

**THESES OF DOCTORAL (PHD) DISSERTATION**

**SZÚCS DIÁNA  
GÖDÖLLŐ  
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# **HUNGARIAN UNIVERSITY OF AGRICULTURE AND LIFE SCIENCES**

## **ALONE OR IN A TEAM? NETWORK ORGANISATIONS IN THE HUNGARIAN AGRICULTURE**

**Szűcs Diána**  
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## 1. BACKGROUND OF THE WORK, OBJECTIVES

Agriculture is the sector with the longest history, the current integrated form of which combines traditional peasant industrial and organic farming models (GAZDAG 2019).

The relationship and role of the individual and the group in achieving the goals may be a classic topic (BAKACSI 2006), but I believe that there are still only a few publications on the issue in the field of agriculture.

The research is based on two disciplines: on the one hand on knowledge in organizational science and on the other hand on knowledge in agricultural science. In my research, I wanted to focus on how production can evolve in agriculture if individual farmers start networking. I wanted to shed light on the implications of working together in a group, and how difficult it is to implement it individually. Can a goal really be achieved sooner in the community, or does it require effortful adaptation?

One of the most important scientific topics of the beginning of the 21st century is the network, which is based on the same organizational principle. It is extremely interesting that the beginning of the XX. century a Hungarian writer had a major influence on the development of mathematical theories. The six-step distance theory states that everyone on Earth can connect with anyone through a chain of acquaintance. The theory first appears in Frigyes Karinthy's 1929 short story Chain Links, albeit in five steps. The idea came from Karinthy's conjecture. He thought a few connections were enough that the circle of acquaintances could create the all of humanity (KARINTHY 1929); (BARABÁSI 2003).

Studies on new economic formations report that the mutual, network dependence of companies and their partners is a prerequisite for rural innovation. However, in addition to demand-driven networking, there is still considerable scope for a supply-driven market presence. This is especially true for small agricultural producers, for whom local conditions and limited resources are the most decisive (LAZÁNYI et al. 2017).

In other sectors, business people already find it almost impossible to survive without coming together, organizing and exchanging experiences thus, it would be extremely important for farmers to finally become self-aware in agriculture as well: they must work together if they want to produce in an environmentally conscious and efficient way (SZÚCS-NAGY 2018).

Globalization processes now require *sustainable* production in agriculture, for which the use of the most efficient technology is vital. In order to take advantage of the opportunities offered by technology, it is extremely important to have the necessary knowledge that the young generation can easily acquire. However, *expertise* is not enough; the experience of older farmers is also essential, the generational change is yet to be implemented. After researching the topics described above, I got to the expectations of Hungarian farmers regarding the leader of a possible cooperation and their attitude towards cooperation.

Hungary has outstanding geographical features that are optimal for the implementation of successful agricultural production, however, it should be noted that in neither developed nor in moderately developed countries could it be a key sector. Agriculture is a special sector, it is affected by a lot of external influences, which sometimes happen unexpectedly, so full rationalization is almost impossible (SZÚCS 2017).

It's a concern for researchers worldwide how it is possible to adapt to extreme weather conditions. This is particularly important in agriculture, a sector that is extremely vulnerable to the weather. Agricultural production is extremely unpredictable not only but especially due to the variability of the weather factor, so it's risky (SZÚCS 2020).

Globalization, unchanged size of the land and declining water supplies have made it increasingly urgent to look at sustainable production not as an option but as a mandatory method (SZÚCS 2017), (SZÚCS 2018).

Creating the conditions for precision technology would be extremely important for the development of sustainable agriculture. In Hungary, the fragmented system of estates and small farms do not allow to the farmers to take advantage of the opportunities offered by precision farming. On the one hand, this is hampered by the problem of generational change, and on the other hand, the results of a number of studies show that there is no need for this level of over-mechanization, which is typical in the country (SZÚCS-NAGY 2019).

The pandemic is expected to slow down the population explosion forecasted in previous years, however, this can only save time for agriculture, in the pursuit of sustainability and to improve competitiveness, the generational change will continue to play an important role after the epidemic (SZINAY - ZÖLDRÉTI 2020). Founded in 2008, EIT Food (one of the Knowledge and Innovation Communities set up by the European Institute, which is considered to be a leader at European level in the field of agriculture) points out in a recent publication that in Central and Eastern Europe, efforts to reform agriculture after COVID are even more urgent than ever (NÍZYŇSKA - RODRÍGUEZ 2020).

The small and medium-sized entrepreneurs of the Hungarian agricultural economy are in a vulnerable position due to the size of their farms. The size of the plot or land does not reach the economical size of the farm. This means that they alone - without social support, without networking - are unable to compete with larger agricultural companies (SZÚCS - LAZÁNYI 2018).

It is necessary to increase the volume of higher processed products; in the composition of Hungarian agricultural exports, products with lower added value and hardly processed products still predominate (SZÚCS-NAGY 2018).

The mentality of the Hungarian people can be compared to nothing. Although there are positive examples in the surrounding European countries, professionals were faced with the challenge of finding a model that could work in a domestic environment. The 2018-2019. apple crisis has confirmed the relevance of my research topic, as the problem of apple growers is mainly due to a lack of cooperation. In order to support the need for *teamwork*, I conducted primary research, which was aimed at the over-mechanized nature of Hungarian agriculture, but this is not enough for the spread of precision technology. Without the use of subsidies in private farms, it is almost impossible to set up a machine park, however, achieving an economical farm size is not only possible with the help of TSZs, but also through other forms of group cooperation (SZÚCS - NAGY 2019).

Albert-László Barabási created the theory of the scale-independent network in 1999, following the publication of which several researchers independently joined the topic and contributed to the generalization of the theory. (BARABÁSI 2003); (BARABÁSI 2016).

More and more people are recognizing abroad that by using such cooperation models, agricultural producers can build joint capacities to compensate for their size disadvantages and market positions, and can jointly manage the acquisition of inputs, the use of capacities, and sales channels (LAZÁNYI et al. 2017).

Collective resources, such as the use of infrastructure, greatly favour the formation of economic networks (LAZÁNYI 2012).

Belonging to a group also has advantages and disadvantages. The main goal of my research was to examine that cooperating as group members whether an optimal operation could be established for the members of Hungarian agriculture, and if so, what are the benefits and inconveniences of this collaboration.

Due care must be taken in defining the research goal; essentially clarifies the topics to be examined and the information required. It's important to focus on the necessary and relevant issues (KÁRPÁTI - LEHOTA 2010). My aim was to present the specifics of the agricultural sector in addition to the general issue of corporate governance, the effect of factors other than other sectors of the economy. There was a need for comparable databases to judge the relative situation, justify and evaluate the differences. One of my goals was to show the impact of working in a group, thus, the following objectives have been identified, which promote a better understanding of the Hungarian agriculture and the attitudes of those working in agriculture (Table 1).

Table 1: Objectives of the research work

|    |   |
|----|---|
| C1 | PRESENTATION OF THE IMPORTANCE OF COMPETITIVENESS IN AGRICULTURE, IN PARTICULAR WITH REGARD TO TECHNOLOGY AND GENERATION CHANGE<br><br>EXPLORING THE IMPACT OF DIFFERENT ATTITUDES OF GENERATIONS AND FAMILY BACKGROUND               |
| C2 | RELEVANCE OF THE LEVEL OF SKILLS OF AGRICULTURAL EMPLOYEES<br><br>LITERATURE REVIEW AND ANALYSIS OF THE CURRENT SITUATION ON THE BASIS OF AGRICULTURAL STATISTICS AND PRIMARY RESEARCH<br>A KÉPZETTSÉGBELI ELTÉRŐ ATTITÚDÖK FELTÁRÁSA |
| C3 | ANALYSIS OF THE CURRENT SITUATION OF AGRICULTURE AND PRESENTATION OF THE POSSIBILITY OF DIGITIZATION  |
| C4 | PRESENTATION OF THE SIGNIFICANCE OF THE GROUP, SOCIAL CAPITAL, NETWORKING IN AGRICULTURE, ANALYSIS OF THE CURRENT SITUATION BASED ON PRIMARY RESEARCH   |

Source: own editing

In order to achieve the set goals, the following tasks have been formulated:

*C1. The development of Hungary's agriculture and land over the course of history*

Tasks: a) to clarify the reasons for changes in land; b) to provide an overview of the development of the land involved in the agricultural production of the country, based on secondary (CSO) data; c) comparison of the domestic situation with European countries

*C2. Sustainability and risk management*

Tasks: a) conceptual boundaries; b) presentation of the current climate situation, risks arising from the climate situation and exploring farmers' risk management strategies for risk factors; c) a comparison of the domestic situation and trends

*C3. Competitiveness: technology and generational change*

Tasks: a) conceptual boundaries; b) identification of factors affecting the competitiveness of the agricultural sector; c) a comparison of the domestic situation and trends

- Throughout history, farmers have had the opportunity to work on less and less land. The shrinking land area determined the tracking of technological progress in order to ensure adequate production.
- In addition to declining land, climate change and globalization are putting pressure on the sector, thus, the importance of sustainable farming is becoming more and more urgent, which also requires technological development.

*C4. Qualifications of those working in agriculture*

Tasks: a) to identification of factors affecting the competitiveness of the agricultural sector; b) presentation of the problems of generational change; c) a comparison of the domestic situation and trends

- Adopting the technology requires the right level of qualification and experience from the older generation. Both the level of technology and the level of skills are essential to improve the competitiveness of the sector.

*C5. The current situation of agriculture and the possibility of digitization*

Tasks: a) the situation of mechanization in the Hungarian agricultural sector; b) the state of mechanization at international level; c) a comparison of the domestic and international situation

*C6. Group, social capital, networking*

Tasks: a) the attitude of individuals from different marital status toward co-operation; b) demonstrating the importance of cooperation in the sector; c) international best practice; d) the comparison of the domestic and international situation

- Hungarian agriculture is over-mechanized, which can be traced back to the possibilities of using EU funds on the one hand, and to the attitude of farmers to co-operation on the other.



My research questions related to the assumptions are summarized in the following table (No. 2):

Table 2: Formulated research questions

|    |   |
|----|---|
| K1 | WHAT FACTORS AFFECT THE DIFFERENT ATTITUDES OF HUNGARIAN FARMERS?   |
| K2 | HOW THE DIFFERENT GENERATIONS VIEW THE IMPORTANT ISSUES OF THE AGRICULTURAL DEVELOPMENT?                    |
| K3 | HOW DOES THE MARITAL STATUS AND THE NUMBER OF FAMILY MEMBERS IN AGRICULTURE AFFECT AGRICULTURAL PRODUCTION? |
| K4 | WHAT IS THE IMPACT OF QUALIFICATIONS ON COMPETITIVENESS AND COOPERATION?                                    |

Source: own editing

The literature has been chosen in order to successfully implement the research of the stated goals, tasks and assumptions, and they can be considered as diverse in terms of their topic.

## 2. MATERIAL AND METHOD

The best way to define a research plan is to provide the most appropriate way to address the problem, to set objectives, provides an appropriate way to test research hypotheses and provides valid and reliable answers in accordance with the scientific method (Scipione 1994). It is essential to read so much that the researcher be thoroughly informed in the history and context of the topic in order to know the available literature on the topic (Seidman 2002). While reading the literature or walking with a naked eye, the researcher can ask a number of questions, from which they then select the best (HORVÁTH - MITEV 2015). According to CRESWELL (2018), data can be interpreted based on what the researcher brings with them, ie based on their own culture, history and experience, but comprehension can be the result of a process of comparison when the researcher compares his or her own findings with other findings or theories found in the literature.

In 2017, at the beginning of my research, I combined exploratory and descriptive traits. In my exploratory research, I followed the deductive logic, as I did not have enough knowledge on the subject. The aim of the study was not to obtain final results, but to obtain the necessary support for further research, a significant part of which was the processing of the literature on agricultural and organisational behavior. Descriptive studies also serve to formulate a strategy for later explanatory research. It plays an important role in such research that what tools we use to collect data to capture reality (HÉRA - LIGETI 2006).

In support of the information I found relevant, I chose to analyze publicly available statistics, which either supported or refuted my suggestions. The further I progressed in my research, the more the need arose to go beyond the analysis of publicly available statistics, but I also started my primary research by making my own questionnaire and processing its answers. In 2018, the challenges apple growers were facing have shown that without cooperation, farmers will not be able to work efficiently. Initially, the research was mainly focused on apple growers in Szabolcs, but in 2019 I extended the research to other sectors and to the national level.

I wanted to carry out my primary research by developing a large sample questionnaire. In the course of my research, I wanted to explore such possible development directions by processing the available domestic and international literature and primary research, which would offer a solution to economies of scale arising from a fragmented ownership structure. In my case, part of the preparation was the processing of the agrarian-specific literature, and the other predominant part was the processing of the literature on social capital and networking.

The research was carried out in the framework of a comprehensive research that examined the operation of Hungarian agricultural companies, the characteristics of entrepreneurs and the willingness to cooperate. The first phase of the research was targeted sampling, where farmers working in agriculture from all over the country were contacted.

Subsequently, in the second phase of the research (after 2019), the snowball method was applied: with the help of respondents in the first phase, the online version of the questionnaire reached more than 400 farmers nationwide. After data cleansing, 435 questionnaires were considered acceptable. The questionnaire can be divided into three parts. The first part was to reveal the demographic data and some basic characteristics of the agricultural enterprise, the second part examined the operation of the company, and the third part discussed the respondents' attitudes towards possible cooperation, its advantages and disadvantages, and the competencies expected from potential leaders.

According to the data of the Central Statistical Office, 72% of those employed in agriculture are men, and the sample can be considered representative in terms of the gender of the respondents. Our experiment to reach all regions of the country also proved successful, which is illustrated by the following graph. The Észak-Alföld region is slightly over-represented, the involvement of the other six regions can also be considered representative (Figure 19); (KSH 2019).

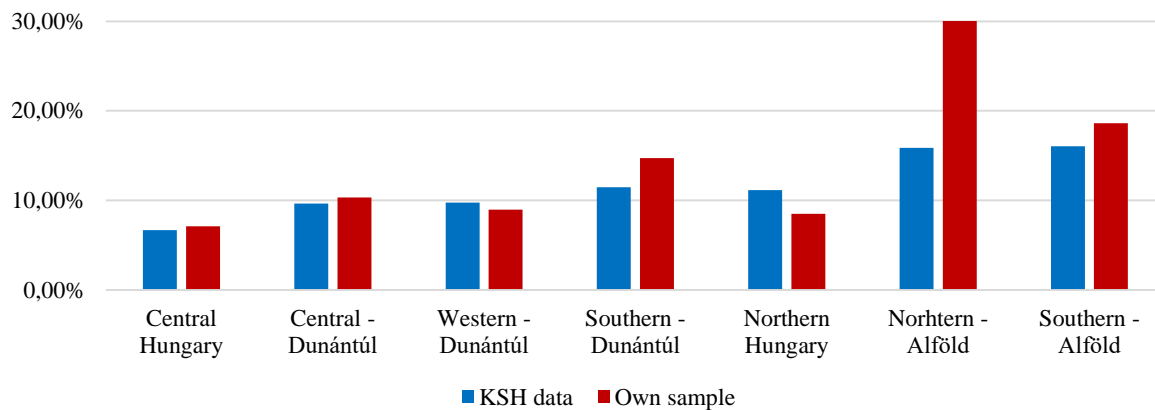


Figure 19: Distribution of respondents by region

Source: (KSH 2019) and own source, own editing

The largest share of the respondents came from the baby boom generation, which can also be considered representative in terms of the CSO census. Generations X and Y were almost equally represented in the questionnaire, while Generation Z was slightly overrepresented based on the 2016 agricultural census (Figure 20).

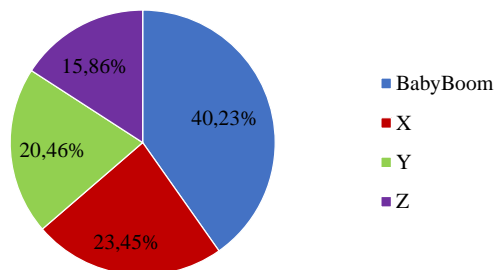


Figure 20: Generation distribution of respondents

Source: own resources

Although it is very difficult to determine the size of an agricultural enterprise, the first step in analyzing the survey was to form a well-applicable scale.

I started my primary research by analyzing the different attitudes and different risk management strategies and qualifications of Hungarian farmers. The basis of my hypothesis was that no matter how much Hungarian farmers have access to various EU or domestic subsidies, due to the fragmented land and the difference in the developed machinery, it is more difficult to prosper than to think together, think as a group and act accordingly.

A well-functioning collaboration requires the presence of a charismatic leader and group members with different attitudes (BARABÁSI 2018), thus, with this in mind, I wanted to point out the lack of cooperation in Hungarian agriculture, in the group, and the positive or (if the hypothesis is rejected) negative effects of cooperation.

According to the literature, members of the Baby Boom generation have largely retired or are in the process of retiring. Generations X and Y are highly educated generations. Eliminating uncertainties is very important for Generation X, and Generation Y, being born in the age of the information revolution, is extremely good at handling technical innovations.

Generation Z has a very different way of thinking than other generations, so they are being addressed in a number of studies to get closer to them, for example, in their consumption or employment. Based on these, my first hypothesis was that generations have different views on group membership and collaborative leadership activity.

*H1: Generations are represented in different proportions in a producer group and show a varying willingness to lead a producer co-operation*

Next, in my second hypothesis, I wanted to point out what different expectations result from different attitudes.

*H2: Different generations have different expectations about a well-functioning organization, its leader and the membership fee to be paid*

Studies of sociological and organizational functioning report that social relationships help an individual achieve better results. Marital status also affects the activities of individuals, thus, in formulating my third hypothesis, I sought to point out the effects of marital status and social relationships in the activities of farmers.

*H3: Marital status and social relationships result in different activities and affect the length of time spent on the activity*

The fourth hypothesis focused on the attitudes of farmers with different family backgrounds. The assumption was that farmers with different marital status and different family backgrounds and kinship also had different views on a potential cooperating organisation.

*H4: Marital status results in different attitudes when joining a cooperating organisation*

Finally, in connection with my last hypothesis, I wanted to examine the different attitudes resulting from differences in education, in which the assumption was that Hungarian farmers would have different views depending on whether or not they had an agricultural degree. In the course of my research, the agricultural census of 2020 was also published, in which several questions could be compared with my own research.

*H5: Farmers with a specialized education have a different mindset and attitude than those without a qualification*

The database and methodology are an essential point for the observation, analysis and interpretation of the results of all socio-economic phenomena. From the very beginning of the research, it is necessary to determine which variables to include in the study and the methods we use to analyze our data (MOLNÁR 2015). Adequate methods must be used for the given database (SAJTOS - MITEV 2007). It was extremely important to have as much information as possible in the field of both agricultural and organizational economics, which I obtained through exploratory research. The aim of the descriptive examinations was to get to know the characteristics of the examined population thoroughly and with the help of explanatory studies I tried to explore the cause-effect relation.

Descriptive statistical results are presented as mean  $\pm$  standard deviation or mean, specifying the number of elements (N) and percentage (%) of the frequencies. The tables in descriptive statistics obtained in SPSS show the number of items (N), the mean (MEAN), the standard deviation (STD.DEVIATION) and the standard error (STD. ERROR MEAN).

T-tests were mostly used for hypothesis testing (SZTE 2019).

The general goal of hypothesis testing is to look for differences in the characteristics of samples obtained from a population. These comparisons basically assume that there is no significant difference ( $H_0$ ) between the samples. T-tests, which are among the most common hypothesis tests, are most often used to search for the differences.

Parametric methods assume that our data come from a normally distributed population. Comparing two normal distributions means comparing their means and standard deviations, for the same standard deviations, only the means should be compared. Parametric tests comparing the two groups (t-tests) examine the mean change, their null hypothesis is that the average of the two studied multitudes is the same ( $\mu_1 = \mu_2$ ).

For most statistical programs, the decision is made not on the basis of the t-value, but on the basis of the p-value calculated in parallel with it. Nevertheless, both values can be taken into account in our calculations, which generally show the same conclusion.

The decision based on the p-value shows the probability that the obtained deviation is caused by chance. For a p-value of 0.05, this means exactly 5%. In the description of manual calculations, we deal with the definition of this in more detail.

The confidence interval is set at 95% in all cases, with a p value below 0.05. SPSS 22.0 software was used for all analyzes, in which at the table, obtained as a result of the t-test (Independents Samples Test), we first examine the table "Levene's Test for Equality of Variances". The first line shows that the variances are the same, the second line shows that the variances are different. For different variances, the first line [Sig. value] will be significant, from which we know that the variances are different. If it is established that the variances are different or the same, we should look at the degree of freedom and the value of significance by going through the appropriate line.

For the same variances, we are talking about a two-sample t-test (top row), for different variances: Welch's two-sample t-test (bottom row), the results of which are interpreted within the table. Prior to multivariate analyzes, I performed univariate analyzes aimed at providing primary insight into the data structure through individual analysis of variables in the database, examining normality, outstanding and missing values (SAJTOS - MITEV 2007). The correct choice of methods is greatly influenced by the level of measurement of the dependent and independent variables (nominal, ordinal, interval, and ratio scale).

Methodological issues required the use of several statistical literature, the most important of which were the following: (SEIDMAN 2002); (SCIPIONE 1994); (SAJTOS - MITEV 2007); (SZÉKELY - BROWN 2008); (MOLNÁR 2015); (HORVÁTH - MITEV 2015); (DUSEK - KOTOS 2016).

### 3. RESEARCH RESULTS

I started my primary research by analyzing the different attitudes and different risk management strategies and qualifications of Hungarian farmers. In Hungarian agriculture, I wanted to point out the lack of cooperation in the group and the positive or (if the hypothesis is rejected) negative effects of cooperation.

I started my research by gathering the characteristics of agriculture, on the basis of which I determined the milestones of my primary research. At the beginning of my research, I focused on the challenges of apple growers, however, I extended my primary research to a national level, during which I wanted to explore the different attitudes of Hungarian farmers, for which I have identified three main directions: the impact of generational differences, different family backgrounds/social relationships, and different qualifications on attitudes.

The definition of the three directions was necessary, in my opinion, because the research results showed what factors could contribute to the establishment and successful operation of a future producer cooperation.

#### 1. QUESTIONNAIRE: GENERATIONAL DIFFERENCES

**H1. HYPOTHESIS: GENERATIONS ARE REPRESENTED IN A DIFFERENT RATIO AND WITH A DIFFERENT MOTIVATION IN A CERTAIN PRODUCER GROUP AND SHOWING VARY TENDENCY IN LEADING A PRODUCER COOPERATION.**

In connection with **H1 hypothesis**, I first examined whether farmers have already joined the producer network, and if so, why; then I sought an answer to the question of how different generations relate to leading a possible producer collaboration.

In the first part of the hypothesis test, the actual participation of farmers in groups shows a different picture, however, it is still worrying that the young generation is under-represented in some form of producer co-operation, so the generational change much mentioned in the literature is yet to come. There was a significant difference in motives only in a single response, thus, the different attitudes between the generations towards accession were only partially detectable. Finally, the part of the hypothesis related to managerial ambitions showed a significant difference between generations when comparing generations in pairs. The leadership ambitions of Generation Z, which can be found in the literature, are also reflected in the results of the study.

**RESULT: CERTIFIED / PARTIALLY CERTIFIED / NON-CERTIFIED**

**H2. HYPOTHESIS: DIFFERENT GENERATIONS HAVE DIFFERENT EXPECTATIONS REGARDING A WELL-WORKING ORGANISATION, ITS LEADERSHIP AND THE FEE TO BE PAID**

During the examination of **H2 hypothesis**, I addressed three questions: on the one hand, the expectations of the generations towards a well-functioning organization and its leader, and the different willingness to pay membership fees per generation.

With regard to the expectations of a well-functioning organization, 13 topics were identified (1. higher income, 2. increase of average yield or reproduction, 3. free or discounted expert advice, 4. conference, 5. purchase discount, 6. sales assistance, 7. tender opportunities, 8. economic advice and representation, 9. temporary staffing, 10. contract work, 11. car rental, 12. legal advice and representation, 13. networking opportunities).

Respondents were able to rate the topics on a 5-point Likert scale in the categories “not at all important,” “not very important,” “neutral,” “important,” and “very important”.

In the light of the analyzes performed and the different attitudes described in the literature, the second hypothesis was accepted. Different generations have different expectations for a well-functioning organisation. The statistics of the first part of the hypothesis test show very clearly that the expectations of Generation Z significantly differ from those of older farmers, as shown by previous researches in the literature.

In terms of well-functioning collaboration, the statistics from the analyzes performed show that there is a consensus across generations that both ability and intelligence are extremely important leadership traits, with significant differences in terms of personality. Generational research to date also shows what leadership qualities are preferred by the generations present in the labour market, which was also supported by the results of the present research.

RESULT: **CERTIFIED** / PARTIALLY CERTIFIED / NON-CERTIFIED

## 2. QUESTIONNAIRE: FAMILY STATUS AND RELATED RELATIONS

### H3. HYPOTHESIS: MARITAL STATUS AND SOCIAL RELATIONSHIPS RESULT IN DIFFERENT ACTIVITIES AND AFFECT THE DURATION OF THE ACTIVITY

When examining **Hypothesis H3**, I first examined the time spent on the activity as an analysis of the better results. I approached the issue from two directions: I was the first to carry out an analysis of how marital status affects the length of time spent in farming, then I also looked at how social relationships affect this. In the second part of the hypothesis study, I elaborated on how family background and social relationships influence the chosen activity.

Studies of organisational functioning usually report the positive and negative effects of group collaboration. Previous research on marital status has reported that the lowest perceived support and having the fewest supporters are single and divorced, with the highest perceived support and having the most supporters reported as married or cohabiting.

The analysis of the time spent on agricultural production showed that marital status and social relationships really influence who spends how much time on the activity, which indicates the presence or absence of cooperation. The analyzes showed a significant difference according to marital status regarding the agricultural activity that farmers choose, however, the extent of the kinship of each farmer or how many people are working in agriculture in the family, did not.

RESULT: CERTIFIED / **PARTIALLY CERTIFIED** / NON-CERTIFIED

### H4. HYPOTHESIS: FAMILY STATUS GIVES A DIFFERENT APPROACH TO JOINING A COOPERATIVE ORGANISATION

With regard to cooperation, in addition to the current activities of farmers, I also wanted to examine how they relate to a producer cooperation. What kind of organisation do they currently belong to, why did they join this organisation? How do you keep in touch with your environment and how do you relate to a possible leadership role?

I also approached the examination of **H4 hypothesis** from two directions: on the one hand, marital status; on the other hand the social side and how these factors influence joining a cooperating organization.

In the course of the hypothesis test, there was a visible difference between the widows and people with other marital status based on the distribution table for the type of the current organisation and the reason for joining. In terms of social relations, it was found that the more extensive the system of relations is, the more people the farmer keeps in touch with and has a greater willingness to lead the organization.

Statistical results show that marital status and social relationships influence farmers' attitudes toward cooperation.

RESULT: **CERTIFIED** / PARTIALLY CERTIFIED / NON-CERTIFIED

### 3. QUESTIONNAIRE: FAMILY STATUS AND KINSHIPS

H5. HYPOTHESIS: THOSE FARMERS WHO HOLD A DEGREE HAVE DIFFERENT MENTALITY AND ATTITUDE THAN THOSE, WHO DON'T

Qualifications lead to different attitudes in agricultural production and attitudes towards cooperation. I started the examination of the hypothesis by examining whether there is a significant difference in the different sectors, how much the specialized qualification contributes to wise management. Next, I examined how a specialized qualification affects the attitude toward collaboration, which I also approached from several perspectives.

The changes highlighted in the literature, according to which education is absolutely necessary for efficient production, can also be seen in the issues involved in the hypothesis. Skills result in wisdom; those with qualifications are more efficiently produce than their colleagues. The studies urge the need for collaboration, which is also reflected in the issues addressed in the hypothesis test. With regard to the conditions of use of the machine, the maintenance of social relations and the expectations of a well-functioning organisation, it can be seen that a statistically substantiated significant difference can be discovered in issues that may facilitate cooperation between Hungarian farmers in the future. Hypothesis H5 was accepted in the light of the literature and statistics.

RESULT: **CERTIFIED** / PARTIALLY CERTIFIED / NON-CERTIFIED



#### 4. SUGGESTIONS

J1: Overall, the research results show that there are generational differences in the attitudes of farmers involved in agricultural production. Based on the responses of the participants in the research, it was found that the older generation still represents a larger proportion of their age group in an organization, but on the other hand, younger people are more willing to lead a well-functioning organization. Before building a well-functioning organization for the future, it may be worthwhile for researchers to pay attention to the specific attitudes of generations, to take advantage of age-specific characteristics in the right positions in order to get the right individuals.

J2: Based on the answers of the research participants, the willingness to pay membership fees is influenced not only by the generations, but also by the existence of qualifications. Thus, when setting the level of membership fees, it is also worth paying attention to the fact that in addition to the appropriate membership fee, also come the right quality of information and services.

J3: Based on the responses of the participants, it was found that farmers with different social relationships (family background and kinship) have different attitudes towards the time spent in productive activities and different opinions about a well-functioning organization. There were also significant differences between farmers with different marital status in terms of production activity. Accordingly, farmers with and without social connections have different attitudes, which means that it is worth paying attention to the research of their motivation to join a well-functioning organization that may be formed in the future.

J4: As confirmed by the data of the latest (2020) agricultural census, the proportion of people with specialised qualifications varies in different sectors, but it is hoped that the proportion of people with a degree has improved in recent years. The different level of education, based on the answers of the farmers participating in the research, also means a different attitude towards joining the cooperating organisation. There was a significant difference between those with and without a specialist qualification in how they perceived their current organisation and what they expected from a well-functioning organisation. In Hungarian education, great efforts are devoted to the training of those working in agriculture, however, in order for farmers to network, it would be important to take their views into account and to encourage them to work together.

J5: The current legislation and subsidies have the effect of creating the conditions for farmers to work themselves, however, in my opinion, state measures and state/EU subsidies would be needed to steer farmers in the direction of cooperation. A state measure could, for example, be a favorable form of taxation that supports cooperatives, such as that form of group taxation, which is already successful in other sectors. Subsidies should not be targeted for individual objectives (such as the purchase of machinery), but for tasks that call for cooperation. The farmer applies for what is tendered, thus, if the aid is granted for tasks to be carried out jointly, producers may also seek to cooperate for a common purpose, especially if a maintenance period may be set for the future.

## **5. NEW AND INNOVATIVE SCIENTIFIC RESULTS**

Researchers are constantly concerned about the fact that, on the one hand, meeting the increased consumer demands due to globalization, on the other hand, the application of precision farming, which promotes more efficient farming, requires the cooperation of those involved in agriculture as soon as possible. In other sectors, it is not uncommon to examine the expectations and attitudes of those involved in production to get to know individuals as well as possible in order to achieve their goals.

In my research I examined the attitudes of Hungarian farmers, as a result of which:

1. Statistical data have supported the intergenerational expectation of a well-functioning producer co-operation, in particular the willingness of the younger generation to co-operate and lead.
2. Different attitudes according to marital status have been shown regarding the length of time spent in an agricultural activity and the nature of the activity and their attitude towards co-operation.
3. The analysis of the professional qualifications of those working in agriculture has shown how it influences the attitude of farmers both in terms of their responsible management and their willingness to cooperate.

I believe my research can contribute to the development of a (or more) well-functioning agricultural organization that focuses not on the parameters of the activity but on the individuals within the organization.

## 6. PUBLICATIONS RELATED TO THE TOPIC OF THE DISSERTATION

### In a scientific journal

#### *In a foreign language*

1. SZŰCS, D. – NAGY, E. (2019): The situation of the agricultural machinery park – too much or less

SELYE E-STUDIES 10 : 1 pp. 48-55. , 8 p.

2. SZŰCS, D. – LAZÁNYI, K (2020): Higher education and willingness to cooperate – is there any relation? The case of hungarian farmers

ERENET PROFILE 15: 3 pp. 40-50. , 11 p.

3. SZŰCS, D. (2020): Leadership attitude expectations in agriculture

In: Živan, Živković (szerk.) An international serial publication for theory and practice of Management Science - IMCSM Proceedings(2020) Bor, Szerbia : University of Belgrade, Technical Faculty in Bor, Engineering Management Department (EMD) (2020) 537 p. pp. 509-519. , 11 p.

#### *In Hungarian*

1. SZŰCS, D. (2017): Magyarország mezőgazdaságának történelmi áttekintése

In: Csiszárík-Kocsir, Ágnes (szerk.) Vállalkozásfejlesztés a XXI. században: VII. tanulmánykötet Budapest, Magyarország : Óbudai Egyetem, Keleti Károly Gazdasági Kar (2017) 833 p. pp. 580-601. , 22 p.

2. SZŰCS, D. – LAZÁNYI, K. (2018): Bizalmi kapcsolatok a mezőgazdaságban

In: Csiszárík-Kocsir, Ágnes; Garai-Fodor, Mónika (szerk.) Vállalkozásfejlesztés a XXI. században VIII./1. : Integrált vállalkozásfejlesztési megoldások Budapest, Magyarország : Óbudai Egyetem, Keleti Károly Gazdasági Kar (2018) 301 p. pp. 163-171. , 9 p.

3. SZŰCS, D. (2018): Fenntartható vagy ökológiai mezőgazdaság? Ma már nem lehetőség, kötelező!

In: Csiszárík-Kocsir, Ágnes; Garai-Fodor, Mónika (szerk.) Vállalkozásfejlesztés a XXI. században VIII./2. : Makro- és mikrokörnyezeti trendek és kihívások a vállalkozásfejlesztésben, Budapest, Magyarország : Óbudai Egyetem, Keleti Károly Gazdasági Kar (2018) 349 p. pp. 255-285. , 31 p. (Vállalkozásfejlesztés a XXI. században VIII./2., 2018)

4. SZŰCS, D. – LAZÁNYI, K. (2020): A magyar mezőgazdasági termelők értékesítési csatornái

In: Csiszárík-Kocsir, Ágnes; Garai-Fodor, Mónika (szerk.) Vállalkozásfejlesztés a XXI. században X./2. : A környezeti változások és az új kihívások hatásai a szervezetek működésére, Budapest, Magyarország : Óbudai Egyetem, Keleti Károly Gazdasági Kar (2020) 354 p. pp. 274-288. , 15 p.

5. SZŰCS, D. (2021): Hogyan tovább? Magyar almatermesztés a XXI. században

KÖZÉP-EURÓPAI KÖZLEMÉNYEK 13 : 4 pp. 25-46. , 22 p. (2021)

6. SZŰCS, D. – LAZÁNYI, K (2022): Együtt könnyebb – hálózatosodási szándék vizsgálata a mezőgazdasági kkv-k körében

ERENET PROFILE – under publication

### **In conference publication**

#### *In a foreign language*

1. SZŰCS, D. (2017): Factors influencing the rational production in the Hungarian agriculture

In: Fehér-Polgár, Pál (szerk.) FIKUSZ 2017 - Symposium for Young Researchers: Proceedings, Budapest, Magyarország : Óbudai Egyetem, Keleti Károly Gazdasági Kar (2017) pp. 47-47. , 1 p.

2. SZŰCS, D. – NAGY, E. (2018): – Eszter Nagy: Apple crisis versus Karinth's six steps

In: Fehér-Polgár, Pál; Garai-Fodor, Mónika (szerk.) FIKUSZ 2018 - Symposium for Young Researchers Proceedings, Budapest, Magyarország : Óbudai Egyetem, Keleti Károly Gazdasági Kar, (2018) pp. 425-437. , 13 p.

4. SZŰCS, D. – NAGY, E. (2019): What's next? What about the famous Hungarian apple?

In: Fehér-Polgár, Pál (szerk.) FIKUSZ 2019 – Symposium for Young Researchers Proceedings, Budapest, Magyarország : Óbudai Egyetem, Keleti Károly Gazdasági Kar (2020) 321 p. pp. 249-257. , 9 p.

5. SZŰCS, D. (2020): The mind of Hungarian apple-farmers need changing (2020)

4th INTERNATIONAL SCIENTIFIC CONFERENCE - CONTEMPORARY CHALLENGES IN ECONOMIC AND BUSINESS RESEARCH, konferencián elhangzott előadás, Maribor, 2020. május 19.

6. SZŰCS, D. – LAZÁNYI, K. (2020): Direct from the producer? Quantitative analysis of Hungarian farmers' retail practices

In: Keszthelyi, András; Szikora, Péter; Fehér-Polgár, Pál (szerk.) 18th International Conference on Management, Enterprise, Benchmarking. Abstract Booklet (MEB 2020), Budapest, Magyarország : Óbudai Egyetem Keleti Károly Gazdasági Kar (2020) 48 p. pp. 19-19. , 1 p.

#### *In Hungarian*

1. SZŰCS, D. (2018): A magyarországi mezőgazdasági együttműködések megvalósult formái (5th international scientific correspondence conference, Nyitra, 2018)

In: Monika, Gubanova (szerk.) Legal, economic, managerial and environmental aspects of performance competencies by local authorities, 2017 : 5th international scientific correspondence conference, Nyitra, Szlovákia : Slovak University of Agriculture in Nitra (2018) 320 p. pp. 255-271. , 17 p.

2. SZŰCS, D. (2018): A fenntartható mezőgazdaság és a klaszter holland példája  
(5th international scientific correspondence conference, Nyitra, 2018) In: Monika, Gubanova (szerk.) Legal, economic, managerial and environmental aspects of performance competencies by local authorities, 2017 : 5th international scientific correspondence conference, Nyitra, Szlovákia : Slovak University of Agriculture in Nitra (2018) 320 p. pp. 246-254. , 9 p. 31
3. SZŰCS, D. (2019): Gazdaságpolitikai befolyás az agrárágazatban  
(6th international scientific correspondence conference, Nyitra, 2019) In: Gubánová, Monika (szerk.) Legal, Economic, Managerial and Environmental Aspects of Performance Competencies by Local Authorities : 6 th international scientific correspondence conference, Nyitra, Szlovákia : Slovak University of Agriculture in Nitra (2019) 286 p. pp. 189-196. , 8 p.
4. SZŰCS, D. – VÁRDAI, ZS. (2019): A gazdaságpolitika eszközeinek sajátosságai az agrárágazatban  
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5. SZŰCS, D.: Innovatív és versenyképes almatermelés?  
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6. SZŰCS, D.: Hogyan tovább? Magyar almatermesztés a XXI. században  
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7. SZŰCS, D.: Kockázatkezelési stratégiák a magyar gazdák körében  
In: Bilicz, Hanga Lilla; Sebestyén, Tamás Változás, újratervezés és fejlődés tudományos konferencia = Change, Redirection and Development Academic Conference: Absztraktkötet = Book of Abstracts, Pécs, Magyarország : Pécsi Tudományegyetem Közgazdaságtudományi Kar (PTE KTK) (2020) 190 p. pp. 175-175. , 1 p.

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