

PERFORMANCE AND CAUSES OF DEVELOPMENT PROBLEMS AMONG LATVIAN GRAIN COOPERATIVES

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ABSTRACT

The research aimed to examine Latvian grain cooperatives in terms of their performance and causes of development problems. The research employed several approaches, including a monographic method, induction and deduction, comparison, graphical method, statistical analysis, cause and consequence analysis and a sociological research method in the form of structured expert survey and interviews. The research examined the theory on cooperative development in Latvia and the world, analysed the Latvian grain production industry and made a statistical analysis of the performance of grain cooperatives. The total output of cereals was affected by the total area cropped with cereals, which was proved by the correlation coefficient $r = 0.90$. An increase in the area used for cereals leads to an increase in the total cereal output. The correlation coefficient showed a strong relationship between independent and dependent variables. Structured interviews with experts allowed the authors to identify the factors that hinder the development of grain cooperatives in Latvia. The industry experts identified the technological factor, i.e., poorly developed agricultural processing. As possible causes of the previously identified problem, experts identified a lack of financial resources, the unclear market situation, workforce problems, additional costs, and a lack of initiative in identifying new opportunities. The expert method helped to identify the most significant problem for the development of Latvian grain cooperatives and the underlying causes. The research allows drawing the attention of policymakers to the main problem regarding the development of grain cooperatives, namely, the technological factor of underdeveloped grain processing. The cooperatives did not own processing enterprises, which was mainly due to an unclear situation in the sales market.

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INTRODUCTION

Economic globalisation makes it increasingly more important for companies to cooperate with the aim to contribute to the competitiveness of their products or services in the worldwide market. The

cooperation should be developed considering relatively limited resources of Latvia, which is a small country. One of the potential forms of cooperation is the establishment of cooperatives and the expansion of their activities. The Sustainable Development

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Strategy of Latvia until 2030 emphasises cooperation as one of the strategic principles to promote and ensure the sustainable development of Latvia (Sustainable..., 2010).

The research topic is relevant and important, as cooperation promotes the development of domestic agriculture, which is affected by various factors.

Based on the National Development Plan of Latvia 2014–2020, the promotion of cooperation in agriculture is one of the national priorities, which means that domestic agricultural policies focus on the development of cooperation (National..., 2012).

A conference organised by the European Research Institute for Cooperatives and Social Enterprises and the International Alliance for Cooperatives noted a vital role of cooperatives in the socio-economic development of society. Cooperatives contribute to employment, introduction and spillover of innovations as well as rural development. Cooperatives operating in the agricultural industry encourage crop insurance and the increased availability of cheap loans among the farmers, which would be rather unlikely otherwise. Cooperatives are believed to be more successful than classical businesses in overcoming periods of crisis and post-crisis (Borzaga & Galera, 2012; Development..., 2015).

Italian professor Giovannini pointed out that cooperatives could play a key role in raising public awareness of a sustainable and viable future (World..., 2018).

Cooperation allows establishing prerequisites for a successful business, which is difficult for a single individual to achieve.

This research aimed to examine the performance and causes of development problems among Latvian grain cooperatives.

Specific research tasks were set to achieve the aim:

- to examine the theoretical aspects related to the performance of cooperatives;
- to analyse the grain production industry in Latvia, performing statistical analysis of the performance of grain cooperatives; and
- to identify the most significant problem for grain cooperatives and the causes that hinder their development.

The research used scientific research papers from various databases, reports on agriculture, statistical databases, European Union and national policy documents, as well as the results obtained from expert questionnaires, and other public information available at a library and Internet resources.

1. THEORETICAL ASPECTS RELATED TO THE PERFORMANCE OF COOPERATIVES

The term “cooperation” comes from Latin “cooperationem”, which means “working together”, participation or collaboration (Vedļa, 2000). The concept of cooperation has been widely researched, and various explanations for it could be found (Kundríková & Holubčík, 2016; Domańska, 2018; Soviar et al., 2016; Bednarz & Markiewicz, 2015; Havierníková et al., 2016). Kučinskis (2004) compiled definitions of the concept given by authors from various European countries. All the definitions emphasise the idea of mutual benefit for the members, the adherence to the principles of volunteering and the aim to increase the level of material wellbeing (Kučinskis, 2004). In their research paper *Development of Agricultural Cooperation in Zemgale Region*, Buģina and Pabērza (2007) pointed out that Miglavs gave a comprehensive and complete explanation of the term. Miglavs stressed that cooperation is an activity where several persons with common interests come together to achieve a common goal (Buģina & Pabērza, 2007, pp. 115-123; Lismanis et al., 1999).

Gyulgyulyan and Bobojonov (2019) examined the definitions of the concept “cooperation” given by several international organisations. According to a definition by the International Cooperative Alliance, an agricultural cooperative is an autonomous association of persons who voluntarily unite to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise. The authors emphasised that many international organisations indicated similar basic principles of cooperation (Gyulgyulyan & Bobojonov, 2019, pp. 121-134).

One of the founders of the theory on cooperation, Chayanov, believed that cooperation was the most appropriate way and practically the only way for agricultural development (Čajonovs et al., 2001).

In his research, Kaupušs emphasised that cooperation played an important role in the existence and development of small and medium farms that performed two functions:

- social — to ensure the protection of farmers and small producers from large companies, lenders and monopolies and provide social support and assistance; and
- economic — to provide the support that is not available to any small farm in the fields of pro-

duction, supply, transport, storage, processing and produce sales (Kaupušs, 2001, pp. 24-25).

Vedļa (2000) defined the following objectives of cooperation:

- joint sales of products. Cooperation helps to sell more products, thereby creating competition among intermediaries and receiving the maximum price for the products;
- maximum use of machinery, equipment, processing lines and buildings, which could be achieved by investing in shared rather than individual units;
- joint use of qualified agricultural specialists, i.e. agronomists, veterinarians, accountants and consultants, to make the most of their services;
- the availability of cheap and easily accessible loans to members;
- the representation of common interests at the national level through achieved favourable amendments to relevant legislation; and
- the creation of a favourable living environment in the areas of business activity, as well as the promotion of the idea of cooperation and education of members.

The ideas of cooperation are implemented in practice through cooperative societies (CS), which help to achieve the goals set by their members.

According to the definition given by the political organisation Cooperatives Europe, a cooperative is a company owned by its members who have equal opportunities to express their opinions on the management and who share the profits earned. Cooperatives are considered to be key partners in achieving sustainable development goals. A cooperative is a company that is owned and controlled by the people who use its services and receive the revenues earned distributed according to their investments (Dunn et al., 2002).

Vedļa (2002) defined cooperatives as voluntary associations whose members work to pursue common economic interests, which they would not be able or would have difficulty to implement individually. Cooperation allows members to achieve their common goals without losing the economic and legal independence of individual enterprises.

A cooperative is an autonomous association of persons voluntarily grouped together to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise (The Role..., 2001).

According to the Cooperative Societies Law, a cooperative society is a voluntary association of

persons, the purpose of which is to contribute to the effective implementation of the common economic interests of the members (Cooperative, 2019). The term “cooperative” is widely used in daily language.

Cooperatives are organisations that set certain economic goals for themselves or represent joint economic activities (Balodis, 1934). This statement is in line with the opinion of authors underlining that cooperatives are made of population groups working in one field of economy. In essence, a cooperative helps all members regardless of their size, to gain advantages that are normally only available to very large companies.

A cooperative is an economic organisation characterised by a business relationship (benefit), a decision-making relationship (control) and a financial relationship (ownership) (Dunn et al., 2002).

Kučinskis (2004) pointed out that the purpose of a cooperative was not to make a profit or to pay the highest possible dividends but to provide members with the means of production at reasonable market prices. To ensure solidarity, each member of the cooperative has only one vote for decision-making. Cooperatives are non-profit voluntary organisations that cannot have a limit on the number of their members.

The goal of a cooperative is to gain market power by reducing costs owing to integration (Čajonovs et al., 2001).

The operation of a cooperative is based on the principles of economic democracy, transparency and solidarity, which strengthen the stability of the cooperative and promote its long-term growth (Development..., 2015).

According to Kučinskis (2004), cooperatives exist in almost every area of life in Europe. The main types of cooperatives are credit, consumer, agricultural, fishermen, dairy, apartment, production cooperatives etc.

The cooperation movement and cooperatives also undergo continuous restructuring in the context of market globalisation. Many countries question the traditional pattern of operation of cooperatives, and the restructuring efforts are linked to the aim to strengthen the competitiveness of agricultural cooperatives in the international market (Nilsson, 1998, pp. 39-48).

Nilsson (2001) compiled a meta-research on the opportunities and risks of cooperation. Contrary to the opinion about the limited influence of cooperative members on the decision-making and the low efficiency of cooperatives, researchers emphasised

the positive benefits related to the sale of cooperative products and the reduced impact of purchase prices set by large retail companies (Nilsson, 2001, pp. 329-356).

Researching the role of cooperatives in agriculture, Valentinov (2007) noted that one of the advantages of participation in agricultural cooperatives is the capability to supply large enough quantities of agricultural products, which could not be done by an individual farm. The efficiency of an agricultural organisation is determined by two orthogonal criteria: the efficiency of labour division in agricultural production and the efficiency of monitoring activities. The importance of the second criterion is determined by the organisational characteristics of agricultural production specific to the industry. Farms considered small in terms of area, to which the author refers as family farms, are more effective in controlling the use of resources. However, such farms have a limited output, which is directly affected by the available resources, which are mainly agricultural land. In Western agriculture, family farming is the dominant form of an agricultural business organisation. Due to the specifics of the agricultural industry, farmers are almost always at a disadvantage compared to their trading partners, so they can use cooperatives for counterbalance (Valentinov, 2007, pp. 55-69).

A survey of cooperative members within the thematic assessment into the Development of Cooperation in Agriculture and the Development Strategy for 2013–2020 (2012) revealed that the key benefit of participating in a cooperative was the opportunity to sell agricultural products at equal prices and receive regular payments.

Arnis Vējš, the owner of Uzvara lauks Ltd and a member of the ASCS Latraps, was cautious about cooperation and believed that access to cooperative services was essential. He emphasised the importance of the distance for grain delivery. Grain collection points should be geographically distributed so as not to increase the total length of the route for grain delivery (Large Framer..., 2019).

Summarising the research studies and findings mentioned above, the authors concluded that many problems faced by farmers could be resolved by joining efforts by way of cooperatives. The problems often affect several farmers, which can be close to impossible to overcome for individuals, depending on personal traits. A cooperative usually has a person who stands out from among the members, has leadership skills and is able to take the lead. It is desirable that this person is well known and trusted by all other

members. After overcoming the first obstacles and achieving success, all members gain confidence and trust in the movement. However, for a cooperative to continue to be successful in the long term, it has to be able to bring tangible benefits to its members. Besides, cooperatives need professional management, which should be properly motivated. Although a cooperative is not intended to make a profit, it is not different in nature and business philosophy from other forms of business organisations, as it has to bring economic benefits to its members. Besides, the benefits have to outweigh the personal contribution of each member. Each member has to understand that everyone is the owner of the cooperative, and each member has to promote the development of the cooperative through a personal attitude.

Cooperatives could be categorised and systematised according to various distinctive features: legal status, the type of economic activity, territorial distribution, the position in the production process chain and the economic status of the members (Lismanis et al., 1999).

Associations of people united by one common interest could be distinguished according to legal status. This is the simplest legal form of an organisation built upon an agreement among the participants. According to its legal status, a cooperative society is a mutual company for achieving common goals. Cooperative unions are established by several cooperative societies operating in the same field of economic activity and representing associations of various industries, which could cover a certain region, country or continent (Čajonovs et al., 2001).

According to the national legislation, agricultural cooperatives could be subdivided by industry, for example, grain production, dairy farming, vegetable production etc. (Cooperative..., 2019).

Cooperatives operating in the field of forest management, which unite a large number of forest owners, are widespread in the Scandinavian countries. Successful cooperation examples can also be found in other fields, such as electrification, slaughterhouses, sewing, construction etc.

Cooperatives could also be divided according to the territory, in which they undertake economic activities. Some cooperatives may operate within a city only, and others — a county or a country.

Cooperatives could be divided into vertical and horizontal by the position in the production process chain. Horizontal cooperatives unite enterprises or farmers engaged in the same field of economic activity. For example, grain farms join a cooperative to work

together on production and marketing issues. Vertical cooperation is a form of cooperation, which is widespread in the world but not popular in Latvia. Vertical cooperatives include enterprises that fully or partially complete all the stages of the product production process (Buģina & Pabērza, 2007, pp. 115-123). Such cooperatives are most often formed by enterprises with a fully closed production cycle. The chain includes farmers as the producers of agricultural commodities and owners of the cooperative and enterprises engaged in the processing of agricultural commodities, logistics and the production of final products.

By the economic status of cooperative members, cooperatives are divided into employee, producer or consumer cooperatives. Such cooperatives are established to implement the interests of each social group. Employee cooperatives are established to implement interests that are specific to individuals engaged in one industry (Lismanis et al., 1999).

Vedļa (2000) grouped cooperatives according to their common features:

- by the function to be performed (procurement, production, sales, finances etc.);
- by the degree of economic development of the participants (horizontal and vertical cooperation cooperatives); and
- by the intended duration of the cooperative's tasks to be performed (one-off or fixed-term).

The scientific literature also offers other types of cooperatives, such as equity cooperatives, new generation cooperatives, and cooperatives with limited liability.

Equity cooperatives are those that issue bonds. This type of cooperatives developed at the end of the last century to issue bonds in a closed or open offer (Bekum & Bijman, 2006, pp. 1-15). In such cooperatives, investors often become members who gain more voting rights in decision-making, and the cooperatives are often privatised (Spear, 2010).

New generation cooperatives have high member trust and can supply specific niche products of high value (Fulton, 1999). They still retain several similarities with traditional cooperatives, e.g. only farmers may be the members, a limited amount of dividends can be paid out, one member has one vote in decision-making, and dividends are paid according to the number of shares purchased. Several differences distinguish the new generation cooperatives from traditional ones:

- new generation cooperatives seek to produce products that could be processed and sold at a maximum profit;

- the number of members is limited;
- each member is obligated to supply a certain quantity of products. The member is responsible for the quantity unsupplied;
- each member invests in the cooperative based on the volume of products planned to be processed by means of the cooperative; and
- the capital invested in the cooperative may be sold to another cooperative member at a price agreed by both members and approved by the management of the cooperative.

The new generation cooperatives have several advantages related to member loyalty. Their members are considered very loyal due to significant investments in the cooperative (Dunn et al., 2002).

2. RESEARCH METHODS

The research used monographic and descriptive methods that allowed determining the problem in detail, which was investigated from a theoretical perspective based on an extensive review of relevant scientific literature. The research also used several other approaches, including induction and deduction, comparison, the graphical method, statistical analysis, cause and consequence analysis and a sociological research method in the form of structured expert survey and interviews. A structured expert survey was conducted to identify the most significant problems for grain cooperatives and their causes. The survey involved seven experts who were competent in the grain production industry and were engaged in operating cooperatives. The experts represented the Latvian Agricultural Cooperatives Association, the Agricultural Services Cooperative Society (ASCS) Latrap and the ASCS VAKS. For confidentiality and at the request of experts, their identities were concealed.

3. RESEARCH RESULTS

3.1. DEVELOPMENT OF THE GRAIN PRODUCTION INDUSTRY AND ITS COOPERATIVE SOCIETIES IN LATVIA

According to the Central Statistical Bureau of the Republic of Latvia (CSB), a breakdown of the cropping pattern by main types of cereal crops in Latvia shows that the dominant crop was wheat, followed by barley, oats and other crops. Rye made up a relatively

small percentage in the cereal cropping pattern in 2019, with only 5.9% (Table 1).

In the cropping pattern, the decrease can be observed in the percentages of areas planted with all crops, except for wheat and oats. In 2018 and 2019, compared with 2009, the percentage of the area planted with oats increased by 1.9 and 0.2 percentage points, respectively.

According to the research project Forecasting of Agricultural Development and the Designing of Scenarios for Policies until 2050, the area used for wheat is projected to increase to 733.2 thou. ha until 2050, compared with 448.2 thou. ha in 2015 (+ 64%).

A significant increase in wheat area by 39%, reaching 623.4 thou. ha, is also expected until 2030. According to the research project, the total area cropped with cereals is also projected to increase from 672.3 thou. ha in 2015 to 918.4 thou. ha in 2050 (+ 37%). In 2030, compared with 2015, the total area is projected to increase by 23%, reaching 829.1 thou. ha (Forecasting..., 2018).

In Latvia, the total cereal output and the average yield varied in 2009–2019 (Table 2).

The most significant annual increase in cereal output of 53.8% was reported in 2019. The result was affected by an increase of 51.4 thou. ha in the area used for cereals, which reached 742.3 thou. ha, and an increase of 42.6 quintals/ha or 43% compared with 2018 in the average yield. It should be emphasised that 2019 saw the highest total cereal output, while the average yield of 42.6 quintals/ha was the second-highest in the history of Latvia.

A decrease of 23.6% in the total cereal output in 2018 and a decline of 22.2% in the average yield resulted from unfavourable winter conditions. Some cereals were destroyed by frost, and because of long autumn rains in August and September of 2017, the area cropped with winter cereals was smaller than expected. In the spring of 2018, the availability of good quality seed on the market was problematic, and prices were high. As a result, many farmers did

not reseed the frost-damaged cereals (Agriculture..., 2019). In 2017, the output of grain in Latvia accounted for 0.87% of the total EU output of grain. In the EU, the total output of grain decreased by 4.8% in 2018, compared with 2017 (Agriculture, forestry..., 2018). The analysed information on the total output and average yields, as well as the findings of research studies, allow concluding that agro-climatic conditions affect the total output and average yields the most (Sown area..., 2019; Lowest Average..., 2019, Agriculture..., 2019). The total output of cereals was also affected by the total area cropped with cereals, which was proved by the correlation coefficient $r = 0.90$. An increase in the area used for cereals leads to an increase in the total cereal output. The correlation coefficient showed a strong relationship between independent and dependent variables.

The coefficient of determination $R^2 = 0.8184$ shows that an increase of 1% in the area cropped with cereals results in an increase of 0.82% in the total output (Fig. 1).

In 2018, 20 316 farms were engaged in cereal production in Latvia. In 2009–2018, the total number of farms was volatile and decreased by 9.48 thou. or 31.8%.

The largest decrease was reported in the category of farms having a cereal area of up to 10 ha. In the opinion of the authors, this trend could be considered positive, as the number of farms increased in other categories of cereal farms. This finding could be explained by the liquidation of small farms, which allows other farms to increase the area used for cereals. In the analysed period, the largest increase was reported in the category of farms with a cereal area of over 300 ha. In this category, the number of farms increased by 139, indicating that large farms expanded faster.

The expansion of large farms could be viewed positively from the perspective of agricultural intensification. The use of land resources in Latvia is inefficient (Lēnerts, 2018). The management of large

Tab. 1. Percentage breakdown of the cropping pattern by the main type of cereals in Latvia in 2009–2019

| CROP | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| WHEAT | 52.8 | 56.8 | 59.1 | 61.7 | 63.7 | 61.4 | 66.7 | 67.4 | 67.0 | 60.8 | 66.8 |
| BARLEY | 19.3 | 19.7 | 18.7 | 15.3 | 14.6 | 18.3 | 14.8 | 13.4 | 11.6 | 17.4 | 11.8 |
| REY | 10.9 | 6.4 | 5.4 | 6.4 | 5.0 | 4.9 | 5.6 | 5.1 | 4.8 | 3.2 | 5.9 |
| OATS | 11.2 | 11.7 | 11.3 | 10.8 | 10.7 | 10.2 | 9.0 | 9.0 | 10.1 | 13.1 | 11.4 |
| OTHER | 5.7 | 5.4 | 5.5 | 5.7 | 6.0 | 5.1 | 4.0 | 5.0 | 6.5 | 5.5 | 4.2 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: elaborated by the authors based on CSB data, 2020.

areas increases efficiency, thereby enhancing the performance of the farms.

The CSB data allow concluding that cereal yields are higher on farms with larger areas cropped with cereals. In 2009, the category of farms having the cereal area of up to 10 ha had the average yield of 18

Tab. 2. Changes in the total cereal output and the average yield in Latvia in 2009–2019

| YEAR | TOTAL OUTPUT, THOU.T | ANNUAL CHANGE (%) | AVERAGE YIELD, QUINTALS/HA | ANNUAL CHANGE (%) |
|------|----------------------|-------------------|----------------------------|-------------------|
| 2009 | 1663.1 | - | 30.8 | - |
| 2010 | 1435.5 | -13.7 | 26.5 | -14.0 |
| 2011 | 1412.0 | -1.6 | 26.8 | 1.1 |
| 2012 | 2124.5 | 50.5 | 37.0 | 38.1 |
| 2013 | 1948.7 | -8.3 | 33.4 | -9.7 |
| 2014 | 2227.2 | 14.3 | 34.0 | 1.8 |
| 2015 | 3021.5 | 35.7 | 44.9 | 32.1 |
| 2016 | 2703.2 | -10.5 | 37.8 | -15.8 |
| 2017 | 2692.5 | -0.4 | 38.3 | 1.3 |
| 2018 | 2057.3 | -23.6 | 29.8 | -22.2 |
| 2019 | 3163.2 | 53.8 | 42.6 | 43.0 |
| 2009 | 1663.1 | - | 30.8 | - |
| 2010 | 1435.5 | -13.7 | 26.5 | -14.0 |
| 2011 | 1412.0 | -1.6 | 26.8 | 1.1 |
| 2012 | 2124.5 | 50.5 | 37.0 | 38.1 |
| 2013 | 1948.7 | -8.3 | 33.4 | -9.7 |
| 2014 | 2227.2 | 14.3 | 34.0 | 1.8 |
| 2015 | 3021.5 | 35.7 | 44.9 | 32.1 |
| 2016 | 2703.2 | -10.5 | 37.8 | -15.8 |
| 2017 | 2692.5 | -0.4 | 38.3 | 1.3 |
| 2018 | 2057.3 | -23.6 | 29.8 | -22.2 |

Source: elaborated by the authors based on CSB data, 2020.

quintals/ha, while farms with 300 ha of the serial area had 36.2 quintals/ha or twice as much. In 2019, the figures for respective categories were 27.5 quintals/ha and 49.8 quintals/ha or 1.8 times more. The average yield trend in 2015–2018 clearly showed that technological support was an important prerequisite for cereal production and differed for small and large farms (Forecasting..., 2018). The summarised data showed that in the analysis period, the average cereal yield tended to increase in all categories of farms, which could be viewed positively.

In 2014–2018, according to the Latvian Agricultural Cooperatives Association, the number tended to decrease for Latvian grain cooperatives granted the compliance status.

In 2018, compared with 2014, the number of grain cooperatives decreased by four. An annual change rate calculation showed that the number of grain cooperatives mostly decreased in 2016 and 2017, by 10% and 11.1%, respectively. In 2018, compared with the previous year, the number of grain cooperatives decreased by 6.3%; however, this reduction could indicate a positive trend as it contributed to the expansion of cooperatives and an increase in their total membership.

In 2018, the total membership of grain cooperatives was 2 278 or 446 more than in 2014. The largest increase in membership of 12.2% was reported in 2015, and in 2018, it was only 1.2%. The membership increased due to the economic situation in the agricultural industry in 2014 when the development and turnover of the industry were affected by the food embargo imposed by the Russian Federation (Agriculture..., 2016). The increase in the number of grain cooperatives and their membership was facilitated by

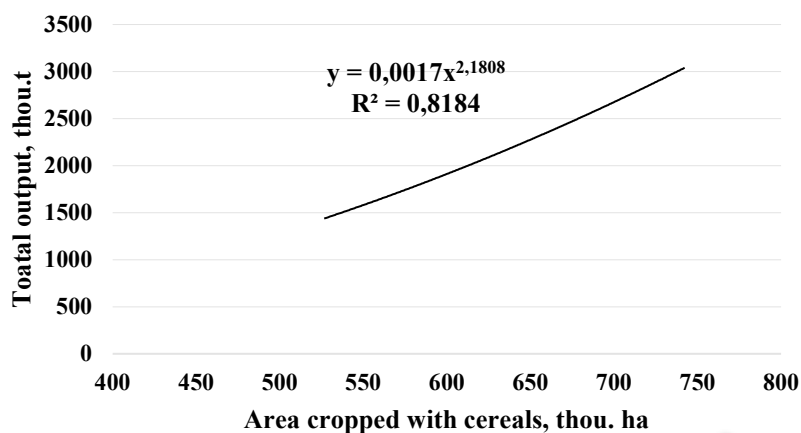


Fig. 1. Correlation between the area cropped with cereals and cereal output in Latvia in 2009–2019

Source: elaborated by the authors based on CSB data, 2020.

opportunities to receive national and EU financial support (Development..., 2012).

The calculated correlation coefficient ($r = -1$) indicated a strong relationship between the number of cooperatives and their memberships. The coefficient was negative because a decrease in the number of cooperatives resulted in an increase in their memberships.

Based on the analysis of the total number of grain farms in Latvia, 11.2% joined cooperatives in 2018. According to the authors of this article, this rate is considered low; therefore, the Latvian Agricultural Cooperatives Association, in collaboration with cooperatives, should take intensive measures to increase the membership.

In 2015–2019, according to the Latvian Agricultural Cooperatives Association, the proportion of cooperatives engaged in grain production varied. In the same period, most cooperatives that received the compliance status were engaged in milk production. In 2014, their proportion in the total number of agricultural cooperatives was 43.8%, while in 2015, the share decreased by three percentage points. In the following years, the proportion of dairy cooperatives increased and reached 49% in 2019. During the analysed period, the proportion of grain cooperatives in the total number of cooperatives decreased from 39.6% (2015) to 30.6% (2019). Only in 2016, compared with 2014, the proportion increased by 1.2 percentage points and amounted to 40.8%. The total number of cooperatives varied during the analysed period.

Based on analysis into a breakdown of cooperative members by the agricultural industry, in 2014–2018, grain and milk cooperatives had the highest membership proportions.

It should be noted that the membership proportion of cooperatives engaged in grain production has been decreasing since 2017; however, it increased for forest owner cooperatives. The membership proportions of other cooperatives (fruit and vegetable production, technical services, meat production) were small. Consequently, farmers of other agricultural industries should be motivated to join cooperatives.

Based on analysis into a breakdown of memberships of grain cooperatives in 2017 and 2018, the largest number of members was reported by the ASCS Latraps, 915 and 972 members, respectively (Table 3).

ASCS VAKS was the second-largest cooperative in terms of membership with 531 members in 2017 and 538 members in 2018. Based on analysis into

Tab. 3. Changes in memberships of grain cooperatives in Latvia in 2017 and 2018

| COOPERATIVE NAME | 2017 | | 2018 | | CHANGE (%) |
|---------------------|-------------|--------------|-------------|--------------|------------|
| | NUMBER | (%) | NUMBER | (%) | |
| ASCS Latraps | 915 | 40.6 | 972 | 42.7 | 6.2 |
| ASCS VAKS | 531 | 23.6 | 538 | 23.6 | 1.3 |
| ASCS Durbes grauds | 177 | 7.9 | 179 | 7.9 | 1.1 |
| ASCS Barkavas arodi | 113 | 5.0 | 114 | 5.0 | 0.9 |
| Other | 516 | 22.9 | 475 | 20.9 | -7.9 |
| Total | 2252 | 100.0 | 2278 | 100.0 | 1.2 |

Source: elaborated by the authors based on (Kiryluk, 2005, p. 60).

a breakdown of memberships of cooperatives, ASCS Latraps and ASCS VAKS comprised more than 64% of the total membership in 2017 and 66% in 2018. In 2018, compared with 2017, the most significant increase in the number of cooperative members was reported by the ASCS Latraps (6.2%). It should be noted that the proportion of membership in small cooperatives tended to decrease. In 2018, compared with 2017, the number of members in small cooperatives decreased by 7.9%, which could indicate a positive outcome as it promoted the development of large cooperatives.

Aiming to identify the activity of members of grain cooperatives and trends in contributing to the performance of cooperatives, it is necessary to analyse the net turnover. In 2014–2018, the net turnover was volatile (Table 4).

In 2014, the total net turnover of grain cooperatives was EUR 246.2 million. The highest annual growth in net turnover (42.9%) was observed in 2015.

Tab. 4. Changes in the net turnover of grain cooperatives in Latvia in 2014–2018

| YEAR | NET TURNOVER, MILLION EUR | CHANGE RATE (%) | |
|------|---------------------------|-----------------|----------------|
| | | ANNUAL | FROM BASE YEAR |
| 2014 | 246.2 | - | - |
| 2015 | 351.8 | 42.9 | 42.9 |
| 2016 | 304.3 | -13.5 | 23.6 |
| 2017 | 341.8 | 12.3 | 38.8 |
| 2018 | 310.9 | -9.0 | 26.3 |

Source: elaborated by the authors based on data of the Latvian Agricultural Cooperatives Association, 2020.

This could be explained by the fact that the year 2015 was the most successful for grain producers, as the total grain output exceeded 3 million tonnes for the first time in the history of Latvia (Agriculture..., 2016).

However, according to analysis into the change rate compared to the base year 2014, the net turnover was higher in all the following years, which indicates the development of cooperatives. Based on a comparison of the total turnover of all types of cooperatives, the turnover of grain cooperatives in the analysed period comprised the largest part of the total turnover (Agriculture..., 2019).

Based on data of the Latvian Agricultural Cooperatives Association, a breakdown of the net turnover of cooperatives that had the compliance status revealed that the industry leaders represented grain production.

In 2014–2018, the turnover of grain cooperatives varied, and the largest turnover of EUR 351.8 million was reported in 2015. In 2015, compared with the previous year, there was also the largest increase in turnover, which amounted to EUR 105.6 million. The turnover of dairy cooperatives was the second largest and varied during the analysed period. The largest turnover was reported in 2018, reaching EUR 87 million. In the analysed period, the net turnover of forest owner cooperatives increased from EUR 0.6 million in 2014 to EUR 8.6 million in 2018. The net turnover of other cooperatives (fruit and vegetable production, technical services, meat production) increased from EUR 1.4 million to EUR 5.8 million in the analysed period.

An analysis of products purchased for sale from cooperative members revealed that in 2014–2018, the number was volatile, which could have been affected by the total output of cereals. The correlation coefficient indicated a moderately strong relationship between the total output of grain and the sales of products purchased from cooperative members ($r = 0.73$). Products purchased from cooperative members indicate their value rather than the quantity. The largest value of products purchased from cooperative members for sale was reported in 2017, amounting to EUR 176.4 million.

The number that represents products sold to cooperative members has been increasing since 2016, which could be viewed as a positive indicator demonstrating the increasing loyalty of the members. In contrast, fewer services were sold to cooperative members in 2018 compared with 2017, i.e. by EUR 6.1 million or 52.1%. Probably, this outcome was the

result of hot and dry summer, due to which the average yield and output of cereals decreased as well as the moisture content of the grain; therefore, cooperative members purchased less drying services.

Overall, the activity of grain cooperatives in Latvia slowly expanded, which is suggested by the increased number of cooperative members in 2014–2018. Also, a faster increase was observed in the membership of the largest cooperatives, which also indicated an increase in the importance of cooperation in agriculture.

The Latvian Agricultural Cooperatives Association designed a development strategy for agricultural and forestry service cooperative societies for 2021–2027 and identified the consolidation of cooperatives or the development of second-level cooperation in the agricultural industry as one of the priority areas (LLKA has..., 2019).

3.2. BARRIERS TO THE OPERATION OF GRAIN COOPERATIVE SOCIETIES IN LATVIA

Structured interviews with experts allowed the authors to identify factors that hinder the development of grain cooperatives in Latvia. The experts were asked open-ended questions; thus, everyone could express their opinions.

The causes of the most significant problem identified by the experts — poorly developed agricultural processing by cooperatives due to a lack of processing enterprises — were determined with the help of a tree diagram. Based on the tree diagram, the experts provided answers to the question “why?”, thereby identifying the possible causes of the problem (Fig. 2):

- lack of financial resources. The experts believed that this economic factor was affected by the reluctance of cooperative members to invest, the inaccessibility of funds from credit institutions, as well as insufficient government support;
- the unclear market situation. According to the experts, there were inadequate resources for market research, insufficient sales guarantees and fluctuating market demand, as well as strong market competitors. One expert emphasised the behaviour of competitors in the event of a new entrant. There were frequent cases of price dumping, as competition intensified in an attempt to drive new entrants out of the market;
- workforce problems. The workforce was affected by demographic processes and emigration, as well as the shortage of skilled and low-skilled workers. The Minister of Agriculture, Gerhards,

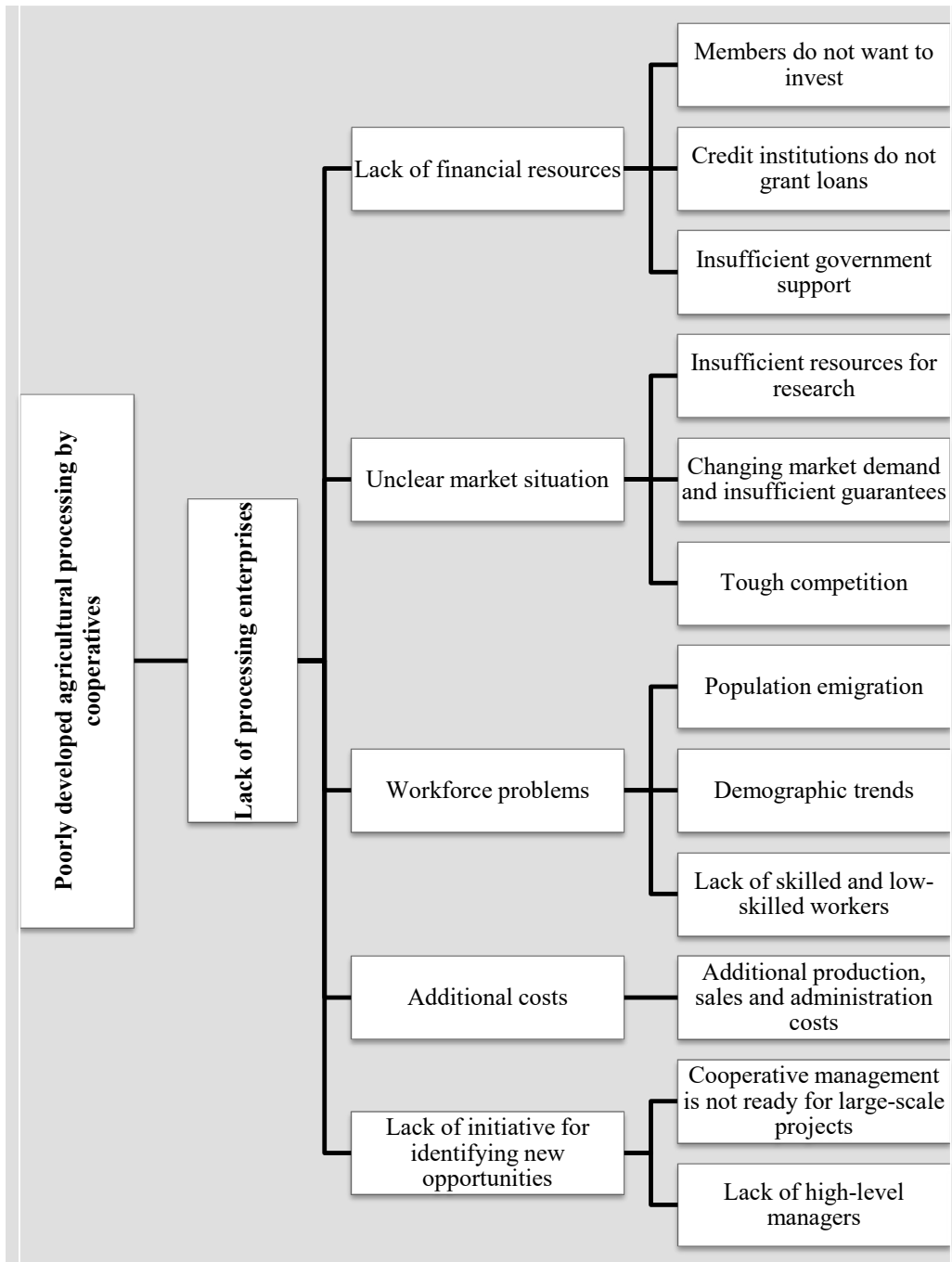


Fig. 2. Tree diagram of the causes for the problem faced by grain cooperatives, i.e. the poorly developed agricultural processing

also noted that one of the most important aspects in the development of the agricultural industry was the quality of the workforce as well as its availability, particularly in the regions. The results of the research showed that approx. 76% of the workforce in the agricultural industry were unpaid employees, including family members, i.e. parents and children. Besides, unemployment in the regions continued to increase despite the rising productivity level (Farmers..., 2019);

- additional costs. The experts pointed out that production, (LLKA has..., 2019) sales and administration costs would increase, which could reduce the income of cooperative members. Labour costs could rise due to the hire of high-level managers;
- lack of initiative for identifying new opportunities. The development of agricultural processing is affected by the readiness of the cooperative management for the implementation of large-

scale projects as well as a lack of high-level managers.

The potential consequences of poorly developed agricultural processing by grain cooperatives include less revenue, a smaller number of customers, decrease in exports, a smaller number of potential cooperative members, an unused opportunity to expand operations and lower profits for cooperative members.

CONCLUSIONS

The nature and types of cooperation have been extensively researched in the scientific literature; however, there are relatively few research studies on grain processing by cooperatives.

Multidisciplinary agricultural cooperatives are widespread in the EU, yet in Latvia, they have not been operating for a long time.

During the analysed period, the area cropped with cereals increased by 90%, the amount of exported cereal increased by 126.6%, the number of small farms (up to 20 ha in size) decreased, and the proportion of large farms grew, resulting in an increase in average cereal yields, which is indicative of the development in the Latvian grain production industry.

In 2018, compared with 2015, the membership of grain cooperatives increased by 446 or 24.3%. Large cooperatives had the fastest growth in the membership of grain cooperatives. During the analysed period, the number of grain cooperatives decreased, and the calculated correlation coefficient showed a strong relationship between the number of cooperatives and their memberships, indicating that the cooperatives expanded and developed, gaining more importance in the grain production industry.

The research examined the theory on the development of cooperatives in Latvia and the world as well as the Latvian grain production industry and performed a statistical analysis into the performance of grain cooperatives. The total output of cereals was also affected by the total area cropped with cereals, which was proved by the correlation coefficient $r = 0.90$. An increase in the area used for cereals leads to an increase in the total cereal output. The correlation coefficient showed a strong relationship between independent and dependent variables.

Structured interviews with experts allowed the authors to identify factors that hinder the development of grain cooperatives in Latvia. The industry experts identified the technological factor of poorly developed agricultural processing. The experts iden-

tified the possible causes of the problem, i.e. lack of financial resources, the unclear market situation, workforce problems, additional costs, a lack of initiative for identifying new opportunities.

Using the internal and attracting external financing, the managements of grain cooperatives should establish processing enterprises to increase the revenue of the cooperatives and expand the sales market.

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