CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Tropical AgriSciences

Assessment of factors influencing improvement of market access among collective action of small farmers in Moldova

MASTER'S THESIS

Prague 2018

Author: Bc. Cristina Conea

Chief supervisor: Ing. Jiří Hejkrlík, PhD

Declaration

I hereby declare that I have done this thesis entitled “Assessment of factors influencing improvement of market access among collective action of small farmers in Moldova” independently, all texts in this thesis are original, and all the sources have been quoted and acknowledged by means of complete references and according to Citation rules of the FTA.

In Prague, 26 April 2018

.....

Bc. Cristina Conea

Acknowledgements

First, I would like to thank my thesis supervisor Ing. Jiří Hejkrlík, PhD of the Faculty of Tropical AgriSciences at Czech University of Life Sciences Prague. He was always open to help me and consult whenever I had a question about my research or writing. He allowed me to feel free in my work but steered into right direction any time I needed.

The financial support of the Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague, under project number 20175012 in form of research grant for data collection is gratefully acknowledged.

I would also like to thank Stelian Andronachi, the President of Union of Cooperatives in Moldova, who provided valuable data for data collection. Without his participation and input, the survey could not have been successfully conducted.

A special thank is also addressed to all respondents, for their patience and time during data collection.

I would especially like to sincerely thank Bc. Pius Hiwe and Ing. Samuel Ahado, for their advices and comments during writing the thesis.

Finally, I must express my very profound gratitude to my family and friends for providing me with support and continuous encouragement throughout my years of study and through the process of writing this thesis. This accomplishment would not have been possible without them.

Abstract

There is a believe among development donors, practitioners and academics that improving market access for smallholders will lead to increased income, food security, more rural employment and sustainable agricultural growth. However, persistent market failures as a lack of information on prices and technologies, high transaction costs, credit constraints, low bargaining power or small quantities of production often limit smallholders' ability to improve their market access. Moreover, as the new procurement systems require larger supply volumes, smallholders are left behind to larger farm enterprises. To address these challenges, value chain interventions such as horizontal integration and support of collective action is often proposed as a tool to overcome these obstacles. There is an increasing evidence that if acting collectively, farmers can reduce transaction costs for market exchanges, attain economies of scale and bargaining power, obtain necessary market information, secure access to new technologies and tap into high-value markets. Therefore, our main research question was to find out, if acting collectively, farmer cooperatives in Moldova can gain better access to markets and if agricultural cooperative groups are an efficient form to improve farmers' livelihood and contribute to food security in Moldova. We investigated factors influencing small farmers' access to local and international markets among 23 cooperative groups, that covered 134 farmers across the whole country using stratified sampling techniques accompanied by questionnaires administration. The analysis considered factors as: institutional, socio-economic, innovation, financial and infrastructural factors of the groups. The results show that gender specifically males, farm size, frequency of meetings, cooperative existence and AMIS were the factors that statistically influenced small farmers' access to improved market.

Key words: Social capital, adding value, farmer cooperatives, horizontal integration

Contents

1. Introduction 10

2. Background 12

2.1. Agricultural Sector 12

2.1.1. Main Agricultural Products 13

2.1.2. Employment in Agriculture 13

2.2. Process of Transition and Land Reform 14

2.3. Moldavian Smallholders after Reforms 15

2.3.1. Accessing Markets 16

2.4. Market Deficiencies 16

2.5. Collective Action of Agricultural Producers in Moldova 17

2.5.1. Forms of Agricultural Producers' Associations 18

2.5.2. Legal Framework for Agricultural Associations' Development 19

2.5.3. State Support Measures of the Producers' Cooperation Initiatives 20

2.5.4. Donor Supported Approaches 20

3. Theoretical Framework 22

3.1. Market Access 22

3.1.1. Smallholder Farmers and The Key Market Challenges 22

3.2. Collective Action 24

3.2.1. Defining Collective Action 24

3.2.2. Types of Collective Action 24

3.2.3. Collective Action to Address Market Failures 25

3.2.4. Reducing Transaction Costs 26

3.2.5. Conditions for a Successful Collective Action 26

3.2.6. The Role of Public, Private Sectors and Civil Society 27

3.2.7. Criticism of Collective Action 28

3.3. Cooperative 29

3.3.1. Types of Cooperatives 30

3.3.2. Differences Between Cooperative and Corporation 31

4. Empirical Review 32

5. Aims of the Thesis 35

6. Methods 36

6.1. Overall Study Design 36

6.2. Study Site 36

6.3. Study Sample 37

6.4. Data Collection 39

6.5. Data Analysis 39

6.5.1. Objective 1 39

6.5.2. Objective 2 41

6.5.3. Model Specification 42

6.6. Quality of the Research 43

6.6.1. Limitations of the study 43

6.6.2. Validity and Reliability 44

7. Results 45

7.1. Objective 1 – Typology of cooperatives and the current situation 45

7.2. Objective 2 – Factors influencing small farmers' access to local and international markets 51

8. Discussion 53

9. Conclusions 56

10. References 58

List of tables

Table 1. Total number of agricultural holdings in Moldova, 2011 …… 15
Table 2. Comparison between of a cooperative and a shareholder corporation …. 31
Table 3. Selected Agricultural Cooperatives ……..……. 38
Table 4. Recommended sample size calculation …… 39
Table 5. Operationalization of indicators of dependent variable …… 40
Table 6. Operationalization of independent variables …… 42
Table 7. Typology of cooperatives ……. 45
Table 8. Ordered Logistic Regression Estimates …… 51

List of figures

Figure 1. Agricultural holdings in Moldova …… 18
Figure 2. Conceptual framework on factors influencing the success of collective action for producer organizations ……... 27
Figure 3. Administrative map of Moldova indicating visited districts …… 36
Figure 4. Improvement of market access before and after establishing the cooperative ……... 46
Figure 5. Farm size of cooperatives, ha ……..... 47
Figure 6. Distance to the nearest major market, km ……. 48
Figure 7. Average age of members in cooperatives, years ……... 49
Figure 8. Average farming experience of members in cooperatives, years …….. 49
Figure 9. % of cooperatives having extension service, credit and AMIS ……..... 50
Figure 10. Frequency of regular meeting, times/year ……... 50

List of the abbreviations used in the thesis

AGT	Association of Peasant Farms
AICC	African Institute of Corporate Citizenship
AIPA	Agency for Interventions and Payment for Agriculture
AMIS	Agricultural Market and Information Services
EU	European Union
FAO	Food and Agriculture Organization
GOV.MD	Government of Republic of Moldova
ICA	International Co-operative Alliance
IDA	International Development Association
IFAD	International Fund for Agricultural Development
ITC	International Trade Centre
KAS	Konrad-adenauer-stiftung
MAC-P	Moldova Agriculture Competitiveness Project
MAIA.GOV	Ministry of agriculture and food industry of Moldova
MIEPO	Moldovan Investment and Export Promotion Organization
NBS	National Bureau of Statistics
NGO	Non-governmental organization
PFAP	The Private Farmers Assistance Program
SIDA	Swedish International Development Cooperation Agency
WB	World Bank

1. Introduction

It is widely known that agriculture is important to the society in terms of poverty alleviation, food security and economic growth (Matsane & Oyekale 2014). Agricultural development will not occur without engaging small scale farmers who account for most actors in this sector (Barham & Chitemi 2009). As market system is transforming fast and traditional marketing channels are replaced by coordinated links between farmers, processors, retailers and other actors, small farmers need quickly to adapt to these conditions (FAO 2007).

International Fertilizer Development Center IFDC (2017) pointed out that improved knowledge of how to access markets and how to engage in transactions in competitive markets is required for small scale farmers. Enabling, favourable policies that allow for the development of farmer-to-market linkages are much demanded.

Despite these efforts, markets in developing countries are still characterized by pervasive imperfections such as lack of information on prices and technologies, high transaction costs, and credit constraints. Moreover, the new procurement systems often expect larger supply volumes, favouring larger farmers (Markelova & Meinzen-Dick 2009). Farmers are also required to produce products that can meet regulations relating food safety and quality standards and at competitive prices (Bhagat & Dhar 2012).

Collective action in this case play a crucial role. It is well known by many development agencies and academics as a reliable strategy to improve market access for smallholders that consequently lead to increased income and food security. Smallholders would be able to reduce transaction costs for exchange, obtain needed information, access to new technologies, enter into high value markets and consequently these will facilitate them to compete with larger enterprises, when working together (Markelova & Meinzen-Dick 2009).

While there are vast studies recommending collective action as a means for increasing smallholder farmers' market access (see Tembachako et al. 2013 for Zimbabwe; Matsane et al. 2014 for South Africa; Antwi & Seahlodi 2011 for South Africa; Zhou et al. 2013 for South Africa) or studies finding determinants of participation in collective action (see Lucila et al. 2006; Shiferaw et al. 2009; Fischer & Qaim 2012; Ampaire et al. 2013; Kirui & Njiraini 2013) there is less evidence of studies

examining the underlying factors that brought small farmers better market access after collective action incentives. Secondly, whereas we can find much literature on that case, proper quantitative study done for Moldova is still not sufficient.

From these considerations, this thesis intended to fill the scarcity of literature within the body of knowledge regarding this case and to serve as a reliable source for further implications and policy recommendations in Moldova.

2. Background

2.1. Agricultural Sector

Agricultural sector in Moldova remains the most important sector for the country's economy and welfare. During the communist period, Moldova was the leading country producing and exporting; vegetables, fruits and crops to all union countries. Moldova ranked the 6th place in the 1980s among the soviet republics for annual outcome of the agricultural products, exporting to Russia, Ukraine, Belarus, Kazakhstan and Uzbekistan. Transnistria used to produce more than 40% of vegetables and 30% of fruits for market (Selari 2010). In the current period of economic transition, the agricultural sector fulfils an important role of social support since a large mass of migrants may return to agriculture because of the lack of better employment opportunities. It provide jobs and livelihoods for rural residents, thus mitigating considerably the adverse consequences of the aging population and fulfils an important social function by reducing the danger of increasing poverty and social exclusion in rural areas of Moldova (Moroz et al. 2014). From the last data it was found that agricultural sector contributes in Moldova around 12% of the country's GDP with 31% of country' labour force (GOV.MD 2012; KAS 2015). It is not a surprise that one of the main focuses of the National Development Strategy *"Moldova 2020"* – a budget of 2 billion EUR is committed to finance the *National Strategy on Agriculture and Rural Development 2014-2020*, with the objectives of increasing the sector's competitiveness, ensuring sustainable resource management, and improving living standards in rural areas (MAIA.GOV 2014; MIEPO 2016; WB 2016a).

Among others, attempts to support agricultural development by Moldovan government are as follows (KAS 2015):

1. *Small and Medium-sized Enterprise Sector Development Strategy 2012-2020;*
2. *Development strategy for internal trade in the Republic of Moldova 2014-2020.*

2.1.1. Main Agricultural Products

Moldova has exceptional high fertile land. Much of the country's arable land consists from black chernozem soils, which cover 75% of the country, especially in the northern districts. High quality soil resources, along with various microclimates, support a wide array of annual and perennial crop production across the country. Among the most important crops are winter and spring grains, including wheat, barley and maize. Main varieties of vegetables are: tomatoes, onions, cabbage, cucumbers, pumpkins, peppers, carrot, red beet, garlic, squash, aubergine, potherb, and green peas. The main fruits in Moldova are: apples, plums, sweet and sour cherries, pears, peaches, nectarines, quinces, apricots, soft fruit, walnuts and grapes (FAO 2016; MIEPO 2016). Crops like apples and potatoes are produced in the Northern part of the country while plums are produced in the Central part. Peaches in the South and table grapes in the Southern and Central areas. The total annual production of fruits is about 486 thousand tons, with apples taking the lead and followed by the production of vegetables, which is annually about 246 thousand tons (MIEPO 2016).

2.1.2. Employment in Agriculture

Approximately 75% of the population live in rural areas and majority of them depend on agriculture as it represents their main source of income. Since 2009 the number of people employed in agriculture has been stable at about 320,000-330,000. In 2017 the number of people employed in agriculture increased to 366,000 constituting 31% of the total number of employed people (MAIA.GOV 2014; NBS 2018). In the sector in the past few years, the sector has experienced some favourable conditions that have attracted people to agriculture and invariably increased labour retainment. About 60% of the country's agricultural output is produced by individual farmers on household plots of 10 hectares or less (FAO 2016). The value of Moldova's agricultural output has followed a strong upward trend over the past 5 years (NBS 2017). However, the sector is vulnerable to fluctuations driven by climate or market effects. These unfavourable conditions create an important reason for the country to find new available markets for its agricultural produce and to help farmers increase the value and diversity of their crops, thus maintaining a stable employment in agriculture (WB 2016b).

2.2. Process of Transition and Land Reform

As most of the East European countries after Soviet Union collapse in 1990s the Republic of Moldova has passed through a process of country's economic transformation to market economy which led to land reform. Economic reforms included privatization of agriculture land and restructuring of state and collective farms. Significant changes started to be visible when National Land Program (NLP) was launched.

Former state and collective farms were replaced by big number of individual agricultural producers in the country (Lerman & Sutton 2006; Cimpoies et al. 2008; Millns 2013; Moroz et al. 2014). Between 1990 and 2000, land plots were physically distributed among over one million Moldovan residents (30% of Moldova's population) that became owners of land, changed their status and functioning forms of farm enterprises (Csaki & Lerman 2002; Lerman & Sutton 2006). Back in the early 1990s, state farms were controlling about 90% of the agricultural land. The individual sector was managed just by the remaining 10% (Lerman & Sutton 2006; Selari 2010; Moroz et al. 2014).

Today Moldova's agricultural land is 74% in private ownership (1.84 million ha) and 26% is owned by the state (Millns 2013). The larger part of agricultural land is still controlled by larger corporate farms with more than 100 ha land, that have succeeded the traditional collective and state farms in the past. Another important share of agricultural land (37%) is cultivated by households and small farms with less than 10 ha of land (Lerman & Sutton 2006; Moroz et al. 2014). Among largescale corporate farms with private ownership of land and assets are newly created organizational forms as: joint stock companies, limited liability companies, agricultural cooperatives (see Table 1) (Lerman & Sutton 2006; Millns 2013; Moroz et al. 2014).

Table 1. Total number of agricultural holdings in Moldova, 2011

Total enumerated units	Total agricultural holdings/Small size agricultural units	
	number	total area (hectares)
AGRICULTURAL HOLDINGS	902214	2243540.02
Agricultural holdings with juridical status	3446	1272666.01
Agricultural cooperatives	204	148737.07
Joint stock companies	158	52788.24
Limited liability companies	1986	694868.67
State enterprises	89	18430.04
Other type of holdings	1009	357841.99
Agricultural holdings without juridical status	898768	970874.01
SMALL SIZE AGRICULTURAL UNITS	164831	9830.63
Total agricultural holdings + Small size agricultural units	x	2253370.65

Source: General Agricultural Census, 2011

2.3. Moldavian Smallholders after Reforms

Smallholder farmers are defined as farmers that have up to 10 ha of the land (Orlova et al. 2017). Despite their smaller share in the total land area small farm forms are an extremely important part of the agricultural sector, as they provide a fundamental contribution to the overall food production and food security in Moldova and are more efficient than large farms (Lerman & Sutton 2006; WB 2016a). In Moldova smallholders make up 95% of all farms and they have a significant share in total agricultural production accounting for 71% of total agricultural output (NBS 2011; Moroz et al. 2014; WB 2016a).

Most of the households and small businesses are focused on producing potatoes (85%), vegetables (85%), grapes (73%), grain maize (65%), leguminous crops (61%), dairy products, livestock and wine. Crops such as sugar beets, sunflowers and tobacco are mainly produced by large farms (Millns 2013; Moroz et al. 2014; KAS 2015).

Most of their production is self-consumed in the households and the surpluses are mostly sold in local open air agricultural markets. one of the typical characteristics of smallholders is small size of cultivated areas but with a large diversity between technological levels, varieties, quality and quantity of products, and access to markets.

As a result of these processes of privatization after Soviet Union breakdown majority of smallholders nowadays suffer from lack of access to agricultural land (Lerman & Cimpoies 2005; Moroz et al. 2014; WB 2016a). Because of insufficient land resources and less alternatives of business activities most small farms are not capable to generate an adequate income. Moreover, small scale agricultural farms are poorly equipped and lack necessary experience to penetrate markets like the EU and other countries (Moroz et al. 2014).

2.3.1. Accessing Markets

Smallholders contribute to the growth of the agricultural sector, due to delivered surpluses to the market (World Bank 2008). Basically, small farms in Moldova engage in more diversified production, but the share of their products that goes to markets is very low. They hardly can reach export markets as they are not fulfilling necessary requirements in terms of food safety and quality. One of the most important precondition to change the situation is modernization and growth of commercially oriented smallholder farms. However, most recommendations and support from the last years, smallholders' commercial engagement into integrated and coordinated value chains through the marketing of outputs, supply of inputs remains very low (Millns 2013; WB 2016a).

Currently the number of small scale commercial farms that produce for the market is limited by underdeveloped agricultural infrastructure and limited access to finance (Moroz et al. 2014).

2.4. Market Deficiencies

Moldova has comparably open market access and a market oriented economy, but weak institutional structure and incompetency impede country to reach stronger trade results (ITC 2014). For example, Moldova fulfilled set of required legislations

regarding phytosanitary and veterinary controls, technical regulation, quality standards and others, however these practices are not consistent with legislation used in EU (ITC 2014; Stiftung 2016). some problematic factors for trade are: identification of potential markets and buyers, inappropriate production technology and skills, access to trade finance, access to imported inputs at competitive prices and technical requirements and standards abroad (Lawrence et al. 2012). Moldova suffer from lack of horizontal and vertical coordination of supply chains. This impede to further development of competitiveness of the agricultural sector. Currently, farmers are faced with low producer prices because of underdeveloped wholesale markets, low bargaining power, changing quality of produce, lack of distribution channels, poor infrastructure and limited access to foreign markets. When in the market are present value chain deficiencies the differences in prices between farm gate and consumer increase. This is leading to low farmers' incomes, low investments and worsened quality of production at farm level (MAIA.GOV 2014). In Moldova, there is still a lack of strong established long-term relationships between intermediaries, processors, exporters, food retailers with suppliers of raw material and recognizing the farmer as a key business partner. Most of the buyers prefer to buy products on the spot market and pay the lowest price to farmers. Food retailers prefer larger imports. This factor disregards potential farmers to integrate into vertically coordinated supply chains.

To improve the bargaining power of farmers and consequently their position in markets, in relation to the processing industry, there is a need to create local associative structures such as marketing and production cooperatives (Moroz et al. 2014).

2.5. Collective Action of Agricultural Producers in Moldova

Basically, small farmers in Moldova do not fully use the advantage of cooperatives, that can bring them market integration through increasing supplies, setting better prices with buyers, or jointly owning post-harvest facilities (MAIA.GOV 2014; IFAD 2016). Lack of cooperation and organization of farmers in Moldova impede them from integration in supply chains and efficiently grasp potential market opportunities. The Moldovan government is currently undertaking measures to encourage formation of producer groups by offering them financial support for association formation and engagement within markets (Millns 2013; MAIA.GOV 2014; IFAD 2016).

2.5.1. Forms of Agricultural Producers' Associations

During the soviet period the dominant part of the agricultural production was grown and supplied by large scale collective farms (kolkhozes) and state farms (sovkhozes). After Soviet Union collapse collective and state farm were restructured to private one. In 1992 was launched a major reorganization of collective farms that assumed also the exit of peasants from collective farms and state farms (Csaki & Lerman 2002). The peak in creation of the post-soviet kolkhozes was registered in 1993 and was followed by a rapid decrease until 1996 when none of newly created kolkhozes was registered by the State Registration Chamber. At present a couple of so called "kolkhozes" are still active in the Republic of Moldova but under the legal form of production cooperatives (IFAD 2016).

Due to strong state financial support the number of production cooperatives increased between 2002-2006. But after 2006 the number of newly created agricultural production cooperatives is continuously decreasing around 2-3 cooperatives per year, possible because of the transformation into limited liability companies. Currently, there are 204 agricultural cooperatives in Moldova, consisting 6% from all agricultural holdings in the country (see Figure 1) (Lerman & Sutton 2006; NBS 2011; Millns 2013; Moroz et al. 2014).

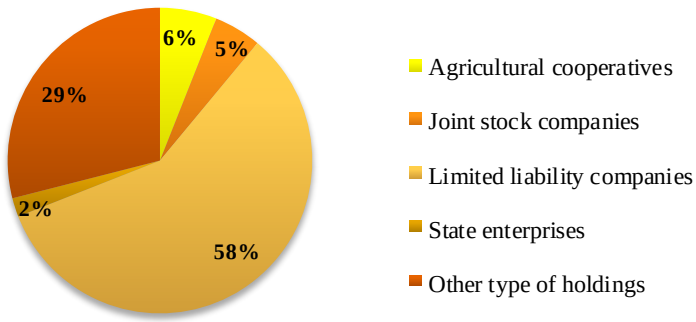


Figure 1. Agricultural holdings in Moldova

Source: General Agricultural Census, 2011

Another form of collective action in the agricultural production that occurred in the Republic of Moldova in the post-soviet period was AGT, initiated for small-scale farms that would jointly work in different fields of agricultural production.

Another type of organization structure created in past years and considered more efficient in Moldova is the entrepreneurship or marketing cooperatives. The peak of the agricultural entrepreneurship cooperatives was recorded for 2000-2002 years when about 180 new cooperatives were created with the support of the PFAP project.

Besides entrepreneurship and production cooperatives in Republic of Moldova have been created also some other forms of collective action such as savings and credit cooperatives and water users associations which also represents some forms of associations in agriculture and rural area (IFAD 2016).

2.5.2. Legal Framework for Agricultural Associations' Development

The legislative framework on the association of agricultural producers was changing since 1992. Entrepreneurship cooperative got its legitimacy with adoption of the first law, that defined enterprise founded by at least five legal entities or individuals engaged in entrepreneurial activities, which aims to help its members to obtain profit. It comprised few ideas on the association and just in 2001 the law on business cooperatives provided more general conditions on the process of association. In 2013 was adopted law on agricultural producer groups and their associations, comprised with a wide range of principles of association of agricultural producers (Millns 2013; IFAD 2016).

The most significant laws adopted in last years are depicted below:

- Law on entrepreneurship and enterprise No.845-XII of 03.01.92;
- Law on small business support and protection, No.112-XIII of 20.05.94;
- Law No. 1353 of 11.03.2000 on households (farms);
- Law No. 73 of 12.04.2001 on business cooperatives;
- Law No. 1007 of 25.04.2002 on production cooperatives;
- Law for supporting small enterprises sector, No.206 of 07.07.2006;
- Law on organization and functioning of agricultural and food markets, No. 257-XVI of 27.07.2006;
- Law No. 312 of 12.20.2013 on agricultural producer groups and their associations.

2.5.3. State Support Measures of the Producers' Cooperation Initiatives

***"Moldovan Village"* program**

In the last years a set of measures were taken by Moldovan government to enhance the development of the farms association. Among the first attempts was the National Program "Moldovan Village", undertaken during the years 2005-2015 (Spînu 2013).

The Program was established with the purpose of enforcement the associations of agriculture producers. In the process of program implementation the following priorities were defined: ensuring of vertical and horizontal integration of the farmers in different organizations, including cooperatives; establishing agricultural production cooperatives, producers associations and distribution cooperatives; negotiation of wholesale purchasing contracts (IFAD 2016).

Subsidy policies

The first financial support addressed to producer groups was established by AIPA in 2013 was in form of subsidies. According to regulation, the subsidy can be recognized to those farmers who fulfil following requirements (case of vineyards): a) compact unit of group, b) established by a group of producers (at least 5 persons), c) are designed to produce consistent quantities of grapes both for processing and export, d) have an area of at least 25 ha on flat land and 12 ha land on the slopes.

Starting with the year 2015 the subvention policies were revised to implement the provisions of the Law No 312 of 20.12.2013 on producers' groups and their associations. Agricultural producer groups registered according to the Law 312 of 24.02.2014 could now have benefits from the financial support up to 40-50% compared to ordinary producers (IFAD 2016).

2.5.4. Donor Supported Approaches

Private Farmers Assistance Program (PFAP)

In the framework of PFAP program in the period of 2001-2002 registered about 180 of business cooperatives. A large part of these cooperatives signed agreements with PFAP for assistance with financial management, business plan development, applications for bank loans, grants, and business evaluations.

Development of Marketing Cooperatives Program (People in Need)

The finalization of the project was held in 2014 year. The donor of the project was Czech Development Agency who partnered with Czech University of Life Sciences Prague. The main goal of the project was to secure local markets in Moldova with products from small and medium sized farmers. People in Need helped the cooperatives to optimize their existing conditions and business strategies. They provided groups with necessary knowledges and know-how in management and marketing of agricultural products.

Moldova Agriculture Competitiveness Project (MAC-P)

MAC-P is an ongoing project, started in year 2012 and with the intended finalization in 2019 year. The main goal of the project is to enhance the competitiveness of the agri-food sector by supporting the modernization of the food safety management system, facilitating market access for farmers, and mainstreaming environmental and sustainable land management practices (WB 2018). It is funded by the WB, the IDA, SIDA. MAC-P is implemented from 2012-2019 and has a total budget of USD 28.4 million with the following set objectives of the project are to "strengthen country capacity to manage the increasingly complex food safety agenda; to increase levels of farmer organization and improving post-harvest infrastructure; to promote adoption of sustainable land management practices by farmers and to ensure a strengthened response by the authorities to soil degradation challenges."

"Moldovan Orchard" Project

The period of realization of project is established from 2012 year to 2020 year. The project aims to creation and modernization of orchards and equipment to improve resource efficiency in the production. Among the beneficiaries are producers' associations. The financed activities are directed towards mechanization of primary production processes of horticultural production, modernization of post-harvest processes, improvement of the phytosanitary control and other (IFAD 2016).

3. Theoretical Framework

3.1. Market Access

Market access refers to a state where there are minimal barriers to domestic, regional and international trade for agricultural products and whose presence will not significantly affect the exchange of agricultural products and equitable profitability on the actors involved in the exchange (AICC 2016). Some other authors defined market access as increasing proportion of marketed output, increasing cash crop production or transition from subsistence towards market-oriented production (Okezie et al. 2008; Zhou et al. 2013).

Smallholder farming is a very important economic activity in developing countries. Improving market access for smallholders lead to increased income, food security, more rural employment and sustainable agricultural growth, that will lead to poverty alleviation (Barham & Chitemi 2009; Gyau et al. 2014; Mutai 2014).

Development practitioners have shifted recently their focus from supply-based programs to market-oriented ones, which means that farmers can produce for markets itself instead of trying to market what they produce (Gyau et al. 2014; Mutai 2014)

Despite all the advantages market access offer to farmers, they still face numerous marketing constraints such as; lack of information on prices and technologies, high transaction costs, credit constraints, low bargaining power, small quantities of production (Antwi & Seahlodi 2011; Zhou et al. 2013; Mukwevho & Anim 2014; Chamberlin & Jayne 2015).

3.1.1. Smallholder Farmers and The Key Market Challenges

It is not a question if market access increases smallholders' income and improve their living standard but, how can they utilize market opportunities to this end. According to Mukwevho and Anim (2014) the reason why most rural communities cannot improve their living standards is because they face difficulties in accessing markets. Access to market is an essential requirement for the rural poor communities to benefit from agricultural growth, thus their participation in accessing markets is significant. But unfortunately, nowadays majority of smallholder farmers face

difficulties to get involved and participate in existing market opportunities, especially in developing countries where markets are not well coordinated.

Very often smallholder farmers do not have access to information regarding prices in urban areas and they mostly must sell their produce to local traders at farm-gate prices to local traders. Also, as the new procurement systems require larger supply volumes, smallholders are left behind by larger farm enterprises. Because individual farmers offer small quantities of produce for sale, they have little bargaining power with traders and most often accept almost any price offered (Gyau et al. 2014). The large scale commercial farmers occupy the high-value markets that pay premium price for quality products while emerging small scale farmers have limited access to such markets (Antwi & Seahlodi 2011). Even if farmers can produce surpluses, they often remain trapped in poverty cycle because of the lack of access to profitable markets and are forced to sell their production at very low producer prices (Tembachako et al. 2013; Mukwevho & Anim 2014; Chamberlin & Jayne 2015).

With the increasing number of free trade agreements between countries, affecting domestic as well as international commodity markets, smallholders face greater competition not only at local level, but also with farmers from other countries. All of these requires larger quantities of production, modernization of production, standardization and diversification of products and quality standard certification holding (Markelova & Meinzen-Dick 2009; Gyau et al. 2014; Kürschner et al. 2016; WB 2016a).

If acting individually, farmers have less chances to participate in new markets such as supermarkets, where larger quantities and standardization of products are often required (Markelova & Meinzen-Dick 2009). To address all challenges depicted above, market interventions such as collective action is often proposed as a strategy for smallholder farmers to address all these constraints to remain competitive in rapidly changing markets.

3.2. Collective Action

3.2.1. Defining Collective Action

By many authors collective action was defined as a voluntary action taken by a group with the same shared interest and arises when people collaborate in joint action and decisions to accomplish an outcome or shared objective (Markelova & Meinzen-Dick 2009; Gyau et al. 2014; Arouna et al. 2016).

Modern theory of collective action was developed to overcome free-rider problems and through cooperative solutions manage common resources. In recent years, collective action incentives where applied to group activities that directly or indirectly intended to enhance the production and marketing of agricultural and food products. Collective action reflects an ongoing global trend caused by the increased market competition and integration (Gyau et al. 2014). Collective action has been conceptualized also as production methods and group dynamics that subsequently enhance marketing of products by members of cooperatives to reduce transaction costs and enhance economies of scale (Gyau et al. 2014).

It is very important to mention that cooperatives are promoted by many development practitioners and there are numerous attempts to facilitate engagement of farmers to work collectively (IFAD 2016). Also, sometimes the creation and development of cooperatives and other forms of associations of agricultural producers must be seen as an evolutionary process that is internally formed through the motivation and socio-economic interests of small-scale agricultural producers (IFAD 2016).

3.2.2. Types of Collective Action

There are two types of collective action: (i) cooperation: bottom-up, farmer-to-farmer collective action and (ii) coordination: top-down, agency-led collective action. While some bottom-up collective action may receive government support, others may be carried out without government support. Similarly, some top-down collective action are promoted by government policies but do not receive any support, while other collective action receive support by government (Vanni 2014). Top-down approach involves identifying market demand and then seeking a group of farmers to satisfy it

when bottom-up approach identify farmers to work with and then finding markets that they could supply (FAO 2007).

3.2.3. Collective Action to Address Market Failures

Smallholder producers can sell their products to different markets: local, urban, regional or international. Local market seems to be easily accessed, because it is not requiring high transportation facilities or quality standard certifications, but also because of less competition compared to international ones. According to Markelova and Meinzen-Dick (2009) as marketing chains are longer they present greater disadvantage for smallholder farmers. But, because smallholders can access local markets more easily, these markets offer lower gains. Regarding these circumstances, collective action can address these market gaps, increase market access for smallholder farmers and help them to remain competitive in rapidly changing markets (Ton 2008; Barham & Chitemi 2009; Fischer & Qaim 2011; Gyau et al. 2014). Collective action can help farmers to reach larger domestic urban, regional, and international markets. If acting collectively smallholders can deal with transportation and storage issues, acquire necessary technologies and certificates to comply with required quality standards for international markets, and also reach more attractive quantity to supply of their products to traders (Markelova & Meinzen-Dick 2009; Shiferaw et al. 2011). Due to larger offered quantities they can attain higher bargaining power withy buyers, which results to higher producer prices. Thanks to better resources as storage, packing etc., obtained with the purpose to enhance the value of production, they represent an attractive source of produce for large processors or wholesalers due to larger quantities supplied and better quality of produce. That consequently result in penetration into high value agriculture. Moreover, farmer organizations can provide an important platform for capacity building, information exchange, and innovation in rural communities (Mutai 2014). Association of small farmers into productive partnerships, whether cooperative or producer groups, is likely to stimulate bigger capital flows towards them, as well as longer-term seller-buyer partnerships with other actors that would allow smallholders to achieve better market and value chain integration, and ultimately higher incomes. All these criteria can potentially facilitate the operation of farms as true business entities (MAIA.GOV 2014).

3.2.4. Reducing Transaction Costs

Market-oriented collective action has potential to overcome the high transaction costs that would be faced by farmers if acting individually (FAO 2007; Shiferaw et al. 2009; Ampaire et al. 2013). Lucila et al. (2006) opined that transaction costs originate typically from; information about potential contracting parties, monitoring and enforcement of contractual terms. The author further argued that collective action through cooperatives can reduce transaction costs by; overcoming smallholders' barriers of access to assets, information, and services, settling disputes and obtaining, interpreting and disseminating information about production, markets, and farmer and trader competence and creditworthiness and by collective negotiations with suppliers or buyers.

3.2.5. Conditions for a Successful Collective Action

Collective action has been proved to be an excellent way to help farmers to reach better markets, but this cannot be achieved if certain conditions are not taken into consideration. Such as; unavailable specialized skills and knowledge within the group, its activities may be hindered by the lack of expertise, thus nullifying the incentives for collective marketing (Lucila et al. 2006; FAO 2007; Markelova & Meinzen-Dick 2009). If the group does not share the same norms and values, there is less probability of the groups' success. A group success it is also affected of how much its group leaders are knowledgeable and skilled in collective enterprise, and motivated and trusted by the group members. One of the other important conditions is simple registration process, which should facilitate the easy formation and operation of a group in accessing inputs and services (FAO 2007; Markelova & Meinzen-Dick 2009).

It has been demonstrated that existing groups have more group dynamics and social cohesion than newly-established ones. This implies that, existing groups have the capacity to undertake collective action activities as a group, due to a certain level of group interconnectedness, motivation and capacity build through the years. Resulting that, social benefits are important for success of the group, which according to Gyau et al. (2014) indicates that collective action should not only be promoted for economic gains but for social benefits as well.

And the last, but not the least, success of collective action depends on existence of a favourable environment for farmers as external continuing support for organizations, low level of settings to enter external markets, governmental bodies that do not undermine local authorities, and supportive external institutions (FAO 2007; Fischer & Qaim 2011; Gyau et al. 2014).

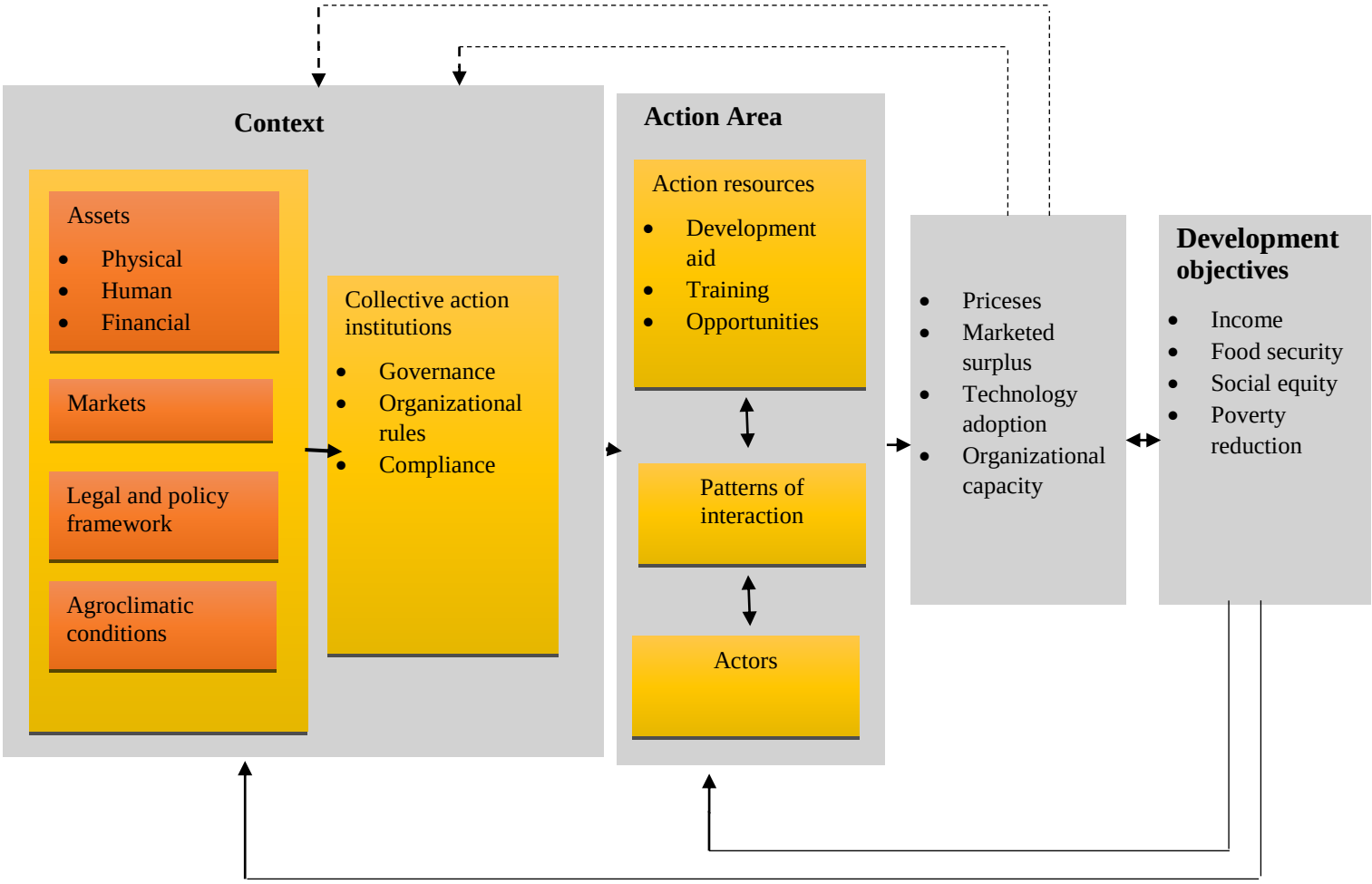


Figure 2. Conceptual framework on factors influencing the success of collective action for producer organizations

(Adapted from Shiferaw et al. 2011)

3.2.6. The Role of Public, Private Sectors and Civil Society

The establishment and sustainability of cooperative organizations is often conditioned on external support, for example by NGOs, government agencies, or private

businesses (FAO 2007; Markelova & Meinzen-Dick 2009; Shiferaw et al. 2009, 2011; Fischer & Qaim 2012; Ampaire et al. 2013). Involvement of the public, private sectors or civil society, needs to be carefully planned and time managed as too long period may create dependency on support, especially in initial stages and may undermine the group sustainability and effectiveness. Facilitating agents either from public, private or civil society, needs to assess their role, capacity, participation and well-planned exit strategy to not affect the natural working dynamics of the group. Public sector contributes by providing financing opportunities for example in form of subsidies. But as said before, financing must be well time managed as its continuous presence may create perverse incentives for collective action.

3.2.7. Criticism of Collective Action

It is worthy to note, that collective action is a good intervention to improve market access of smallholders, but as all interventions it may have its pros, cons and might not be replicable in all situations.

Many case studies demonstrate that collective marketing can enhance livelihood for smallholders who would not be able to overcome barriers to entry on their own. However, certain studies carried out in Kenya show that participation in farmer groups often requires entry and membership fees making it less affordable for the poorest. In addition, creating and sustaining the group by outside assistance may add to the high physical costs that are involved in organizing farmers to market access. All these indicates that collective action may not be suitable to make markets work for all poor (FAO 2007; Markelova & Meinzen-Dick 2009). Even if they succeed to raise their incomes by participating in more profitable markets, these smallholders often do not represent the poorest members of the rural communities.

Collective action is also considered to be an appropriate tool for rural development, but institutional problems as low institutional capacity, inadequate qualified personnel, low entrepreneurship skills, lack of financial resources, lack of market information, poor members participation, patronizing the business activity of the groups, impede it from having a positive role (Mutai 2014).

The third point is that forming farmer groups is not sufficient on its own to enhance market performance and is not a guarantee for increasing profit. Exist situation

where it is either more profitable to sell as an individual rather through a group. Collective marketing goes with many transaction costs and time impediments in planning and selling. The gains of selling through a group should compensate the producer, in contrary it will make collective approach inefficient (Kaganzi et al. 2009).

From the other side other authors do not see the problem to be raised in high transaction costs. Contrary, they agree that market-oriented collective action overcomes the high transaction costs that would be faced by farmers acting individually. In this situation problem has psychological character. Awareness of the potential benefits that collective action brings among the farmers are not sufficient to overcome their suspicions about working with each other. According to FAO (2007), implementing group linkage is thus easier when farmers were already working together, and they are used to collaborating.

3.3. Cooperative

According to International Co-operative Alliance (ICA) a cooperative is an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise. (ICA 2018). Members of cooperatives share the same values based on the self-help, self-responsibility, democracy, equality, equity and solidarity. Cooperative members believe in the ethical values of honesty, openness, social responsibility and caring for each other.

International community agreed on 7 main principles of cooperative:

1. Cooperatives are voluntary organisations, open to all persons able to use their services and willing to accept the responsibilities of membership, without gender, social, racial, political or religious discrimination.
2. Cooperatives are democratic organisations controlled by their members, who actively participate in setting their policies and making decisions. Men and women serving as elected representatives are accountable to the membership. Members have equal voting rights (one member, one vote).

3. Members contribute equitably to, and democratically control, the capital of their co-operative. At least part of that capital is usually the common property of the co-operative.
4. Cooperatives are autonomous, self-help organisations controlled by their members.
5. Cooperatives provide education and training for their members, elected representatives, managers, and employees so they can contribute effectively to the development of their cooperatives.
6. Cooperatives serve their members most effectively and strengthen the cooperative movement by working together through local, national, regional and international structures.
7. Cooperatives work for the sustainable development of their communities through policies approved by their members.

Nowadays, cooperatives represent unique form of enterprise that addresses economic, democratic and social dimensions of poverty reduction at the same time (Ahmed & Mesfin 2017).

There are several studies showing that agricultural cooperatives improve farm productivity through their adoption (Nicola Francesconi & Heerink 2010; Spielman J et al. 2010) and also confirm that cooperatives play an important role in poverty reduction and in improving the livelihood of smallholder farmers (Shiferaw et al. 2014; Verhofstadt & Maertens 2015; Ahmed & Mesfin 2017).

3.3.1. Types of Cooperatives

The Western cooperative types distinguish between production cooperatives, service cooperatives, and consumer cooperatives (Lerman 2013).

1. **Production cooperatives** are groups where members engage together with the purpose of goods production or providing services. Production cooperatives sell their outputs to improve wellbeing of its members.

2. **Service cooperatives** are known to be the largest and the most typical type of cooperatives. They provide services to their members. Service cooperatives are divided into:

    - Marketing cooperatives;
    - Processing cooperatives;
    - Input supply cooperatives;
    - Machinery cooperatives;
    - Agricultural extension and information management cooperatives.

3. **Consumer cooperatives** are trading entities that sell goods primarily to their members at advantageous prices. The largest segment of consumer cooperatives is cooperative food stores and supermarkets.

3.3.2. Differences Between Cooperative and Corporation

In a certain sense the cooperative can be similar to corporation, however there are some differences between them, as listed in Table 2. The main difference consists in organization objective. Business corporations aim to maximize their profit, while cooperatives aim to maximize the benefits for their members derived from participation in cooperative activities.

Table 2. Comparison between of a cooperative and a shareholder corporation

Attribute	Cooperative	Corporation
Owners	Members	Shareholders–investors
Owners' objective	Use of services provided by the cooperative	Earning income
Organization's objective	Maximize members' benefits from working with the cooperative	Maximize corporate profits
Voting rights	One member–one vote, regardless of share contribution	Number of votes proportional to number of shares (i.e., share contribution)
Income distribution rules	Income distributed to members in proportion to their participation in the activity of the cooperative	Income distributed to shareholders in proportion to the number of shares held

Source: (Lerman & Sedik 2014)

4. Empirical Review

There are several studies that examined market access of smallholders. Sylvester Tembachako et al. (2013) using descriptive quantitative survey research design investigated factors affecting the marketing of tomatoes at smallholder cooperative in Mazowe district of Zimbabwe. A sample consisted of 100 farmers, that were randomly selected from the Negomo cooperative society from a population of 296 farmers. The study established that the major factors affecting tomato marketing was lack of storage facilities such as cold rooms and cold containing trucks followed by poor transport mode. 87% of the farmers did not have their own transport and some used buses to carry their tomatoes to markets. Price fluctuations on the market and lack of market information also affected marketing of tomatoes. Lack of agricultural experience influenced a farmer's quantity of harvest per hectare while age, gender and source of financing had no effect on quantity of harvest (Tembachako et al. 2013).

There is other evidence from Tanzania carried out through an evaluation of a government-led program that was attempting to increase smallholder farmers' incomes and food security through a market-oriented intervention. To assess the effect of the intervention on producer group outcomes, authors Barham and Chitemi (2009) used a pre-test and post-test research design. Target group was comprised from 34 smallholder farmer groups. To determine marketing performance of selected groups of farmers descriptive statistics was applied. Findings suggest that more mature groups with strong internal institutions, functioning group activities, and a good asset base of natural capital are more likely to improve their market situation. Gender composition of groups also affects marketing performance, where male dominated groups reach better results. Contrary to this, structural social capital in the form of membership in other groups and ties to external service providers are not significant factors in a group ability to improve its market situation (Barham & Chitemi 2009).

Results from the next research analysing factors affecting market accessibility of small farmers in West Garo Hills District of Meghalaya in India are similar to previous studies. Study was based on a sample of 50 fruits and vegetable growers of the West Garo Hills. Results were based on correlation and multiple regression analysis. It was

found that accurate and timely information and extension support are the prime factors impacting the farmers' access in the markets (Bhagat & Dhar 2012).

Study conducted in Mahikeng Local Municipality, North West Province, South Africa used a simple random sampling method to draw a sample size of 47 small scale vegetable farmers from the target population. Data were collected with structured questionnaire and analysed using descriptive and regression analysis. The most prominent constraints to market vegetables among smallholders were identified to be; lack of access to credit, storage facilities, market information or lack of finances for farming; also, poorly developed village markets, weak producer prices, high perishability of produce, inadequate access to roads, underdeveloped transportation facilities and high transportation costs (Matsane & Oyekale 2014).

Next research used discriminant analysis to investigating factors affecting small scale farmers in accessing markets in Vhembe District, Limpopo Province of South Africa. Samples were consisted of 29 small scale cabbage producers. The results indicated that the independent variables that accounted for most of the differences were: transaction costs, agricultural extension education, level of education of farmers, distance of farm to market and value of equipment owned by farmers (Mukwevho & Anim 2014).

Results of the research coming immediately, effectuated by Antwi and Seahlodi (2011) in South Africa depict that among the most major marketing constraints faced by the emerging small scale pig farmers include: lack of finance, poor marketing information access, lack of access to the existing high value markets, poor market infrastructure and smaller herd sizes (Antwi & Seahlodi 2011).

One of the good examples how collective action lead to a good impact on market access is the study carried out in Kenya analysing influence of collective action on market access among smallholder banana farmers in Imenti South district. The results show that 42% of the members in the groups confessed some improvements in collective action, while 21% did not note any improvement in group action and 35% of the groups noted large improvements in collective action. Gender did not influence the banana market. Education contrary affected the type of market choose to sell their bananas (Mutai 2014).

Studies from Latin America of the coffee growing smallholder farmers in Colombia and cocoa producing cooperatives in Bolivia show that collective action can help smallholders to sell their produce to domestic and international markets (Markelova & Meinzen-Dick 2009).

Study carried out in Kenya also proves that collective action has a positive impact on farmers' commercialization. Farmers of cooperative could expand their banana area significantly more than individual farmers, and that consequently led to higher share of banana income and the degree of banana commercialization for farmers' in the group (Fischer & Qaim 2012).

5. Aims of the Thesis

In developing and transition countries, where smallholder farmers face numerous market constraints, collective action are often proposed by national governments and international donors as a key strategy and modern tool for agricultural development to address these market constraints.

Through accomplishing the objectives and accurate literature review, the thesis aimed to answer the following research questions:

i. If acting collectively, can small farmers' gain better access to markets compared to the situation when they stay alone?

ii. Are agricultural collective groups an efficient form to improve farmers' livelihood and contribute to food security in Moldova?

To answer the main research questions there were established two sub objectives:

1) To create typology and describe the current situation of typical selected groups of small farmers in Moldova;

2) Investigate factors influencing small farmers to reach better access to local and international markets.

The study contributed also to hypotheses testing:

Hypothesis 1

Groups with male dominant members reach better market access (Barham & Chitemi 2009; Mutai 2014).

Hypothesis 2

Cooperatives where members meet regularly achieve better markets (Lucila et al. 2006; Barham & Chitemi 2009; Ampaire et al. 2013; Mutai 2014)

6. Methods

6.1. Overall Study Design

The thesis was designed as applied research. From the point of view of objectives, it applied explanatory type of analysis. Study made use of non-experimental nature of investigation, based on correlational research design. Regarding inquiry mode, it employed explanatory sequential mixed method, with the purpose of evaluation of pre and post establishing situation of small farmers groups, but only with one-time data collection with retrospective reference period.

6.2. Study Site

The study was conducted in Republic of Moldova in 13 districts (which include 22 villages) in South, Centre and Northern part of the country (see Figure 3).

Figure 3. Administrative map of Moldova indicating visited districts

With the purpose of making the sample representative the study put an effort to cover the whole country. The nature and agroecological condition in different parts of the country are very diverse. For example, the Northern part is traditionally the most developed area from the agricultural point of view, consisting larger farms and it was specialized on orchards. It is characterized by production mainly of apples and potatoes The Centre area comprises smaller farms and has a long tradition of vine growing. In the Central part are produced mainly plums. The Centre can benefit from the spill over effects of the big Chisinau markets (WB 2016b). The South is the most remote region. In the South are produced mainly peaches and table grapes (MIEPO 2016). Yields in the Southern part are lesser, because of drier climate (WB 2016b).

6.3. Study Sample

From the considerations of different agroecological conditions the research applied stratified sampling method (Kumar & Ranjit 2011). The country was divided into North, Centre and South. Within these parts, convenience sampling method was used to select the cooperatives. From the total number of 204 cooperatives in the whole country, 4 cooperatives in the North, 8 in the Centre and 11 cooperatives in the South part were selected. The cooperative groups were selected from the official register of Union of Cooperatives of Moldova, provided by the president of the union. Thus, the target group is consisted from existing 23 production cooperatives that covered 134 farmers. In the table below are showed the visited cooperative groups for our research.

Table 3. Selected Agricultural Cooperatives

District	Village	Cooperative
1. Strășeni	Sireți	FRUITMOL GROUP
2. Ungheni	Floreni	AGROASPECT GRUP
3. Florești	Mărculești	Îi Vîrlan Ina Alexandru
4. Cimișlia	Hîrtop	LEGBIOFRUCT
5. Ialoveni	Costești	ECOGRUP FRUCT
6. Cahul	Manta	GRAPE LINE
7. Căușeni	Taraclia	STRUGURI CHIHLIMBARII
8. Căușeni	Sălcuța	COM-FRUCTFRES
9. Ialoveni	Costești	FRUCTBIOIMPEX
10. Edineț	Edineț	ASPECT FRUCT
11. Ștefan Vodă	Popeasca	STRUGURELE AURIU
12. Hîncești	Bușteni	MULTIFRIGO
13. Ungheni	Cornești	GRUP TOP AGRO
14. Cahul	Colibași	STRUGURI DE COLIBASI
15. Căușeni	Căușeni	NOCCIOLE
16. Călărași	Sipoteni	SIPECOFRUCT
17. Cahul	Burlacu	BURLACU-FRUCT
18. Ștefan Vodă	Căplani	IVAS ECO-PRIM
19. Briceni	Tețcani	STINCA-GRUP
20. Cimișlia	Cimișlia	BASAN-AGRO
21. Edineț	Edineț	ECOFRUCT-COM
22. Cantemir	Lingura	MOLDAGROVITIS
23. Ialoveni	Milești Mici	VED-MAR AGRO

The research sample is not sufficient for representation of the population, as the actual calculated sample size is 51, but is representative by selection of places as it was intended to cover the cooperatives from the whole country.

Table 4. Recommended sample size calculation

Population Size:	Confidence Level (%):	Margin of Error (%):	Recommended Sample Size:
204	90	10	51

Source: raosoft.com

6.4. Data Collection

Primary data was collected from 23 heads (directors) of farmers' groups in Moldova. The questionnaire in Romanian language filled by directors and structured interviews with them were used as a main tool of primary data collection. The questionnaire was designed to elicit data on current situation of selected groups and investigate factors influenced access to local and international markets. To triangulate the findings individual interviews with other 2 members from 4 cooperatives were carried out. Transect walks and overt direct observations were taken after interviews associated with photo documentation of the site. To carry out structured interviews with leaders, 9 cooperatives was visited directly in site, 4 via phone calls and 6 questionnaires were filled up with the help of trained enumerators and sent back by post services because of the limited time. To fill up the questionnaire individually by leaders, 4 questionnaires were sent to directors, filled by them sent back via e-mail service.

6.5. Data Analysis

6.5.1. Objective 1

Data were processed in excel and used mainly descriptive statistics to create typology and describe the current situation of typical selected groups of small farmers in Moldova.

The dependent variable of interest is market access. In this study, four main indicators (categories) were used to define farmer groups access to market and they included;

i. Contracts acquired locally
ii. Contracts acquired for export
iii. Location of sales
iv. Types of market

The operationalization of indicators of dependent variable is depicted in table below:

Table 5. Operationalization of indicators of dependent variable

Indicator	Unit	Type
Contracts acquired locally	Number	Continuous
Contracts acquired for export	Number	Continuous
Location of sales		Ordinal
Farm gate	Yes/No	
Roadside	Yes/No	
Fresh market	Yes/No	
Retailers	Yes/No	
Institutions	Yes/No	
Type of market		Ordinal
Local village	Yes/No	
Bigger nearby town	Yes/No	
Regional farther town	Yes/No	
Capital city	Yes/No	
Neighbouring and other countries	Yes/No	

Note: Selling to institutions means selling directly to schools, colleges, hospitals or other care facilities or recreational facilities. Indicators here refer to market access categories a group is likely to acquire in this study.

Out of 23 cooperatives, 7 cooperatives sell their production to institutions. 3 cooperatives deliver their produce via retailers and just 1 cooperative sells its production at fresh market.

The total number of cooperatives answering about their location of sales was 11 cooperatives. It is evident, that the number is not complete as the total number of cooperatives is 23. The reason is, that because majority of cooperatives after establishing the group shifted their production to export markets. This is proved also by the type of market used currently by cooperatives. Majority of them sell their produce abroad. 17 respondents, are selling their products in neighbouring and other countries. 5 cooperatives sell their products in capital city Chisinau. 1 cooperative sell products in nearby bigger town. None from the cooperatives sell products in local village and regional farther town.

Calculation of market access

The calculation of market access was based on the highest value obtained from processed data. Each response was divided by the highest response possible. e.g. the highest number of contracts from all cooperatives was 15, then each response of remaining cooperatives was divided by 15 to obtain the scale between 0 to 1; 1 representing the highest and 0 the lowest value. According to values derived, they were matched from scale of 1 to 4, where 4 represent the highest value and 1 the lowest, specifically: 1 denotes farmers/groups that acquired any one of the four indicators of market access; 2 denotes farmers who acquired any two of the four market access indicators; 3 denotes also farmers that acquired any three of the market indicators and 4 representing farmers/groups that acquired all four categories of market access indicators (refer to notes under table 5). Groups that reached from the first scale value 1 (or any value closer to 1), reached 4^{th} final value, e.g. 0.75 = 3; 0.93 = 4. Contrary, groups which were closer to 0 obtained the lowest value, the 1^{st} one, e.g. 0.40 = 1

6.5.2. Objective 2

Logistic regression is used to model the binary response variable. Generalization of the logistic regression forms categorical responses with more than two categories. When there are more than two categories we employ the multinomial logistic regression however, when there is natural ordering in the response variable, the ordinal logistic regression is used. In this study, the Ordinal Logistic Regression (OLR) was applied to find out factors influencing small farmers' access to local and international markets.

To assess the factors which influence market access improvement, following independent variables were considered (see Table 6):

Table 6. Operationalization of independent variables

Variable	Description	Unit	Expected sign
Institutional factors:			
Frequency of meetings	How often all members meet per year	Number	+
Coops existence	How old is cooperative	Number	-
Socio-economic factors:			
Gender	Gender characteristics of cooperative	%	+
Age	Average age of members in cooperative	Number	-
Farm size	The total farm size of cooperative	Hectares	+
Extension service	If cooperative group received trainings from extension agents	Yes=1 No=0	+
Farming experience	Average farm experience of the members in cooperative	Number	+
Innovation factors:			
AMIS	Agricultural Market Information System using by cooperative	Yes=1 No=0	+
Financial factors:			
Credit	If cooperative received credit	Yes=1 No=0	+
Infrastructural factors:			
Distance to major market	The distance to the nearest major market	Kilometres	+

Note: Distance to major market meaning the distance to the nearest major market available, either in capital city, or local village.

6.5.3. Model Specification

Let Y_i be the ordered categorical dependent variable for observation *i* that takes one of the integer values from 1 to *J* where *J* is the total number of categories (Imai et al. 2007):

1. *Contracts acquired locally;*
2. *Contracts acquired for export;*
3. *Location of sales;*
4. *Types of market.*

- The stochastic component begins with an unobserved continuous variable, Y_i^*, which follows the standard logistic distribution with a parameter μ_i ,

$$Y_i^* \sim \text{Logit}(Y_i^* \mid \mu_i),$$

to which we add an observation mechanism

$$Y_i^* = j \quad \text{if} \quad \tau_{j-1} \leq Y_i^* \leq \tau_j \quad \text{for} \quad j = 1, \ldots, J. .$$

where $\tau_l (for\ I = 0, \ldots, J)$

are the threshold parameters with $\tau_l < \tau_m$ for all $l < m$ and $\tau_0 = -\infty\ and\ \tau_J = \infty$.

- The systematic component has the following form, given the parameters τ_j and β, and the explanatory variables x_i: $\Pr(Y \leq j) = \Pr(Y^* \leq \tau_j) = \frac{In(\tau_j - x_i\beta)}{1+In(\tau_j - x_i\beta)}$

  which implies:

$$\pi_j = \frac{In(\tau_j - x_i\beta)}{1+In(\tau_j - x_i\beta)} - \frac{In(\tau_{j-1} - x_i\beta)}{1+In(\tau_{j-1} - x_i\beta)} \quad (2)$$

  Where *x* is set of explanatory variables which include:

  x_1=Frequency of meetings;
  x_2=Coops existence;
  x_3=Gender;
  x_4=Age;
  x_5=Farm size;
  x_6=Extension service;
  x_7=Farming experience;
  x_8=AMIS;
  x_9=Credit;
  x_{10}=Distance to major market.

6.6. Quality of the Research

6.6.1. Limitations of the study

The research sample is not sufficient representation of the population as the estimated sample size was 51 thus, it was short of 28 groups. From this consideration, further studies on collective action in Moldova are highly recommended.

Several limitations occurred during primary data collection. First is related to reliability of production evidence and book keeping. Farmers could not provide all necessary data because they did not archive their production records. From this consideration, several variables may be not exact, even if the triangulation was employed.

Model was limited, because board of directors of cooperatives could not provide precise information about individual farmers' production progress before they joined the group. Also, the results can be limited from the considerations of non-experimental nature of research that can affect internal validity.

During data processing we faced problem of multicollinearity when testing number of members in cooperative, thus we had to eliminate this variable from our model.

6.6.2. Validity and Reliability

To enhance the validity and reliability a pilot study was carried out by distributing the questionnaires to the farmers in one group to evaluate the ability of the respondents to answer the asked questions correctly. Also, in attempt to increase validity multiple questions in questionnaire were designed.

7. Results

7.1. Objective 1 – Typology of cooperatives and the current situation

Table 7. Typology of cooperatives

No. coop	Mkt Acc.	Farm size (ha)	Type of crops	Existence of coops. (years)	Distance to major market (km)	No of memb.	Gender (%)	Age of mb.	Farm exp.	Extens. service	Credit	AMIS	Reg. meet. (year)
1	3	167	V, F	3	70	5	m=80; f=20	41	10	Yes	Yes	No	2
2	1	20	L	1	5	4	m=50; f=50	33	10	No	Yes	No	24
3	2	180	V, F	3	25	5	m=80; f=20	41	18	Yes	Yes	Yes	2
4	4	83	F	3	5	7	m=100; f=0	45	15	Yes	Yes	No	24
5	2	38.42	F	2	20	5	m=40; f=60	54	29	No	Yes	No	52
6	2	52	V, L	3	40	5	m=80; f=20	54	26	Yes	No	Yes	24
7	2	60	F	2	100	5	m=80; f=20	41	14	Yes	Yes	Yes	24
8	4	200	F	2	5	5	m=80; f=20	36	16	Yes	No	Yes	52
9	2	30	F	3	95	8	m=88; f=12	48	16	Yes	Yes	Yes	12
10	2	84	F	2	180	6	m=83; f=17	45	8	Yes	Yes	Yes	12
11	2	115	F	2	50	7	m=57; f=43	48	26	Yes	Yes	Yes	24
12	3	70	F	17	3	7	m=71; f=29	44	23	Yes	Yes	Yes	24
13	3	60	V, F	2	30	5	m=100; f=0	52	29	Yes	Yes	Yes	24
14	2	120	V	2	50	5	m=100; f=0	45	20	Yes	Yes	Yes	12
15	2	63	F	3	80	5	m=100; f=0	57	19	Yes	Yes	Yes	24
16	2	40	F	3	10	5	m=100; f=0	46	18	No	Yes	No	12
17	2	53	F	3	17	6	m=67; f=33	53	14	Yes	Yes	No	12
18	3	70	F	2	2	6	m=100; f=0	56	24	Yes	Yes	Yes	52
19	2	12	F	2	10	5	m=80; f=20	41	13	No	No	Yes	52
20	2	35	F	3	12	9	m=67; f=33	47	13	Yes	Yes	No	2
21	1	38	F	2	30	5	m=100; f=0	48	21	Yes	No	Yes	12
22	2	120	F	3	30	7	m=43; f=57	40	13	Yes	Yes	No	52
23	2	38.42	F	3	25	7	m=57; f=43	48	20	Yes	Yes	Yes	12

Code 1: V = vegetables, F = fruits, L = legumes; Mkt Acc. = Market Access

Market access

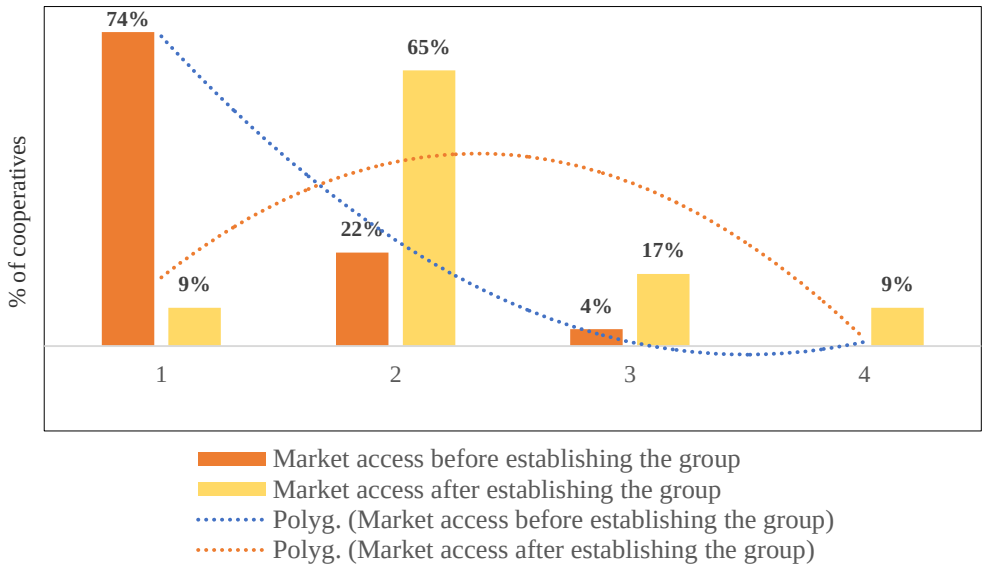


Figure 4. Improvement of market access before and after establishing the cooperative

(Indicators of market access (that is contract locally acquired; contract acquired internationally; location of sales and type of market). 1 denotes farmers/groups that acquired any one of the four indicators of market access; 2 denotes farmers who acquired any two of the four market access indicators; 3 denotes farmers that acquired any three of the market indicators and 4 represents farmers/groups that acquired all four indicators of market access).

Currently, 2(9%) cooperatives acquired any one of the four indicators of market access. 15(65%) cooperatives acquired any two of the four market access indicators. 4(17%) groups acquired any three of the market indicators. The last 2(9%) cooperatives acquired any one of the four indicators of market access. From the figure we clearly see, that majority of cooperatives 17(74%), before establishing the group were able to acquire any one of the four indicators of market access. There was no cooperative that reached the fourth value. The trend is declining towards the higher value. Contrary to that, after establishing the group, we can see increased trend towards the higher value.

Farm size

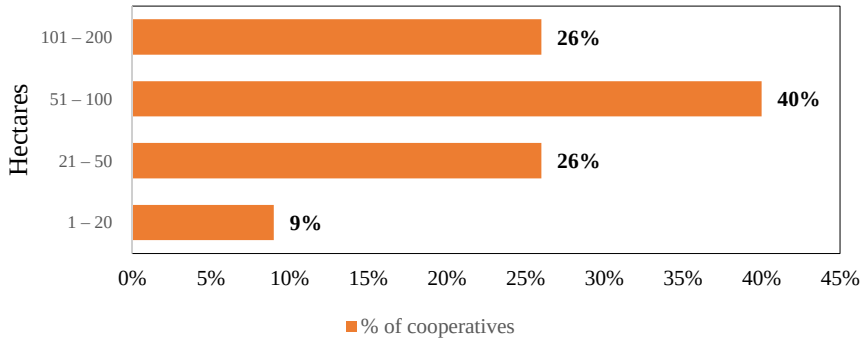


Figure 5. Farm size of cooperatives, ha

2(9%) cooperatives own land between 1 to 20 hectares. 6(26%) cooperatives have land between 21 to 50 hectares. Majority of cooperatives 9(40%) have land between 51 to 100 hectares. The biggest land share has 6(26%) cooperatives with land between 101 to 200 hectares. Some of the groups were also renting land additionally to their own land.

Main cultivated crops

Majority of cooperatives are specialized in growing fruits. There are 3 cooperatives that combine both, cultivating fruits and vegetables. One cooperative cultivates both vegetables and legumes. But majority is specialized just in one kind of crop production. Between the most frequent fruits there were: wine and table grapes, apples, plums. And between vegetables: tomatoes, potatoes and cucumbers.

Existence of cooperatives

According to our results it was found that instead of one cooperative (17 years old) all cooperatives are newly established. There is none cooperative older than three years old. There is just 1 cooperative one year old. 10 cooperatives are two years old and 11 cooperatives are three years old.

Distance to major market

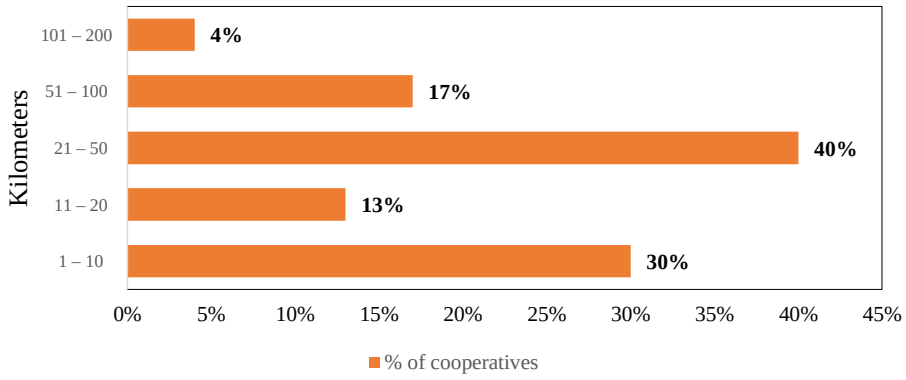


Figure 6. Distance to the nearest major market, km

Distance to major market of majority of cooperatives 9(40%), is between 21 to 50 kilometres. 7(30%) groups have the lowest distance to the nearest major market, between 1 to 10 kilometres. 3(13%) groups need between 11 to 20 kilometres to reach the biggest market available. 4(17%) cooperatives face longer distance, 51 to 100 kilometres. 1(4%) of the cooperatives must reach the longest distance to the most major market, between 101 to 200 kilometres.

Number of members

According to our results the total number of registered active members of the most cooperatives 13(57%) is between 1 to 5 members. The remaining 10(43%) groups have members between 6 to 10.

Gender characteristics

87% of the groups are male dominant, 9% are female dominant and just 4% cooperatives have equal gender distribution.

Average age of members

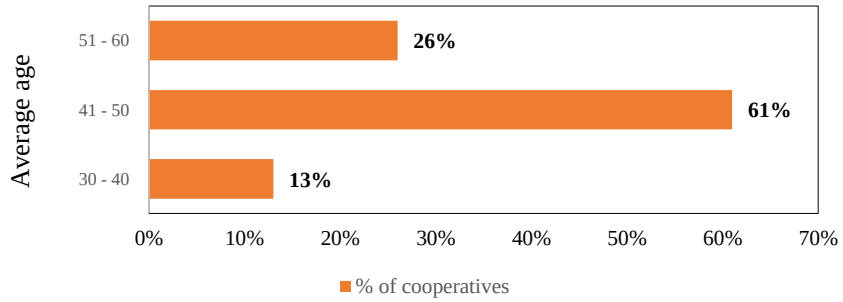


Figure 7. Average age of members in cooperatives, years

The most cooperatives 14(61%) have members between 41 to 50 years old. 3(13%) groups have members with the average age between 30 to 40 years. The remaining 6(26%) cooperatives have the oldest members, with the average age between 51 to 60 years.

Farming experience

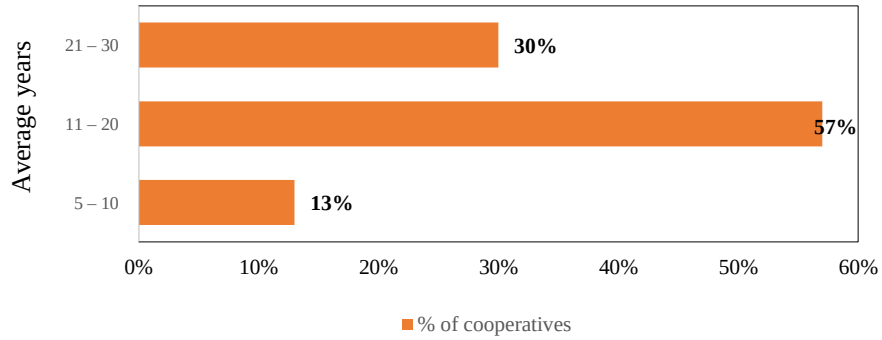


Figure 8. Average farming experience of members in cooperatives, years

13(57%) of cooperatives have between 11 to 20 years of farming experience. Members of 3(13%) groups have less farming experience, and it is between 5 to 10 years. 7(30%) groups have members with the richest experience in agriculture, between 21 to 30 years.

Extension services, credit and AMIS

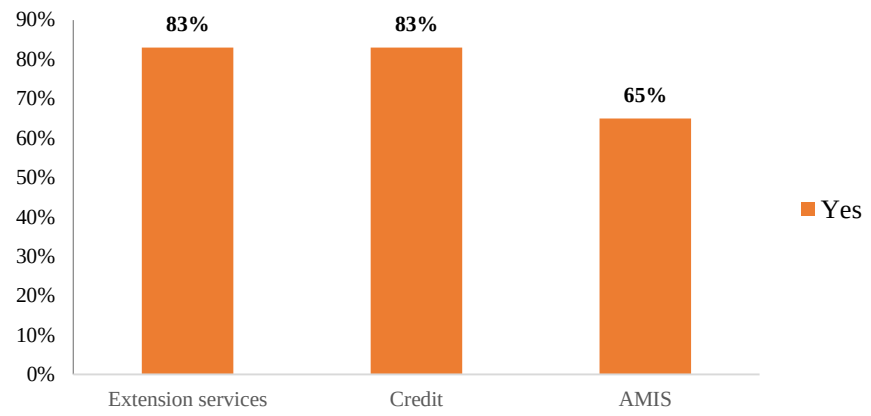


Figure 9. % of cooperatives having extension service, credit and AMIS

From the table we see that 19(83%) cooperatives are willing to get a credit and can afford it. 4(17%) of cooperatives cannot get a credit because of certain reasons as; too high rates, no proper guarantee to declare or too high-risk rates. Among these cooperatives are also groups that just simply still do not need a credit. Basically, cooperatives use the financial sources from the credit for planting, purchasing seeds, purchasing all needed facilities for planting, machinery for agriculture, construction of the main building, purchasing containers or building the packing line; most of them needed credit for building the cooling storage, extension and paying the seasonal workers.

Regular meetings

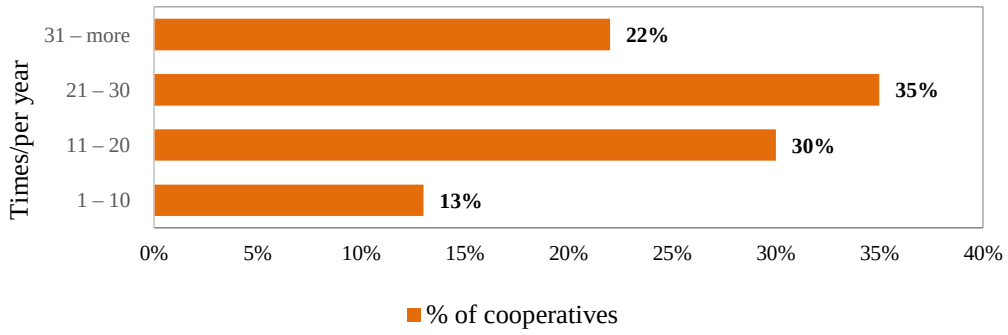


Figure 10. Frequency of regular meeting, times/year

8(35%) cooperatives prefer to meet twice per month, 7(30%) cooperatives meet ones in a month, 4(22%) cooperatives meet once in a week and for 3(13%) respondents is enough to meet twice per year. Among the most common issues discussed on the meetings are climate concerns, additional finance sources, voting the leader of the cooperative and dividing the tasks among members.

7.2. Objective 2 – Factors influencing small farmers' access to local and international markets

Table 8. Ordinal Logistic Regression Estimates

Market access Variable	**Parameter**	**Coefficient**	**Standard Error**	**P-Value**
Gender; male female	β_1	1.060	0.519	**0.041****
	β_2	-0.176	0.573	0.758
Farm size	β_3	0.036	0.014	**0.009*****
Extension service	β_4	-0.575	2.014	0.775
Farm experience	β_5	0.103	0.144	0.475
Credit	β_6	1.031	0.986	0.296
Dist. major_mkt	β_7	0.019	0.013	0.158
Freq. meeting	β_8	0.095	0.034	**0.004*****
Coops existence	β_9	0.299	0.145	**0.040****
Age	β_{10}	-0.042	0.128	0.740
AMIS	β_{11}	-3.092	1.664	**0.063***
	χ^2			**0.018****
Intercept 1		4.075	4.570	
Intercept 2		6..472	4.936	
Intercept 3		7.384	4.992	

***, significant at 1%, ** significant at 5%, * significant at 10%; Pseudo $R^2 = 0.184$

Note: Dependent variable; Indicators of market access (that is contract locally acquired; contract acquired internationally; location of sales and type of market). 1 denotes farmers/groups that acquired any one of the four indicators of market access; 2 denotes farmers who acquired any two of the four market access indicators; 3 denotes also farmers that acquired any three of the market indicators and 4 representing farmers/groups that acquired all four categories of market access indicators.

Explanation

Results of table 8 indicate generally that, the exogenous variables explain 18.4% of the variations in the endogenous variable. The three intercepts show that the dependent variable has four main categories. The positive sign of male means that as the number of male farmers in the groups increase, there is greater chance of been in higher category of market access. It was statistically significant at 1%. Specifically, with larger farm size farmer cooperatives are more likely to be in the higher category of market access. This variable is statistically significant at 1%. Frequency of meetings by cooperatives was also significant and with a positive sign indicating as cooperatives meet to deliberate on their progress and improvement, it beefs up their likelihood to be in higher category of market access. This was significant at 1%. In addition, cooperative existence was also significant at 5%. The positive sign implies that the older the existence of cooperatives, the higher the likelihood of been in a higher category of market access. Contrary to our a priori expectations, considering the notion that with increase in AMIS, farmers are more likely to have better market access, but this was not the case. The negative sign implies otherwise. This variable is also significant at 10%.

Female dominant groups, extension service, farming experience of the members, credit, distance to major market and age of member were found to be not significant for our research.

Hypothesis 1

The study supports the first hypothesis - Groups with male dominant members reach better market access. Hence null hypothesis rejected.

Hypothesis 2

The study supports the second hypothesis - Cooperatives with regular meetings achieve better markets.

8. Discussion

Study results indicates that most of the cooperatives are production cooperatives, with just a few, which can be classified as marketing cooperatives. Basically, there is no clear distinguish between agricultural cooperatives in Moldova, may be due to relatively recent reorganization of former state farmers. Garden and Lerman (2006), posited a similar findings that, agricultural cooperatives in transition countries are not really cooperatives in the Western sense of the word (Gardner & Lerman 2006). From these considerations, better understanding and classification of cooperatives according to the main types is still required. The understanding and classification of cooperatives according to the main types is necessary.

Results of our study show that gender was found to be significant. As the number of male farmers in the groups increase, there is greater chance that cooperative will improve its' market access. There are several studies going in line with our result. Barham and Chitemi (2009) argued that the gender composition of groups in Tanzania affects marketing performance. Gender composition of banana farmer groups in Kenya also factors in better group market access, with enabling factor for male dominated groups and acts as a disabling factor for female only groups (Mutai 2014). It has been argued by several authors that these arrangements are caused by different gender roles. Women occupy greater share of the responsibility over the households' and taking care of the children. Due this, many women simply do not have time to spend searching out new market opportunities (Doss 2001; Mutai 2014). Women may also have different opportunities, motivation and capabilities than men to engage in collective marketing and because of higher opportunity costs of time, woman may reduce their incentives for participation (Doss 2001; Pandolfelli et al. 2007). Results of these studies are also in line with our first hypothesis, which states that gender dominant groups achieve better market access. Contrary to our results, there are studies that contradict our findings. According to Fischer and Qaim (2012), Tembachako et al. (2013) and Verhofstadt and Maertens (2015) gender did not influence the market improvement of the farmers (Fischer & Qaim 2012; Tembachako et al. 2013; Verhofstadt & Maertens 2015).

Result on regular meetings of the cooperatives is supported by several studies carried by Lucila et al. (2006), Barham and Chitemi (2009), Ampaire et al. (2013) and

Mutai (2014). Cooperatives with larger farm size are more likely to reach better market access. Similar findings are shown in the study on cooperative membership on farmers' welfare in Rwanda. The authors Verhofstadt and Maertens (2015) imply that cooperatives with relatively larger landholdings are most effective in increasing farm income and reducing poverty (Verhofstadt & Maertens 2015). Empirical evidence of Ahmed and Mesfin (2017) from Eastern Ethiopia argues also that cooperatives with bigger land share improve the welfare of its' members than cooperatives who own smaller sizes of land (Ahmed & Mesfin 2017). Contrary to previous arguments, author Mutai (2014) when assessing the influence of collective action on market access among smallholder banana farmers in Imenti South district in Kenya, found that the size of the group was found to being insignificant in accessing the banana market. Moreover, Olson (1965) argues that smaller groups are more successful in collective action than larger groups as the distribution of benefits is more likely to be inadequate in larger groups. It is argued that small groups tend to work better than large ones. It is recommended, if farmers work in a larger farm, they should be divided into 20-30 people. Small groups will enhance groups' cohesion and sustainability. An effective group size is however difficult to determine, as larger farmers can exploit economies of scale but there can be a threat of conflicts between members. With very small groups there is contrary a danger that small volumes and low margins will necessitate ongoing subsidies to cover operating costs (FAO 2007).

The positive sign of cooperative existence implies that the older the cooperative is, the higher the likelihood of reaching better markets. In line with our results Mutai (2014) argues that older groups were found to access the banana market.

Contrary to our a priori expectations, considering the notion that with increase in AMIS, farmers are more likely to have better market access, but this was not the case. The results showed a negative relationship with market access. This could possibly mean that AMIS is not helping the farmers to reach international markets, as they are using mainly agricultural market information system for local markets and that capacity of AMIS do not provide two dimensions of its' utilization. Our possible explanations are supported by several authors claiming that many governments and donors recently tried to establish market information services, but these often suffered from problems of sustainability and data accuracy. Such services usually address only basic agricultural

commodities information service and often do not have enough information on export markets or on markets for processed products (FAO 2007). Also, we assume that AMIS can negatively affect market access of farmers as the time spent on information gathering, which in the end can be ineffective and useless, make farmers to waste their time and consequently reduce their market opportunities. Recently AMIS has been criticized that it is not appropriate for the modern multifunctional agriculture (Blackstock et al. 2010). However, availability of higher quality of information should not affect its' cost (Vanni 2014). Findings of research evaluating agricultural market information service (AMIS) in Bangladesh show that although farmers were fully capable to make and receive voice calls, accessing other modes of services was difficult for them. Only 32% of the users could access SMS by themselves, while others tried to seek help from their family members, neighbors or friends when the need for price information was urgent (Islam & Grönlund 2010b). Also, AMIS was futile when the facilitating conditions as connectivity or power supply were not present (Islam & Grönlund 2010a). Information services can be effective, if adjusted in accordance with individuals' information needs; when technologies are fast adaptive and easily accessible.

9. Conclusions

It is argued that collective action, whether through cooperative or producer group, can address market constraints of smallholder farmers, increase their market access by reaching larger domestic urban, regional, and international markets and help them to remain competitive in rapidly changing markets (Ton 2008; Barham & Chitemi 2009; Fischer & Qaim 2011; Gyau et al. 2014). There are several studies showing that agricultural cooperatives improve farm productivity through their adoption (Nicola Francesconi & Heerink 2010; Spielman J et al. 2010) and also confirm that cooperatives play an important role in poverty reduction, cash and food security (Shiferaw et al. 2014; Verhofstadt & Maertens 2015; Ahmed & Mesfin 2017). Therefore, our main goal was to find out, if acting collectively, farmer cooperatives in Moldova gain better access to markets and if agricultural cooperative groups are an efficient form to improve farmers' livelihood and contribute to food security in Moldova.

The results show that collective action improve market access of farmers, thus cooperatives can be considered as a vehicle to improve farmers welfare, cash security and maintain high levels of food security in Moldova. With establishing the group, farmers achieved greater market access, compared with the situation if they stay alone. Determinants of market access improvement were established to be gender (male farmers), farm size, frequency of meetings, existence of cooperatives and AMIS.

Specifically, males positively influence improvement in market access of cooperatives. That is with increased number of males, cooperatives achieve better market access compared with their female counterparts. Also, cooperatives with larger farm size were more likely to reach better markets. Frequency of meeting among farmer cooperatives was also significant, indicating as cooperatives meet to discuss the group concerns, it improves their market access. Also, older cooperatives, statistically influenced market access, suggesting that the higher the existence of cooperatives, the better their access to markets. Contrary to our a priori expectations, agricultural market and information services had a negative influence on improvement of market access even though it was statistically significant in our study. We believe that, prioritising the factors which influenced market access in our study by existing and emerging farmer

cooperatives will contribute immensely to their market access improvement in order to better the incomes and living standards.

10. References

Ahmed MH, Mesfin HM. 2017. The impact of agricultural cooperatives membership on the wellbeing of smallholder farmers: empirical evidence from eastern Ethiopia. Agricultural and Food Economics **5**:20.

AICC. 2016. Handbook on facilitating market access and linkages.

Ampaire EL, Machethe CL, Birachi E. 2013. The role of rural producer organizations in enhancing market participation of smallholder farmers in Uganda: Enabling and disabling factors. African Journal of Agricultural Research **8**:963–970. Available from http://www.academicjournals.org/AJAR.

Antwi M, Seahlodi P. 2011. Marketing Constraints Facing Emerging Small-Scale Pig Farmers in Gauteng Province, South Africa. J Hum Ecol **36**:37–42.

Arouna A, Yergo W, Adegbola P. 2016. IMPACT ASSESSMENT OF COLLECTIVE MARKETING OF RICE BY SMALLHOLDER PRODUCERS IN BENIN.

Barham J, Chitemi C. 2009. Collective action initiatives to improve marketing performance: Lessons from farmer groups in Tanzania. Food Policy:53–59.

Bhagat D, Dhar UR. 2012. Factors Affecting Market Accessibility of Small Farmers in West Garo Hills District of Meghalaya. Management Convergence **3**:47–56.

Blackstock KL, Ingram J, Burton R, Brown KM, Slee B. 2010. Understanding and influencing behaviour change by farmers to improve water quality. Science of the Total Environment **408**:5631–5638.

Cimpoies D, Muravschi A, Racul A. 2008. STRUCTURAL CHANGES IN MOLDOVAN AGRICULTURE: PROBLEMS AND PERSPECTIVES:7.

Csaki C, Lerman Z. 2002. Land Reform and Farm Restructuring in Moldova: A Real Breakthrough? Problems of Post-Communism **49**:11.

Doss CR. 2001. Designing Agricultural Technology for African Women Farmers: Lessons from 25 Years of Experience. World Development **29**:2075–2092.

FAO. 2007. Approaches to linking producers to markets.

FAO. 2016. Republic of Moldova and FAO: Partnering to achieve sustainable food

systems.

Fischer E, Qaim M. 2011. Smallholder Farmers and Collective Action: What Determines the Intensity of Participation?30.

Fischer E, Qaim M. 2012. Linking Smallholders to Markets: Determinants and Impacts of Farmer Collective Action in Kenya. World Development:36.

Gardner B, Lerman Z. 2006. Agricultural cooperative enterprise in the transition from socialist collective farming. Journal of Rural Cooperation **1**:1–18.

GOV.MD. 2012. Small and Medium Enterprise Sector Development Strategy for 2012-2020.

Gyau A, Franzel S, Chiatoh M, Nimino G, Owusu K. 2014. Collective action to improve market access for smallholder producers of agroforestry products: Key lessons learned with insights from Cameroon's experience. Current Opinion in Environmental Sustainability:68–72.

Chamberlin J, Jayne TS. 2015. Unpacking the Meaning of Market Access : Evidence from Rural Kenya. World Development:62.

IFAD. 2016. Cooperation of agricultural producers in the Republic of Moldova.

Imai K, King G, Lau O. 2007. Ordinal Logistic Regression for Ordered Categorical Dependent Variables.

Islam MS, Grönlund A. 2010a. Agriculture market information services (AMIS) in the least developed countries (LDCs): Nature, scopes, and challenges:109–120.

Islam MS, Grönlund Å. 2010b. An agricultural market information service (AMIS) in Bangladesh: Evaluating a mobile phone based e-service in a rural context. Information Development **26**:289–302.

ITC. 2014. Country Report Republic of Moldova.

Kaganzi E, Ferris S, Barham J, Abenakyo A, Sanginga P, Njuki J. 2009. Sustaining linkages to high value markets through collective action in Uganda. Food Policy:39.

KAS. 2015. SMEs AND SMALL FARMS IN AGRIBUSINESS IN THE BLACK SEA ECONOMIC COOPERATION REGION. Available from www.kas.de/tuerkei.

Kirui OK, Njiraini GW. 2013. Impact of Collective Action on the smallholder agricultural commercialization and incomes: Experiences from Kenya. Centre for Development Research:12.

Kumar, Ranjit. 2011. Research Methodology.

Kürschner E, Baumert D, Plastrotmann C, Poppe A-K, Riesinger K, Ziesemer S. 2016. Improving Market Access for Smallholder Rice Producers in the Philippines.

Lawrence RZ, Drzeniek Hanouz M, Doherty S. 2012. The Global Enabling Trade Report: Reducing Supply Chain Barriers.

Lerman Z. 2013. Cooperative development in Central Asia. Policy Studies on Rural Transition:38.

Lerman Z, Cimpoies D. 2005. Land Consolidation as a Factor for Successful Development of Agriculture in Moldova. The Hebrew University of Jerusalem:23. Available from http://departments.agri.huji.ac.il/economics/indexe.html.

Lerman Z, Sedik D. 2014. Cooperatives in the CIS and Georgia: Overview of Legislation. Policy Studies on Rural Transition:26.

Lerman Z, Sutton WR. 2006. Productivity and Efficiency of Small and Large Farms in Moldova. The Hebrew University of Jerusalem:34. Available from http://departments.agri.huji.ac.il/economics/indexe.html.

Lucila M, Lapar A, Binh VT, Son NT, Tiongco M, Jabbar M, Staal S. 2006. The Role of Collective Action in Overcoming Barriers to Market Access by Smallholder Producers: Some empirical Evidence from Northern Vietnam.

MAIA.GOV. 2014. NATIONAL STRATEGY ON AGRICULTURE AND RURAL DEVELOPMENT FOR THE PERIOD 2014-2020.

Markelova H, Meinzen-Dick R. 2009. COLLECTIVE ACTION FOR SMALLHOLDER MARKET ACCESS. CAPRI Policy Brief:1–7.

Matsane S., Oyekale A. 2014. Factors Affecting Marketing of Vegetables among Small-Scale Farmers in Mahikeng Local Municipality, North West Province, South Africa. Mediterranean Journal of Social Sciences **5**:390–397.

MIEPO. 2016. Agriculture and Food Processing.

Millns J. 2013. Agriculture and Rural Cooperation Examples from Armenia, Georgia and Moldova. Policy Studies on Rural Transition:37. Available from http://www.fao.org/europe/agrarian-structures-initiative/en/.

Moroz V, Ignat A, Lucasenco E. 2014. Small and large farms in the Republic of Moldova: trends and perspectives. Management Theory and Studies for Rural Business and Infrastructure Development **36**:902–912.

Mukwevho R, Anim FDK. 2014. Factors Affecting Small Scale Farmers in Accessing Markets: A Case Study of Cabbage Producers in the Vhembe District, Limpopo Province of South Africa. J Hum Ecol **48**:219–225.

Mutai MB. 2014. INFLUENCE OF COLLECTIVE ACTION ON MARKET ACCESS AMONG SMALLHOLDER BANANA FARMERS IN IMENTI SOUTH DISTRICT, KENYA. International Journal of Social Sciences and Project Planning Management **1**:99–110.

NBS. 2011. General Agricultural Census in the Republic of Moldova.

NBS. 2017. Statistical Yearbook "Agricultura Republicii Moldova."

Nicola Francesconi G, Heerink N. 2010. Ethiopian Agricultural Cooperatives in an Era of Global Commodity Exchange: Does Organisational Form Matter? Journal of African Economies:1–25.

Okezie C., Nwosu A., Okezie C. 2008. An Assessment of the Extent of the Commercialization of Agriculture in Abia State, Nigeria. Agricultural Journal **3**:129–133.

Orlova E, Bargan T, Baghici S, Chiperi M, Cebotari G, Предисловие P. 2017. ACTIVITATEA AGRICOLĂ A MICILOR PRODUCĂTORI AGRICOLI ÎN REPUBLICA MOLDOVA ÎN 2016. Available from http://www.statistica.gov.md.

Pandolfelli L, Meinzen-Dick R, Dohrn S. 2007. Gender and Collective Action: A Conceptual Framework for Analysis. International Food Policy Research Institute:50. Available from http://dx.doi.org/10.2499/CAPRiWP64.

Selari G. 2010. Agrarian sector of the Republic of Moldova and Transdniestria: reforms and results. Institutul de Politici Publice:11.

Shiferaw B, Hellin J, Muricho G. 2011. Improving market access and agricultural

productivity growth in Africa: What role for producer organizations and collective action institutions? Food Security:475–489.

Shiferaw B, Kassie M, Jaleta M, Yirga C. 2014. Adoption of improved wheat varieties and impacts on household food security in Ethiopia. Food Policy **44**:272–284.

Shiferaw B, Obare G, Muricho G, Silim S. 2009. Leveraging institutions for collective action to improve markets for smallholder producers in less-favored areas. Afjare **3**:18.

Spielman J D, Byerlee D, Alemu D, Kelemework D. 2010. Policies to promote cereal intensification in Ethiopia: the search for appropriate public and private roles. Food policy:185–194.

Spînu S. 2013. The Integration of the Republic of Moldova into the European Cultural Realities. Administrarea Publică:101–105.

Stiftung B. 2016. BTI Moldova Country Report.

Tembachako S, Mushari J, Katsaruware D. 2013. Assessing Economic Factors Affecting the Tomato producers. International Journal of Science and Research **6**:492–496.

Ton G. 2008. Challenges for smallholder market access: A review of literature on institutional arrangements in collective marketing. Stewart Postharvest Review:6.

Vanni F. 2014. The Role of Collective Action. Pages 21–37Agriculture and Public Goods.

Verhofstadt E, Maertens M. 2015. Can agricultural cooperatives reduce poverty? Heterogeneous impact of cooperative membership on farmers' welfare in Rwanda. Page Applied Economic Perspectives and Policy.

WB. 2016a. Structural Transformation of Moldovan Smallholder Agriculture: Implications for Poverty Reduction and Shared Prosperity.

WB. 2016b. Competitiveness in Moldova's Agricultural Sector.

WB. 2018. MOLDOVA AGRICULTURE COMPETITIVENESS PROJECT.

World Bank. 2008. Agriculture for Development.

Zhou S, Minde IJ, Mtigwe B. 2013. Smallholder agricultural commercialization for

income growth and poverty alleviation in southern Africa: A review. African Journal of Agricultural Research **8**:2599–2608. Available from http://www.academicjournals.org/AJAR.

Appendices

List of the Appendices:

Appendix 1: Questionnaire …… II

Appendix 2: Photo documentation of data collection …….. VIII

Appendix 1: Questionnaire

Czech University of Life Sciences Prague
Faculty of Tropical AgriSciences

Questionnaire

Study on assessment of factors influencing improvement of market access among collective actions of small farmers in Moldova

Questionnaire No. ☐☐☐

District..... Name of cooperative/group.....

Village..... Contacts/tel.number.....

Date of interviewing: ☐☐ ☐☐ ☐☐☐☐

Date *Month* *Year*

Please mark this way ☒ the right response and complete the open questions.

The questionnaire is absolutely anonymous.

THANK YOU IN ADVANCE!

Section 1: Assesment of Independent Variables

Socio-economic factors:

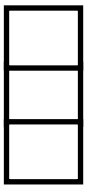
1. What is the total size of the farm land? _____hectares

2. What are the main cultivated commodities? Please specify

Vegetables……

Fruits……..

Legumes……

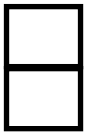


3. How many members do you have? _____ No

Member	**Sex** f/m	**Age**	**Level of education** 1 = none; 2 = primary; 3 = secondary; 4 = post-secondary	**Experience in agriculture** years
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

4. Did the group receive any trainings from extension agents? Yes ……..

No ……..



Institutional factors:

5. In which year was the group established? _____ Year

6. It is the group officially recognized as a formal institution? Yes ……. ☐

No ……. ☐

7. If yes, in what form is it recognized?

Cooperative …….. ☐

Registered business organization ……. ☐

Association of small farmers ……. ☐

Other, which?..... ☐

8. What was the reason for formation of the group?

Changes in laws ……. ☐

Efforts to rich better markets ……. ☐

Other, which?..... ☐

9. Do you organize regular meetings? Yes ……. ☐

No ……. ☐

10. How often do you meet?

Ones in a week …….. ☐

Twice per month …….. ☐

Once in a month ……. ☐

Twice per year …… ☐

Other, please specify…….. ☐

11. What are the most common issues you are discussing at meetings?

Climate related problems ……. ☐

Admission of new members …… ☐

Voting future representative ……. ☐

Dividing work between memebers …… ☐

Other, please specify …….. ☐

12. During harvests, all members of the group work in orchards?

Yes, all registered members …… ☐

No, just few of them are active ……. ☐

We are receiving help from external non members …… ☐

Other, please specify? …….. ☐

Infrastructural factors:

13. Do you have your own means of transportation? Yes …….. ☐

No …….. ☐

14. If not, what means of transportation do you use to deliver products to the buyer?

Any transportation buyer own…… ☐

Renting services ……. ☐

Other, please specify……. ☐

15. How far is your farm up to the nearest major market available? _____km

16. Do you use intermediaries to deliver your products?

Yes, only intermediaries …….. ☐

No, we deliver products by ourselfs…….. ☐

We use both ways …… ☐

Other, please specify …….. ☐

Innovation factors:

17. Do you use the Agricultural Market Information System? Yes …….. ☐

No …….. ☐

18. Do you possess quality certifications for your products? Yes …….. ☐

No …….. ☐

19. If yes, how did these certifications affect your sales?

We can sell our products in supermarkets in bigger cities …….. ☐

We can sell in supermarkets from capital city …….. ☐

We can export our production …….. ☐

Other, please specify …… ☐

Financial factors:

20. Do you have a bank account? Yes …….. ☐

No …….. ☐

21. Did the group received subsidy? Yes …….. ☐

No …….. ☐

22. If yes, for what purpose did you use the amount received?……

23. If not, what are the factors that stop the group from receiving a subsidy?

We do not meet the necessary requirements …….. ☐

Don't need it …….. ☐

Other, which ones? …….. ☐

24. Did the group received a credit from the bank? Yes …….. ☐

No …….. ☐

25. If yes, for what purpose did the group use the amount received?.....

26. If not, what are the factors preventing the group from getting credit?

High rates …….. ☐

No proper guarantee to declare …….. ☐

High rate of risk …….. ☐

Other, please specify …….. ☐

Section 2: Assesment of Indicators of Dependent Variable

27. Where do you <u>currently</u> sell your products?

Local village …….. ☐

Bigger nearby town …….. ☐

Regional farther town …….. ☐

Capital city Chisinau …….. ☐

Neighboring and farther countries …….. ☐

28. Where did individual farmers sell their products <u>before they joined the group</u>?

Local village …….. ☐

Bigger nearby town …….. ☐

Regional farther town …….. ☐

Capital city Chisinau …….. ☐

Neighboring and farther countries …….. ☐

29. As a formed group, do you sign contracts to supply your agricultural products in Moldova?

Yes …….. ☐

No …….. ☐

30. If yes, how many contracts to sell your products in Moldova did you sign with buyers <u>curently</u>?

_____No

31. How many contracts were signed by farmers before group formation? _____No

32. <u>Currently</u>, where is the groups' location of sales?

Farm gate …….. ☐

Roadside …….. ☐

Fresh market …….. ☐

Retailers …….. ☐

Institutions …….. ☐

Other, please specify …….. ☐

33. Where did farmers sell their products <u>before group formation</u>?

Farm gate …….. ☐

Roadside …….. ☐

Fresh market …….. ☐

Retailers …….. ☐

Institutions …….. ☐

Other, please specify …….. ☐

34. Do you sign contracts to deliver your agricultural products outside Moldova?

Yes …….. ☐

No …….. ☐

35. If yes, how many contracts did you sigh currently to export your products?

_____No

36. Were individual farmers able to sell their products abroad <u>before joining the group</u>?

Yes …….. ☐

No …….. ☐

37. If yes, how many contracts were signed by individual farmers per year <u>before group formation</u>?

_____No

Thank you very much for the time spent on the questionnaire!

Appendix 2: Photo documentation of data collection

Photo 1: Interview with director of cooperative in Sireți, Strășeni region.

Source: author

Photo 2: Seasonal workers of cooperative in Sireți, Strășeni region

Source: author