**CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE**

**Faculty of Tropical AgriSciences**



# Willingness of farmers to join agriculture cooperatives in Moldova

MASTER'S THESIS

Prague 2023

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# Declaration

I hereby declare that I have done this thesis entitled Willingness of farmers to join agriculture cooperatives 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 21.4.2023

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# Acknowledgements

**Abstract**

In the aftermath of the Soviet Union's collapse, Moldova struggled with the transition from a communist-collective system, which had significant implications for its agricultural industry. Given the significance of agriculture in Moldova's economy, as well as in addressing poverty and food insecurity, cooperatives are a potentially crucial strategy for overcoming the challenges of land fragmentation, achieving economies of scale, and reducing transaction costs that hamper Moldova's development prospects, despite its fertile land and proximity to the EU. The study aimed to investigate the factors that influence farmers' willingness to join agricultural cooperatives in Moldova. The first objective analysed how the political environment affects farmers' willingness to join cooperatives, while the second objective analysed specific factors influencing this decision. The study was conducted in Moldova with a sample size of 208 respondents, data was analysed using descriptive statistics, comparison of means in two-group research design and Structural Equation Modelling (SEM). In addition, five in-depth interviews were conducted to provide a comprehensive picture of the context. The results indicate that the political environment influences farmers' decision to join cooperatives mainly through awareness, while past experience with the Soviet Union indirectly affects this decision through a lack of trust. The study disproves the hypothesis that farmers with larger farms are less likely to join cooperatives and confirms that organic farmers who are more innovative and less risk-averse are more likely to join. Attitudes towards institutional advantages and strong support from social networks were significant factors influencing farmers' willingness to join. To improve the success of cooperatives in Moldova, it is recommended to enhance communication, provide better incentives to farmers, increase the visibility of existing cooperatives, and build trust among farmers and supporting institutions.

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## List of the abbreviations used in the thesis

| | |
|---|---|
| JICA | JAPAN INTERNATIONAL COOPERATION AGENCY |
| FAO | FOOD AND AGRICULTURE ORGANIZATION |
| TPB | THEORY OF PLANNED BEHAVIOR |
| RAA | REASONED ACTION APPROACH |
| PBC | PERCIEVED BEHAVIOR CONTROL |
| SN | SOCIAL NORM |
| MOVCA | MOLDOVAN ORGANIC VALUE CHAIN ALLIANCE |
| USAID | UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT |
| SEM | STRUCTURAL EQUATION MODELING |
| SPSS | STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES |
| IFAD | INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT |
| IEA | INTERNATIONAL ENERGY AGENCY |
| UNEP | UNITED NATIONS ENVIRONMENT PROGRAMME |

# 1.         Introduction

Following the dissolution of the Soviet Union, Moldova encountered difficulties in transitioning from a communist-collective to a private property-based economy, with significant repercussions for its agricultural sector (Lerman et al. 2016; JICA 2017). In addition to being a crucial natural resource (World bank 2016), agricultural land is a significant employer in countries like Moldova, where the percentage of their workforce engaged in agriculture was higher compared to industrialized European and North American nations (Moroz et al. 1998). Consequently, some of the primary goals of Moldova's shift towards a market-oriented economy were to implement agricultural reforms, privatize agricultural land, and reorganize collective and state farms (Moroz et al. 1998; Lerman & Cimpoieş 2006; Lerman et al. 2016). This was accompanied by other shifts, such as market-controlled systems for agricultural inputs and goods, institutional changes and reforms, and the privatization of other productive assets (Lerman et al. 2016).

However, despite these efforts, Moldova remains one of Europe's poorest countries (World bank 2016; Parlicov et al. 2022). Moldova has the world's lowest level of energy self-sufficiency due to the absence of domestic fossil fuel resources (IEA 2022). A health crisis followed by an energy crisis, had put significant pressure on the country's public finances and substantially impacted the economy, causing a 7% decrease in GDP in 2020 alone (Parlicov et al. 2022). As of 2021, 26.8% of the population lives in absolute poverty, jeopardized by the severe impact of COVID-19 on the most vulnerable households (Parlicov et al. 2022).

The agriculture sector in Moldova plays a vital role not only in the country's economy but also in addressing food insecurity and poverty (World bank 2016), especially in a country with one of the highest proportions of rural people in Europe and Central Asia (O'Connell & Kiparisov 2018). Over the past years, the agricultural sector, together with the processing industry accounted for more than 16% of Moldova's GDP and nearly 45% of overall exports. Additionally, the sector employs about 21% of the workforce (Invest Moldova Agency 2022). Despite its significance, the agri-food sector has faced challenges in achieving consistent growth with slow progress and unequal results. Even with recent reforms, farming practices still fall short of Western standards (JICA 2017).

To a certain degree it is due to land consolidation reforms and redistribution of former state farmland to residents of the villages, which led to the emergence of many new smallholders who had little prior agriculture expertise on how to holistically manage a farm, as they were used to carry out specialized work, such as tractor driver or animal taker (JICA 2017). To enable small-scale farmers to compete with large-scale actors and to strengthen their bargaining power, cooperatives are viewed as one of the primary solutions to the numerous issues (Ignat et al. 2017).

The "cooperativization" of the agricultural sector has been adopted in many post-socialist countries following the success of the Western cooperative model. Cooperatives are often seen as key players in the development of the agricultural sector. Agricultural cooperatives are a quite common practice in Russia, Ukraine, and Moldova (Lerman et al. 2016). However, it should be noted that in above mentioned transition economies, agricultural cooperatives are not necessarily the same as cooperatives in the Western sense of the term, as they are often equivalent to other corporate farms (Lerman et al. 2016; Yanbykh et al. 2019).

Regardless of the potential benefits of agricultural cooperation in Moldova, there are several challenges that prevent its growth. These include land consolidation, a lack of available labor force, excessive bureaucracy, difficult access to financing sources, and a weak legislative framework (Ignat et al. 2017). Furthermore, many farmers inherited a distrust towards the concept of cooperatives from the post-Soviet era, where collectivization gave rise to pseudo-cooperatives (Bijman et al. 2012). Hence to establish a cooperative, there is a need for enormous effort to persuade people to cooperate, establish a common vision for the objectives of cooperation, and overcome the mentality that still associates cooperatives with the Soviet-era's Kolkhoz (Ignat et al. 2017).

Despite government's long-lasting support and numerous international initiatives (Millns 2013), cooperatives represent only a small percentage of all registered agriculture holdings (JICA 2017). Yet even with above mentioned challenges, cooperation is still viewed as a solution to the numerous issues faced by agricultural producers.

Notwithstanding the known advantages and limitations of cooperatives in Moldova, little is known about farmers' motivations for joining them. Therefore, the topic of this study is to investigate the factors that influence farmers' willingness to join agricultural cooperatives in Moldova. By understanding these factors, the study will

contribute to the knowledge of agricultural cooperation in Moldova and provide insights into how cooperatives can be promoted and sustained.

The thesis is organized as follows: chapter 2 reviews the related literature of the research. This chapter is subdivided into three parts. The first part 2.1 is devoted to agricultural cooperatives, starting with examination of the concept of cooperatives in chapter 2.1.1, characteristics and history of cooperatives in post-Soviet countries in chapter 2.1.2, and context and development of cooperatives in Moldova in chapter 2.1.3. Followed by chapter 2.2. where the author delves into the subject of organic farming, which serves as an exemplary case of agricultural innovation and modernization. This chapter is important to be included to the study due to the vast potential that both organic agriculture and cooperatives have in Moldova. Lastly, the third part 2.3 of the literature review examines the various factors that influence farmers' decision to cooperate, starting with psychological factors dominated by the Theory of Planned Behavior (TPB) and its updated Theory of Reasoned Action Approach (RAA), together with trust and risk attitudes as additional subfactors in chapter 2.3.1, followed by socio-economic factors in chapter 0, past experience in chapter 0, and lastly policy factors and awareness in chapter 0. Chapter 3 outlines the research objectives, while chapter 4 presents the methodology of the research. The results of this study are presented and described in chapter 5, followed by discussion provided in chapter 6. Chapter 7 concludes the research and all used references are displayed in chapter 8.

# 2. Literature Review

## 2.1. Agriculture cooperatives

### 2.1.1. What is a cooperative?

A cooperative is an independent organization of people who have come together voluntarily to work for the same economic, social, and cultural goals through a jointly owned and democratically run business (International Co-operative Alliance 2015). Traditional cooperatives' most distinguishing characteristic is a democratic form of ownership and control, meaning all members own equal shares in the company, decisions are made according to the "one member, one vote" principle, and profits are distributed in accordance with patronage or how frequently members use the cooperative's services (Penrose-Buckley 2007). Self-help, self-responsibility, democracy, equality, equity, and solidarity are the foundation principles of cooperatives. Cooperative members respect the ethical values of transparency, honesty, social responsibility, and compassion for others (International Cooperative Alliance 2015).

The motivation to collaborate, mainly for small producer, has economic origins in the need to use economies of scale, minimizing transaction costs, and to overcome market failures (Cook 1995). Small-scale farmers are unable to profit from economies of scale when negotiating with input suppliers, hence disabling them to secure discounts available for purchases in greater quantities. This also stands for other services including credit provision, risk insurance, equipment sharing, veterinary care, and specialized services (Penrose-Buckley 2007). Through cooperatives, small farmers can also improve their access to markets where a variety of services are offered, such as an easier access to natural resources, information, communication, technology, credit, training, and storage. Additionally, cooperatives support small producers in protecting their land use rights, negotiating better terms for contract farming, and better prices for agricultural inputs like seeds, fertilizer, and equipment (Penrose-Buckley 2007; FAO 2012)

According to FAO (2012), thanks to this support small producers can effectively protect their livelihoods and take a bigger part in supplying the rising food demand on markets, helping to reduce poverty and ensure food security. It is argued, the act of working together itself can foster confidence and a sense of solidarity among small-scale

producers, empowering them to face market risks and obstacles and have more influence over regional laws and practices that have an impact on their markets (Penrose-Buckley 2007). Moreover, cooperatives add to a country's "social capital" in a manner that investor-owned companies do not (Green et al. 2013). With the use of business models that are more resistant to environmental and economic shocks, they enable their members on an economic and social level and create long-term rural employment (FAO 2012).

Despite all positive impacts cooperatives can have, there are some problems to be considered. According to Penrose-Buckley (2007), cooperatives frequently struggle to get their members to contribute money for investment. There is no incentive for members to spend their own assets in the cooperative since all members possess equal ownership, rights to vote, and the profits are allocated based on patronage. Røkholt (1999) specifies a scarcity of investment resources as an issue of cooperatives, reflecting particularly in risk capital and in shortage of capital flexibility. Furthermore, cooperatives are large organization with a limited versatility and substantial internal administrative expenses (Penrose-Buckley 2007). Not forget to mention their long and open decision-making procedures, complicated goal structures, as well as rigid organizational and owner structures are also considered as weaknesses (Røkholt 1999). Lastly, many states still have a strict regulation towards cooperatives due to negative experience when cooperatives were state governed (Penrose-Buckley 2007).

### 2.1.2. Cooperatives in post-soviet countries

According to various studies (Bijman et al. 2012; Lerman et al. 2016), cooperatives have become a viable method of agricultural production in Western countries. As a result, post-socialist countries have also attempted to adopt the cooperative model in their agricultural sectors. However, the cooperative model has encountered resistance due to the post-Soviet legacy (Bijman et al. 2012; Niyazmetov et al. 2021). Farmers in such countries often preserve a mistrust towards the cooperative concept due to collectivization and the rise of pseudo-cooperatives (Bijman et al. 2012; Soliev & Theesfeld 2020; Niyazmetov et al. 2021). Lerman at al. (2016) even suggests that in transition economies, agricultural cooperatives are hardly cooperatives in the western meaning and are essentially identical to other corporate farms.

By any means, all former Soviet Union countries are affected by communist inheritance, with low trust being an impediment in cooperative development (Bijman et

al. 2012). However, agriculture cooperatives have a long history in many former Soviet Union republics already before collectivization. Soon after cooperatives were introduced in Western Europe, around 1875, they started to emerge in Russia and by 1917 more than 2 million Russian farmers were members of cooperatives (Lerman et al. 2016). Consequently, even before Stalin's collectivization in 1929, the number of cooperatives jumped from 8300 in 1927 to 20 000 just within a year (Yanbykh et al. 2019). Despite using the cooperative language during collectivization campaign, highlighting the benefits of collaboration, and focusing on voluntary participation, the reality was different. The process contained forced conscription, reinforced by verbal and physical abuse. In 1980, there were roughly 30 000 collective farms, each with 500 workers and about 3000 hectares of land (Lerman et al. 2016). It seems that the original spirit of spontaneous bottom-up cooperation that was common for 19th and early 20th century everywhere, was crushed by the heavy hand of the Soviet socialistic state.

The socialist regimes' implementation of the "cooperation" was frequently characterized by corrupt and self-interested politics. It eventually undermined public's trust in voluntary collaboration arrangements creating specific characteristics of low levels social capital in those countries (Tuna & Karantininis 2021). This issue occurred mainly due to collective farms lacked many traits of a true cooperative, apart from sharing ownership of non-land assets and to pay the residual profits in proportion to work rather than capital. The process of forced collectivization violated the fundamental concept of voluntary membership; members lost their right to free leave, the role of general assembly and the "democratically" voted management was also reduced (Lerman et al. 2016).

After the collapse of Soviet Union, the first changes in the agricultural sector of post socialistic countries were the privatization of assets (particularly land) and the transformation of the existing state and collective farms, which resulted in farm restructuring (Spoor 1999). Most cooperatives ceased to exist at the hand of weak and insufficient institutional and legal structures, which were brought on by the transition to market economies (Tuna & Karantininis 2021). This outcome took place despite post-socialist European countries acted relatively fast to execute reforms in establishing property rights and forming market-oriented institutions (Bijman et al. 2012; Möllers et al. 2018; Niyazmetov et al. 2021). Beside weak institutions, farmers were also facing high transaction costs, which were influenced by a lack of marketing and risk-taking

experience on their part, as well as an overall high level of uncertainty (Bakucs et al. 2012; Möllers et al. 2018).

The process of recovering social capital and credibility of the cooperative model has been difficult and is still in progress (Bijman et al. 2012; Möllers et al. 2018; Niyazmetov et al. 2021). The research carried out by Tuna and Karantininis (2021) regarding social network in post-socialist countries revealed low levels of structural social capital in agricultural cooperatives, which relates to the existence of a network that has access to people, resources, and to cognitive factors such as norms, values, trust, attitudes, and beliefs (Bakucs et al. 2012). Even with these unifying signs, the specific situation of the cooperation among farmers differs between the post-Soviet countries and is influenced by specific paths and decisions that the governments took after the independence and change of their political regimes.

### 2.1.3.          Cooperatives in Moldova

After the independence, Moldova made the transition to a market economy and implemented several measures including lowering interest rates, ending preferential funding to state-owned enterprises, removing export restrictions, and introducing land privatization reform which was crucial to their agriculture development (Ignat et al. 2017). The land reform in Moldova was effectively finalized in 2000 after almost ten years of persistent efforts and debates, resulting in the creation of more than a million landowners among the rural population (Lerman & Cimpoieş 2006; Ignat et al. 2017), thereby making land ownership almost ubiquitous in rural areas (World bank 2016).

A small plot of land (often less than one hectare per household) was given to the majority of rural residents to meet their consumption needs, while every active and retired collective farm worker got a sizeable part of land – known as the "big share," that ranged from one to two hectares when the collective farms were dismantled in the late 1990s (World bank 2016). During this time many of them were privatized, liquidated or registered as modernized legal entity (Lerman & Cimpoieş 2006). A small number of former collective farm leaders were able to benefit from the transfer of significant portions of collective farms from the public sector, leading to the emergence of medium-sized and large commercial farms. These individuals mostly consolidated their landholdings by renting majority of the shares from smallholders (World bank 2016).

Despite this, most rural households possessed less than three hectares of agricultural land, which ultimately resulted into fragmented land use pattern (World bank 2016). According to Lerman and Cimpoieş (2006) land fragmentation in Moldova has two main features: namely extremely small size of family farms and the division of land ownership into numerous plots. In this manner it was rather impossible to use the plots efficiently after one million individuals have become landowners. Plots were managed around 1.4 hectares each and were further divided into separate plots based on the type of land, such as arable, orchard, and vineyard (Ignat et al. 2017).

Following the World Bank report (2016), smallholder farms in Moldova account for 95% of all farms and contribute to 71% of the total agricultural output. Therefore, they represent a crucial component of the agricultural industry. In general, small-scale farmers face numerous challenges, including insufficient funds, abilities, and knowledge to keep up with the demands of markets. They also have high business costs, limited access to affordable services that could help increase productivity and quality, also a weak bargaining position in markets. Additionally, they have minimal influence on local, national, and global policies that impact the markets they depend on (Penrose-Buckley 2007).

The situation for smallholder farmers in Moldova is specific and particularly difficult due to additional three reasons: First off, due to the lack of land sales in the developing land market, households typically lease out larger fields to commercial farmers while maintaining smaller pieces of land for their own personal use. When families are unable to lease their larger plots, it frequently results in a fallow land. Second, the rural population is aging and decreasing due to demographic shifts and emigration. This has a negative impact on labour-intensive farming activities. Subsistence farming has hence grown consequently, especially in households headed by women, the elderly, or those with lower levels of education. Finally, although smallholders with relatively larger plots and a better non-farm income might be more inclined to commercialize their farm, they still encounter difficulties entering to markets (World bank 2016). Millns (2013) adds, that small scale farmers in Moldova have little options to access foreign markets and less ability to compete in domestic market as they often do not engage in value-adding processes like grading, storage, or packing; instead, they sell their products as they become available or straight from the field. Due to this, their produce sells for little and experiences significant post-harvest losses.

Small-scale producers must enhance their competitiveness, access external resources, and improve their bargaining power and influence in the market (Penrose-Buckley 2007). To address these challenges, agriculture cooperatives serve as a viable solution in overcoming these obstacles (Ignat et al. 2017) and are considered an important element in development of agriculture sector and rural areas in Moldova as well (JICA 2017; FAO 2020; Parlicov et al. 2022).

The Moldovan government has been supporting agricultural and rural cooperatives for several years. In 2001 law on business cooperative number 73 was adopted, where the business or entrepreneur cooperative is defined as a commercial organization with the status of legal entity, whose members are legal entities and/or physical persons performing a business activity. In 2002 was established law number 1007 on production cooperative defining the production cooperative as a legal entity, created by five or more physical individuals for the purpose of engaging in joint production and other business activities based mostly on labor of its members and accumulation of contributions. It is considered a private enterprise created to generate profits (Millns 2013; FAO 2020). Cooperatives have been entitled to priority access to several government subsidy programs including those for post-harvest and agri-food processing, farming credit, risk insurance, investments in orchards, vineyards and greenhouse vegetable production, equipment and breeding stock purchases, and post-harvest financing, which are frequently not available to individual farmers (Millns 2013).

The law number 312 on agricultural producer groups and their associations was adopted in 2013. This law defines producer groups as groups of legal persons (with the exception of non-profit organizations composed of farmers) whose primary goal is the joint sale of agricultural products of group members. The goals of producer group include enhancing farmer cooperation and association, raising agricultural activity revenue, improving agricultural economic performance and competitiveness, lowering production costs, stabilizing producer prices, and raising exports of agricultural goods (FAO 2020).

However, despite the enactment of cooperatives and supporting policies, which was by Millns (2013) described as "quite well-developed legal framework", World bank report (2016) states, that in general agricultural policies primarily focus on large farms and, to a lower extent, on small farmers with commercialization ambitions. Hence, for an individual farmer to reach some government subsidy, cooperatives and associations possess advantages they cannot compete with. Production and entrepreneur cooperatives

are supposedly the most favored by farmers among all the kinds of collaboration in use (FAO 2020).

As of 2015, there were 2,058 registered cooperatives in the country, accounting for 0.5% of all agricultural holdings, utilizing 6.5% of the agricultural land (JICA 2017). Although it is important to point out that according to Ignat at al. (2017) there is a significant statistical gap in the official statistics on the growth of cooperatives in Moldova. This could be partially explained by AGROinform, an agency working with United States Agency for International Development (USAID) on various projects enhancing agriculture cooperation. AGROinform stated that the number of cooperatives was increasing during the time of the projects. However, once the financial support was stopped, majority of cooperatives ceased to exist (JICA 2017).

The small percentage of cooperatives could be also caused by number of obstacles linked to poor rural infrastructure such as roads, energy, irrigation and residential water supply, education, and waste collection (Millns 2013). Among other factors are lack of capital, investments, and credit availability (Ignat et al. 2017). Also, inadequate subsidy programs and poor agriculture insurance market (UNEP & MoEN 2016) lead to usage of low yield technologies and reduction of agriculture inputs (Ignat et al. 2017). For instance, an improper application of chemical fertilizers has a detrimental impact on the quantity and quality of agricultural output (UNEP & MoEN 2016).

Besides the structural and economic obstacles, there are also challenges linked to post-soviet legacy, such as the mentality of people that still closely associates cooperatives with kolkhozes (Ignat et al. 2017). This persists after more than fifty years of coerced cooperation. Independence and private land ownership still have an impact on governments, farmers, and rural residents' mindset; therefore, many people continue to have doubts about cooperatives and cooperation (Millns 2013). Among other consequences are the lack of trust between cooperative members, the necessity of continuous effort to persuade people to cooperate, the challenging process of establishing a common vision and objectives of the cooperative, and the absence of leadership and manager skills (Ignat et al. 2017). Millns (2013) argue that to develop cooperative organizations, farmers and rural communities must be included in the decision-making processes that affect their livelihoods. Their participation in all levels of financial, policy, and strategy management shall also be institutionalized.

## 2.2. Organic agriculture in Moldova as an example of agricultural innovation and modernization

In this research organic farming is used as a proxy for innovation and a new, open-minded approach among smallholder farmers. This theory is firstly based on definition of organic agriculture provided by MacRae at al. (1990) and adapted by Henning at al. (1991). They argue that organic agriculture is not only a system of farming, but also a philosophy founded on values reflecting ecological and social realities, and the capacity of an individual to act. Secondly, it is perceived as beliefs and values of farmers' personal characteristics, which influence their decision – whether or not practice organic agriculture (Egri 1999). Points mentioned above assume characteristic differences between organic and conventional farmers.

Research done by Duram (1999) showed, that organic farmers are generally open to new ideas and concepts, they also embrace the difficulty of organic farming as it requires their initiative and new agriculture methods. They enjoy the challenge organic farming provides and appear to like being unconventional. These farmers are usually younger, have higher education and come from urban areas (Egri 1999; Rigby et al. 2001; Läpple 2013). According to Duram (1999) organic farmers are less likely to have a formal agriculture education. Based on several studies (Egri 1999; Läpple 2013) women have higher environmental concerns and are reported to include more alternative agriculture practices (Egri 1999).

As for their personal characteristics, they have a higher level of environmental awareness (Egri 1999; Flaten et al. 2006; Läpple 2013), are used to obtain relevant information from more sources rather than extension agents, (Egri 1999) and are willing to risk more than conventional farmers (Duram 1999; Burton et al. 2003; Läpple 2013). Compared to conventional farmers, organic farmers are subject to additional and distinct sources of risk. For example, production risk is influenced by restrictions on the use of pesticides, fertilizers, synthetic drugs, and feed purchases. These factors lead to smaller organic markets have more volatile prices among others. Based on study of dairy farmers in Norway, organic farmers perceived themselves as less risk averse than conventional farmers (Flaten et al. 2005). Lastly, conventional farmers reportedly care more about the economic benefits than conventional farmers (Egri 1999; Läpple 2013). According to Kaliyeva et al. (2020) farms selling products to the market with a clear business

orientation are expected to be less likely to join or create a cooperative, whereas rural households in need of assistance (e.g., loan, subsidy) are expected to be more interested in joining or creating a cooperative.

In Moldova the agricultural and agro-processing sectors play a vital role in the country's economy; however, these industries have been found to have a detrimental impact on the environment, resulting in the degradation of ecosystems and a loss of biodiversity. Moreover, they contribute to the depletion of natural capital and exhibit substantially lower crop yields in comparison to neighbouring countries (Gerciu & Rundgren 2020). The implementation of organic agriculture can enhance both environmental protection and food security (Läpple 2013). The proportion of organic agriculture globally is progressively rising, as reported by Willer et al. (2021). Similarly, according to MOVCA (2021), the trend is observable in Moldova. However, several studies (World bank 2016; Gerciu & Rundgren 2020; MOVCA 2021; Invest Moldova Agency 2022; FAO 2022) have highlighted the unfulfilled potential of organic agriculture in Moldova.

Moldova possesses several essential prerequisites for the development of organic agriculture, such as favourable conditions for cultivating a diverse range of ecologically and organically valuable crops, one of which are fertile soil conditions (Invest Moldova Agency 2022). Majority of Moldovan farmers utilize very modest amounts of chemical fertilizers and pesticides, which would make the potential move to organic farming practices simpler (JICA 2017; Gerciu & Rundgren 2020). Moreover, commercial farmers are willing to implement organic farming, although they need assistance and practical skills for efficient management of organic farms (JICA 2017).

According to Government Decision No. 455/2017, financial assistance is provided to all farmers who are registered in the organic farming system to support the promotion and development of organic farming. This assistance is given as compensation for income losses and additional expenses imposed by beneficiaries who enter voluntary commitments and agree to remain in this system of agriculture for a period of five years (MOVCA 2021). Even though the government's assistance has been steady, Gerciu and Rundgren (2020) argue that the approach should be more strategic and inclusive. An initiative in form of organic marketing law and its implementing regulation for promoting organic production was launched by the government in 2006 with the goal of developing environmentally friendly and competitive agriculture in Moldova (Gerciu & Rundgren

2020; Invest Moldova Agency 2022). Regulations on ecological principles and practices of processing organic food production, a field inspection and certification system, and organic food items for import and export were all recently adopted as part of legislation that was aligned with EU criteria (Invest Moldova Agency 2022). Moldova has nine inspection and certification organizations that are accredited by the European Commission and operate in accordance with European Regulation 834/2007 (MOVCA 2021).

MOVCA (2021) reports that, despite a decrease in the number of organic operators from 152 to 144 in 2020, the statistical data indicates a growth in the certified organic area compared to previous years. Specifically, the area increased from 28,547 hectares to 29,352 hectares (Invest Moldova Agency 2022). This increase is attributed to small operators merging with larger ones to achieve a greater sustainability and competitiveness in the market (MOVCA 2021) which correlates with land consolidation trend described in chapter 2.1.3. Among other causes are barriers, such as lack of management capabilities, infrastructure, investments, the structure of subsidies (which are prone to changes), a poor access to agricultural inputs, and overall lack of public awareness about organic farming (Gerciu & Rundgren 2020). Despite these challenges, MOVCA (2021) states there have been a steady rise in the number of farmers searching for chances to expand and improve organic farming. These farmers are able to quickly obtain information about current trends, financial opportunities, and certification also thanks to successfully formed partnerships among regional organizations. Nevertheless, this rather positive evaluation can be caused by general difference between organic farmers and their conventional counterparts (Flaten et al. 2010; Läpple 2013).

## 2.3. Factors influencing farmer's willingness to join cooperatives

Farmer's decision to join a cooperative is based on number of factors. Factors that directly or indirectly influence farmers decision are divided into several categories and are pictured in Figure 1.
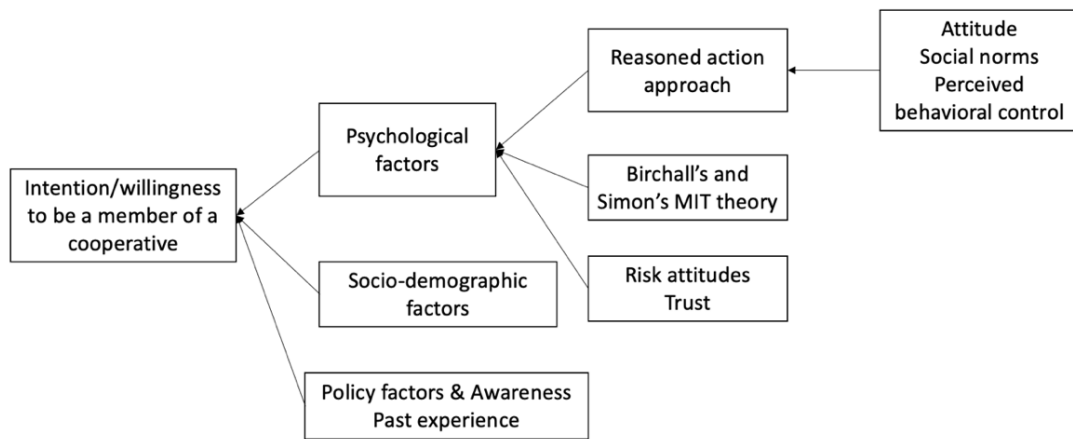
**Figure 1: Factors influencing farmer's willingness to join cooperatives**

## 2.3.1. Psychological factors

### 2.3.1.1. TPB & RAA

Throughout the years, number of theories were developed to explain individuals' behavior. Gibbons at al. (1998) argue that most concepts of attitude-behavior assume that the decision to engage in a particular behavior is the result of a rational, goal-oriented process that follows a logical sequence. Meaning that behavioral options are reviewed, outcomes of each are assessed, and a decision is taken to act or not act. That choice is commonly referred to as behavioral intention. Because all behaviors require premeditation or planning, the only direct cause of a given action is the individual's intention to engage in that activity, according to one key principle of these rational methods.

This approach is common to a variety of social psychological theories, however the two most influential theories in predicting behavior are Theory of planned behavior (TPB) and its update theory of Reasoned action approach (RAA). These concepts emphasize the premise that an individual's goals and behavior may be influenced not only by socio-demographic factors but also by psychological characteristics. These include an individual's own perceptions of what the behavior outcome would be; barriers/difficulties including present habits to behave in a certain way and the impact of others on one's choice process (Kaliyeva et al. 2020).

Gibbons et al. (1998) proposed that unlike measures of intentions or behavioral expectations, a measure of willingness is somehow capable of capturing nonintentional, irrational influences on behavior. However, Fishbein and Ajzen (2010) pointed out

Gibbons at al. (1998) did not assume that willingness is a better predictor than behavioral intention or behavioral expectation, only that a measure of willingness adds a significant amount of unique variance to the prediction of behavior (Fishbein & Ajzen 2010).

Therefore, measures of willingness, according to Gibbons (1998), were different from measures of intentions or behavioral expectations because they reflected non-intentional, reactive, and irrational influences on behavior. Fishbein (2008) hence argued, given how "willingness" was measured in their study, the concept of willingness characterized by Gibbons is quite unrealistic (Fishbein 2008).

Accordingly, number of authors used TBT or updated RAA as a base for their research in predicting certain behavior or willingness (Zhang et al. 2006, 2021; Möllers et al. 2018; Kaliyeva et al. 2020). Zhang at al. (2021) argues that because the TPB model is reflecting the impact of personal attitudes and perceptions of a specific behavior on individual behavioral motivation, this theory can be explained as reflecting an individual's willingness to change their attitudes and behavioral norms in response to a perceived circumstance that brings corresponding rewards. Moreover, it takes into consideration the influence of involuntary factors, which original theory of Reasoned action ignored (Fishbein & Ajzen 2010).

Accordingly, number of authors used TBT or updated RAA as a base for their research in predicting a certain behavior or willingness (Zhang et al. 2006, 2021; Möllers et al. 2018; Kaliyeva et al. 2020). Zhang et al. (2021) argues that because the TPB model is reflecting the impact of personal attitudes and perceptions of a specific behavior on individual behavioral motivation, the theory can be explained as reflecting an individual's willingness to change their attitudes and behavioral norms in response to a perceived circumstance that brings corresponding rewards, moreover it takes into consideration the influence of involuntary factors, which original theory of Reasoned action ignored (Fishbein & Ajzen 2010).

Since the late 1970s, Martin Fishbein and Icek Ajzen developed the theories of reasoned action and planned behavior on its most recent version called the reasoned action approach, it became one of the most influential approaches to predict and understand intentional behavior (Ajzen 1991; Gibbons et al. 1998; Fishbein 2008; Fishbein & Ajzen 2010; Hagger 2019).

The theory of reasoned action was the first version of the theory, with intention as its central construct. Motivational construct was considered the most defining factor of a

behavior. Intention reflects how likely an individual is to plan to do and invest effort in pursuing a given behavior. Attitudes and subjective norms were defined as two belief-based constructs that influence intention (Ajzen 1991; Gibbons et al. 1998; Hagger 2019). Ajzen modified the theory of reasoned action to account for behaviors that were not entirely under the individual's control. The TPB added perceived behavioral control (PBC) as a predictor of intentions. In situations where individuals' perceptions of control closely reflect actual control, PBC would determine the strength of the Intention-Behavior Relationship. Individuals were more likely to act on their intentions when they perceived they had a high level of behavioral control (Ajzen 1991; Madden et al. 1992; Fishbein 2008; Fishbein & Ajzen 2010; Hagger 2019). Intention reflects how likely an individual is to plan, do and invest an effort in pursuing a given behavior. Attitudes and subjective norms were defined as two belief-based constructs (Ajzen 1991; Zhang et al. 2021). However, the TPB has been criticized for its lack of consideration of moral factors, which reflects people's perception of the moral correctness of behavior options (Zhang et al. 2021).

Both TPB and RAA put an emphasis on combination of psychological and demographical characteristics that influence individual's intentions (Fishbein 2008; Fishbein & Ajzen 2010). The RAA extends the TPB by differentiating between different subcomponents of the attitude, subjective norm, and perceived behavioral control constructs in the theory of planned behavior (Fishbein & Ajzen 2010; Hagger 2019)gFigure 2 pictures a schematic presentation of reasoned action approach. Fishbein and Ajzen (2010) assume that human social behavior follows reasonably and often spontaneously from the information or beliefs people possess about the behavior under consideration. They differentiate three kinds of beliefs: behavioral, normative and control beliefs. Behavioral beliefs are either positive or negative consequences people believe they would experience if they performed some behavior. Normative beliefs reflect what one thinks to be the social norm in terms of certain behavior. The normative beliefs produce a perceived role which is perceived social pressure to engage or not to engage in the behavior. Lastly, control beliefs are about personal and environmental factors that can help or impede their attempts to carry the behavior. Hence perceived behavior control refers to the perceived difficulty of performing specific behaviors and attitude refers to an individual's positive or negative assessment of behavior possibilities, as well as the individual's opinion and evaluation of the anticipated outcomes of the behavior (Ajzen

1991; Fishbein & Ajzen 2010; Zhang et al. 2021). As a rule, the more favourable the attitude and perceived norm, and the greater the perceived behavioral control, the stronger should be the person's intention to perform the behavior in question (Fishbein & Ajzen 2010).
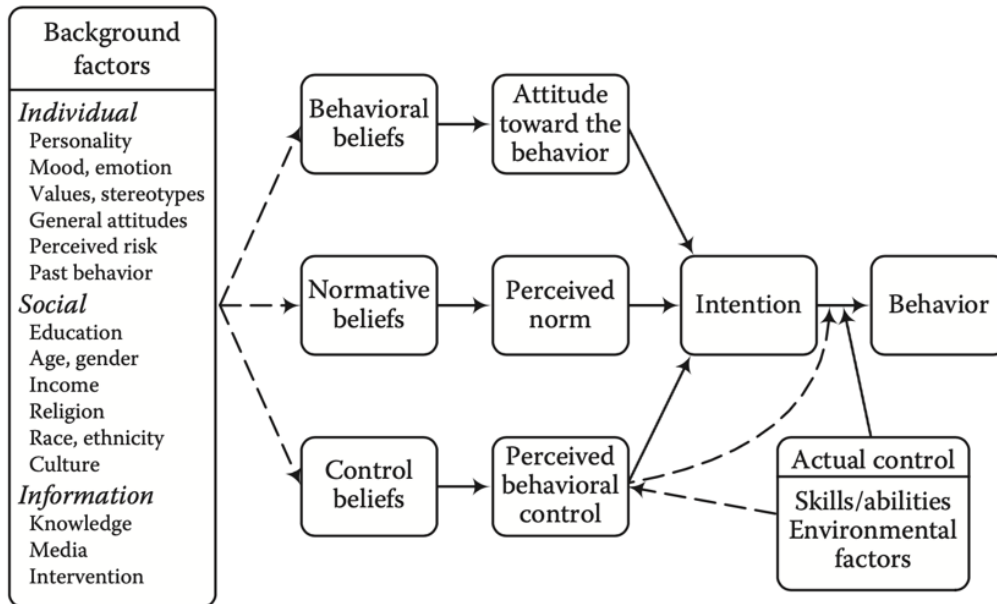


**Figure 2: Model of Reasoned Action Approach (Fishbein & Ajzen 2010)**

Even though intention is the best indicator of a behavior, it is essential to consider skills and abilities, as well as environmental factors, because only that approach would not address the origin of the beliefs (Fishbein & Ajzen 2010). Fishbein and Ajzen (2010) state number of variables can potentially influence the beliefs that people hold and incorporated them into the framework: age, gender, ethnicity, socioeconomic status, education, nationality, religious affiliation, personality, mood, emotion, general attitudes and values, intelligence, group membership, past experiences, exposure to information, social support, and coping skills. Whether a given belief is or is not impacted by a particular background factor is an empirical question and needs to be considered with theory guiding the selection of behavioral domain of interest. In Chapter 0 and 0 are some of the variables described in the context of our research.

### 2.3.1.2.          Birchall's and Simons' MIT

Another influential theoretical model on farmer's motives to participate in cooperative was constructed by Birchall and Simmons. The authors synthesized sociological and political theories and developed Mutual Incentives Theory (MIT) of motivations to participate.

The MIT analyses two social-psychological theories of motivation called the individualistic and collectivistic approach. The individualistic approach takes the premise that people are driven by individual rewards and punishments and gives a set of generalizations about how they interact. On the other hand, the collectivistic approach analyses human behavior differently, assuming three variables can encourage participation: shared goals – when people express mutual needs that translate into common goals, shared values – when people feel a sense of duty to participate as an expression of common values, and the sense of community – when people identify with and care about other people who either live in the same area or possess similarities with them in some respect. The collectivistic approach assumes that the greater the presence of each of these three variables, the more likely individuals are to participate (Birchall & Simmons 2004a).

Birchall and Simmons (2004) argued MIT cannot explain people's motives on its own and proposed a model called the Participation chain that expands MIT. It consists of three levels. The first level considers resources and capacities of potential participants, such as time, money, skills, and confidence. Next level recognizes mobilization of participants, within which number of factors was looked at. For example, certain 'catalysing issues' draw certain people more strongly than others (e.g., "the cooperative is not listening to people like me"). Another factor to consider is the creation and promotion of opportunities, specifically in terms of attractiveness, timeliness, and relevance of opportunities hence important in mobilisation. Last factor to consider is recruitment efforts, because "being asked" is frequently cited as an important aspect in mobilizing participants. Finally, the third link in the chain is contributed by members' motivations to participate. It is important to note that, while the three levels are linked, the chain model is not sequential. As a result, characteristics at each of the three levels affect the possibility that members will participate independently (Birchall & Simmons 2004a).

### 2.3.1.3.      Trust

Beside the theory of RAA, and Birchalls and Simmons' Participation chain theory, number of studies emphasized "trust" as an influential factor on willingness to join (Zhang et al. 2006; Martey et al. 2014; Droždz et al. 2021). The factor of trust in Moldovan context is particularly important due to this country's history. The transition to a market economy in agriculture was marked by a lack of trust due to the absence of the previously established structures. Several comparable, former communist regime countries are found to have similar problems (JICA 2017).

Research investigating trust in political institution conducted in nine former Soviet Union countries, between years 2001 and 2010/2011 indicated that the lowest level of institutional trust is in Moldova (McKee et al. 2013). Low levels of public tolerance, trust, and civic engagement were also discovered in other part of the research focused on civil society development. They also found little evidence to back up the claim that participation increases public trust and tolerance among the mass public (Bădescu et al. 2004).

However, the same research done by Mckee et al. (2013) highlighted that people in rural areas trusted more in individuals and less in institutions than those in towns and cities. Therefore, suggesting possible advantages while forming cooperatives in rural Moldova. Nevertheless, trust was the most frequently mentioned reason for leaving a cooperative. Among other reasons were lack of effective communication and mutual support between cooperative members (Ignat et al. 2017).

This can be explained by Guinot and Chiva (2019) who claim that the significance of trust had been proved to enhance cooperation and healthy teamwork, improve communication and employee satisfaction, create more positive attitudes, facilitate organizational citizenship behavior, and increases task, group, and organizational performance. Because in addition to joining a corporate organization, the individual also joins a social association and therefore, interpersonal relationships within a group are essential (Draheim 1955; Bakucs et al. 2012; Möllers et al. 2018). According to Bakucs (2012) cooperatives are even sometimes referred to as "organized trust," which could make a difference in whether they succeed or not.

Trust can be either vertical – meaning trust in the government, institutions and municipal authorities, or horizontal – meaning trust in other people, for example neighbours or friends (Zhang et al. 2006). Besides trust as a crucial factor for cooperatives

to be effective in managing human relations, members must have better knowledge and confidence in one another (Røkholt 1999). Fulton (1999) adds commitment into the essential determinants of success of cooperative and argues that without it, so called "free riding" problem can arise. It occurs when some members would choose to sell their product outside of cooperative for better price and therefore benefiting from endeavours and investments of others (Penrose-Buckley 2007).

Additionally, studies showed importance of reciprocity. People are reciprocal if they reward acts of kindness and condemn malicious actions (Falk & Fischbacher 2006). Experiments have revealed that preferences in reciprocity are a key aspect in successful collective action. A previous experience with reciprocity is especially relevant in understanding current behavior (Ostrom 2000; Lubell & Scholz 2001).

However, those aspects are difficult to capture in a structured survey (Ostrom 2000; Lubell & Scholz 2001; Fischer & Qaim 2014). For example, study done by Jensen-Auverman et al. (2018) investigating how is trust impacting the relations in rural cooperatives analysed 7 main variables: trust, commitment, obligation, transparency, service quality, communication, and age. Study carried out by Fischer and Qaim (2014) assessed trust indirectly, by indicating whether farmers belong to social groups such as church associations, self-help groups, or savings clubs. Their hypothesis assumed that membership in social group was a suitable proxy for trust, because those groups were built on trust and social ties. Social group membership enhanced the likelihood of active engagement in the first stage, which was related to positive attitudes toward collective action and higher levels of trust. This impact, however, was reversed in the second phase. Members who are also engaged in social groups may have less time to attend meetings on a regular basis (Fischer & Qaim 2014).

### 2.3.1.4.        Risk attitudes

The precise impacts of joining a cooperative are uncertain (Zhang et al. 2019). Hence, it is assumed that farmer's decision to join a cooperative would be influenced by their risk attitudes, with risk-averse rural households being less likely to change the status quo. It is vital to emphasize that cooperative membership provides access to input and product markets, implying a risk reduction on the members' behalf. Therefore, it is crucial to consider if people's views regarding risk influence their decision to join in collective action (Kaliyeva et al. 2020).

Risk and uncertainty are important in every economic decision and understanding individual's attitudes towards risk can predict economic behavior (Dohmen et al. 2011). Research done by (Kaliyeva et al. 2020) reported that perceived social roles and household risk attitudes played a significant role in farmer's intention to participate in collective action. Another research done by Dohmen at al. (2011) revealed evidence that variables such as gender, age, height, and parental background were important in explaining differences in risk attitudes. More specifically, according to the research, women are less willing to take risks in general and willingness to risk as such decreases with age.

### 2.3.2. Socioeconomic factors

Socioeconomic factors represent another cluster of variables that influence farmers' willingness to join cooperatives. They refer to the social and economic conditions that can affect individuals' decisions and behaviors.

Farmers' age is theorized to influence their decision to join cooperatives, either positively or negatively. Previous research conducted in Ethiopia using a quantitative approach has demonstrated a significant positive relationship between farmers' age and their willingness to join cooperatives (Chagwiza et al. 2016). Older farmers were found to be more familiar with marketing channels and were more likely to choose lower-risk cooperative partnerships over other marketing agreements, indicating a positive influence of age on farmer membership in cooperatives. Contrarily, younger farmers who may have inherited their farms from their parents and sell to the same marketing channels as their parents may be negatively influenced by age (Jitmun et al. 2020).

In a study conducted by Kaliyeva et al. (2020) in Kazakhstan, nationality was identified as a significant determinant of farmers' willingness to join cooperatives. The study highlighted that individuals from different nationalities may have diverse interests and opportunities, suggesting that policies should be more inclusive. Furthermore, the results showed that Kazakh nationals were more inclined towards managing social processes in the country. Considering the presence of numerous ethnic minorities in Moldova, exploring the role of nationality in farmers' cooperative membership could be an intriguing area for investigation.

Sex is predicted to have a substantial impact on participation. In meta-analytic review of social dilemmas in sex differences in cooperation (Balliet et al. 2011) is argued

that despite the widespread belief that women are more cooperative and compassionate compared to men, there is inconsistent evidence to support this notion. The authors suggest that the level of cooperation can be influenced by contextual factors, leading to a situation where women may be more cooperative in some instances, while men may be more cooperative in others. Fischer and Qaim (2012) agree that depending on the social environment, the nature of the group activities, and the rights that women have inside the groups, collective action can possess a variety of effects on gender roles.

For instance, Martey et al. (2014) claims that males are expected to be more inclined to participate than females, because female farmers frequently lack access to agricultural resources, which limits their engagement in social and innovation platforms. That is supported by study done in Ethiopia which revealed people joining agriculture cooperatives are usually male households' heads (Nugussie 2010). Contrary to those findings, based on evidence from Lithuania, women are more likely to participate in social and cultural events (Drože̊dz et al. 2021). Diversely, Fischer and Qaim's (2012) research conducted in Kenya did not reveal any correlation between gender and group membership. Inconsistent results suggest importance of given context. Balliet et al. (Balliet et al. 2011) concluded results of their review followingly; women exhibited greater cooperation in social dilemmas involving both sexes, while men tended to display less cooperation due to a desire to demonstrate social dominance to potential mates, as suggested by an evolutionary perspective. In same-sex groups, however, men were found to be more cooperative.

As stated in research done by Kaliyeva et al. (2020) highly educated rural households were less likely to form a cooperative. The authors argue it might be because agriculture in Kazakhstan is unappealing from a social standpoint, therefore highly educated rural households were pursuing more prestigious and well-paid jobs to maintain their social position. These finding are supported by other studies (Bednaříková et al. 2016). However, several studies have found a positive relationship between education and desire to engage in cooperatives (Ahmed & Mesfin 2017; Zhang et al. 2019; Jitmun et al. 2020). According to study in Finland the education level of the members influences their participation frequency (Xiang & Sumelius 2010).

The price received for products is a major motivator for farmers' decisions about production system organization, commercialization, and participation in collective action (Hernández-Espallardo et al. 2013). Individual farm producers are frequently motivated

to organize or to join cooperatives to enhance farm-gate prices in the event of failures in the input supply and output demand markets. In theory, by pooling commodities, organized farm producers gain negotiating strength allowing them to command higher farm-gate prices than non-organized farm producers (Grashuis & Ye 2019). Cooperatives can influence product prices through a variety of mechanisms, including increasing market power, achieving higher levels of vertical integration, or playing a role in knowledge dissemination or quality control, resulting in quality improvement. (Chagwiza et al. 2016).

In research done in Thailand was hypothesised that the main source of income from farming influences farmers' desire to join cooperatives because farmers whose primary source of income is farming work on various scales, however, the results did not confirm the hypothesis (Jitmun et al. 2020).

Farmers' decision to join a cooperative is also thought to be influenced by their proximity to the market. The closer the markets are to the farms, the lower the transportation costs and losses due to spoilage. Longer distances relate to higher transportation expenses; however, the probability of cooperative membership, particularly among smallholder farmers, is higher because the costs are shared among the members (Bardhan et al. 2012; Jitmun et al. 2020).

Other factors inspired by research of Möllers et al. (2018) include farm registry and farm experience. Farming experience is considered to have a positive impact on farmers' willingness to join a cooperative. More experienced farmers are more likely to make wise judgments and foresee the benefits of cooperatives (Gupta & Roy 2012; Jitmun et al. 2020). It is noteworthy that the correlation between farming experience and group membership was negative in study done in Kenya, indicating that farmers with greater experience preferred to work alone, possibly due to their increased proficiency in production and marketing methods (Nyambune Maindi & Lucy Wangare 2021). There are numerous ways to collaborate; individuals may collaborate informally within families and among friends, or formally through producer groups, associations, or agricultural service cooperatives that are registered as legal entities to run a business. Formal registration is required to engage in economic life efficiently, hence farm registry is considered a prerequisite to join a cooperative (Möllers et al. 2018).

Lastly, number of investigations proved farm size as influential characteristic in decision making process. According to Fischer & Qaim (2014) farmers with larger farm

size are less likely to join, because they can already economize transaction cost and have economies of scale. Moreover, large-scale farmers with considerable assets and purchasing power will be hesitant to join cooperatives since they may purchase farm inputs directly from factories or vendors at lower rates than the cooperative. Meanwhile smallholder farmers are more likely to join cooperatives since they can provide them with services such as enhanced bargaining power and finance (Jitmun et al. 2020).

### 2.3.3. Past experience

Past experience also potentially influences farmers willingness to join agriculture cooperative. Farmers' perspective on past regime is incorporated into the analysis to determine whether farmer's intention to join a cooperative is related to the past. In essence, whether despite nearly 30 years since the collapse of kolkhozes people's willingness to join cooperative correlates with their opinion of country's governance history (Kaliyeva et al. 2020).

For instance, in another post-socialistic country, Romania, after the regime change, the experience of forced collectivization during the communist period led to a rejection of formal forms of cooperation (Möllers et al. 2018). However, research done by Kaliyeva at al. (2020) in Kazakhstan, did not find any correlation of past experience on farmer's motivation to join a cooperative, despite expecting it to be essential determinants of their final decision.

### 2.3.4. Policy factors and awareness

Policy factors represent over-all political situation with focus on the national legislation, institutional factors, and international donors' activities, depending on site location and awareness of farmers of current policies and options. Sultana at al. (2020) emphasised factor of external support, such as training, credit services, farmers' awareness of the options and ability to reach them, and their impact on decision to function as cooperative or non-cooperative farmers.

Farmer's awareness of the current enabling policies and understanding the basic principles and function of agriculture cooperatives is crucial in their decision-making process and management of farm, therefore it is relevant to this investigation (Bukchin & Kerret 2020; Sultana et al. 2020). Farmers' decisions to join could be influenced if they're

well informed about the consequence, advantages, and disadvantages. Consequently, it is thought that the more aware rural households are, the more likely they are to join a cooperative (Kaliyeva et al. 2020).

# 3.        Aims of the Thesis

Agricultural cooperatives have long been recognized as an effective mechanism for promoting the economic growth of small farmers, particularly in transition and developing countries. International organizations and governments have invested significant resources in supporting their development. While the benefits and constrains of agricultural cooperatives are well-established, there is still much to be understood about the willingness of farmers to give up some of their autonomy and join such groups. Therefore, this study aims to explore the factors that influence farmers' decisions to join or not to join such organizations.

The findings of this study will help to inform the development of policies and strategies that can promote the growth of agricultural cooperatives in a way that is responsive to the needs and preferences of farmers.

The specific objectives are the following:

1. To analyse how the political environment influence farmer's willingness to join cooperatives.
2. To analyse specific potential factors that influence willingness of farmers to join cooperatives.
   The size of the farm, sex, education, and whether the farm operates as an organic farm are expected to be the most influential factors. To understand the interplay among all factors the remaining variables will be subjected to analysis using Structural Equation Modelling (SEM).

Based on research (Fischer & Qaim 2014; Martey et al. 2014; Ahmed & Mesfin 2017; Zhang et al. 2019; Jitmun et al. 2020; Kaliyeva et al. 2020) hypotheses for objective two are following:

$H2_a$ *Farmers with larger farm size are less likely to give up their autonomy and join the cooperatives, because they already have better bargaining position on the market and reach sufficient economies of scale.*

$H2_b$ *Organic farmers are more likely to join cooperatives because we can assume they are more innovative and pro-export oriented. Thus, searching for ways how*

*to increase economies of scale, reduce the transaction costs, and improve the quality.*

**H2$_c$** *Male farmers are assumed to be more inclined to participate than females.*

**H2$_d$** *There is a positive relationship between education and desire to engage in cooperatives.*

# 4.       Methods

The study is based on quasi-experimental design, because it was not possible to randomly manipulate members to groups/not groups as it is feasible in full experimental design. In quasi-experimental design the manipulation of independent variables to observe the effect of dependent variable is not viable (Luellen et al. 2005).

The methodology is primarily based on theory of planned behavior (TPB). To include psychological factors that influence the decision of farmers whether join agriculture cooperatives, the reasoned action approach (RAA) is incorporated as well (Fishbein & Ajzen 2010). It has been widely used across different fields, including agriculture to explain human behavior (Fishbein 2008). Inspired by Kaliyeva (2020) RAA is expanded to other factors that influence the decision-making process, such as trust, opinions on past regime, referred to as "past experience", over-all political situation with focus on the national legislation and international donors' activities, as well as risk attitudes. Those factors, among others, have been proven influential in cooperative behavior (Möllers et al. 2018; Jensen-Auvermann et al. 2018). The research also analyses both driving forces and barriers to join the cooperatives.

## 4.1.       Operationalization of the research

The dependent variable is a binary variable that represents the willingness to be a member (1) or not (0). The independent variables are divided into six categories: socioeconomic, psychological, trust, risk attitudes, past experience, policy and awareness. The reasons for the variables believed to influence farmers' membership in cooperatives are describe in chapter 2 Literature Review.

To ensure accuracy and reliability of the data, some variables were excluded from the analysis. Variable *total income* had been removed due to initial testing where the question proved to be too sensitive, and answers seemed to be inaccurate. Similar applies for *average price of output* and *gross margin from farm activities*, in initial testing the respondents often weren't aware of the answer, or stated unreliable numbers, which could have resulted in significant amount of missing data or in extreme values, which might have led to biased results.

Lastly, variable *nationality* become eventually insignificant since majority of respondents identified as Moldavians.

### 4.1.1. Impact of the political environment on farmers' willingness to join cooperatives

The variables for first objective are divided into two categories, in the Table 1 are listed sources for each variable. All variables were measured with 5-point Likert scale, where (1) meant yes and (5) no.

**Table 1: Relevant literature for variables from objective 1**

| Variables | Relevant literature |
|---|---|
| **Past experience** | |
| Farming during Soviet Union | (Kaliyeva et al. 2020) |
| Life during Soviet Union | (Kaliyeva et al. 2020) |
| **Policy and awareness** | |
| Training service and education access | (Jitmun et al. 2020) |
| Credit service access | (Jitmun et al. 2020) |
| Farm input service access | (Jitmun et al. 2020) |
| Governmental position towards cooperatives | (Niyazmetov et al. 2021) |
| What is cooperative | (Kaliyeva et al. 2020) |
| Principles of cooperative | (Kaliyeva et al. 2020) |
| Advantages/disadvantages of cooperative | (Kaliyeva et al. 2020) |

### 4.1.2. Potential factors influencing farmers' willingness to join cooperatives

The main variables for objective two were: *sex, level of education, organic farm, farm size* and *main product*. They were selected based on literature review, sources for each variable are displayed in Table 2. The variable *sex*, and *organic farm* are binary variables, where (0) was assigned to male and (1) to female and (1) to organic farmer and (0) to non-organic farmer. The organic farmer had to possess organic farm certificated to be recognized as an organic farmer. The variable *main product* was a nominal, open question.

**Table 2: Relevant literature for variables from objective 2**

| Variables | Relevant literature |
|---|---|
| Independent – Socioeconomic | |
| Sex | (Möllers et al. 2018), (Kaliyeva et al. 2020) |
| Level of education | (Jitmun et al. 2020), (Kaliyeva et al. 2020) |
| Organic farm | |
| Farm size | (Möllers et al. 2018), (Fischer & Qaim 2014) |
| Main product | |

Variables *size of the farm* was measured according to intervals displayed in Table 3, due to mixed types of farms, where farmers referred to either hectares, number of bee haves or number of animals. To standardize those types of farmers, the intervals were designed based on commonly accepted intervals.

**Table 3: Intervals for measurement of variable size of farm**

| | hectares | haves | heads |
|---|---|---|---|
| Very small – 1 | > 2ha | >10 | >10 |
| Small – 2 | 2,1ha - 10ha | 10,1 – 20 | 10,1-50 |
| Medium – 3 | 10,1ha - 50ha | 20,1-100 | 50,1 – 150 |
| Big – 4 | 50,1ha - 100ha | 100,1-250 | 150,1 – 250 |
| Very big – 5 | more than 100,1 | <250,1 | <250 |

The variable *level of education* was a nominal open question, whose answers were later transformed into years in average spent at school. The detailed description is at Table 4.

**Table 4: Categories for variable Level of education with assigned years**

| Type of education | Number of years spent at school |
|---|---|
| Lyceum | 12 years |
| Vocational training | 12 (lyceum) + 2 years = 14 years |
| College | 12 (lyceum) + 4 years = 16 years |
| University | 12 (lyceum) + 6 years = 18 years |
| Ph.D. | 18 (university) + 4 years = 22 years |

The investigation of attitudes, social norms and PBC is inspired by research of (Kaliyeva et al. 2020) where the psychological factors that influence the decision of farmers whether to join agriculture cooperatives were formed through the RAA (Fishbein & Ajzen 2010). All those aspects are combined to form a behavioral intention (Kaliyeva et al. 2020).

Under the RAA, the respondent creates a specific attitude (A) about a behavior, and then assesses the relative importance to perform, or not to perform, the given behavior. As a result, following the RAA, a variety of statements were employed to

evaluate farmers opinions. The study used both formative and reflective questions to measure attitude. The questions were presented as doubled statements and were rated on a 5-point Likert scale. For the formative questions, participants were asked to indicate either "yes," "rather yes," "not sure," rather no," or "no," while for the reflective questions, they were asked to rate the importance of the statement on a scale from "not important" to "important." This was used to develop an indicator for attitude.

$$A = \frac{b_i + e_i}{2}$$

An A represents an individual's attitude towards a behavior, $b_i$ is a strength of a belief $i$ about a consequence of a behavior, $e_i$ is evaluation of belief $i$.

In research done by Kaliyeva et al. (2020), same approach of doubled statements was also applied to social norms and perceived behavioral control. We have modified the approach and for social norm (SN) used only formative questions. Where SN stands for individual's social norms towards a behavior and $m_i$ is motivation to comply with specific normative belief referred to by $i$.

$$SN = m_i$$

Lastly, PBC is defined as a factor that can influence a behavior directly or indirectly through an intention (Madden et al. 1992). Hence, under RAA, it is defined as control belief that is weight by power of control factors (Kaliyeva et al. 2020). We have again used only formative questions; hence the approach is following:

$$PBC = c_i$$

The PBC stands for perceived behavioral control and the $c_i$ for motivation which controls belief $i$. Consequently, according to RAA, formed and weighted attitudes (A), social norms (SN), and perceived behavioral control (PBC) are combined to form behavioral intention (Kaliyeva et al. 2020). While the RAA approach used doubled statements for attitude, social norms, and perceived behavioral control, we only used them for attitude in our study. This decision was made to increase validity, as we believed that attitude was the most important construct.

In the Table 5, beside psychological factors representing RAA approach are displayed additional variables from socioeconomic, trust and risk factors with relevant literature sources.

**Table 5: Relevant literature for remaining variables from objective 2**

| Variables | Relevant literature |
|---|---|
| **Socioeconomic** | |
| Age | (Jitmun et al. 2020), (Chagwiza et al. 2016), (Möllers et al. 2018) |
| Farming experience | (Jitmun et al. 2020) |
| Main income | (Jitmun et al. 2020) |
| Farm subsidies | (Möllers et al. 2018) |
| Farm registry | (Möllers et al. 2018) |
| Distance to market | (Martey et al. 2014) |
| **Psychological** | |
| Attitude | (Kaliyeva et al. 2020), (Ajzen 1991; Gibbons et al. 1998; Fishbein 2008; Fishbein & Ajzen 2010; Hagger 2019) |
| Social norm | (Kaliyeva et al. 2020), (Ajzen 1991; Gibbons et al. 1998; Fishbein 2008; Fishbein & Ajzen 2010; Hagger 2019) |
| Perceived behavioral control | (Kaliyeva et al. 2020), (Ajzen 1991; Gibbons et al. 1998; Fishbein 2008; Fishbein & Ajzen 2010; Hagger 2019) |
| **Birchall's theory** | |
| Individualistic & collectivistic behavior | (Birchall & Simmons 2004a, 2004b) |
| **Trust** | |
| Horizontal trust | (Zhang et al. 2006), (Jensen-Auvermann et al. 2018) |
| Vertical Trust | (Zhang et al. 2006) |
| **Risk attitudes** | |
| Risk attitudes | (Dohmen et al. 2011), (Kaliyeva et al. 2020) |

## 4.2.         Study area

The research covers the whole Republic of Moldova. It is an Eastern European republic bordering by Romania on the west and southwest, and Ukraine on the north, south, and east. According to National Bureau of statistics there is 2,6 million inhabitants in 2022 (Cemirtan et al. 2022). Majority of its population lives in rural areas and the agriculture industry employs close to 32% of the overall population (O'connell & Kiparisov 2018). Moldova is one of Europe's most prolific agricultural regions due to its fertile soil and moderate continental climate. The exceptionally rich chernozem soil supports wheat, corn, barley, tobacco, sugar beet, and soybeans and covers 75% of the agricultural land. Common is beekeeping, beef, and dairy cattle, wine industry as well as

variety of horticulture goods, including sunflower seeds, walnuts, apples, and other fruits. This makes the region perfect for food processing and agriculture (Millns 2013).

## 4.3.        Study sample

Target group of this research were farmers owning agriculture business, who were not members of any cooperative. Final sample size was 208 respondents, from which 120 were willing to join cooperative and 88 were not willing to join.

According to sample size calculator ideal sample size would be 384 respondents in order to have 95% of confidence level, counting with 900 000 population size. Population size was estimated based on results of the most recent General agriculture census 2011, where 902 214 agricultural holdings were registered, from which 0,4 agriculture firms had juridical status, making 99,6 % of agricultural holding owned by physical persons (National bureau of statistics & FAO 2014). Defining agriculture holdings as a technical-economical entity of agricultural production under a single management that uses agricultural land to carry out agricultural activities as either the primary or secondary purpose (Spoială et al. 2011). It is probable that population size is smaller than it was in 2011, as country's statistics from 2022 confirm rapid population decline (Cemirtan et al. 2022). Additionally, last agriculture survey was conducted in 2011, and from the data is clear that total number of farms is declining while, total size of farm is growing, pointing out the results of farm consolidation efforts the government is supporting are not considered (World bank 2016; FAO 2022).

The sample size is not statistically representative; however, the respondents are equally distributed over the country, creating representative distribution, which is an important factor sample size calculation.

The respondents were chosen using a non-probability sampling technique, namely the convenient technique, which can help to ensure generalization to larger population. In the Figure 3 is visible distribution of all respondents.
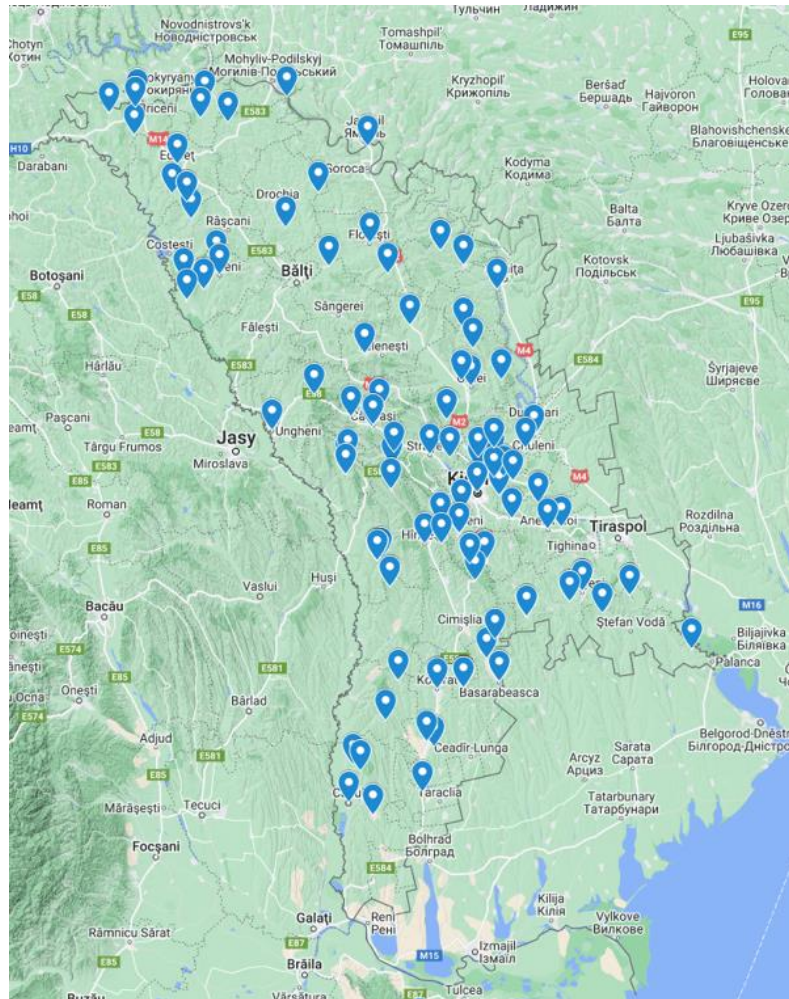
**Figure 3 - Distribution of the sample**

## 4.4. Data collection

The study used primary data to find the key characteristics influencing willingness to join a cooperative. The primary data were collected by the author in October 2022 with help of local enumerators from Agriculture state University of Moldova, now Technical University of Moldova, from faculty of Cadastre and faculty of Mechanical Engineering and Transport.

The data were obtained via a mixed-methods approach, comprising telephone interviews, electronic surveys, and paper-based questionnaires. Paper-based surveys were mostly conducted among farmers attending agriculture exhibitions and farmers' markets in Chisinau. Farmers who attended agriculture exhibitions and organic markets in Chisinau were found to predominantly come from various regions of the country and were characterized by their adoption of modern agricultural practices, processing techniques,

and marketing strategies for their products. In contrast, farmers who sold their goods on the regular markets of Chisinau were typically small-scale farmers residing in the vicinity of the capital and tended to specialize in selling fresh produce such as vegetables and fruits or producing artisanal cheese.

Initial testing of questionnaire was conducted in agriculture exhibition, using electronic surveys, after which the questionnaire was adjusted. The questionnaires were available in Rumanian, Russian and English language.

Data were collected using structured questionnaire as a quantitative survey instrument, which is tailored to picture the concepts of RAA and other incorporated factors that determine the formation of decision to join the cooperative and their willingness to do so. The question design is closely following theory of RAA and TPB.

In addition to structured questionnaire, five in depth interviews were conducted with local stakeholders by the author. The aim was to obtain representation from the government, private farmer association, non-profit sector, and academia. First interview was taken with a representative of Czech non-profit organization People in Need. Second with a representative of local company called ProConsulting, which was for instance working with USAID on project that helped established 100 cooperatives in 2000. Another interview was conducted with a high manager of Farmer federation of Moldova, which also had experience with cooperative establishment, and which represents the interests of Moldavian farmers. Fourth interview was with a representative of the Ministry of agriculture, who is working on subsidy program for farmers and has an insight into government support programs. Last interview was conducted with one of the top managers of Agrarian state institute of Moldova, representing the academia.

## 4.5.        Data analysis

Data for both objectives were cleaned and checked for errors, few values became invalid due to extreme values or illegible writing in paper-based survey; those values were left empty. For certain variables, such as *education*, *size of farm* and *main product*, data was processed according to set intervals and groups, as is described in methodology chapter 4.1.2.

Objective 1 – For variables clustered in policy, awareness and past experience factors were used descriptive statistics to picture the differences between farmers willing

to join and not willing to join. Beside percentages, parametric methods were used, this decision was made after a thorough examination of the distribution of the data, which appeared to be approximately normally distributed based on visual inspection. Among parametric methods were average, standard deviation and independent single-tailed T-test done in Statistical package of the Social Sciences (SPSS). The null hypothesis was formulated as follows: "The following characteristics have no contribution to willingness to join."

Objective 2 – For main variables of the objective 2, *sex, level of education, organic farm, farm size*, *main product,* and variables from RAA, socioeconomic, trust and risk attitude factors were used the same methods as for variables in objective 1.

Additionally, for RAA variables was used more advanced data analysis inspired by Kaliyeva et al. (2020) and Möllers et al. (2018) done in AMOS SPSS 28. Specifically, structural equation modelling (SEM). SEM is a statistical technique used to test theoretical models based on hypothesized relationships. It compares the variance-covariance matrix derived from sample data to the matrix implied by the theoretical model to evaluate how well the model fits the data. SEM extends standard analysis methods and includes regression, factor analysis, correlation, and analysis of variance (Merchant et al. 2013). In the context of our study, the key component of SEM is output model with regression coefficient that provides information on the specific variables that influence each other and indicates the strength, and direction of these relationships. The Maximum likelihood method of estimation with standardized estimates was used.

Hence, SEM was used for simultaneous analysis of the factors influencing the farmer's willingness to join the cooperative and to estimate interrelated decisions. Primary focus was to determine how potential behavioral factors, displayed in Figure 4 affected the level of intention to cooperate. Due to the complexity of the model and impossibility to find good model fit for more observed variables and their constructs, our model primarily contains only the core intangible cognitive components of RAA: attitudes, norms, and perceived behavioral control. Where dependent variable was willingness to join a cooperative and independent variables were attitudes, whose doubled questions were averaged, as explained in chapter 4.1.2, social norms and perceived behavioral control.
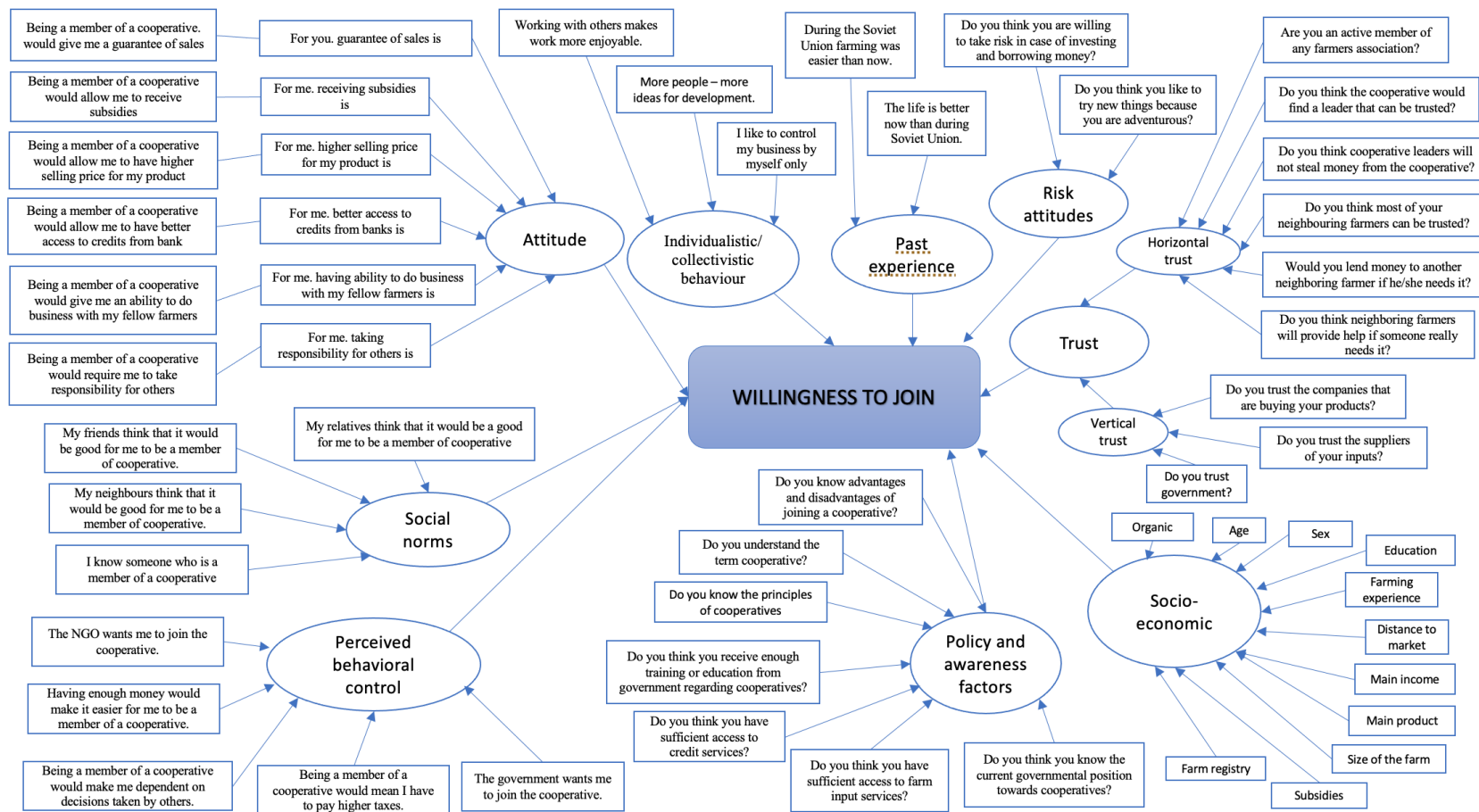
**Figure 4: Conceptual framework of all potential variables and constructs**

## 4.6.         Description of data

The total sample was 208 respondents, from which 120 farmers were willing to join, while 88 were not. Average of the full sample is 0.57 with standard deviation 048.

Table 6 shows the distribution of main products among respondents. Almost 40% of respondents produce cereals, legumes, and pulses, 21% are beekeepers and 16% produce vegetable and nuts.

**Table 6: Distribution of main product among respondents**

| Product | Full sample | |
|---|---|---|
| | **Number of farmers** | **Percentage of farmers** |
| Honey | 44 | 21.15% |
| Cereals, legumes, oilseed | 82 | 39.42% |
| Dairy products | 12 | 5.77% |
| Meat (cow, sheep, goat, pigs, poultry), animal breeding | 13 | 6.25% |
| Wine, vine, table grapes | 12 | 5.77% |
| Vegetables, fruit | 34 | 16.35% |
| Nuts, seeds | 6 | 2.88% |
| Service | 5 | 2.40% |

Table 7 and Table 8 displays set of socioeconomic variables used for SEM analysis and T-test with descriptive statistics. The variables are compared based on willingness of framers to join cooperatives.

**Table 7: Socioeconomic variables**

| Description | Measurement | Full sample (N=208) |
|---|---|---|
| | | Aver (dev.) |
| Sex | 1= female | 0.35 (0.45) |
| | 0 = male | |
| Level of education | Number of years Average | 16.40 (2.07) |
| Organic farm | 1 = yes | 0.24 (0.36) |
| | 0 = no | |
| Size of farm | Categorical interval (1-5) | 2.80 (1.13) |
| Main product | Categorical interval (1-8) | 3.02 ((1.95) |
| Main income | 1 = farming | 0.57 (0.48) |
| | 0 = other | |
| Farm subsidies | 1 = receives | 0.47 (0.49) |
| | 0 = does not receive | |
| Farm registry | 1 = registered | 0.75 (0.37) |
| | 0 = non-registered | |

**Table 8: Socioeconomic variables 2**

| Description | Measurement | Full sample | | | Willing to join (N=120) | | Not willing to join (N=88) | |
|---|---|---|---|---|---|---|---|---|
| | | Aver (dev.) | min | max | min | max | min | max |
| Age | Number of years | 40.2 (11.7) | 20 | 81 | 20 | 81 | 20 | 77 |
| Distance to market | km | 33.38 (27.69) | 0 | 230 | 0 | 230 | 0.5 | 190 |
| Farming experience | Number of years | 13.30 (8.56) | 1 | 60 | 2 | 60 | 1 | 50 |

Table 9 displays variables of psychological factors, trust, Birchall's and Simon's theory, risk attitudes, policy and awareness and past experience based on differences among willingness of farmers to join or not to join cooperatives with descriptive statistics and T-test.

**Table 9: Variables with descriptive statistics**

| Variables | measurement | Questions | Full sample (N=208) Average (dev) |
|---|---|---|---|
| | | **Psychological factors** | |
| Attitude (A) | 5-point Likert scale Average | For you. guarantee of sales is | 1.42 (0.59) |
| | | Being a member of a cooperative. would give me a guarantee of sales | 2.39 (1.09) |
| | | For me. receiving subsidies is | 1.83 (0.86) |
| | | Being a member of a cooperative would allow me to receive subsidies | 2.27 (1.10) |
| | | For me. higher selling price for my product is | 1.45 (0.58) |
| | | Being a member of a cooperative would allow me to have higher selling price for my product | 2.65 (1.06) |
| | | For me. better access to credits from banks is | 2.27 (1.01) |
| | | Being a member of a cooperative would allow me to have better access to credits from bank | 2.90 (1.13) |
| | | For me. having ability to do business with my fellow farmers is | 2.14 (0.75) |
| | | Being a member of a cooperative would give me an ability to do business with my fellow farmers | 2.37 (1.02) |
| | | For me. taking responsibility for others is | 2.36 (0.91) |
| | | Being a member of a cooperative would require me to take responsibility for others (other member of cooperatives) | 2.37 (0.89 |
| Social norm (SN) | 5-point Likert scale Average | My relatives think that it would be a good for me to be a member of cooperative. | 2.69 (0.97) |
| | | My friends think that it would be good for me to be a member of cooperative. | 2.61 (0.91) |
| | | My neighbours think that it would be good for me to be a member of cooperative. | 2.98 (0.81) |
| | | I know someone who is a member of a cooperative. | 2.34 (1.47) |
| Perceived behavioral control (PBC) | 5-point Likert scale Average | Having enough money would make it easier for me to be a member of a cooperative. | 2.85 (1.22) |
| | | Being a member of a cooperative would make me dependent on decisions taken by others. | 2.18 (0.88) |
| | | Being a member of a cooperative would mean I have to pay higher taxes. | 3.17 (1.05) |
| | | The government wants me to join the cooperative. | 2.51 (0.89) |
| | | The NGO wants me to join the cooperative. | 2.30 (0.88) |

| Birchall's theory | | | |
|---|---|---|---|
| Individualistic/ collectivistic behavior | 5-point Likert scale average | Working with others makes work more enjoyable. | 1.63 (0.72) |
| | | More people – more ideas for development. | 1.52 (0.69) |
| | | I like to control my business by myself only | 1.66 (0.77) |
| **Trust** | | | |
| Horizontal trust | 5-point Likert scale Average | Do you think most of your neighbouring farmers can be trusted? | 2.69 (0.94) |
| | | Do you think neighboring farmers will provide help if someone really needs it? | 2.98 (0.85) |
| | | Would you lend money to another neighboring farmer if he/she needs it? | 3.14 (1.20) |
| | | Do you think the cooperative would find a leader that can be trusted? | 2.29 (0.89) |
| | | Do you think cooperative leaders will not steal money from the cooperative? | 3.17 (0.93) |
| | | Are you an active member of any farmers association? | 3.30 (1.77) |
| Vertical Trust | 5-point Likert scale Average | Do you trust the companies that are buying your products? | 1.99 (0.75) |
| | | Do you trust the suppliers of your inputs? | 2.14 (0.91) |
| | | Do you trust the government? | 2.82 (1.16) |
| **Risk attitudes** | | | |
| Risk attitudes | 5-point Likert scale Average | Do you think you like to try new things because you are adventurous? | 1.64 (0.71) |
| | | Do you think you are willing to take risk in case of investing and borrowing money? | 2.00 (0.87) |
| **Past Experience** | | | |
| Past experience | 5-point Likert scale Average | During the Soviet Union farming was easier than now. | 3.22 (1.32) |
| | | The life is better now than during Soviet Union. | 2.48 (1.15) |
| **Policy Awareness** | | | |
| Policy & Awareness | 5-point Likert scale Average | Do you think you receive enough training or education from government regarding cooperatives? | 3.03 (0.96) |
| | | Do you think you have sufficient access to credit services? | 2.38 (1.02) |
| | | Do you think you have sufficient access to farm input services? | 1.98 (0.86) |
| | | Do you think you know the current governmental position towards cooperatives? | 2.73 (0.97) |
| | | Do you agree that you understand the term cooperative? | 1.81 (0.80) |
| | | Do you agree that you know the principles of cooperative? | 2.14 (0.89) |
| | | Do you agree that you know advantages and disadvantages of joining a cooperative? | 2.14 (0.86) |

## 4.7.         Limitations

This research encountered several limitations that could have affected the validity, reliability, and objectivity of the results. Reliability relates to the consistency of the research findings. The research partially relied on self-reported data in paper and electronic questionnaires, which can be prone to bias. Moreover, the sample size was smaller than optimal sample size, and the sampling method was not random, which could impact the reliability and generalizability of the findings. Furthermore, number of interviews were conducted in agriculture expositions and on organic markets, therefore influencing selection of farmers in terms of their abilities, skills, and their business initiatives. Additionally, the translation of the questionnaires might also have affected the

reliability of the responses and the quality of translation of interviews and communication with the enumerators could have influence the reliability and validity. The enumerators might not have understood the questions correctly, leading to inaccurate responses. In order to improve the reliability, some questions were negatively formulated. However, the questions were not statistically tested, which could limit the interpretation of the results. Respondents with contradicting answers were not cut out of the total sample, which could have affected the reliability of all the responses.

Objectivity applies to the extent to which the research is free from personal biases. In this study, the objectivity of the research was challenged by the fact that the research depended on farmers' willingness to share their experiences. This meant that some farmers could have given biased responses or not provided the full picture of their experiences. Similar applies to respondents of in-depth interviews, each of them represented a certain organization, which has its own interest and agenda.

Validity refers to the extent to which the research accurately measures what it is intended to measure. Although we did not explicitly test for normal distribution of the data, we proceeded under the assumption that they were normally distributed. However, this approach can pose a challenge in cases where some variables may not be normally distributed, thereby making parametric methods, such as the T-test, unsuitable for statistical analysis. In such instances, non-parametric tests are more appropriate. Nonetheless, we did not employ non-parametric tests in our analysis.

The validity of the research was also limited by the language barriers. The translation of the questionnaires could have led to misinterpretation or misunderstanding of the questions, affecting the validity of the responses. The research was conducted in Moldova where farmers are not used to share personal information and in general people in post-socialistic countries possess low levels of trust, hence making it difficult to share some information with a stranger. This could have influenced the validity of the responses, or the completeness of the information provided by the farmers. Moreover, the communication with the enumerators was not always clear, which could have resulted in inaccurate responses.

Lastly, the research was conducted during the harvest season, which is a busy time for farmers. This could have affected the quality of the responses or even prevented some farmers from participating in the study.

# 5. Results

## 5.1. Analysis of the influence of the political environment on the farmers' willingness to join cooperatives

Table 10 displays policy, awareness and past experience variables. The results show that people who are not willing to join a cooperative have in general less positive relation towards current government. Past experience variables indicate people willing to join are less in favour of former Soviet Union, however, the results are not statistically significant.

There is a statistically significant difference in variable for access to credit services and current governmental position towards cooperatives. Both variables show contrast between people willing to join cooperatives, who seem to be better aware of governmental position and at the same time are more inclined to agree with statement of having sufficient access to credits. Variables for farm input and training provided by government also display difference between the two groups, but they are not statistically significant.

The attitude of farmers towards institutional advantages, government support and experience with past regime was articulated by one of the managers of Farmers federation, when he was asked what government should do, to support the farmers:

> *"They know how to do it (farming), but they should tell us what to do. That's the problem of government. Step by step. In Soviet Union all our presidents had agriculture education, now they don't have it. Our Ministry of agriculture is not a specialist and makes radical reforms."*

The awareness variables show slight variation in level of understanding between farmers willing to join and not willing to join. Statistically significant are variables on principles of cooperatives and advantages and disadvantages of membership in cooperatives, who suggest that people willing to join have more information regarding cooperatives. Source from the Ministry of agriculture claims, joining a cooperative can be beneficial in terms of obtaining information in general:

> *"Not all of them (farmers) know the legislation, for example, related to export, technology, to use of fertilizers and so on. And this is other reason*

*to join because when they join there is somebody there who can oversee different problems and different legislation processes related to establishing cooperatives.*"

One of the top managers of State agrarian institute of Moldova shared similar experience and pointed out farmers needs to be persuaded to apply for support.

*"I assisted to a meeting when a representative of the agency for interventions and payments was working with producers, and she tried to convince them to apply for investments and it needs some time and some competencies. The problem is that the government gives money, but you need also to fill in some documents, ... I know that there are amounts of money that are not valued because producers are not submitting documents."*

**Table 10: Results of variables for political environment**

| Variables | Questions | Full sample (N=208) | Willing to join (N= 120) | Not willing to join (N=88) | T-test |
|---|---|---|---|---|---|
| | | Average (dev) | Average (dev) | Average (dev) | P value |
| Past experience | During the Soviet Union farming was easier than now. | 3.22 (1.32) | 3.30 (1.36) | 3.10 (1.24) | 0.350 |
| | The life is better now than during Soviet Union. | 2.48 (1.15) | 2.38 (1.13) | 2.60 (1.15) | 0.247 |
| Policy & awareness | Do you think you receive enough training or education from government regarding cooperatives? | 3.03 (0.96) | 2.94 (1.09) | 3.16 (0.84) | 0.223 |
| | Do you think you have sufficient access to credit services? | **2.38 (1.02)** | **2.21 (0.89)** | **2.60 (1.13)** | **\*\*0.022** |
| | Do you think you have sufficient access to farm input services? | 1.98 (0.86) | 1.93 (0.81) | 2.05 (0.95) | 0.490 |
| | Do you think you know the current governmental position towards cooperatives? | **2.73 (0.97)** | **2.57 (1.00)** | **2.94 (0.87)** | **\*\*0.025** |
| | Do you agree that you understand the term cooperative? | 1.81 (0.80) | 1.76 (0.77) | 1.89 (0.83) | 0.364 |
| | Do you agree that you know the principles of cooperative? | **2.14 (0.89)** | **2.00 (0.77)** | **2.33 (1.00)** | **\*\*0.033** |
| | Do you agree that you know advantages and disadvantages of joining a cooperative? | **2.14 (0.86)** | **2.02 (0.76)** | **2.31 (0.96)** | **\*0.055** |

Note: \*\*\*, \*\*, and \* represents significance level at 1%, 5% and 10% respectively

Figure 5 and Figure 6 graphically display the percentage differences between farmers willing to join and farmers not willing to join in terms of their opinion on life and farming during Soviet Union, their political view, and their awareness of cooperatives.
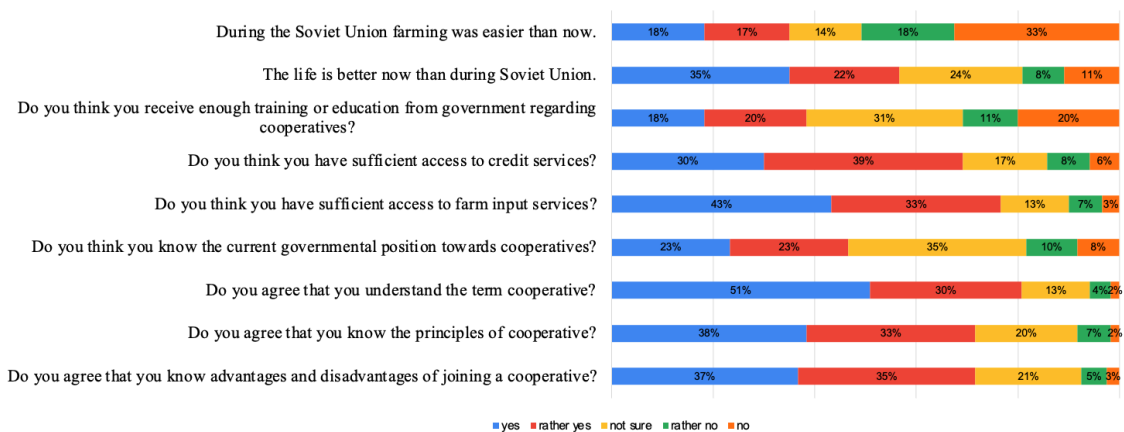
**Figure 5: Policy Environment factors for farmers willing to join cooperatives**
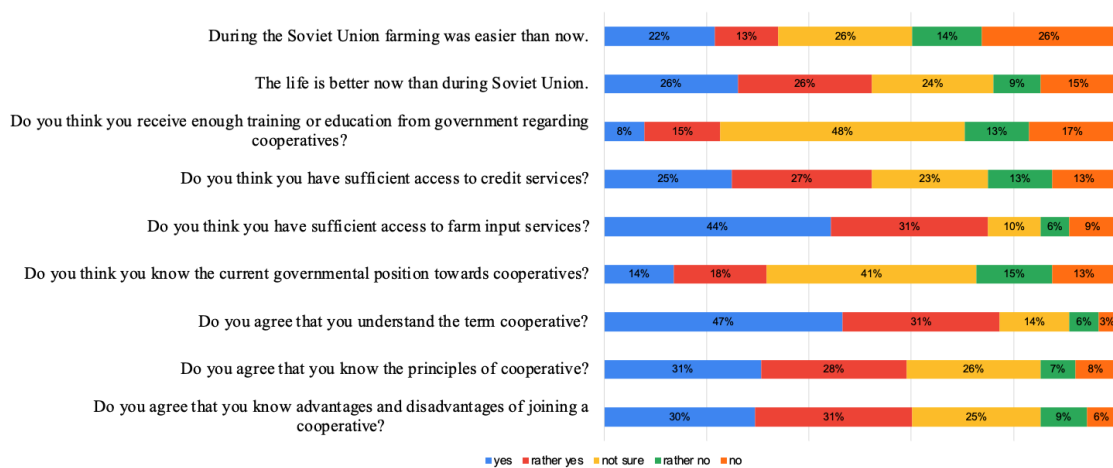


**Figure 6: Policy environment factors for farmers not willing to join cooperatives**

The most significant difference between them are the opinions on whether they receive sufficient training provided by government and whether they know governmental position towards cooperatives. The source from the Ministry of agriculture stated, that Government of Moldova has an interest in development of cooperatives, mainly in terms of export possibilities, therefore they provide sufficient support to cooperatives, considering their budget option, which is confirmed by the representant of NGO:

> *"With the subsidy options that we have in Moldova basically whatever you want to start now in agriculture you can get 50% of your investment and even you can be paid up front. Then if you're young they give you another 10%, if you are a woman, they give you another 10%."*

The opinion on finance was not shared the manager of Farmer Federation, who also had experience with cooperative establishment:

*"Years ago, the federation formed two cooperatives, with the help of partners from other countries. It was production of meat and milk. They both fall apart. In conditions of our country these cooperatives cannot exist without financial help. They don't have money."*

Government support comes with administration, which lot of farmers are not able to submit and hence they are not able to get funds, explained representative of the Ministry of agriculture and one of the top managers of State agrarian institute. Moreover, other downside of government support is described by the representative from NGO:

*"These cooperatives[1] are formed only because of the funds from the government. So, on the paper we have a lot of cooperatives … but it really wasn't a cooperative there was one businessman and four small farmers and that was it."*

This issue is also mentioned by manager of consulting company, who works on projects supported by various international organizations and listed several other issues while establishing cooperatives:

*"I had a target to create five cooperatives and we created only three, it is a very difficult process. They offer grant of $8000, but it's a small amount to establish the cooperative. And the problem is to find people who want to work together, and who understand the role of a cooperative."*

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[1] The ones created with support from government, with help of external organization, such as USAID, IFAD etc.

## 5.2.        Analysis of potential factors of farmers' willingness to join cooperatives

### 5.2.1.        Socioeconomic factors

Table 11 displays categories of variable main product. It shows differences in willingness to join and unwillingness to join among farmers producing various goods. Cereals producers are slightly more incline to join a cooperative as well as dairy, wine and vegetable and fruit and nuts and seeds producers. Honey producers are on the other hand more unwilling to join a cooperative. However, most of the categories are statistically insignificant, with exception to service, though there the total sample is negligible.

**Table 11: results of categories of variable Main product**

|  | Full sample | Willing to join | Not willing to join | T-test |
|---|---|---|---|---|
| **Product** | Percentage of farmers | Percentage of farmers | Percentage of farmers | P value |
| Honey | 21.15% | 17.50% | 26.14% | 0.133 |
| Cereals. legumes. oilseed | 39.42% | 41.67% | 36.36% | 0.442 |
| Dairy products | 5.77% | 5.83% | 5.68% | 0.963 |
| Meat (cow. sheep. goat. pigs. poultry). animal breeding | 6.25% | 6.67% | 5.68% | 0.773 |
| Wine. vine. table grapes | 5.77% | 6.67% | 4.55% | 0.519 |
| Vegetables. fruit | 16.35% | 17.50% | 14.77% | 0.601 |
| Nuts. seeds | 2.88% | 3.33% | 2.27% | 0.654 |
| Service | 2.40% | 0.83% | 4.55% | *0.085 |

Note: ***, **, and * represents significance level at 1%, 5% and 10% respectively

The results in Table 12 show that men are considerably more willing to join a cooperative than woman. Same applies for organic farmers who are more inclined to join cooperative, than conventional farmers. Interest of organic farmers to join cooperatives confirmed a representative of NGO:

> *"We established one cooperative, organic farmers, we provided support, developed a business plan and strategy plan and they (government) gave them big money which they can use collectively and generate income, this cooperative is working but it was forced at the beginning. Top down, donor driven."*

The results for size of the farm are showing that farmers owning slightly bigger farms are more interested in cooperatives, than those having smaller businesses. There is not a positive relation between education and willingness to join, but the data are not statistically significant for the variable education. Manager of Farmer federation highlighted problem with education in relation with lack of qualified managers and qualified workers. Manager of the Consulting company also shared the problem of educated managers for cooperatives.

**Table 12: Results of main variables for objective 2**

| Description | Full sample (N=208) | Willing to join (N=120) | Not willing to join (N=88) | T value |
|---|---|---|---|---|
| | Aver (dev.) | Aver (dev.) | Aver (dev.) | |
| Sex | **0.35 (0.45)** | **0.29 (0.41)** | **0.43 (0.49)** | **\*\*0.037** |
| Level of education | 16.40 (2.07) | 16.62 (2.06) | 16.11 (2.08) | 0.147 |
| Organic farm | **0.24 (0.36)** | **0.32 (0.43)** | **0.14 (0.23)** | **\*\*\*0.003** |
| Size of farm | **2.80 (1.13)** | **3.08 (1.07)** | **2.43 (1.07)** | **\*\*\*0.001** |

Note: \*\*\*, \*\*, and \* represents significance level at 1%, 5% and 10% respectively

Table 13 displays results for remaining socioeconomic variables. Statistically significant differences are showing data for variables main income, farm subsidies and farm registry. The results imply that farmers who have farming as their main income are more willing to join cooperatives, than those with other income. Farm subsidies also play an important role in farmers decision, as farmers who are receiving or had already received subsidy are more inclined to join a cooperative. Farm registry seems to also influence farmers' decision significantly since high number of farmers willing to join have their farm officially registered. Variable age, distance to market and farming experience, are all statistically insignificant.

**Table 13: Results of socioeconomic variables**

| variable | Total sample Aver (dev.) | Willing to join Aver (dev.) | Not willing to join Aver (dev.) | T-test P value |
|---|---|---|---|---|
| Age | 40.2 (11.7) | 41.11 (11.36) | 39.07 (11.91) | 0.296 |
| Distance to market | 33.38 (27.69) | 34.84 (29.16) | 31.28 (25.49) | 0.517 |
| Farming experience | 13.30 (8.56) | 13.89 (8.86) | 12.46 (8.01) | 0.364 |
| Main income | **0.57 (0.48)** | **0.63 (0.46)** | **0.48 (0.49)** | **\*\*0.037** |
| Farm subsidies | **0.47 (0.49)** | **0.60 (0.48)** | **0.30 (0.42)** | **\*\*\*<0.001** |
| Farm registry | **0.75 (0.37)** | **0.87 (0.23)** | **0.59 (0.48)** | **\*\*\*<0.001** |

Note: \*\*\*, \*\*, and \* represents significance level at 1%, 5% and 10% respectively, standard error reported

## 5.2.2.         Psychological factors

Table 14: Results of psychological variables of objective 2 displays results for psychological factors, included RAA variables, Birchall's and Simon's theory, trust factors and risk attitudes.

RAA approach, comprised of attitudes, social norms and perceived behavioral control showed mostly statistically significant differences between farmers who are willing to join a cooperative and those who are not, with exception of two doubled attitude variables on importance of guarantee of sales and higher selling prices and perceived behavioral control variable on possibility of higher taxes for members of cooperatives.

Attitude – Overall, farmers who were willing to join a cooperative thought more than their counterpart, that if they were members of cooperative, they would have some institutional advantages, such as: guarantee of sales, receive subsidies, have higher selling price for their product and better access to credit. Those who stated that the ability to do business with fellow and taking responsibility for other is important for them, were the ones more willing to join a cooperative, than ones who stated otherwise. Similarly, considering being a member of a cooperative would allow them to do business with fellow farmers, people answering more negatively, were not willing to join, while the ones answering positively were willing to join. Lastly, considering being a member of a cooperative would require them to take responsibility for others, farmers agreeing with the statement were more inclined to join a cooperative.

Social norms – All variables for social norms display statistically significant differences among farmers willing and not willing to join a cooperative. Three questions focused on whether relatives, friends and neighbours thought it would have been good for respondent to join a cooperative. Data simultaneously revealed diversity between social bubbles of respondents, as farmers willing to join have mostly relatives, friends and neighbours who would have supported that decision, while relatives, friends, and neighbours of farmers not willing to join were usually against the idea of a cooperative. Last question on social norms asked whether the responded knew a member of a cooperative. Results show, farmers willing to join a cooperative are more likely to know someone who already is a member, than ones not willing to join.

Perceived behavioral control – Group of variables focused on perceived difficulty of intention to join a cooperative mostly showed statistically significant differences. Farmers willing to join, were more likely to perceive that having enough money would

make it easier for them to enter a cooperative, than farmers not willing to join. Similarly, farmers willing to join thought more they would be dependent on decision of others if there were members of a cooperative. Two questions were dedicated on a perception of what the government and NGO would want them to do. In both cases, farmers willing to join were more likely to think that the government and NGO want them to join cooperative.
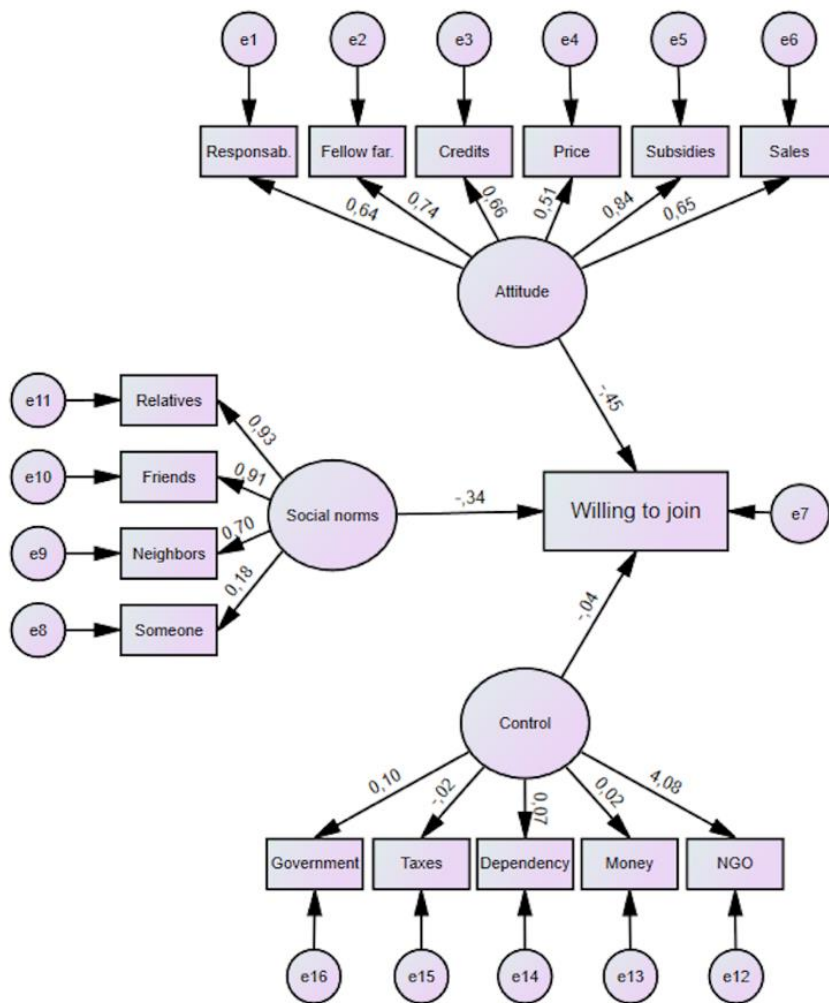


**Figure 7: Output of SEM analysis for RAA variables**

Figure 7 displays the output model of SEM analysis. The regression coefficients show the strength and direction of the relationships between the variables in the model. The regression coefficients from attitude, social norms, and perceived behavioral control to willingness to join the cooperative are all negative, indicating that as these factors increase, the willingness to join the cooperative decreases. Therefore, farmers who have negative attitudes towards cooperatives, perceive little social pressure to join, or have low

perceived behavioral control over joining, are less likely to be willing to join a cooperative.

The regression coefficients from the attitude cluster variables are all positive, indicating that as these factors increase, the willingness to join the cooperative also increases. Specifically, the attitude variables with the highest coefficients were subsidies, responsibility for fellow farmers, and credits. The regression coefficients of social norms are all positive, indicating that social pressure from relatives, friends, and neighbors to join the cooperative increases willingness to join. The relationship with knowing some members of cooperative is weaker but still positive. The regression coefficients from the perceived behavioral control cluster variables to willingness to join the cooperative are mixed, with the coefficients for taxes and having enough money being negative and the coefficients for government involvement, NGO involvement, and dependency on others being positive. Overall, the results show that farmers' attitudes and social norms are important factors in determining their willingness to join a cooperative than perceived control.

Birchall's and Simons' theory of collectivistic and individualistic behavior inspired three variables displayed in Table 14. On questions whether working with others makes work more enjoyable and if more people mean more ideas were farmers willing to join answering more positively than farmers not willing to join. This behavior in practice was explained by the representative of NGO:

> *"The cooperatives work very well when they need to buy inputs, but when it comes to selling this is when the problem starts. Because everyone feels that I get a better price, my product is better than my neighbor's or members of the cooperative."*

When asked an opposite question if they like to control their business by themselves only, farmers not willing to join were more likely to say "yes", compared to those willing to join. This is also supported by source from the Ministry of agriculture:

> *"They want to be the leader of the farm. Not somebody to order them. They want to run their businesses themselves. They don't realize the benefits of cooperative."*

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Variables of trust factor displayed in Table 14 were divided into horizontal and vertical set of questions, from which only one, on whether respondents think leaders of cooperatives will steal money, was found statistically insignificant.

Horizontal trust – Variables of horizontal trust referred to the level of trust and cooperation among individuals on the same hierarchical level. On questions whether neighbouring farmers and leaders of cooperatives can be trusted were farmers willing to join cooperatives answering with a significant difference more positively than their counterparts. Lack of trust highlighted the manager of Consulting company: "*The main problem in cooperative is when one of the founders is also a manager, there is problem with transparency, and the trust decreases after the first financial reporting.*"

Two questions focused on provision of help, one question was if they thought neighbouring farmer would provide help to somebody who needs it, farmers willing to join were substantially more trustworthy than farmers not willing to join and were more likely to believe that they would provide help. Second question was if the respondents would lend money to a neighbouring farmer if he or she would really need it and the answer correlated with previous question. Farmers willing to join, were much more inclined to lend someone else money than those who were not willing to join a cooperative. Last question examined whether farmers are already active members of some association, results of this question showed the biggest differences among the two groups. Farmers who expressed a willingness to join a cooperative exhibited a much higher likelihood of being affiliated with another association compared to farmers who were not willing to join a cooperative. While working on projects focusing on establishing cooperatives, representative of NGO, stated the main problems:

*"The constrain from what I've seen is lack of trust, which comes with the Soviet mentality, because of the Kolkhoz and when we were forced to cooperate ... now 30 years since the Soviet Union the mentality is still there."*

Vertical trust – Variables of vertical trust refer to level of trust between individuals of different hierarchical position or institution. Questions in this study were aimed at trust towards institution and organizations. Specifically, towards government, suppliers of inputs and companies buying farmers' products. Results simultaneously revealed, farmers

not willing to join have lower levels of trust towards their suppliers, buyers and the most significant result was towards government.

　　　　Risk attitudes – Lastly, variables for risk attitudes showed, that farmers willing to cooperate are more likely to try new things, rather than the ones not willing to cooperate and farmers willing to cooperate are more inclined to take a risk in investing or borrowing money, than those who are not willing to join cooperatives.

**Table 14: Results of psychological variables of objective 2**

| Variables | Questions | Full sample (N=208) | Willing to join (N= 120) | Not willing to join (N=88) | T-test |
|---|---|---|---|---|---|
| | | Average (dev) | Average (dev) | Average (dev) | P value |
| | **RAA** | | | | |
| Attitude (A) | For you. guarantee of sales is | 1.42 (0.59) | 1.38 (0.54) | 1.48 (0.66) | 0.378 |
| | Being a member of a cooperative. would give me a guarantee of sales | **2.39 (1.09)** | **1.83 (0.68)** | **3.15 (1.17)** | ***<0.001 |
| | For me. receiving subsidies is | **1.83 (0.86)** | **1.44 (0.58)** | **2.36 (1.12)** | ***<0.001 |
| | Being a member of a cooperative would allow me to receive subsidies | **2.27 (1.10)** | **1.76 (0.75)** | **2.97 (1.24)** | ***<0.001 |
| | For me. higher selling price for my product is. | 1.45 (0.58) | 1.43 (0.54) | 1.47 (0.64) | 0.733 |
| | Being a member of a cooperative would allow me to have higher selling price for my product. | **2.65 (1.06)** | **2.23 (0.86)** | **3.23 (1.09)** | ***<0.001 |
| | For me. better access to credits from banks is. | **2.27 (1.01)** | **2.00 (0.82)** | **2.65 (1.13)** | ***<0.001 |
| | Being a member of a cooperative would allow me to have better access to credits from bank. | **2.90 (1.13)** | **2.53 (0.99)** | **3.41 (1.28)** | ***<0.001 |
| | For me. having ability to do business with my fellow farmers is. | **2.14 (0.75)** | **1.82 (0.61)** | **2.59 (0.89)** | ***<0.001 |
| | Being a member of a cooperative would give me an ability to do business with my fellow farmers. | **2.37 (1.02)** | **1.85 (0.62)** | **3.07 (1.09)** | ***<0.001 |
| | For me. taking responsibility for others is. | **2.36 (0.91)** | **1.92 (0.67)** | **2.93 (0.86)** | ***<0.001 |
| | Being a member of a cooperative would require me to take responsibility for others (other member of cooperatives). | **2.37 (0.89** | **2.06 (0.59)** | **2.80 (1.01)** | ***<0.001 |
| Social norm (SN) | My relatives think that it would be a good for me to be a member of cooperative. | **2.69 (0.97)** | **2.13 (0.74)** | **3.46 (0.94)** | ***<0.001 |
| | My friends think that it would be good for me to be a member of cooperative. | **2.61 (0.91)** | **2.10 (0.70)** | **3.31 (0.85)** | ***<0.001 |
| | My neighbours think that it would be good for me to be a member of cooperative. | **2.98 (0.81)** | **2.58 (0.90)** | **3.52 (0.89)** | ***<0.001 |
| | I know someone who is a member of a cooperative. | **2.34 (1.47)** | **2.03 (1.22)** | **2.75 (1.61)** | ***0.002 |

| | | | | | |
|---|---|---|---|---|---|
| Perceived behavioral control (PBC) | Having enough money would make it easier for me to be a member of a cooperative. | 2.85 (1.22) | 2.53 (1.17) | 3.30 (1.23) | ***<0.001 |
| | Being a member of a cooperative would make me dependent on decisions taken by others. | 2.18 (0.88) | 1.99 (0.66) | 2.44 (1.06) | ***0.004 |
| | Being a member of a cooperative would mean I have to pay higher taxes. | 3.17 (1.05) | 3.11 (1.01) | 3.26 (1.08) | 0.399 |
| | The government wants me to join the cooperative. | 2.51 (0.89) | 2.32 (0.96) | 2.77 (0.69) | ***0.002 |
| | The NGO wants me to join the cooperative. | 2.30 (0.88) | 1.92 (0.79) | 2.82 (0.63) | ***<0.001 |
| **Birchall's theory** | | | | | |
| Individualistic/collectivistic behavior | Working with others makes work more enjoyable. | 1.63 (0.72) | 1.45 (0.58) | 1.89 (0.83) | ***0.001 |
| | More people – more ideas for development. | 1.52 (0.69) | 1.31 (0.47) | 1.81 (0.86) | ***<0.001 |
| | I like to control my business by myself only | 1.66 (0.77) | 1.77 (0.83) | 1.52 (0.67) | *0.086 |
| **Trust** | | | | | |
| Horizontal trust | Do you think most of your neighbouring farmers can be trusted? | 2.69 (0.94) | 2.32 (0.89) | 3.19 (0.84) | ***<0.001 |
| | Do you think neighboring farmers will provide help if someone really needs it? | 2.98 (0.85) | 2.65 (0.86) | 3.43 (0.97) | ***<0.001 |
| | Would you lend money to another neighboring farmer if he/she needs it? | 3.14 (1.20) | 2.70 (1.11) | 3.74 (1.13) | ***<0.001 |
| | Do you think the cooperative would find a leader that can be trusted? | 2.29 (0.89) | 1.95 (0.74) | 2.76 (0.81) | ***<0.001 |
| | Do you think cooperative leaders will not steal money from the cooperative? | 3.17 (0.93) | 3.23 (1.00) | 3.10 (0.81) | 0.464 |
| | Are you an active member of any farmers association? | 3.30 (1.77) | 2.75 (1.73) | 4.06 (1.31) | ***<0.001 |
| Vertical Trust | Do you trust the companies that are buying your products? | 1.99 (0.75) | 1.83 (0.74) | 2.20 (0.84) | ***0.007 |
| | Do you trust the suppliers of your inputs? | 2.14 (0.91) | 2.01 (0.78) | 2.33 (1.03) | **0.049 |
| | Do you trust the government? | 2.82 (1.16) | 2.58 (1.21) | 3.14 (1.04) | ***0.004 |
| **Risk attitudes** | | | | | |
| Risk attitudes | Do you think you like to try new things because you are adventurous? | 1.64 (0.71) | 1.55 (0.65) | 1.76 (0.76) | *0.089 |
| | Do you think you are willing to take risk in case of investing and borrowing money? | 2.00 (0.87) | 1.80 (0.77) | 2.27 (1.08) | ***0.003 |

Note: ***, **, and * represents significance level at 1%, 5% and 10% respectively, standard error reported

# 6.　　　Discussion

This study investigates willingness of farmers to join agriculture cooperatives in Moldova. Cooperatives are a potentially important tool for addressing the problems of land fragmentation, achieving economies of scale, and reducing transaction costs that impede the development potential in Moldova, which otherwise has fertile land and proximity to the EU. We examined the factors which could influence farmers decision. Firstly, we analysed political environment factors, and then how and to which extent other interrelated variables effect farmers' willingness to join cooperatives.

The methodology is based on RAA approach, which uses attitude, social norms, and perceived behavioral control as a basis to determine farmers intention. In addition to the RAA, the approach is expanded to encompass multiple groups of factors, including Birchall's and Simon's theories of collectivistic and individualistic behavior, trust and risk attitudes, and socioeconomic factors. Specific factors typical for post-Soviet transition countries - policy and awareness, past experiences with the Soviet regime - are also incorporated. We used descriptive statistics, comparison of means in two-group research design and SEM analysis to determine the influential variables.

The first objective focused on how political environment in Moldova influences farmers' willingness to join a cooperative. Overall, the political climate in Moldova is characterized by divergent viewpoints, as evidenced by the findings of in-depth interviews with representatives from different sectors, including state, NGO, private and academia. Contrasting opinions on key issues related to agriculture in Moldova suggest a lack of effective communication, coordination, and lack of information. One potential reason for this could be a lingering attachment to Soviet-era central planning and socialist principles of some representatives, as evidenced by proposal for top-down creating of zones of specialized agricultural cooperatives across Moldova, to relieve farmers of marketing responsibilities. Considering especially the fact, that while Moldovan farmers exhibit proficiency in cultivation, they lack skills in marketing and distribution to modern food value chains.

Interestingly, the analysis revealed no effect of either bad or good experience with past socialistic regime. In research done by Kalyieva et al. (2020) in Kazakhstan was also found that experience with communist regime did not have any impacts on farmers willingness to join a cooperative. However, research done in Romania (Möllers et al.

2018) culturally very similar country to Moldova, concluded that the traumatic experience of forced collectivization during the communist period resulted in aversion towards formal forms of cooperation. The in-depth interviews revealed the impact of communist era on luck of trust, which is also supported by survey done by JICA (2017).

It could be assumed that the legacy of the communist regime manifests itself in a latent manner as a general scepticism towards institutions and trust in fellow farmers, rather than directly towards the notion of cooperation. This could explain the fact that a significant number of farmers did not express scepticism towards socialistic central planning per se.

The findings nevertheless suggest that farmers who express a willingness to join a cooperative possess a greater awareness of the institutional advantages that come with cooperative membership, as well as a deeper understanding of the principles and advantages and disadvantages associated with cooperatives. Which confirms theory from Kalyieva et al. (2020) that the more aware farmers are the more likely to join. The results are consistent with findings of research done by Sultana et al. (2020) for dairy cooperatives in Bangladesh along with number of other studies conducted in Thailand, Ethiopia, and India (Gupta & Roy 2012; Mojo et al. 2017; Jitmun et al. 2020). Greater familiarity with the Moldavian government's position on cooperatives among farmers appears to be an important factor in determining their likelihood of joining such organizations, given that the government is known to be supportive of cooperatives.

Despite the significant financial support directed towards the creation of cooperatives from various sources, including national government, international donors sucha as IFAD or FAO, the sustainability and viability of these cooperatives remains uncertain. This raises important question about the constraints that hinder the establishment of cooperatives, among which is farmers unwillingness to join. Farmer considering membership in cooperative, might be discouraged by the concept, given the limited evidence of positive examples. Moreover, the numerous challenges Moldova is facing, such as economic instability, political polarization, oscillation between EU and Russian federation, corruption, and demographic issues, have resulted in a prevailing negative mood and frustration among the population, creating a significant barrier to the emergence of new private collective initiatives typical for advanced liberal democracies.

The most notable findings from the second objective's primary variables pertained to the size of the farm, sex, and the organic farming. Contrary to our initial hypothesis

and the widely accepted theory from studies such as Fischer and Qaim (2014), research findings indicate that farmers with larger farms are more likely to participate in cooperatives. Droždz et al. (2021) obtained similar findings in their study conducted in Lithuania, yet they attributed these results to the type of farming. This study outcome may be explained by the high degree of land fragmentation in the country, as noted by Lerman and Cimpoieş (2006), which results in numerous extremely small plots of land. It is likely that the land owned by some of the survey participants may be too small to be considered in other studies.

The results of sex variable confirm the hypothesis, that males are more likely to join cooperatives, than females. Although literature is divided on the subject as some studies (Dohmwirth & Hanisch 2019; Droždz et al. 2021) found out women are more likely to join cooperative and some studies (Nugussie 2010; Martey et al. 2014; Kaliyeva et al. 2020) confirmed the opposite. Our results correlate with findings in Kazakhstan, another post socialistic country, where it was implied that women do not possess the same opportunities as men. The greater tendency of men to join agricultural cooperatives in Moldova can potentially be connected to the fact that, on average, women manage smaller plots of land and often use them for subsistence farming (World bank 2016), as only 36 percent of all agricultural holdings in the country are headed by women (National bureau of statistics & FAO 2014).

The affirmation of our hypothesis that organic farmers in Moldova exhibit a greater willingness to participate in cooperatives may be attributed to several potential reasons. The unfulfilled potential of organic agriculture in Moldova, as highlighted by various studies (World bank 2016; Gerciu & Rundgren 2020; MOVCA 2021; Invest Moldova Agency 2022; FAO 2022), may be due to the limited capacity of individual farmers to export alone. Hence, one reason could be that cooperatives may offer organic farmers access to larger markets and distribution networks, including potential export opportunities, where demand for organic products keeps increasing. Hence the need for increased economies of scale resulting from horizontal integration of farmers. Second reason could be that organic farmers may face greater challenges in terms of accessing finance, technical assistance, and other resources, and cooperatives may provide a means of pooling resources and sharing knowledge and expertise as well as creating a sense of community and solidarity among organic farmers. Lastly, the results can be attributed to the innovative nature of organic farming practices, which could serve as a proxy for the

adoption of new ideas and techniques in general. It could be associated with their propensity to take on greater risks and their openness to novel ideas and concepts (Duram 1999; Burton et al. 2003; Läpple 2013). Our findings on risk attitudes are consistent with this result, suggesting that farmers who express a willingness to join cooperatives tend to be more receptive to taking risks and experimenting with new approaches. This is supported by a similar study conducted in Kazakhstan (Kaliyeva et al. 2020).

As for RAA approach, the study indicates attitudes and support from social networks and perceived behavioral control were important factors that influence farmers willingness to join a cooperative. The SEM model demonstrate that as farmers' negative attitudes towards cooperatives increase, as well as their perception of less social pressure and low perceived behavioral control, their willingness to join a cooperative decrease.

In line with research of Kaliyeva et al. (2020) and Möllers et al. (2018) the strongest influence had the construct of attitude. Specifically, farmers willing to join a cooperative were more likely to believe that membership would provide guaranteed sales, access to subsidies, higher prices for their products, and improved access to credit. The fact that institutional advantages were the most important factor in farmer willingness to join cooperatives in Moldova suggests that there are systemic and structural issues that need to be addressed in order to increase cooperative membership. It may indicate that farmers are primarily motivated by the benefits they can receive from cooperative membership, such as access to markets and services, rather than ideological or cultural reasons.

Social norms had the second strongest influence on farmer's decision. Results indicate, farmers who were willing to join a cooperative reported having more supportive social networks. Which confirms original theory of RAA where the authors argue, the more intense the perceived social pressure, the more likely it is for the intention to participate in the behavior to arise (Fishbein & Ajzen 2010). The findings align with studies conducted in Kazakhstan (Kaliyeva et al. 2020) and Romania (Möllers et al. 2018), which also identified social norms as the second most significant factor and perceived behavioral control as having minimal importance. Moreover, the study shows that having a connection with an existing cooperative member can positively impact farmers' willingness to join, which is consistent with previous research emphasizing social networks' role in promoting cooperation (Ostrom 1990).

We applied theory of collectivistic and individualistic behavior and the results showed that farmers willing to join a cooperative had a more collectivistic behavior, as they valued the benefits of working with others. This finding is consistent with Birchall's and Simons' theory, which argues that collectivistic behavior leads to greater cooperation and collective decision-making (Birchall & Simmons 2004a). Notwithstanding, local stakeholders reached a consensus that farmers display a willingness to engage in cooperative endeavours in particular domains, such as input purchase, but are reluctant to external intervention in their business. It could be posited that these farmers may not be ideal candidates for membership in a cooperative, as their tendency towards independent decision-making may make them more susceptible to engaging in free-riding behavior within the cooperative.

The findings suggest that trust has a considerable impact on farmers' decision-making regarding joining a cooperative, which is consistent with numerous studies (Zhang et al. 2006; Martey et al. 2014; Jensen-Auvermann et al. 2018; Guinot & Chiva 2019; Droždz et al. 2021). The results indicate that farmers who expressed willingness to join cooperatives had higher levels of horizontal trust, as they were more likely to trust neighbouring farmers. Which is in line with study examining trust in the former Soviet Union countries, (McKee et al. 2013), where they found out that people in rural areas are more likely to trust their neighbours.

On the other hand, the farmers who were not willing to join showed lower levels of vertical trust, particularly towards government and institutions. The same research done by McKee et al. (2013) showed that institutional trust in Moldova was the lowest from all nine examined post socialistic countries. Previous research (Bădescu et al. 2004; McKee et al. 2013; JICA 2017) and in-depth interviews have demonstrated that trust in post-socialist societies has been undermined on horizontal and vertical scale by the undemocratic regime as citizens were often subjected to widespread repression, censorship, and propaganda. This led to a culture of fear and suspicion, in which people were hesitant to trust one another or any institutions associated with the government and the power.

Additionally, the transition to a market-based economy in post-socialistic societies such as Moldova has been difficult, resulting in economic instability and uncertainty. Which further deteriorated trust in institutions, leading to a pervasive sense of scepticism among the population, as observed during in-depth interviews. This lack of

trust is particularly evident in the context of cooperatives establishment projects, where the representants of state, non-profit and privet sectors themselves expressed doubts about the feasibility of cooperatives in Moldova.

# 7.        Conclusions

This study aimed to investigated willingness of farmers to join agriculture cooperatives in Moldova by examining factors that might influence their decision. First objective was to analyse how the political environment influence farmer's willingness to join cooperatives and second objective to analyse specific potential factors that influence willingness of farmers to join cooperatives. The study was carried out in Moldova, with a sample size of 208 respondents equally distributed. The data was collected through a mixed-method approach, which included a structured questionnaire and in-depth interviews from representatives of relevant sectors. The quantitative survey instrument was tailored to depict the concepts of RAA and other incorporated factors that determine the formation of the decision to join the cooperative and the willingness to do so. Among other factors were socioeconomic, policy and awareness, past experience and psychological factors, including individualistic and collectivistic behavior theory, trust and risk attitudes. The data was analysed using descriptive statistics and SEM in SPSS.

The findings suggest that the political environment affects the farmers' decision to join cooperatives primarily through awareness. More precisely, it is the understanding of the opportunities presented by institutional advantages or cooperatives, including the associated benefits, that has an impact on their willingness to join. Past experience with Soviet Union had rather indirect influence in terms of lack of trust among farmers themselves and towards institutions.

The additional findings indicate that the hypothesis that farmers with larger farm sizes would be less likely to join a cooperative has been disproven. On the other hand, the hypothesis that organic farmers who are more innovative and less risk-averse are more likely to join cooperatives has been confirmed. Additionally, the hypothesis that males would be more willing to join cooperatives than females has also been confirmed, while education did not yield significant results. Following RAA, the study reveals that attitudes towards institutional advantages and strong support from social networks were significant factors that influenced farmers' willingness to join a cooperative. Furthermore, the study findings suggest that both horizontal and vertical trust are crucial factors.

The uncertainty of Moldova's political orientation, marked by competing democratic liberal pro-European and autocratic central planning tendencies, is reflected in the opinions of farmers regarding agriculture cooperatives. While some farmers see

cooperatives as a promising opportunity to access institutional advantages and network support and are willing to face the risks associated with collaboration with similarly minded farmers, others are sceptical and demonstrate lack trust in both the cooperatives and the institutions that promote them.

To promote the formation and success of cooperatives in Moldova, it is recommended to improve communication between state, professional farmers association, NGOs, academia, and farmers themselves, to provide better (and communicate about the existing) incentives to farmers and increase visibility of existing functional cooperatives. It is also important for successful cooperative leaders to have a stronger believes in the concept and demonstrate success of the collaboration to others. Identification and promotion of such leaders is the role for all above mentioned stakeholders. However, ultimately, the success of cooperatives in Moldova will depend on the willingness of farmers to overcome their scepticisms and build trust with each other and the institutions supporting them. And this crucial change of the mindsets need always longer time periods.

# 8.        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**. SpringerOpen.

Ajzen I. 1991. The Theory of Planned Behavior. Organizational behavior and human decision processes **50**:179–211.

Bădescu G, Sum P, Uslaner EM. 2004. Civil society development and democratic values in Romania and Moldova. SAGE Publications Inc.

Bakucs Z, Fertő I, Szabó GG. 2012. Benefits of marketing cooperative in transition agriculture. Society and Economy **34**:453–468.

Balliet D, Li NP, Macfarlan SJ, Van Vugt M. 2011. Sex Differences in Cooperation: A Meta-Analytic Review of Social Dilemmas. Psychological Bulletin **137**:881–909.

Bardhan D, Sharma ML, Saxena R. 2012. Give to AgEcon Search Market Participation Behavior of Smallholder Dairy Farmers in Uttarakhand: A Disaggregated Analysis §. Agricultural Economics Research Review **25**:243–254. Available from http://ageconsearch.umn.edu.

Bednaříková Z, Bavorová M, Ponkina E v. 2016. Migration motivation of agriculturally educated rural youth: The case of Russian Siberia. Journal of Rural Studies **45**:99–111. Elsevier Ltd.

Bijman J et al. 2012. Support for Farmers' Cooperatives. Available from http://ec.europa.eu/agriculture/external-studies/index_en.htm.

Birchall J, Simmons R. 2004a. What motivates members to participate in co-operative and mutual businesses? A theoretical model and some findings*. Annals of Public and Cooperative Economics **75**:465–495.

Birchall J, Simmons R. 2004b. What motivates members to participate in the governance of consumer co-operatives? A study of the Co-operative Group. Available from https://www.researchgate.net/publication/253990658.

Bukchin S, Kerret D. 2020. The role of self-control, hope and information in technology adoption by smallholder farmers – A moderation model. Journal of Rural Studies **74**:160–168. Elsevier Ltd.

Burton M, Rigby D, Young T. 2003. Modelling the adoption of organic horticultural technology in the UK using Duration Analysis. The Australian Journal of

Agricultural and Resource Economics **47**:29–54. Available from http://ageconsearch.umn.edu.

Cemirtan I, Todica E, Eni M, Bulgac S, Ermurachi G. 2022. Moldova in Figures: Statistical summary. Chisinau.

Chagwiza C, Muradian R, Ruben R. 2016. Cooperative membership and dairy performance among smallholders in Ethiopia. Food Policy **59**:165–173. Elsevier Ltd.

Cook ML. 1995. Agricultural Cooperatives: A Neo-Institutional Approach. American Journal of Agricultural Economics **77**:1153–1159.

Dohmen T, Falk A, Huffman D, Sunde U, Schupp J, Wagner GG. 2011. Individual risk attitudes: Measurement, determinants, and behavioral consequences. Journal of the European Economic Association **9**:522–550.

Dohmwirth C, Hanisch M. 2019. Women's active participation and gender homogeneity: Evidence from the South Indian dairy cooperative sector. Journal of Rural Studies **72**:125–135. Elsevier Ltd.

Draheim G. 1955. The cooperative association as a business enterprise, 2nd edition. Vandenhoeck and Ruprecht, Göttingen.

Droždz J, Vitunskienė V, Novickytė L. 2021. Profile of the small-scale farms willing to cooperate—evidence from lithuania. Agriculture (Switzerland) **11**. MDPI.

Duram LA. 1999. Factors in organic farmers' decisionmaking: Diversity, challenge, and obstacles. American Journal of Alternative Agriculture **14**:2–10. Henry A. Wallace Institute for Alternative Agriculture Inc.

Egri CP. 1999. Attitudes, backgrounds and information preferences of canadian organic and conventional farmers: Implications for organic farming advocacy and extension. Journal of Sustainable Agriculture **13**:45–72.

Falk A, Fischbacher U. 2006. A theory of reciprocity. Games and Economic Behavior **54**:293–315.

FAO. 2012. Agricultural cooperatives: the way for food security and rural development.

FAO. 2020. Smallholders and family farms in the Republic of Moldova. Page Smallholders and family farms in the Republic of Moldova. FAO, Budapest.

FAO. 2022. Special report – FAO Crop and Food Supply Assessment Mission (CSAM) to the Republic of Moldova. Page Special report – FAO Crop and Food Supply Assessment Mission (CSAM) to the Republic of Moldova. FAO.

Fischer E, Qaim M. 2012. Gender, agricultural commercialization, and collective action in Kenya. Food Security **4**:441–453.

Fischer E, Qaim M. 2014. Smallholder farmers and collective action: What determines the intensity of participation? Journal of Agricultural Economics **65**:683–702. Blackwell Publishing Ltd.

Fishbein M. 2008. A reasoned action approach to health promotion. Medical Decision Making **28**:834–844.

Fishbein M, Ajzen I. 2010. Predicting and changing behavior: the reasoned action approach. Psychology Press, Taylor & Francis Group.

Flaten O, Lien G, Ebbesvik M, Koesling M, Valle PS. 2006. Do the new organic producers differ from the 'old guard'? Empirical results from Norwegian dairy farming. Renewable Agriculture and Food Systems **21**:174–182. Cambridge University Press (CUP).

Flaten O, Lien G, Koesling M, Løes AK. 2010. Norwegian farmers ceasing certified organic production: Characteristics and reasons. Journal of Environmental Management **91**:2717–2726.

Flaten O, Lien G, Koesling M, Valle PS, Ebbesvik M. 2005. Comparing Risk Perceptions and Risk Management in Organic and Conventional Dairy Farming: Empirical Results from Norway. Livestock Production Science **95**:11–25.

Fulton M. 1999. Cooperatives and Member Commitment. LTA **4**:418–437.

Gerciu V, Rundgren G. 2020. The Status and Potential of Organic Agriculture in the Republic of Moldova.

Gibbons FX, Gerrard M, Blanton H, Russell DW. 1998. Reasoned action and social reaction: Willingness and intention as independent predictors of health risk. Journal of Personality and Social Psychology **74**:1164–1180. American Psychological Association Inc.

Grashuis J, Ye SU. 2019. A review of the empirical literature on farmer cooperatives: performance, ownership and governance, finance, and member attitude. Annals of Public and Cooperative Economics **90**:77–102. Wiley-Blackwell Publishing Ltd.

Green P, Bertrand S, Craig M, Kuria N. 2013. Blueprint for a cooperative decade.

Guinot J, Chiva R. 2019, June 1. Vertical Trust Within Organizations and Performance: A Systematic Review. SAGE Publications Ltd.

Gupta K, Roy D. 2012. Gains from coordination in milk dairy in Punjab. Journal of
    Agribusiness in Developing and Emerging Economies **2**:92–114.

Hagger MS. 2019. The Reasoned Action Approach and the Theories of Reasoned
    Action and Planned Behavior. Oxford University press, New York.

Henning J, Baker L, Thomassin P. 1991. Economics Issues in Organic Agriculture.
    Canadian journal of agriculture economics **39**:877–889.

Hernández-Espallardo M, Arcas-Lario N, Marcos-Matás G. 2013. Farmers' satisfaction
    and intention to continue membership in agricultural marketing co-operatives:
    Neoclassical versus transaction cost considerations. European Review of
    Agricultural Economics **40**:239–260.

IEA. 2022. Energy policy review, Moldova 2022. Available from www.iea.org/t&c/.

Ignat A, Stratan A, Lucasenco E. 2017. Development of cooperatives in the republic of
    Moldova. Pages 229–235 Agrarian Economy and Rural Development.
    ECONSTOR.

International Co-operative Alliance. 2015. Guidance Notes to the Co-operative
    Principles.

Invest Moldova Agency. 2022. Food processing and livestock, Republic of Moldova.
    Chisinau. Available from www.aipa.gov.md/en.

Jensen-Auvermann T, Adams I, Doluschitz R. 2018. Trust—Factors that have an impact
    on the interrelations between members and employees in rural cooperatives.
    Journal of Co-operative Organization and Management **6**:100–110. Elsevier Ltd.

JICA. 2017. Data Collection Survey on Agriculture Sector in Moldova. Japan
    International Agency

Jitmun T, Kuwornu JKM, Datta A, Kumar Anal A. 2020. Factors influencing
    membership of dairy cooperatives: Evidence from dairy farmers in Thailand.
    Journal of Co-operative Organization and Management **8**. Elsevier Ltd.

Kaliyeva S, Areal FJ, Gadanakis Y. 2020. Attitudes of Kazakh rural households towards
    joining and creating cooperatives. Agriculture (Switzerland) **10**:1–20. MDPI AG.

Läpple D. 2013. Comparing attitudes and characteristics of organic, former organic and
    conventional farmers: Evidence from Ireland. Renewable Agriculture and Food
    Systems **28**:329–337.

Lerman Z, Cimpoieş D. 2006. Land consolidation as a factor for rural development in
    Moldova. Europe - Asia Studies **58**:439–455.

Lerman Z, Sedik D, Csaki C. 2016. Agriculture cooperatives in transitioning countries. LAP Lambert Academic Publishing, Saarbrucken.

Lubell M, Scholz J. 2001. Cooperation, Reciprocity, and the Collective Action Heuristic. American Journal of Political Science **45**:160–178.

Luellen JK, Shadish WR, Clark MH. 2005, December. Propensity scores: An introduction and experimental test.

MacRae RJ, Hill SB, Mehuys Guy R, Henning John. 1990. Farm-scale Agronomic and Economic Conversion from Conventional to Sustainable Agriculture. Advances in Agronomy **43**:155–198.

Madden TJ, Ellen PS, Ajzen I. 1992. A Comparison of the Theory of Planned Behavior and the Theory of Reasoned Action. Personality and Social Psychology Bulletin **18**:3–9. SAGE Publications.

Martey E, Etwire PM, Wiredu AN, Dogbe W. 2014. Factors influencing willingness to participate in multi-stakeholder platform by smallholder farmers in Northern Ghana: implication for research and development. Agricultural and Food Economics **2**. SpringerOpen.

McKee R, Murphy A, Richardson E, Roberts B, Haerpfer C, McKee M. 2013. Do citizens of the former Soviet Union trust state institutions, and why? East European Politics **29**:377–396.

Merchant WR, Li J, Karpinski AC, Rumrill PD. 2013. A conceptual overview of Structural Equation Modeling (SEM) in rehabilitation research.

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

Mojo D, Fischer C, Degefa T. 2017. The determinants and economic impacts of membership in coffee farmer cooperatives: recent evidence from rural Ethiopia. Journal of Rural Studies **50**:84–94. Elsevier Ltd.

Möllers J, Traikova D, Bîrhală BAM, Wolz A. 2018. Why (not) cooperate? A cognitive model of farmers' intention to join producer groups in Romania. Post-Communist Economies **30**:56–77. Routledge.

Moroz V, Lerman Z, Csaki C. 1998. Land reform and farm restructuring in Moldova: progress and prospects. Washington, D.C. Available from https://www.researchgate.net/publication/294815256.

MOVCA. 2021. The Yearbook of Organic Agriculture in the Republic of Moldova 2020 Edition 2.

National bureau of statistics, FAO. 2014. Women and men in agriculture in the republic in Moldova.

Niyazmetov D, Soliev I, Theesfeld I. 2021. Ordered to volunteer? Institutional compatibility assessment of establishing agricultural cooperatives in Uzbekistan. Land Use Policy **108**. Elsevier Ltd.

Nugussie WZ. 2010. Why some rural people become members of agricultural cooperatives while others do not. Journal of Development and Agricultural Economics **2**:138–144. Available from http://www.academicjournals.org/JDAE.

Nyambune Maindi C, Lucy Wangare N. 2021. The Exclusion Dilemma: How Women and the Poor are excluded from Collective Action and Implications for Development Policy. Issue 5 Ser. I **14**:22–35. Available from www.iosrjournals.org.

O'connell J, Kiparisov P. 2018. Republic of Moldova Value chain gap analysis. Budapest. Available from www.fao.org/publications.

Ostrom E. 2000. Collective Action and the Evolution of Social Norms. Journal of Economic Perspective **14**:137–158. Available from http://www.indiana.edu/workshop/wsl/wsl.html.

Ostrom Elinor. 1990. Governing the commons: the evolution of institutions for collective action. Cambridge University Press.

Parlicov V, Vremis M, Craievschi-Toarta V, Cepoi E. 2022. Report on Energy Poverty Assessment and Support Mechanisms in the Republic of Moldova.

Penrose-Buckley C. 2007. Producer Organisations: A Guide to Developing Collective Rural Enterprises. Oxfam GB. Available from www.oxfam.org.uk.

Rigby D, Young T, Burton M. 2001. The development of and prospects for organic farming in the UK. Food Policy **26**:599–613.

Røkholt PO. 1999. Strengths and Weaknesses of the Co-Operative Form; A Matter of Perspective and Opinion. Agricultural University of Norway.

Soliev I, Theesfeld I. 2020. Benefit sharing for solving transboundary commons dilemma in central Asia. International Journal of the Commons **14**:61–77. Igitur, Utrecht Publishing and Archiving Services.

Spoială L et al. 2011. 2011 General Agricultural Census in the Republic of Moldova Main results.

Spoor M. 1999. Agrarian transition in former soviet central Asia: a comparative study of Kazakhstan, Kyrgyzstan and Uzbekistan.

Sultana M, Ahmed JU, Shiratake Y. 2020. Sustainable conditions of agriculture cooperative with a case study of dairy cooperative of Sirajgonj District in Bangladesh. Journal of Co-operative Organization and Management **8**. Elsevier Ltd.

Tuna E, Karantininis K. 2021. Agricultural cooperatives as social capital hubs – A case in a post-socialist country. Journal of Co-operative Organization and Management **9**. Elsevier Ltd.

UNEP, MoEN. 2016. First Biennial Update report of the Republic of Moldova under the United Nations Framework Convention on Climate Change. United Nation, Chisinau. Available from http://www.clima.md.

Willer H, Trávníček J, Meier C, Schlatter B. 2021. The world of organic agriculture: statistics & emerging trends 2021. FiBL.

World bank. 2016. Moldova Poverty Assessment 2016: Structural Transformation of Moldovan Smallholder Agriculture: Implications for Poverty Reduction and Shared Prosperity.

Xiang LY, Sumelius J. 2010. Analysis of the Factors of Farmers' Participation in the Management of Cooperatives in Finland. Journal of rural cooperation **38**:134–155.

Yanbykh R, Saraikin V, Lerman Z. 2019. Cooperative tradition in Russia: a revival of agricultural service cooperatives? Post-Communist Economies **31**:750–771. Routledge.

Zhang L, Wang H, Wang L, Hsiao W. 2006. Social capital and farmer's willingness-to-join a newly established community-based health insurance in rural China. Health Policy **76**:233–242.

Zhang L, Yang X, Fan Y, Zhang J. 2021. Utilizing the theory of planned behavior to predict willingness to pay for urban heat island effect mitigation. Building and Environment **204**. Elsevier Ltd.

Zhang Y yuan, Ju G wei, Zhan J tao. 2019. Farmers using insurance and cooperatives to manage agricultural risks: A case study of the swine industry in China. Journal of

Integrative Agriculture **18**:2910–2918. Editorial Department of Scientia Agricultura Sinica.

# Appendices

**List of the Appendices: Questionnaire for data collection**

# Appendix 1: Questionnaire for data collection

QUESTIONNAIRE: FARMER'S WILLINGNESS TO JOIN COOPERATIVES

**Socioeconomic questions**
- How old are you?
- Are you men or female?
- What is your nationality?
- What level of education do you have?
- How long have you been farming?
- Is farming your main income? (More than 50% of income)
- Is your farm organic?
- What is the size of your farm in hectares?
- Do you receive any form of subsidies?
- Is your farm officially registered?
- What is your main product?
- What is your distance to market in km? (Selling of products, buying of inputs)

**Theory of planned behavior: Attitude (5-point scale)**
- For me, guarantee of sales is: (Importance scale)
- Being a member of a cooperative, would give me a guarantee of sales. (Likert scale)
- For me, receiving subsidies is: (Importance scale)
- Being a member of a cooperative would allow me to receive subsidies. (Likert scale)
- For me, higher selling price for my product is: (Importance scale)
- Being a member of a cooperative would allow me to have higher selling price for my product. (Likert scale)
- For me, better access to credits from banks is: (Importance scale)
- Being a member of a cooperative would allow me to have better access to credits from bank. (Likert scale)
- For me, having ability to do business with my fellow farmers is: (Importance scale)
- Being a member of a cooperative would give me an ability to do business with my fellow farmers. (Likert scale)
- For me, taking responsibility for others is: (Importance scale)
- Being a member of a cooperative would require me to take responsibility for others (other member of cooperatives). (Likert scale)

**Theory of planned behavior: Social norm (5-point scale)**
- My relatives think that it would be a good for me to be a member of cooperative.
- My friends think that it would be good for me to be a member of cooperative.
- My neighbors think that it would be good for me to be a member of cooperative.
- I know someone who is a member of a cooperative in my region.

**Theory of planned behavior: Perceived Behavioral control (5-point scale)**
- Having enough money would make it easier for me to be a member of a cooperative.
- Being a member of a cooperative would make me dependent on decisions taken by others.
- Being a member of a cooperative would mean I have to pay higher taxes.

- The government wants me to join the cooperative.
- The NGO wants me to join the cooperative.
- Are you willing to join a cooperative?

**Individualistic & collectivistic behaviors (5-point scale)**
- Working with others makes work more enjoyable.
- More people – more ideas for development.
- I like to control my business by myself only.

**Trust (5-point scale)**
- Do you think most of your neighboring farmers can be trusted?
- Do you think the cooperative would find a leader that can be trusted?
- Do you think cooperative leaders will not steel money from the cooperative?
- Are you an active member of any farmers association?
- Do you trust the companies that are buying your products?
- Do you trust the suppliers of your products?
- Do you trust the government?
- Do you think neighboring farmers will provide help if someone really needs it?
- Would you lend money to another neighboring farmer if he/she needs it?

**Risk Attitudes (5-point scale)**
- Do you think you like to try new things because you are adventurous?
- Do you think you are willing to take risk in case of investing and borrowing money?

**Past experience (5-point scale)**
- During the Soviet Union farming was easier than now.
- The life is better now than during Soviet Union.

**Policy & Awareness (5-point scale)**
- Do you think you receive enough training or education from government regarding cooperatives?
- Do you think you have sufficient access to credit services?
- Do you think you have sufficient access to farm input services?
- Do you think you know the current governmental position towards cooperatives?
- Do you agree that you understand the term cooperative?
- Do you agree that you know the principles of cooperative?
- Do you agree that you know advantages and disadvantages of joining a cooperative?