other activities for payment. The last actor type is religious organizations, which doesn't need further elaboration.

5.2 Actor-mechanism matrix

All these support mechanisms and actor types are visualized in table 2. This table has a central position in this research because it is used as the basis for the upcoming case study results. Because of its importance it will be referred to as the actor-mechanism matrix in the remainder of this report.

Table 2: actor mechanism matrix

	Technological & agronomical support	Marketing & business support	Financial support	Lobbying activities	Institutional support	Collaboration support
Knowledge institutes	X	X	X			X
Value chain actors	X	X	X			X
Farmer organizations	X	X	X	X		X
Government	X	X	X		X	X
Farmers	X	X		X		X
Donor organizations	X	X	X	X	X	X
Consultants	X	X				X
Financial organizations	X	X	X			X
Religious organizations		X			X	X

The actor types are visualized on the left side of each row in actor-mechanism matrix. In the row behind each of the actor types the identified support mechanisms for the corresponding actor type are highlighted by means of an **X**. This means that the specified actor type can, according to the experts, fulfill the supporting mechanisms in the column corresponding to the **X**. When there is no **X** in one of the columns behind the actor type, it means that the experts did not mention the actor type to contribute to fulfilling the support mechanism of the corresponding column (example 5). It is however possible that there are situations in which such actor types do still make a contribution to fulfilling the supporting mechanism. It should thus be noted that the matrix is a guideline to identify the kind of collaborations that are relevant for the farmer organization in stimulating innovation amongst member farmers. The matrix is used according to this principle as a guideline and framework for the case study interview questions.

Example 5

According to the experts, financial organizations can contribute to four out of six support mechanisms. This becomes clear because in the table there are four **X**'s in the row behind financial organizations. Because these **X**'s correspond to the columns of "technological & agronomical support", "Marketing & business support", "financial support" and "collaboration support", the experts mentioned that financial organizations could fulfill these four mechanisms. In the columns of "lobbying activities" and "institutional support" there is no **X**, which means that the experts did not mention that financial organizations can fulfill these two support mechanisms.

5.2.1 Matrix to case studies

The results visualized in the actor-mechanism matrix give an important indication to farmer organizations. It makes it possible to identify with what actor types the farmer organizations can

collaborate in providing support to the farmers. Additionally, it indicates on which support mechanisms these actor types can make a contribution.

In the case studies it is explained how the farmer organizations contribute to fulfilling the supporting mechanisms. This gives insights in the role of farmer organizations in supporting innovation amongst farmers. Special interest is however in how they collaborate with the formerly identified actor types in providing this support to farmers. By elaborating on these collaborations the intermediary role of farmer organizations can be better understood.

5.2.2 Matrix to results and analysis

The case study results are built up of two different parts, one part focusing on the Moldovan case and one on the Peruvian case. Each case starts with a descriptive section that elaborates on how the farmer organizations fulfill each of the supporting mechanisms and how they collaborate in doing so. This descriptive section is structured by the six supporting mechanisms as identified by the expert interviews pre-study. After the descriptive results part the analysis will be more geared to comparing the findings of the two cases, with each other, but predominantly with theory. After the comparison the new insights can be used to broaden existing theoretical understanding.

The analysis starts with an overview that summarizes the collaborations of the Moldovan and Peruvian farmer organizations. This overview will be based on two case specific actor-mechanism matrixes. The difference of these case specific matrixes is that they only show with whom the farmer organizations actually cooperate in giving support. The background color of these specific matrixes will be slightly adapted to show how these findings relate to the findings of the expert interviews pre-study. It should be emphasized that comparisons to the expert interviews will not be used to value how the respective farmer organizations function, but rather to differentiate new insights obtained by the case study. Based on the case specific actor-mechanism matrixes and the descriptive sections beforehand, the overview provides some information on the functioning of the specific farmer organizations as an intermediary. After the overview the analysis will delve into the findings related to the mechanisms (functions) and structure of intermediation. These findings will be compared to findings in scientific literature in order to complement and elaborate it.

6. Case study results

In this chapter the results of the case studies will be elaborated upon. Per case study it will be explained how the farmer organizations fulfill an intermediary role in stimulating innovation amongst farmers. The supporting activities will be structured by the six support mechanisms identified during the expert interviews. If the farmer organization involved a different structural element this is stated.

6.1 Moldova

6.1.1 Technological & agronomical support

NFFM has several means by which they can provide agronomical and technological knowledge to the farmers. The most frequently called and most elaborated two forms of knowledge exchange take place in the form of trainings & seminars and by exchange meetings.

Trainings and seminars take place multiple times a year. Farmers who have shown their interest in the topic under discussion are automatically invited to these meetings per phone by the regional directors. Depending on the amount of places available in the trainings, the regional director also informs the others. The topics for these meetings can range from how to control weather hazards, new irrigation methods and new plant and fertilizer types. Next to these more general topics for agriculture, there are also trainings for commodities. The farmers pronounced that they would like to have more of these specific trainings that go deeper into their commodities. Based on the topic and the interests, the trainings are given either on a central location or in a specific region. The trainings are mainly dynamic in order to show the farmers how to apply the new knowledge.

In providing these technical trainings and seminars, a lot of organizations from the broader innovation system make a contribution. First, the teacher or speaker during these meetings can be an external expert from consultancy or knowledge institute. Such experts can also come from universities, but university people mostly have difficulties in placing themselves in the position of the farmers, additionally the farmers have difficulty believing someone who never applied the technology or advice himself. Therefore they are more willing to learn from successful farmers, which NFFM calls 'leader farmers'. These leader farmers are used more often as trainers than university experts. Secondly, the farmer organization also organizes some seminars and training in cooperation with other organizations, such as processors, suppliers, other farmer organizations and extension service providers. Training collaboration with the latter two organization types takes place in some of the regions in which NFFM is active. Because of the regional structure of NFFM and their dominance as a farmer organization within Moldova, not every region has suitable partners amongst other farmer organizations and extension service providers. The collaboration is mainly based on the sharing of facilities and other resources. Collaboration with processors and suppliers takes place because they have mutual interests with NFFM. Processors require a constant quality and quantity of production, while suppliers are willing to sell their products. This means that both parties are willing to teach the farmers how to use new technologies and working mechanisms. These organizations can contribute to the trainings by the provision of a trainer, knowledge or facilities and resources.

Example 6

The Moldovan farmer visits a Dutch farmer in strawberries. To prevent insects from eating the strawberries, the Dutch farmer uses specific types of bees. The Moldovan farmer can ask questions about these bees and the Dutch farmer gives him the name of his supplier. Back in Moldova the farmer can import the bees and starts to apply the new bee based working method.

Amongst the interviewed farmers there were many that highlighted the importance of exchange visits to other farmers abroad. NFFM organizes such meetings once or twice a year. They take group of approximately 30 farmers to the Netherlands or Italy. During the one to two weeks they

are there, they visit multiple farms, agricultural fairs and other agricultural activities. Especially these farm visits help the farmers to see different technologies and working methods in practice. The Moldovan farmers can then ask questions to the Dutch or Italian farmers, so that they can apply the same type of methods in Moldova (example 6).

NFFM organizes these exchange visits with the help of their Dutch and Italian donor organizations. These donors contribute by facilitating the exchange. They help with transport to activities, farmer housing and with establishing the daily activities in collaboration with NFFM. Especially the selection of farmers to visit is an important contribution, which also involves collaboration of Dutch and Italian farmer organizations. The donors ask these organizations which of their member farmers might be interesting to the Moldovan farmers and interested to participate in the program. If the farmer is agreed upon by NFFM and the donor, the donor establishes contact with the farmers and makes appointments for the farmer visits.

Next to the two main technical and agronomical support mechanisms, there are three other activities of NFFM which make a clear contribution. Firstly there are training modules for each commodity. Every joining farmer receives one such module, which combines basic agronomical knowledge, knowledge on agricultural technologies and more specified knowledge on their specific commodity. The module is written in such a way that farmers can easily read and understand the information. To make the module more comprehensible, it includes a lot of pictures of crops and technologies. To obtain the knowledge required for all these training modules, close collaboration took place with external consultants, agronomists from the university and extension service providers. NFFM had the specific task to transform this knowledge into something that farmers understand and will actually use while farming. Secondly, NFFM uses model farms as a means to diffuse knowledge. These model farms are the farms of 'farmer leaders' that were willing to open up their farm to other farmers and show them what working methods and technologies are applied. Farmers can go to such 'model farms' to see and experience the results for themselves. This visual experience is said to be important for adoption, by both the farmers and the staff members that were interviewed. A third contribution to agronomical and technical knowledge amongst farmers is provided by regional offices. Farmers seek contact with the regional director to ask questions and advice on for example technical and agronomical issues. The regional director will then try to answer the question or seek an external expert that can. If the same question is stated frequently, the director can decide to organize a regional training or seminar.

6.1.2 Marketing & business support

NFFM plays an important role in helping the farmers in buying their input, selling their output and developing their business. On the one hand this includes the provision of market information, to enable the farmer to make better investment and business decisions. On the other hand it means that they have an active role in facilitating the farmers in their contact with suppliers, processors and markets. They can for example connect the farmers to these market chain parties. Supermarkets for example have interest to buy not only lettuce, but also tomatoes and grapes. If a farmer thus sells lettuce to a supermarket, NFFM seeks a tomato farmer and grape farmer amongst their members and helps them to get in contact with the super market. Processors on the other hand need large quantities of the same crop, so NFFM can help to find multiple lettuce growers. As a result, the farmers can sell their produce against higher prices. Supplying companies on the other hand seek customers amongst the NFFM farmers. NFFM knows which farmers are interested and can help the farmers to get in contact with these suppliers. Additionally, they can help to find other farmers that are interested, so that they can pay a lower price for their supplies. Next to directly establishing a contact between the farmer and market chain, NFFM can also help the farmer to make such contacts. NFFM organizes and participates in several festivals and exhibitions in which their member farmers can have stands or show their produce to the general public and processors. Especially the festivals, such as the wine festival and pumpkin festival are a great means to show how good the products are. The exhibitions on the other hand allow the

farmers to meet processors and suppliers. This helps the farmers for example to get new customers for their produce.

After the contact is established, NFFM can help the farmer to formalize agreements by helping with setting up contracts. This task, which is provided by the regional consultants, prevents that the farmer is cheated by their partner. Next to helping individual farmers with establishing contracts, the regional office also makes contracts with regional market chain actors. These contracts include all NFFM members that are willing to buy/sell from these market chain actors and ensure that they can get better prices as a member of NFFM.

Next to these active ways of market and business support, there are also two mechanisms of market knowledge distribution. Firstly the regional offices have a large database which includes most of the regional suppliers, processors and markets. This database also provides knowledge on the prices which they are asking for input materials or which they pay for produce. This helps the farmers to find better partners and make better business decisions.

The central office also helped in doing sector research. Together with universities, governments and other organizations they did a large analysis of the economic sectors of Moldova. The focus of NFFM was clearly on the agricultural sector, which is one of the strongest sectors in Moldova. In this analysis they identify several problems and provide some suggestions that can also be used by the farmers to make marketing and business decisions.

6.1.3 Financial support

The members of NFFM can search for money amongst three financial source types: financial organizations, the government and NFFM. NFFM provides activities to help with all three sources.

NFFM provides money themselves in the form of a rotary fund. Farmers that are willing to make investments, in new crops or a tractor can apply for up to 5.000 euro without interest. The farmers need to make a business plan and a special request. Then NFFM organizes a briefing event where the best plans are rewarded with the loan. These farmers have to pay this loan back after three years; the loan is then given to a different farmer. Every farmer can only apply once for this rotary fund. The main strength of the fund is that farmers don't need to pay interest rates, which are rather high in Moldova. NFFM can provide this support because of the help of donor organizations such as Cordaid, which provided a large share of money for the total fund. Donors have also helped them to establish an innovation fund that will be used specifically to support the creation of capabilities amongst farmers. This fund is however in an early stage and comprises a rather small amount of money.

NFFM also helps the farmers with getting loans from banks and other financial institutions. On the one hand they help to inform farmers about the availability of funds and the interest rates which the organizations apply. Sometimes they do this with the help of seminars, where the financial organization speaks to the farmers. Next to only informing the farmers about these banks, NFFM also tries to get discounts on interest rates for their farmers. They do this for example by promoting individual farmers, so that it becomes clear to the bank that these farmers are likely to pay the money back.

A third, but perhaps most important financial source is provided in the form of government subsidies. Farmers in Moldova are entitled to receive a large percentage of their expenditures from the government subsidies. Most farmers however don't know this, or don't know how to get the subsidy. Therefore NFFM plays an important role in informing the farmers and helping them to actually get these loans.

If farmers want to receive money from the rotary fund, financial organizations or the government, they always need to have a business plan that shows how the money is being used and what the expected results are. NFFM noticed that the farmers are incapable to write such business plans by themselves and therefore NFFM provides intensive support on this behalf. The regional consultant will go into discussion with the farmer and helps to obtain all the important information, such as

the financial results of last year and why they need the loans. Then the regional consultant will actually write the business plans for the farmers. Since these consultants know what is important for the different organizations and since they have experience with writing business plans, a lot of the financial requests are granted.

6.1.4 Lobbying activities

NFFM is the strongest farmer organization in Moldova. Therefore they are frequently invited to participate in advisory councils regarding agriculture. This advisory role of NFFM is one of the main ways in which they influence the government. The advice is created by NFFM based on the problems and needs of the farmers. These problems are identified by the regional offices, which visit the farmers regularly. They then provide the farmer their feedback to the central office which translates it to government advice.

Next to the fact that NFFM is involved with the government, politicians are also involved with NFFM. Several regional powers are for example part of the administrative board of NFFM. Additionally, the vice minister of agriculture is a member of NFFM and has a good relationship with the central staff. A former minister of agriculture is now even the president of NFFM, which implicates how far the network of NFFM reaches in the government.

The lobbying activities of NFFM focus on anything that makes the life of farmers better. The last year, this has been mainly done by helping the farmers to get the subsidies they are entitled to. According to Moldovan law every farmer is entitled to a subsidy equal to a certain percentage of their expenditure. The total budget from the government was however insufficient to reach this percentage for all farmers. The lobbying activities in this regard resulted in a 25% budget increase of 100 million lei. Other lobbying activities include the reduction of bureaucratizes in registering new input materials. It took for example multiple months to register a new type of seed or fertilizer, which was already widely used in other countries. The lobbying of NFFM helps to reduce this registration time.

Even though NFFM has strong ties with the government and achieved several goals, they do collaborate in lobbying. They do several lobbying activities with other farmer organizations in Moldova, because their members are also farmers and therefore share certain problems and needs with the members of NFFM.

Next to collaboration in the actual lobby, they receive support from donor organizations on how to lobby. Agriterra for example provided a course which teaches farmer organizations new lobby tactics in a dynamic and interactive way.

6.1.5 Collaboration support

Collaboration amongst farmers has been an important source of income growth amongst farmers. Especially the creation of cooperatives has helped in this regard. In cooperation with their donors such as Agriterra, NFFM attempted to create a cooperative system in Moldova. The former Soviet history of Moldova and the enforced collaboration that took place there has resulted in a situation where the farmers are unwilling to trust each other and collaborate in buying input materials and selling produce. Therefore NFFM had to find other ways in which to stimulate collaboration amongst farmers. They decided to create so called producer groups. Such producer groups exist of approximately 10 farmers that all produce the same types of commodities. They regularly come together to discuss their plant types, technologies and working methods. It is NFFM's aim that such voluntary collaboration, which is not directly coupled to economic returns, helps the farmers to get more thrust in each other. Thereby the producer groups could be the set up for a future cooperative system.

To stimulate the creation of producer groups, they provide several trainings and activities which are only accessible for producer groups. These trainings are generally more focused on the specific commodity in which the group is active. Generally it is the regional director that goes into discussion with the producer groups to identify their needs and problems and then provide the group with trainings by a suitable expert.

As a result of the producer group movement of NFFM, some farmers have decided to collaborate more thoroughly and set up associations. These associations can exist of two farmers or more. The collaborate activities of these associations may include the buying of supplies, selling of produce or organizing of activities. These associations are a step closer to cooperatives, but do not always have all three types of activities and they often lack the size of cooperatives in other countries. NFFM helps the farmers that are willing to set up such associations, with setting up their structure and helping with the activities that the association wants to provide to the farmers.

6.1.6 Institutional support

NFFM tries to influence the non-governmental institutions in two main ways. On the one hand they provide so called information points at the regional offices. Farmers can visit these offices and use data sources, contact information and computers with internet. This is an important contribution to the communication infrastructure of Moldova, because most farmers do not own a computer and internet.

The second way in which NFFM influences the non-governmental institutions is by use of their producer groups. During their USSR period, the farmers were forced to collaborate in large farms. These memories make that most farmers of today are unwilling to collaborate. A culture of distrust arose amongst Moldovan farmers. NFFM is helping to gradually remove this barrier of distrust, by building trust through voluntary collaboration in producer groups. Collaboration which is not directly linked to production and sales and which therefore encompasses less risks of betrayal. Donor organizations such as Agriterra see the important role of collaboration and thus played a supporting role in the establishment of producer groups. They provided information and experience on cooperative systems abroad and promoted collaboration to NFFM.

6.2 Peru

6.2.1 Technological & agronomical support

The cooperatives in Peru provide two main types of support: training & agronomical extension and exchanges to other farmers. These extension activities take mostly place at the location of the farmer. A general approach is that the supervisor of the organization visits all the farmers and when a farmer has a problem, the supervisor tries to solve it on location. Only when the problem can't be solved, this results in training on a central location, or an easily accessible farm. Other cooperatives decide to provide trainings when it is a shared need or problem (La Florida), or organize trainings every month (Pangoa). The trainings can be focused on agronomical issues on how to improve the production, for example via a new cutting method. Other interesting training issues are related to the blight and to diversified crops/income sources. The latter is an important aspect of organizations like La Florida, that actively stimulate farmers to be active in a second commodity and Rio Negro, that provided support if farmers are interested in other commodities. Amongst the visited farmers were one that was also in chickens, two that were also in bananas and one that was also a baker. Diversified crops are important because coffee can only be harvested 2-3 months a year. The specialists for these trainings on diversified commodities mainly come from other agronomical institutes. Other trainings are either provided by external institutes or the supervisor. Two of the organizations also mentioned that they received technical support from partner processors and facilities from local governments.

Trainings on the blight however are more complex and require a more intense research network. Such a network was established with the help of JNC, which found appropriate research institutes, local governments and cooperatives that were willing to collaboratively do research. JNC also makes an important contribution to the agronomical extension and other trainings which the cooperatives provide to the farmers. Most supervisors and technical engineers of the cooperatives are namely trained by JNC. This training was provided in such a way that JNC trained the supervisors to give trainings to farmers.

A second method to enhance the technical support provided to farmers is by the use of exchange visits. These can be either visits to farmers abroad (Los Chankas & La Florida), or to other model farms in Peru (Rio Negro). The chance to visit farmers abroad is however only available to a select few. Los Chankas for example only provides this opportunity to leader farmers, which have to diffuse the obtained knowledge amongst the other farmers after their return. The model farms can be visited by all farmers of the cooperative that are willing to.

JNC does not actively help to arrange exchanges of farmers, they do however help with exchanges of cooperative staff members. They provide for example staff members the possibility to see how other cooperatives function and to technical engineers and supervisors the possibility to obtain more knowledge from knowledge institutes abroad.

A third method in which cooperatives provides technical and agronomical knowledge to the farmers is through collaboration with universities. Two of the interviewed cooperatives (Los Chankas & Rio Negro) allowed agronomy students to do an internship on the farm of their members. That way the students can get infield experience, while the farmer can learn from the students.

6.2.2 Marketing & business support

An important property of cooperatives is that they sell the coffee to processors and markets. This means that farmers do not need to do many marketing and selling activities such as seeking contracts with processors. It does however mean that the farmers need to provide their produce to the cooperative. This can be difficult because not all farms are located near a road and are therefore difficult to reach, additionally, not all farmers own a vehicle for transport. Most of the cooperatives therefore provide help with collecting the coffee from the farmers. Most use pick-up trucks to collect the coffee. However, because renting a pick-up truck is expensive, some smaller

cooperatives only collect when there are multiple farmers that have their production ready (Pangoa). In most cases, the farmer still needs to bring the coffee by foot from the farm to a road that is accessible by truck.

Next to collecting the coffee, some farmer organizations do also process the coffee (La Florida & Pangoa). These are mostly the larger cooperatives that own a factory or have contracts with one. By processing the coffee they can obtain a higher price for the coffee, ensuring larger profits to the farmers.

Besides helping the farmers in selling their produce, some farmer organizations also help in getting input materials such as seeds and fertilizers (Pangoa). This ensures both that the farmers have high quality inputs as reduces their need to find expensive suppliers by themselves.

A last business and marketing means of support provided by the cooperatives is based on certificates. All the cooperatives interviewed used certificates, so that they sell high quality and more expensive coffee to exporters and processors. In order to get these certificates, they provide trainings to the farmers and then let their supervisors check regularly if the farmer applies the things learned. All farmers have to make a test each year in order to keep their certificate. Farmers that score well enough can sell their coffee to the cooperatives for better prices. JNC does not directly help the farmers to get these certificates. They do however help to make the certification process more accessible. They observed that there is a broad range of different certificates, which all ask for partly overlapping information. Every certificating company however did an entirely new study into the cooperative, while the information was already partly present in the report of a different certification company. This meant more work for certification companies and thus higher expenditures for the cooperatives. Therefore JNC is discussing this problem with the certification companies in order to prevent them from doing double work.

JNC is also collaborating with the union of coffee exporters of Peru. They are mainly concerned with increasing the image of Peruvian coffee. Several years ago the Peruvian coffee producers made very low quality coffee in order to sell as much coffee as possible. As a consequence the Peruvian coffee is now selling on a lower price than coffee from competing countries. Collaboration takes place with the exporters because they also see that more profit can be made if the image improves.

Currently the quality of the Peruvian coffee has already improved drastically. JNC also made a large contribution in this. They helped to create a business strategy for their member cooperatives, which focuses more on high quality coffee. This strategy, which is widely applied according to the many certificates and with customers like Starbucks, has also followed from the annual coffee market analysis. Every year JNC invites coffee experts, from Peru and abroad, and all cooperatives to discuss important market developments, business chances and strategies.

Besides helping with certificates and business strategy, JNC also helps the cooperatives to get in contact with customers. They organize for example the expo café, which is an annual fair where coffee producers and processors can meet and do business. JNC and a consultancy organization invite all people and organizations that might be interested in Peruvian coffee. Next to organizing such events, JNC also provides cooperatives with the possibility to visit a large American coffee exhibition. Approximately 30% of all contracts which the cooperatives make follow from this fair. On this fair, JNC helps to bring cooperatives and customers together, but the actual negotiation takes place independently from JNC.

A special topic for JNC is to improve the position of woman and younger farmers. They help them to start their own business. With the support of JNC, several cooperatives have established a woman association within their organization. These woman associations train the woman to make a business, for example out of sewing blankets and cloths (La Florida, Rio Negro & Los Chankas). Younger farmers on the other hand have problems because they do not own land. JNC and the younger associations of cooperatives help these younger farmers to either receive land from older farmers or to start up a different coffee related business, for example a coffee bar.

JNC also collaborates with universities as a means of marketing for their own activities and projects. Even though the university experts might be unsuitable for most training and workshops, it is an important benefit to have the university's name associated to the project. This ensures that they can get more financial support from other sources for these projects.

6.2.3 Financial support

There are three ways in which the cooperatives contribute to the financing of farmers. Firstly they all provide (or are planning to provide) micro credits to the farmers. These are credits of 500-1000 soles, which have to be paid back when the harvest is sold. This is generally within 6 months or a year, depending on the cooperative. Most of these microcredits are provided to enhance the production capabilities of the farmers, although La Florida for example also provided money for food and health. In order to receive these funds, most farmers need to have a business plan. This plan is mostly written by the supervisor, which discusses the needs of the farmers and their capabilities to pay back the loan after the harvest. Rio Negro provided micro credits without such prior investigation, but they are now changing the rules because several farmers didn't pay or paid too late.

Some cooperatives have too little funds or are unwilling to actually provide all credits by themselves. Rio Negro for example obtains finance and expertise in their micro credit system from their customer, with whom they have close collaboration. Los Chankas on the other hand collaborates with the Agrobank in order to provide finance. They help the farmers to apply for loans and match the requirements of the bank. As a result of this collaboration the farmers get longer terms and lower interest rates.

The main problem with getting loans from national banks such as Agrobank is that the risks involved with providing funds to farmers are relatively high. Not all farms have something to give the bank if they can't pay back their loan. Therefore most banks either only provide to farmers which own their farm, or ask high interest rates to cope with the risks. Therefore JNC created a large financial buffer for Agrobank, so that they would be willing to provide lower interest rates to the cooperatives and their members.

The third way of financial support has already been mentioned under marketing & business support. Farmers of Pangoa obtain input materials from the cooperative, which does not only help them to get good quality inputs, but also saves them the costs. This is a large financial contribution, because the input materials comprise a large part of the total farming costs.

Besides the financial support to farmers, JNC also receives financial support as an organization. 60% of their total budget for example comes from their donor organizations. They mostly provide finance for specific projects. These donor organizations are both those that focus on developing support and those that are against drugs. The latter financial flow will become clearer in the next paragraph.

6.2.4 Lobbying activities

Lobbying activities are not part of the main business of the cooperatives that have been interviewed. Only two out of four cooperatives mentioned to perform independent interaction with governments (La Florida & Rio Negro). La Florida exists of 18 subgroups, divided based on the area in which the farmers are active. In this way these subgroups can have a larger influence on the local governments. Rio Negro has direct cooperation with mayors of La Merced and Rio Negro (village) and receives finance and facilities for workshops.

Los Chankas, which is a smaller cooperative, is also conducting some lobbying activities together with 10 other small cooperatives. Their goal is to receive a financial contribution.

A farmer of Pangoa also mentioned that he had been striking to the government, but this strike turned out to be organized by JNC, who invited the farmers of their member cooperatives. JNC is lobbying to remove a certain law that forces farmers to pay taxes twice: once when they sell their

coffee to the cooperative and once when the cooperative sells the coffee to exporters or processors. These lobbying activities, including the previously mentioned strike, also received support from donors like Agriterra.

JNC emphasizes that the cooperatives have more influence on the government as a group than as individual organizations. This is probably why JNC conducts a broad range of lobbying activities. Firstly they perform an advisory function. The ministry of agriculture regularly comes with plans, which JNC then adapts to better fit the coffee farmers of Peru. The communication involved to steer these government plans is mainly on an informal basis through their direct contacts in the ministries. The formal ways of communications are heavily biased due to bureaucracy. Sometimes when the government is unwilling to accept the changes and plans to continue with policy that negatively influences the farmers, JNC applies pressure. They can threaten to go to the press or start to plan a conference on the matter.

Next to having an active advisory function, JNC also provides multiple services to the government and government associated organizations. The finance obtained from these governmental sources contributes to approximately 30% of JNC's total budget. In return for this financial contribution JNC provides detailed coffee market statistics, provide technical support in trainings and in policy rapports and organizes the annual coffee expo to stimulate the brand of Peruvian coffee. Special help is also provided to regional governments. These regions receive large budgets from the central government, but lack the capacity to write down assignments and select offers. Therefore a large part of the budget had to be returned to the central government. Therefore JNC provides these regional governments the required capacity, so that they can spend the money to JNC. This provided capacity is partly coming from JNC itself and partly from an organization of students, which provides JNC with cheap expertise.

6.2.5 Collaboration support

All four cooperatives try to stimulate cooperation in approximately the same way. They have structured their organization in such a way that there are several sub groups. These sub groups are existent of farmers in the same region, therefore it is easier to come together and share knowledge. To stimulate this knowledge exchange, these cooperatives also provide teamwork workshops on a regular basic, because teamwork is seen as a way to move production forward. Special is that the teamwork workshops of Pangoa are even freely accessible for all cooperatives. In organizing these workshops they collaborate with JNC.

Los Chankas is the only interviewed cooperative that has an additional approach to stimulating cooperation. They want to stay a small cooperative, with a small amount of families, so that most members know each other. Farmers can only join the cooperative when a different farmer recommends his membership to the cooperative. To further stimulate cooperation, they regularly advertise for more collaboration amongst their members.

JNC also tries to stimulate collaboration amongst cooperatives. When they organize trainings for cooperative staff members, they also let the staff members collaborate with each other. In this way, the staff members of the different cooperatives that have the same function (e.g. President and president, or supervisor and supervisor) learn from how their colleagues work.

Next to these regular trainings that involve a collaboration aspect, there are certain topics that require a meeting between all cooperatives. This can be on issues that influence all cooperatives, such as policy changes or the blight, or on issues which JNC rates as important, such as woman and younger participation.

Sometimes, problems are urgent and collaboration can't remain in a discussion stage. In such instances JNC helps the cooperatives to take action in a collaborative way. Such collaborations took place in establishing a fund and agreements with the Agrobank and in order to influence the government. A further reaching collaboration is explained in example 7.

Example 7

A few years ago the Columbian coffee farmers made too much deals with exporters and processors. They couldn't deliver all the coffee and a coffee shortage was the result. These Columbian producers decided to buy Peruvian coffee in order to fulfill their contracts. Columbian coffee is however more expensive than Peruvian coffee and therefore they were willing to offer higher prices to the farmers. As a result, the farmers started to selling the coffee to the Columbians instead of the cooperatives and a problem emerged for the Peruvian cooperatives. Some cooperatives even tried to steal away farmers of the other cooperatives to fulfill their own contracts. In order to stop this price war, JNC and eight cooperatives came together and decided to offer the same coffee price to their farmers. In this way the cooperatives were less damaged from farmers leaving to the other cooperatives, since these offered the same prices.

6.2.6 Institutional support

Peru is a masculine culture, meaning that men are often working, while women are not. JNC is trying to stimulate the position of women in Peru. As said under the collaboration support mechanism, they have regular discussions with all member organizations about the role of women in farming. Next to these discussions, JNC helped to create women associations within several of their member cooperatives. The women of these associations are active and give a good example to other cooperatives. As a last means to stimulate women influence in Peru, they provide special trainings to women, making them better capable to do work within the Peruvian environment. All these JNC activities help to make the culture more accessible to women.

Next to women, young people also have difficulty to become farmers. They do often not have land or the resources to obtain land and start farming. JNC helps these youngsters to become active in coffee in two ways. On the one hand they help youngsters to take over farms of older farmers. On the other hand they promote the youngsters to start a different type of business in coffee instead of farming. An example of such a business could be a coffee bar.

In strengthening the position of women and youngsters, JNC is helped by donor organizations. These donors provide finance and assistance for trainings and promotion.

In recent history the Peruvian farmers and cooperatives made very bad quality coffee. As a consequence the Peruvian coffee market was decreasing rapidly and even today the price of Peruvian coffee is automatically downgraded. JNC saw the problem and tried to convince their members to make better quality coffee, to ensure that customers will remain. Due to their influence the image of Peruvian coffee is now gradually improving. To further strengthen the image JNC collaborates with the union of coffee exporters of Peru, because they share the interests of a better product image.

Next to a culture and history that might have a negative effect on innovation, the physical and communication infrastructures are also of a poor quality. Therefore the cooperatives apply several activities to strengthen the infrastructure or circumvent it. La Florida for example is investing in road maintenance. Like the other cooperatives they also have a truck to collect the coffee. This way the farmer does not have to use the poor physical infrastructure.

The communication infrastructure is also of a low quality. Telephony is not always usable in the mountains and most farmers do not have a computer with internet. To stimulate the use of communication channels, cooperatives and JNC are therefore providing trainings on how to use a computer. This might stimulate farmers to purchase a computer and get a better communicative position.

A special characteristic of coffee production is that it has the same production environment as coca leaves, which is the main ingredient for cocaine. The coca business is however more beneficial than coffee production: coca producers have an ensured market, receive more money, the coca is collected directly at the farm and there are multiple harvests a year. This has large implications on coffee producers, which might decide to produce coca instead. Even though the Peruvian

government has some policies to stimulate coffee and control the coca production, more coffee farmers start with coca then the other way around. Since there are multiple organizations which are involved in a sort of war against drugs, JNC tries to use the competition with coca as a spear head in some of their lobbying activities and collaboration with non-profit organizations. As a result they receive some support from the government and some additional financial support of international non-profit organizations against drugs.

7. Analysis

In this section the more descriptive results will be analyzed. This is done with a clear focus on the role of farmer organizations as intermediaries. The chapter starts with a short summary on the results and some findings that can be derived from that. In this summary the actor-mechanism matrixes of Moldova and Peru will be presented. After these short summaries the findings from the case studies will compare and elaborate to scientific literature. This comparison will take place on two prominent aspects of innovation intermediaries that are to a large extent also present in the actor-mechanism matrix: support mechanisms and the intermediary structure. In comparing the results with theory new insights will become apparent and a paragraph will highlight the most prominent additions to theory. The last part of the analysis will put emphasis on the used method. It will be argued what the strengths of this method are and thus why it could be a useful tool in analyzing innovation intermediaries.

7.1 Case overviews

Table 3 shows all the organization types that NFFM collaborates with in providing the six support mechanisms to stimulate innovation. The blue cells in these matrixes illustrate that according to the expert interviews, the corresponding actor type could make a contribution to innovation via the corresponding support mechanisms.

The way in which JNC and their member cooperatives involve other actors in stimulating innovation becomes clear in table 4. In this table there are C and U columns, these are used to differentiate between the collaboration of the cooperative (C) and the collaboration of JNC: the union (U). It should be noted that collaboration of cooperatives with other farmer organizations is also mostly facilitated by JNC or collaboration with JNC itself.

Table x shows that NFFM collaborates with multiple partners on all of the support mechanisms with the exception of the institutional support mechanism. It becomes clear that they found a broad set of different actor types as partners in providing technological & agronomical support, marketing & business support, financial support and lobbying activities. While for institutional and collaboration support they are dependent on collaboration with only one or two different actor types. That collaboration on institutional support does hardly take place is because NFFM does not believe that they are the right organization to give institutional support. Comparable results can be found in Peru (table 4), where cooperatives believe that they are not the right organization to conduct lobbying activities and provide institutional support, while the union does not think they should give technical & agronomical support to farmers. The results indicate that there is less collaboration in providing these support mechanisms.

Even though the Peruvian union and cooperatives each have one or more support mechanisms that they see as less relevant to provide, together they do provide support via all the six support mechanisms. Additionally, together they have relationships with multiple actor types in providing these support mechanisms. The organizations thus complement each other, because where the union is less active and to a lesser extent collaborating; the cooperatives are more active and cooperating with more actor types and vice versa.

The Peruvian union and cooperatives even complement each other in collaborating within specific support mechanisms. This is most visible in the business & marketing support, where the cooperatives also involve value chain partners, while the union also involves donors.

Other interesting findings related to the tables are amongst others that religious organizations were not involved as collaboration partners in both cases. According to board members of the unions in both countries, they do not have a dominant role in society and are therefore not seen as potential partners. A different finding specific for the Peruvian case was the involvement of certification organizations. They were not mentioned in the expert interviews but as described in the results can indeed have an influence on the business & marketing support mechanism.

There are also two actor types that make a contribution to innovation through a different support mechanism as the expert stated they would do. In Moldova consultants were used in providing financial support, while in Peru they were used with lobbying activities. Collaboration with value chain actors on the other hand took also place in Peru to influence the non-governmental institutions.

A last finding in relation to the tables is that the Peruvian farmer organizations do hardly collaborate in stimulating collaboration amongst farmers. This finding could be explained because there is already a lot of collaboration amongst farmers due to the cooperative system. A different reason might be that partnering is difficult in stimulating collaboration amongst farmers, what would also explain the small diversity of collaboration partners in the Moldovan case.

Table 3: Moldovan actor-mechanism matrix

	Technological & agronomical support	Marketing & business support	Financial support	Lobbying activities	Institutional support	Collaboration support
Knowledge institutes	X	X				
Value chain actors	X	X				
Farmer organizations	X			X		
Government		X	X			
Farmers	X			X		X
Donor organizations	X		X	X	X	X
Consultants	X	X	X			
Financial organizations			X			
Religious organizations						

Table 4: Peruvian actor-mechanism matrix

	Technological & agronomical support		Marketing & business support		Financial support		Lobbying activities		Institutional support		Collaboration support	
	C	U	C	U	C	U	C	U	C	U	C	U
Knowledge institutes	X	X		X								
Value chain actors	X		X	X	X					X		
Farmer organizations	X		X		X		X	X			X	X
Government	X	X			X	X				X		
Farmers	X							X				
Donor organizations						X		X		X		
Consultants				X				X				
Financial organizations					X	X						
Religious organizations												
Certification organizations			X	X								

7.2 Actor-mechanism matrix to theory

The actor-mechanism matrix developed in this research shows several implications on the role of farmer organizations as intermediaries. These findings correspond to a large extent with what can be found in scientific theory, but it also adds new insights on the role of farmer organizations and the role of intermediaries.

The actor-mechanism matrix and the corresponding descriptions give insights in two important aspects of intermediaries. Firstly it gives insights in what support mechanisms the intermediaries can be active. The results from using the matrix also indicate how they can fulfill these mechanisms. A second aspect of intermediaries that is captured by the actor-mechanism matrix, is the structure of intermediation. This structure encompasses the position of the intermediary to other actors. In other words it tells about the collaboration between resource providers and the intermediary and between the intermediary and its clients.

These two aspects do also take a central position in the actor-mechanism matrix itself. The support mechanisms make up the columns of the matrix. The structure is the aggregate of all the collaboration in which the intermediary is active: this is illustrated as the X's in the matrix where actors and mechanisms congregate.

7.2.1 Mechanisms

It is observed that the farmer organizations in developing countries act as intermediaries through six support mechanisms. Here it will be explained how the findings about these mechanisms relate to scientific literature on intermediaries.

Technological & agronomical support

In the Peruvian case it was observed that the cooperatives send out supervisors to visit their member farmers. It was their task to discuss the farmers' needs and to identify issues and problems which might have arrived on the farms. Additionally the Peruvian union JNC hold group discussions with all their member cooperatives when they identified an issue or problem that would be relevant to all cooperatives. This thus shows that farmer organizations can contribute with identifying needs and problems amongst their members. In theory this is also called a diagnostic function or demand articulation (Bessant & Rush, 1995; Boon et al., 2008). According to Bessant & Rush (1995) many small and medium sized firms, such as farmers, lack the experience and resources to understand and prioritize needs and problems to the extent that they can utilize external resources and opportunities in an efficient manner. Fulfilling a diagnostic function is thus important, because without a clear demand from the farmers it is difficult for the intermediary to make a contribution (Klerkx & Leeuwis, 2008a).

Next to seeing the farmer organizations identifying the problems and needs of farmers and translating these into solutions, translation support does also take place in helping the farmers to utilize the resources from other actors. This becomes best apparent in the Moldovan case where NFFM created, in collaboration with several university experts, multiple training modules for the farmers. As was frequently mentioned while conducting the interviews, farmers are often incapable to understand the university experts and use the provided knowledge accordingly. Therefore the role of NFFM in creating these modules was to process the knowledge of the experts into easy to understand language. Such difficulties in communication between the scientific community and entrepreneurs were also identified by Massa & Testa (2008). They highlight that intermediaries should translate knowledge and technology in order to transfer it. This notion is agreed upon by Klerkx & Leeuwis (2008a) who note that an intermediary is needed to enhance communication between actors, by bridging the cultural and cognitive differences. Which according to Howells (2006) can be achieved by modifying and processing the technical knowledge to transfer.

It became apparent that in providing technological and agronomical support to farmers, especially trainings and seminars were used. Most of the interviewed farmers in Moldova and Peru mentioned

that they attended trainings organized by the farmer organizations. This support helps to increase the technical competences of the farmers. As is argued by Bessant & Rush (1995), these competences are an important source for the competitiveness of both the farmers and the agricultural system. They argue that larger, but certainly smaller and less experienced organizations need to look to external sources as inputs to build up technological competences. Intermediaries can help to build these technical competences either directly by transferring a specific technological competence or indirectly by providing information on how to obtain such competences (Bessant & Rush, 1995). According to Howells (2006) one of the options to transfer technical competences is by conducting trainings, as was observed in the case studies. In order to transfer competences, experience often also needs to be transferred (Bessant & Rush, 1995). They argue that there are two ways in which the intermediary can transfer experience: either by telling their clients what they saw in previous cases or by visiting other firms while advising their clients. In the Moldovan and Peruvian case studies a third way in which intermediaries can contribute to experience sharing can be identified. In both cases successful farmers are asked to conduct trainings on the technologies they use. According to the farmer organizations this is the best way to provide trainings, because the farmers only want to listen to someone that actually has experience with the technology they are learning to use. A prominent way of learning with help of experience is through the model farms as applied by NFFM. Their most successful farmers have opened up their farms to other NFFM members, so they can visit these farms and see what the leader farmers do differently.

Business & marketing support

One of the findings is that the farmer organizations manage to link other actor types with the farmers. In Moldova it was for example observed that NFFM helped the farmers to come in contact with suppliers and processors and even helps the farmers with finalizing the contracts. Comparable findings were derived from JNC that helped the cooperatives to get into contact with international customers on an American coffee fair. This function is important for agriculture, because it allows the farmers to establish linkages which they would not easily be able to make (Klerkx & Leeuwis, 2008a). According to Kilelu et al. (2011) this is even truer for farmers in developing countries. Therefore this bridging or gate-keeping function is widely accepted as a function of intermediaries (Howells, 2006) and especially a main function for intermediaries in this context (Klerkx & Leeuwis, 2008a; Kilelu et al., 2011).

Another finding in providing business & marketing support is that farmer organizations organize fairs, exhibitions and festivities. The Peruvian case shows for example that JNC organizes an annual fair where the coffee cooperatives can meet and show their produce. The Moldovan case shows that NFFM also organizes exhibitions and even some produce related festivals. These activities help to promote the farmers and their produce, so that they are better capable to sell their products. It is thus a type of commercialization support provided by the intermediary.

A different example of commercialization support identified within the business & marketing support mechanism is the conducting of market research and identifying market opportunities. This becomes clearly visible in the Peruvian case where JNC annually invites multiple experts with expertise on coffee to identify all the market developments. This helps their cooperatives to make better business planning and strategies.

A third type of observed commercialization support is that the Peruvian cooperatives run the sales channels of the farmers. Additionally some of the cooperatives even run the supply channels, by supplying the farmers with input materials.

All three types of collaboration support identified are directly related to the commercialization function as identified by Howells (2006). This article states that commercialization is an important task for intermediaries, because it allows their clients to reap the benefits from their produce and innovations. The commercialization activities identified in this study: promoting clients, market analysis and running sales channels can also be observed in scientific literature (Howells, 2006; Bendis et al., 2008).

The coffee from Peru had a bad image problem. This problem was observed by JNC and therefore they decided that a high-quality coffee strategy was required to stimulate the image of Peruvian coffee and the sales of the farmers. They applied pressure on their member cooperatives to get better quality coffee. The cooperatives decided to follow JNC's lead and started to implement certification measures to get better quality coffee. The combined actions of JNC and the cooperatives thus resulted in setting a quality standard. Such a standard setting function for innovation intermediaries can also be identified in theory (Howells, 2006). Other researchers urge the importance for quality standards for developing countries, because low quality products can hamper the export dramatically (Aubert, 2005; Metcalfe & Ramlogan, 2008).

Financial support

It is observed that the farmer organizations in both case studies help with getting financial support. Firstly this includes the establishment of linkages with financial organizations. Establishing linkages has however already been explained in the previous support mechanism, the main difference here is the type of actor involved.

Next to helping the farmers to come in contact with financial organizations, they also help by acting as a guaranty to the financial organizations. This was observed in Peru, where JNC and their member cooperatives created a financial buffer for Agrobank, so that the bank has less risk and can ask lower interest rates to the farmers of the cooperatives. This is an important contribution, because the uncertainty of profitability can hinder the willingness of financial organizations to make investments in innovation (Hoppe & Ozdenoren, 2005). Howells (2006) agrees by mentioning that helping to attract finance is part of the commercialization support which can be provided by intermediaries.

Farmer organizations in both cases have also been found to provide finance by themselves. The Peruvian cooperatives act as micro credit providers, providing small credits with short durations. NFFM in Moldova has a rotary fund that allows the farmers to make somewhat larger investments. The provision of finance as a role for intermediaries can also be identified in scientific literature. Examples indicate that such support is mainly important for start-ups and small enterprises such as farmers (Winch & Courtney, 2007; Klerkx & Leeuwis, 2008a). Dalziel (2010) applies a focus to such investments by mentioning that some intermediaries can provide funding for technology & development activities. The findings of the case studies suggest that the farmer organizations also help in this account. A special finding in this regard is that NFFM also has an innovation fund especially meant for the farmers to buy technical and business related knowledge and support from other sources.

An additional financial support mechanism identified is the help provided in writing business plans to obtain finance from financial organizations and the government. Hereby they make a contribution to developing the business competences of the farmers. This is an important contribution made, because farmers in developing countries need to be capable to manage themselves (Bessant & Rush, 1995).

Next to helping the farmers with building business competences, they also take the need for such competences to a large extent away. The business plans in Moldova are for example written by both farmer and regional consultant, but this often means that the farmer only provides basic input for the actual business plan. A different example is that the cooperatives in Peru help the farmers with transporting their coffee and in some cases even provide the input materials. Even though this support is useful to the farmers it increases their dependence on outside sources such as the farmer organizations (Bessant & Rush, 1995). According to both Bessant & Rush (1995) and Klerkx & Leeuwis (2008a) intermediaries such as the farmer organizations should therefore to a lesser extent take away the needs for competences, but actually build these business competences and capacities amongst farmers more intensively.

Lobbying activities

A different activity performed by both JNC and NFFM is lobbying at the government, for more beneficial regulations and support. Whether this is with the help of strikes, by proposing policy or by using political pressure, it all helps to create a better institutional environment for the farmers. Lobbying is perceived as a function for intermediaries by Dalziel (2010). The study notes that especially industry associations have an important role in promoting the cause of their members amongst policy makers. One way in which this can be achieved is by providing policy relevant information to the government, which is according to Dalziel (2010) indeed a function of innovation intermediaries. Klerx & Leeuwis (2008a) agree by stating that through lobbying the policy agendas can be informed. Such informing function becomes apparent in Peru, where JNC provides information on the coffee sector to the government and even helps the regional governments with writing policy documents. A more pressurized lobbying activity performed was the use of strikes and media attention. Both activity types have been mentioned as a potential lobbying activity for intermediaries by Kingiri & Hall (2012).

Institutional support

Following the Peruvian case it becomes clear that some of the cooperatives contribute to the physical infrastructure, either by collecting the coffee or by investing in better roads. JNC and NFFM on the other hand help with the communication infrastructure. JNC trains woman how to use computers, while NFFM has an information point in their regional offices so that farmers can come there to access databases and the internet. This type of infrastructural support is very important for developing countries, because they are a characteristic of most developing countries is a bad infrastructure (Anderson & Billou, 2007). A good infrastructure is needed to reach these potential customers. A sound physical infrastructure is crucial for product distribution, but also important for marketing and collaboration aspects (Pralhad, 2012; Hammond et al., 2007)). A communication infrastructure is mainly important for collaboration and marketing (Pralhad, 2012).

It was also observed that history, thrust and culture have an influence on innovation in Moldova and Peru. Especially the Peruvian case shows that JNC tries to bring cultural issues regarding woman and youngsters on the agenda. This is done by regular meetings and by the creation of woman and youngster associations. NFFM on the other hand gives an example on how to take away problems which were created in their USSR past. That such cultural and historical issues can indeed stimulate or hamper innovation also becomes apparent in theory. It is for example stated that culture is important for successful collaboration (Kedia & Bagat, 2012; Arora & Romijn, 2009) and evidence from a case study in Vietnam showed that a communistic history can also hamper collaboration (Hilst, 2012). Culture is also associated with an impact on innovation & technology adoption (Everdingen & Waarts, 2003; Daghfous et al., 1999), making support based on the history and culture important tasks for intermediaries.

Collaboration support

In the case studies it becomes apparent that both NFFM and the cooperatives try to stimulate collaboration amongst farmers. The cooperatives for example form a unity of farmers through collective input buying and sales. Theoretical findings argue that such local collaboration is an essential contribution to resource obtainment, risk sharing and the creation of a stable production and distribution system (Goedhuys, 2007; Veling & Peine, 2012).

NFFM on the other hand has set up a producer group system, where sharing knowledge and experiences is a central activity. Goedhuys (2007) argues that such knowledge sharing is one of the main potential benefits of local collaboration.

The importance of stimulating collaboration is also seen as important by literature on intermediaries. This literature however tend to focus on collaboration between different actor types and often forgets or shortly mentions the task to stimulate collaboration between multiple actors of the same type: e.g. between multiple farmers (Dalziel, 2010; Klerx & Leeuwis, 2008a).

7.2.2 Structure

Following the actor-mechanism matrixes of Moldova and Peru, it becomes apparent that the farmer organizations take resources from many different actor types to the farmers. Therefore the intermediaries thus bring resources from many sources to many farmers. Such findings correspond to scientific literature on intermediaries. Dalziel (2010) notes that intermediaries support the inward flows of resources which are derived from a broad set of sources. Bessant & Rush (1995) mention that technology transfer with the help of an intermediary does not only goes from many actors to one, but that in some cases it can also go from multiple actors to multiple other actors. In the Peruvian case there is an additional complexity observed, because here the role of the intermediary is not only fulfilled by one farmer organization, but by the union and the cooperatives. This becomes apparent from the fact that both cooperatives and unions cooperate with different actor types in fulfilling the intermediary role (table 4). Howells (2006) identified a comparable complexity, in the article it was stated that there can be multiple intermediaries fulfilling the intermediary role. Such an intermediary structure was named a many-to-many-to-many configuration. The obtained findings in relation to such a configuration are a contribution to theory, because according to Howells (2006) much of the scientific analysis and discussions on intermediaries focus on one-to-one-to-one configurations.

In the Moldovan actor-mechanism matrix it becomes apparent that donor organizations are a dominant source of resources for NFFM. As can be seen in table 3, they help NFFM with five out of six support mechanisms. Even though the focus of this contribution is diverse, collaboration with donors results in a significant contribution to financial support and collaboration support. Furthermore it is the only collaboration of NFFM in providing institutional support. According to Klerkx & Leeuwis (2008a) collaborating with multiple resource providers is important because having only one or a dominant source of resources can have negative influence on the impartiality of the intermediary. This is especially true when the supplying organizations also make financial contributions to the intermediary. This can hamper further collaboration with other actors.

In the situation of farmer organizations it becomes clear that the intermediaries have a long term relationship with their clients: the farmers. This means that the farmer organizations can get to know the farmer better. This allows them to give better and more focused advice to the farmers (Howells, 2006).

In the Moldovan case however, the supporting activities organized by NFFM are mainly used by those whom they perceive as innovative entrepreneurs. This focus became apparent after asking the cooperative staff member how the farmers to receive support were identified. It was answered that the more active and innovative farmers were selected because they were more likely to use the support. This is what Klerkx & Leeuwis (2008a) call progressive client bias, which occurs in many publically financed innovation intermediaries. NFFM is namely supporting innovation amongst those farmers that can already support innovation by themselves.

Another finding is that the farmer organizations have a certain regional focus. In Peru for example several of the cooperatives had sub-groups based on geographical proximity, while NFFM in Moldova is structured according to regional offices. This regional focus is important for NFFM, because it allows them to make contracts with local suppliers and processors and because it allows the farmers to visit the regional office and trainings. The Peruvian cooperatives added to this by pointing out the important benefit on lobbying to local and regional governments. Arguments to apply a regional focus can also be found in theory. Boschma (2005) and Katz (1994) argue that geographical proximity is one of the determinants for spill-overs and successful collaboration. In the case of intermediaries and agricultural entrepreneurs it means that a regional focus ensures easy accessibility to the farmers (Klerkx & Leeuwis, 2008a). It is stated that intermediaries can more easily distribute knowledge and resources to the farmers, if they are embedded and located at sites familiar to the farmers.

7.2.3 New insights on mechanisms and structure

Following the comparison to theory, it becomes apparent that some identified results have not been stated in scientific literature regarding innovation intermediaries before. Thereby this study adds to innovation intermediary research. This paragraph summarizes the main additions to theory on the mechanisms and structure of intermediation:

In providing technical and agronomical support, the farmer organizations used several methods to transfer experience to the farmers. They used for example farmers to train the other farmers. An additional way to train farmers was through model farms, where farmers can visit others their farms to see what technologies and working methods they apply. Both these experience transfer methods are more direct than the methods mentioned by Bessant & Rush (1995) that entails the transfer of experience from resource provider to intermediary to client. In the newly identified method the experience transfer takes directly place from resource provider to client, while the intermediary only facilitates the transferring process.

Another new finding relate to financial support provided by the farmer organization. Both the Moldovan case and the Peruvian cooperatives help by writing the business plans for the farmers. Even though examples of providing assistance with obtaining financial support exist, even in the form of help with writing a business plan, taking over the whole business plan writing process is a new finding. The farmers seem to appreciate this support and especially in Moldova this support proved to result in higher success rates in attracting subsidies and loans. The question arises however to what extent intermediaries should take over core business activities of their clients, especially since such support increases the dependence on outside sources (Bessant & Rush, 1995; Klerkx & Leeuwis, 2008a).

Even though infrastructural support is seen as an important contribution to innovation systems in developing countries, theory has not mentioned infrastructural support as one of the activities that intermediaries have to provide.

The same is true for support on cultural and historical issues. Their importance is acknowledged, but they are not connected to the role of innovation intermediaries.

One of the most prominent missing links in innovation intermediary research is that institutional support in general has not been identified as a support mechanism for intermediaries. Here it is argued that such institutional support should indeed be a role that innovation intermediaries can fulfill. The institutional framework is namely part of the broader innovation system (Bergek et al., 2008; Suurs, 2008). Innovation intermediaries that act as brokers between their clients and this innovation system could thus also mediate by strengthening the institutional framework. Therefore infrastructural support and support with cultural and historical issues should be part of the functions that intermediaries could fulfill.

7.3 Method

In this research the actor-mechanism matrix was developed as a tool to analyze intermediaries. This tool was created specifically for agricultural intermediaries in developing countries, but the findings show that the method used in accordance with the tool has several strengths that are highlighted in this section.

One of the benefits in using the actor-mechanism matrix as a guidance tool in analyzing intermediaries, is that it provides results and insights on three aspects of intermediaries: The support mechanisms or functions fulfilled by the intermediary, the actor types that have been involved in providing the support mechanisms and the structure of intermediation. It hereby covers a broader spectrum than most other intermediary research approaches that tend to focus on either the functions (Howells, 2006) or the structure of intermediation (Klerkx & Leeuwis, 2008a).

This research has showed that the actor-mechanism based approach is especially useful in regard to functions that intermediaries have to fulfill. This is because the identified support mechanisms give guidance to all questions on interactions between the intermediary and the client. An additional benefit in the applied methodology is that there are the questions were held with both client and intermediary respondents. This ensures that insights on the support mechanisms come from both sides of the interaction: intermediaries and clients.

The division in six support mechanisms and the choices made to create these mechanisms has resulted in a set of mechanisms that covers a broader set of supporting functions then mentioned in any other reviewed article. The main reason is that the lobbying activities and institutional support mechanisms from the actor-mechanism matrix cover activities to mediate between institutions and client. Hereby it differs from other research that primary tends to focus on direct mediation between actors and clients (Bessant & Rush, 1995; Howells, 1995).

Even though there are examples that because of the importance of intermediating with the government already include lobbying activities as tasks of intermediaries (Dalziel, 2010; Kingiri & Hall, 2012), research on non-governmental institutional support is lacking. This research has shown that the actor-mechanism based method is also capable to provide valuable insights on this type of intermediation.

Next to getting findings on the interaction between intermediary and client, the actor-mechanism matrix based approach also gives insights in the interaction between intermediary and resource providers. This differs from most other studies into intermediaries that according to Klerkx & Leeuwis (2008a) tend to focus on the former type of interactions. Interaction between resource provider and intermediary is also covered in an approach based on the actor-mechanism matrix, because the approach asks specifically how collaboration with other actor types takes place in providing the support mechanisms. These questions give insights in how different actor types can contribute to intermediaries. Additionally, by using the matrix a clear overview of all collaborations between resource providers and intermediaries becomes apparent. This differs from the approach used by Klerkx & Leeuwis (2008a) that does explain how one intermediary interacts with resource providers, but lacks a clear overview that could be used for easy comparison with other cases.

This research approach thus gives insights on both the interaction between resource provider and intermediary and between intermediary and client. This gives valuable insights in the structure of intermediation, because it helps to visualize all the links of intermediaries and shows how support is given. Hereby it provides structural insights on geographical foci of intermediaries and the position of intermediaries within a network.

In this research approach the choice was made to take two case studies and to conduct interviews with multiple client respondents and multiple respondents from the farmer organizations. The actor-mechanism matrix based approach is basically focused on case studies on single intermediaries. Other authors argued that a single organization case study approach is better capable to identify and elaborate on less apparent and more unique results (Klerkx & Leeuwis, 2008a; Winch & Courtney, 2007).

8. Discussion

There were several choices made in this research that deserve to be highlighted and further explained. Some of these decisions relate to the case selection applied in this research. The choice was made to do research to the intermediate role of farmer organizations in developing countries. Conducting interviews in developing countries is more difficult than conducting interviews in developed countries. On the one hand it requires the use of a translator, which might result in a loss of information due to the translation process. On the other hand there is a cultural difference between the respondents in developing countries and the interviewer, in this case coming from a developed country. Still the choice was made to do research in developing countries, because it is a different environment than the developed countries, therefore intermediaries might perform different and previously unidentified intermediary activities. The finding that farmer organizations contribute to non-governmental institutional support for example might be found because the cases were conducted in developing countries. Future research should be conducted to see if such institutional support also becomes apparent in more developed countries, where the institutional environment is also more developed.

To reduce the risk of obtaining too little information due to the translating process, the amount of interviews and interview respondents weren't prematurely decided upon. Instead the amount of respondents was determined based on saturation of information. As a result the aggregate of interviews in both case studies was of a sufficient density.

Future research however could be conducted in collaboration with native researchers, which can conduct interviews without language and cultural barriers. An additional benefit is that they are likely to know more about the situation of the country and therefore can more easily formulate relevant questions.

The choice to interview farmer organizations was made because they are intermediary organizations with a large importance in developing countries. In many developing countries for example, agriculture is the dominant economical sector and income source for the majority of the population (Worldbank, 2012c; Feder et al., 1985; Hammond et al., 2007). Additionally, as became apparent in both theory (Chirwa et al., 2005; Morris et al., 2000) and the results, farmer organizations fulfill many different intermediary activities.

The decision was made to do case studies on two different farmer organizations: NFFM in Moldova and JNC in Peru. Hereby it differs from many other studies that tend to focus on a sector and region and conduct interviews to identify the main roles of intermediary organizations in that sector and region (Lichtenhaler & Ernst, 2008; Howells, 2006; Klerkx & Leeuwis, 2008b). Such approaches are indeed capable to identify main roles that intermediaries can play, and because of the large amount of intermediaries active within a sector and region this often results in the identification of multiple intermediating roles within different organizations. Such approach is however to lesser extent useful in identifying all the intermediating activities of single organizations. Hereby it might miss out on less obvious and minor roles fulfilled. Other authors found comparable problems and argued that a single organization case study approach is better capable to identify and elaborate on less apparent and more unique results (Klerkx & Leeuwis, 2008a; Winch & Courtney, 2007). By doing research on two case studies on the same type of intermediaries (farmer organizations) this research still differentiates from the approaches of Klerkx & Leeuwis (2008a), that only has a single case and from Winch & Courtney (2007) that use ten cases with different types of intermediaries. Such approaches can indeed result into new insights and findings, but it is believed that more case studies on the same types of intermediaries are required, because the findings from this research show that even comparable organization types fulfill their intermediary role to some extent differently. To increase the probability of getting new insights from both cases, the selected case study countries were geographically and culturally dispersed. Due to the differences in the environment of the case studies and the fact that only two case studies were conducted, the results of this research can't be generalized for all farmer organizations in developing countries. It is expected that by applying the actor-mechanism

matrix based approach on other farmer organizations new insights can be found. This thus provides opportunities for future research.

Following the expert interviews a framework was created for the case studies. This framework is the actor-mechanism matrix. This matrix contains all the actor types and mechanisms mentioned by the experts and shows for each actor type if it can make a contribution to fulfilling the mechanism. It should however be noted that next to the identified actor types there might exist other actor types with an influence on innovation. Additionally, actors might contribute in different ways than identified by the experts. Both types of unexpected results were also observed in the results. On the one hand the Peruvian farmer organizations collaborated with certification organizations, which weren't included in the actor types. On the other hand collaboration with value chain actors took place on different support mechanisms than based on the expert interviews were expected.

Such results were already expected, because a limited amount of infield experts is unlikely to identify all actors that can make a contribution, nor all ways in which they can do so. Therefore the actor-mechanism matrix is used as a guidance tool for the case studies. Next to asking the respondents about the actor types and support mechanisms from the actor-mechanism matrix, they were also asked if there were other actors and other types of support. By using such an approach that was guided by the actor-mechanism matrix, but allowed for deviating answers, these unexpected findings were discovered. Future research on other case studies can be used to make the actor-mechanism matrix a tool that provides even better guidance to research into intermediaries and farmer organizations.

The conducted pre-study and the conducted research have a slight mismatch. The pre-study focuses more on what the influence that different structural elements can have on innovation amongst farmers, while the final research focuses specifically on the intermediation process between these structural elements and the farmer. The pre-study does not have direct results that a farmer organization should mediate between these structural elements and the farmer in stimulating innovation. This slight mismatch was caused by changes in the research focus during the study.

Even though this mismatch was known, the choice was made to still use the pre-study results as a guideline for the final research. Since the derived actor-mechanism matrix is used as a guidance, it is no large problem if there some small deviations caused by the initial purpose and new purpose of the pre-study.

If one or two actor types can make an important contribution to one of the support mechanisms, but are not important for collaboration, this only has a minor effect on the overall picture regarding the structure and functioning of intermediaries. Furthermore, because the pre-study is only used as guidance, unexpected results can and have been identified. Additionally, since only the collaborations and intermediary support mechanisms observed in the case study are used as results and to elaborate on theory, the minor mismatch between pre-study and final study have limited effects on the results and conclusions of the final study. Future research could however conduct research in order to adapt the actor-mechanism matrix, so that it better fits its purpose as a tool to analyze intermediaries.

The actor-mechanism matrix gives insights in two types of interaction: between resource provider and intermediary and between intermediary and client. To obtain the required insights, interviews were conducted with respondents from the farmer organizations/intermediaries and farmers/clients. It might thus be expected that the link between resource providers and intermediary could be better explained when there were also interviews conducted with resource providers. This was attempted in the Moldovan case, where a governmental research body and a financial organization were interviewed. The respondents for both cases were however incapable to tell anything about the collaboration with the farmer organizations. It even happened that the respondents from one of these organizations didn't even know that they actually collaborated with

NFFM. Since NFFM and JNC found difficulties in arranging meetings with their business partners and because the results from the two partners of Moldova didn't provide any useful insights, it was decided to stop interviewing resource providers and focus on intermediary and client respondents instead. Future research might try to include resource providers by arranging interviews to those employees that are specifically working in collaborations with the farmer organizations. As it turned out to be in this research, people with responsible functions such as managers and directors within the resource providers, does not mean that they are the appropriate respondents.

9. Conclusion

This research used a pre study of 12 expert interviews and two case studies of 32 interviews with farmers and farmer organizations in order to answer the main question.

RQ: How do two intermediaries from developing countries fulfill their intermediary role in the innovation system?

In order to identify the intermediary role of the farmer organizations in Moldova and Peru, the actor-mechanism matrix was developed in a pre-study as a tool to analyze farmer organizations as intermediaries. Applying this tool in the case studies showed that both farmer organizations fulfill six types of support mechanisms: 'technological & agronomical support', 'marketing & business support', 'financial support', 'lobbying activities', 'institutional support' and 'collaboration support'. The results have also shown that in providing these support mechanisms the farmer organizations collaborate with multiple actor types as resource providers. In order to ensure that the farmer gets appropriate support, they bring resources from different sources together and often use their own expertise to translate the resources into solutions of farmers' needs. Hence the use of the actor-mechanism matrix approach led to insights on functions of farmer organizations as intermediaries. The research also gives insights on the structure of intermediation. Especially the Peruvian case showed how two types of farmer organizations fulfilled the intermediary role together, by each bringing resources and support from different actor types to the farmer.

A prominent finding is that farmer organizations do also contribute by stimulating the institutional environment in which farmers are active. Even though the contribution to governmental institutions was also observed in other scientific research, support with non-governmental institutions, such as infrastructure and culture, was in previous literature not linked to the role of intermediaries. It is argued that since such institutions are part of the broader innovation system, it is the role of intermediaries to make such institutions accessible and beneficial to their clients.

This research has shown that the actor-mechanism matrix can be used as a framework for interview questions. This actor-mechanism matrix based approach has proved to be a viable tool to analyze farmer organizations as intermediaries. It has strengths as an intermediary analysis approach, since it covers a broad range of intermediary functions through the support mechanisms and also covers collaborations with the actor types as resource providers and hence the structure of intermediation.

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Appendix 1

Pre-study interview questions

Bedankt dat u mee wilt doen aan dit interview. Dit interview richt zich op de structurele elementen waar een boer in ontwikkelingslanden mee te maken heeft. Het betreft hierbij alle organisaties, instituties (regelgevingen) en relaties in de omgeving van de boer. Het onderzoek en ook dit interview is er op gericht om de structurele elementen die innovatie versterken te identificeren. Voor we aan het interview beginnen wou ik u eerst nog wat andere vragen stellen:

- Mag het bedrijf waar u werkzaam bent genoemd worden?
- Wilt u anoniem blijven met betrekking tot dit onderzoek?
- Mag het interview worden opgenomen?

Dan gaan we nu beginnen met het interview, het interview duurt ongeveer 30-45 minuten en behandelt een aantal thema's.

Samenwerking:

- Binnen het thema samenwerking: welke organisaties, regelgevingen en relaties zijn aldus u van belang voor het stimuleren van innovatie?
- Hoe beïnvloeden deze genoemde elementen aldus u innovatie?
- Welke aspecten zijn belangrijk voor een succesvolle invloed van dit element op innovatie?

Kennis en educatie:

- Binnen het thema kennis en educatie: welke organisaties, regelgevingen en relaties zijn aldus u van belang voor het stimuleren van innovatie?
- Hoe beïnvloeden deze genoemde elementen aldus u innovatie?
- Welke aspecten zijn belangrijk voor een succesvolle invloed van dit element op innovatie?

Bedrijfsleven:

- Binnen het thema bedrijfsleven: welke organisaties, regelgevingen en relaties zijn aldus u van belang voor het stimuleren van innovatie?
- Hoe beïnvloeden deze genoemde elementen aldus u innovatie?
- Welke aspecten zijn belangrijk voor een succesvolle invloed van dit element op innovatie?

Kern actoren:

- Binnen het thema kern actoren: welke organisaties, regelgevingen en relaties zijn aldus u van belang voor het stimuleren van innovatie?
- Hoe beïnvloeden deze genoemde elementen aldus u innovatie?
- Welke aspecten zijn belangrijk voor een succesvolle invloed van dit element op innovatie?

Land condities:

- Binnen het thema land condities: welke organisaties, regelgevingen en relaties zijn aldus u van belang voor het stimuleren van innovatie?
- Hoe beïnvloeden deze genoemde elementen aldus u innovatie?
- Welke aspecten zijn belangrijk voor een succesvolle invloed van dit element op innovatie?

Niet thema:

- Welke organisaties, regelgevingen en relaties zijn aldus u nog meer van belang, maar behoren niet tot één van de bovengenoemde thema's?
- Hoe beïnvloeden deze genoemde elementen aldus u innovatie?
- Welke aspecten zijn belangrijk voor een succesvolle invloed van deze elementen op innovatie?
- Welk nieuw thema past volgens u het beste bij deze structurele elementen?

Dan wil ik u hartelijk bedanken voor deelname aan dit interview.

Main study interview questions

Farmer interview:

*Do you receive technical or agronomical support from the farmer organization?
How do they give this support? Are other organizations involved in this support?*

*Do you receive help from the farmer organization with marketing and selling your products or on making business decisions?
How do they help you? Are other organizations involved in this support?*

*Does the farmer organization help you to obtain finance?
How do they help you? Are other organizations involved in this support?*

*Does the farmer organization stimulate that you collaborate with other farmers?
How do they stimulate this collaboration? How do you collaborate? What other organizations are involved in this support?*

*What other type of support do you receive from the farmer organization?
How do they provide this support? Are other organizations involved in this support?*

*following two test interviews it became apparent that farmers are not well informed about the lobbying activities and institutional support mechanisms applied by the farmer organization, because such support does not directly involve the farmer. Therefore questions regarding these two support mechanisms are not a main part of the interview. Such questions were only asked sporadically.

Farmer union interview:

*Do you provide technical and agronomical support to farmers/cooperatives?
How do you provide this support? What other organizations are involved in giving this support?
How do you collaborate with them?*

*Do you provide marketing and business support to farmers/cooperatives?
How do you provide this support? What other organizations are involved in giving this support?
How do you collaborate with them?*

*Do you provide financial support to farmers/cooperatives?
How do you provide this support? What other organizations are involved in giving this support?
How do you collaborate with them?*

*How do you lobby at the government?
What do you lobby for? What other organizations are involved in these lobbying activities? How do you collaborate with them?*

*Do you undertake activities to make the physical and communication infrastructure better?
How do you do this? What other organizations are involved in giving this support? How do you collaborate with them?*

*Do you try to influence the culture or historical barriers?
How do you provide this support? What other organizations are involved in giving this support?
How do you collaborate with them?*

*Do you stimulate collaboration amongst farmers/cooperatives?
How do you do this? What other organizations are involved in giving this support? How do you collaborate with them?*

*What other type of support do you provide to farmers/cooperatives?
How do you provide this support? What other organizations are involved in giving this support?
How do you collaborate with them?*

*.....
Do you collaborate with knowledge institutes? How do you collaborate with them?*

Do you collaborate with processors, suppliers or other chain actors? How do you collaborate with them?

Do you collaborate with other farmer organizations? How do you collaborate with them?

Do you collaborate with individual farmers? How do you collaborate with them?

Do you collaborate with the government? How do you collaborate with them?

Do you collaborate with donor organizations? How do you collaborate with them?

Do you collaborate with external consultants? How do you collaborate with them?

Do you collaborate with financial organizations? How do you collaborate with them?

Do you collaborate with religious organizations? How do you collaborate with them?

Do you collaborate with other organizations? How do you collaborate with them?

Farmer cooperative interview

*Do you provide technical and agronomical support to farmers?
How do you provide this support? What other organizations are involved in giving this support?
How do you collaborate with them?*

*Do you provide marketing and business support to farmers?
How do you provide this support? What other organizations are involved in giving this support?
How do you collaborate with them?*

*Do you provide financial support to farmers?
How do you provide this support? What other organizations are involved in giving this support?
How do you collaborate with them?*

*How do you lobby at the government?
What do you lobby for? What other organizations are involved in these lobbying activities? How do you collaborate with them?*

*Do you undertake activities to make the physical and communication infrastructure better?
How do you do this? What other organizations are involved in giving this support? How do you collaborate with them?*

*Do you try to influence the culture or historical barriers?
How do you provide this support? What other organizations are involved in giving this support?
How do you collaborate with them?*

*Do you stimulate collaboration amongst farmers?
How do you do this? What other organizations are involved in giving this support? How do you collaborate with them?*

*What other type of support do you provide to farmers?
How do you provide this support? What other organizations are involved in giving this support?
How do you collaborate with them?*

*.....
Do you collaborate with knowledge institutes? How do you collaborate with them?*

Do you collaborate with processors, suppliers or other chain actors? How do you collaborate with them?

Do you collaborate with other farmer organizations? How do you collaborate with them?

Do you collaborate with individual farmers? How do you collaborate with them?

Do you collaborate with the government? How do you collaborate with them?

Do you collaborate with donor organizations? How do you collaborate with them?

Do you collaborate with external consultants? How do you collaborate with them?

Do you collaborate with financial organizations? How do you collaborate with them?

Do you collaborate with religious organizations? How do you collaborate with them?

Do you collaborate with other organizations? How do you collaborate with them?

.....

*Do you receive technical and agronomical support from the farmer union?
How do they provide this support? Are there other organizations involved in this support?*

*Do you receive marketing & business support from the farmer union?
How do they provide this support? Are there other organizations involved in this support?*

*Do you receive financial support from the farmer union?
How do they provide this support? Are there other organizations involved in this support?*

*Does the farmer union lobby on your behalf?
How do they lobby for you? Are there other organizations involved in this lobby?*

*Does the farmer union try to improve the infrastructure and/or influence the culture on your behalf?
How do they do this? Are other organizations involved in these activities?*

*Does the farmer organization try to stimulate collaboration with other cooperatives?
How do they provide this support? Are there other organizations involved in this support?*

*What other types of support do you receive from the farmer union?
How do they provide this support? Are there other organizations involved in this support?*