# APPLICATION OF INNOVATIONS IN AGRICULTURE AND DIGITISATION OF SALES AS A BASIS FOR THE FUTURE

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## Abstract

*The aim of the research is based on the basic IT knowledge of agricultural producers and the assumptions of the application of information technology in agriculture. The main goal of the work is to determine the attitudes of young people in the South Bačka district as they see their career in the future. Based on a literature review, a survey was conducted using a questionnaire. The research was conducted in three thematic units, the attitude of young people towards agriculture, the relationship between traditional sales at the marketplaces and the digitisation of sales, and the attitude towards agriculture as an occupation of the future. Based on the results of research on a sample of 200 respondents, we determined the perspectives of agriculture in the future from the point of view of the application of innovation and digitisation as well as the attitudes of young people as future farmers. The results provide a basis for concluding concrete guidelines for future research in the field of agriculture and youth.*

**Key words:** *innovations in agriculture, digitization of sales, attitudes, markets, marketplaces, young people.*

## Introduction

Analysing the professional literature and practical projects for the application of information technologies on a global scale in the field of agricultural production, simpler solutions for application in practice are noticeable. Ex-

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change of information, improvement of knowledge and improvement of business access and distribution of agricultural products to both retail chains and green markets have a new approach. Based on the experiences of developed countries, solutions for innovative agriculture are increasingly sought in less developed and developing countries. The problem of applying innovations in less developed countries, as well as here, is the appropriate technology and equipment, but also the knowledge and skills to apply those technologies. Basic knowledge of farmers is enough for smooth operation. This means knowledge in the use of computers and operating systems, through e-communication and Internet search of competitive moves, customers, but also the process of communication with the public and state sector. Modern technologies and digital marketing through the Internet or electronic devices enable communication with users. (Prdić, 2022). Also, other research shows that farmers have positive attitudes towards the application of ICT in agriculture and believe that mobile phones and the Internet can be useful sources of agricultural information. (Aldosari et al, 2019). Application of new technologies enables farmers to communicate through social networks and position their own products. In addition, social media is a very dynamic and progressive form of marketing. (Kostić, 2022). Information literacy through communication with retail chains and marketplaces also supports the application of innovations. Active application of innovations in marketplace operations leads to changes in the marketplace portfolio and creates a competitive advantage. (Kuzman et al, 2021). Agriculture plays an important role in developed countries, especially in medium and less developed countries. However, the contribution of the gross domestic product has been declining over the years, due to population migration to urban areas, thus reducing the labour force potential. It is difficult to define why young people are not interested in agriculture, even if they are temporarily unemployed.

The goal of the research was to examine the perception and knowledge of young people about agriculture and to analyse the factors that influence the attitudes of young people about work and employment in agriculture. Individual thematic goals are related to the research of young people's attitude towards agriculture, traditional and digital sales of agricultural products, and young people's attitude towards agriculture as a profession of the future. The results aim to provide reliable data, useful information and recommendations that will enable a development strategy in agriculture and encourage youth involvement in agriculture and agriculture-related activities.

## Methodology

Based on a review of professional and scientific literature and research by other authors, a survey questionnaire was compiled. The survey questionnaire is divided into 3 thematic units: the attitude of young people towards agriculture, the sale of products and agriculture as an occupation of the future. The questions are intended for young people in the South-Bačka district in order to adapt to the research problem and the environment. Empirical research methods were used for young people aged 12-15, in front of the agricultural school in Futog, on a sample of 50 respondents in the period of 15th-30th March 2022 and online surveys of 50 respondents, aged up to 30 years. Research was also conducted on a sample of 50 respondents in front of three local marketplaces, Satelitska, Detelinarska and Petrovaradinska in Novi Sad and three retail establishments in the city centre Maxi, Roda and Univerexport, on a sample of 50 respondents. All surveys were conducted at the same time. The obtained data were processed using statistical data processing methods.

## Results and discussion

Agriculture, as an occupation of the future, is an important factor in the economic development of many countries, especially those that are predominantly agrarian. The share of agriculture in the domestic GDP shows its real importance and level of development, but also the level of standards of the agricultural population. The condition of individual farms can be seen in their liquidity, through the ratio of assets and short-term liabilities, that is, the ability of farmers to meet their obligations on time. All of these indicators, from national to individual, have an impact on the attitudes of young people, in terms of doing business as an occupation of the future. Namely, in our country, agriculture is mainly done by older men, with the support of household members, wives and other younger members. Although the application of information technology in agriculture (ICT) enables the rapid flow of different types of information and the application of knowledge needed in the development of agriculture, research shows that farmers are not sufficiently aware of the benefits of using these technologies in their business (Baruah, 2018). The fact is that the educational structure of the agricultural population is at a low level, and young people who are active generally do not attend school. However, with this work, we want to point out the possibility of educating young people and the option of doing agriculture as a basic job. The fact that a large number of farmers are surviving and that young people are looking for

work in urban areas only confirms that it is necessary to educate young people for work in agriculture. If we take into account the knowledge that Serbia is an agrarian country, and that it has all the prerequisites for the development of agriculture as an occupation of the future, it is necessary to educate young people to work in agriculture. The basic premise of the research is to plan a strategy for involving young people in agriculture through their recognition of a life option as a profession of the future.

The sample included 50 young people in front of the Agricultural School in Futog and 50 young people from the area of the South Bačka administrative district through an online survey in the same period of time. The selection in front of the school was such that it was seen to survey those who were first encountered. The results showed that approximately half of the persons are male and half female. Basic data from the survey show that young people understand that agriculture is an activity in which the future can be predicted, but that they would not engage in it anyway. Namely, 70% of respondents believe that agriculture is a real future and that it offers the possibility of development of local urban and rural areas. Of them, 65% believe that their school provides adequate knowledge about agriculture, as well as that they could personally engage in agriculture based on their education. It is also a fact that young people would not engage in agriculture because it is perceived as a job for poor and uneducated people. These surveys revealed the data and the way how to present a job in agriculture to young people as a good future and remove doubts and prejudices. Therefore, it is necessary to remove the dilemma that agriculture is a job for the uneducated, and that it requires very hard work, for the incomes that are generated. Nevertheless, based on the results of the survey in terms of status and income, 51% of young people believe that agriculture brings practical benefits. Namely, the overall perception of young people surveyed in front of the agricultural school is positive, but they want visible changes in the development strategy and practical benefits from agriculture. Older people, however, must realise that young people can bring modern practices and tools to modernise agricultural activities (May et al., 2019). Over eighty percent of respondents, 81%, believe that agriculture contributes to the development of rural tourism in the South Bačka District. 53% of them believe that the financial income is good in agriculture, while another 47% believe that there is no quick profit. Young people believe that in our conditions, 56% are not sure that the state will help them with the application of new means and technologies. However, 60% would continue family production if they received incentive aid. When it comes to the basic units of the research, the following answers were received. To the specific question, what are your views on agriculture on pre-defined questions, the answers were as follows:

- Agriculture is the main economic branch that contributes to the nutrition of the population - 21%
- Agriculture enables economic development in South Bačka District - 23%
- Agriculture represents our local identity in production - 25%
- Agriculture gives a real chance to young people in the future - 31%.

Which sales channel of local agricultural products is the most efficient and effective:

- Traditional green markets - 41%
- Retail facilities - 32%
- Organised e-markets - 14%
- Digital marketing - 13%.

What is your attitude towards agriculture as an occupation of the future:

- Agriculture has a future because this is an agricultural region - 21%
- It has a future if farmers are educated - 19%
- It has a future if the state actively participates in development - 18%
- Application of modern technologies and innovations is mandatory - 21%
- Stimulating and organised sales of products at green markets - 11%
- Creates interest organisations of marketplaces, sellers and consumers 3%
- Digitises sales - 7%.

Young people who attend an agricultural school have a more pronounced attitude towards agriculture. During personal interviews and conversations with young people, they have the problem of acquiring ownership of agricultural land, they realise that agriculture is an occupation in which there is no quick turnover of monetary capital, but it pays off in a strategic sense. They also think that the state must help in the process of introducing innovations and modern technologies. Farmers who use the services of the extension service adopt and implement innovations more quickly (Altalb et al, 2015). They believe that work in agriculture is intensive and less profitable, that it is less valued in society, but

if all agrotechnical measures and technologies were applied, this attitude towards work would be more acceptable according to them. They need secondary education for work, and higher education only for developed agricultural farms that have already built their position on the market.

When it comes to the online sample, out of 50 respondents, we see diversity in approach and attitudes. Young people think that the problems are the following, acquiring agricultural land – 66%, work in agriculture is insufficiently paid - 71%, and that work in agriculture is insufficiently stimulated - 72%. In addition, 74% of the respondents think that it is an "old-fashioned" profession and because of that, they do not see themselves in perspective. But 73% of them think that young people should continue the family tradition if they have land, while 63% think that they would buy local products. Out of them, 54% think that these products should be sold in marketplaces, 21% in retail chains, and 25% that online sales should also be organised. Unlike the survey conducted at the agricultural school, where only attendance is a sign of a certain affinity in the profession, and also attitudes about the future profession, in the online survey the questions were general because the sample could not be precisely defined. These issues were at the same level of importance as all the others, so 43% of them have a positive attitude about agriculture, 54% consider traditional marketplaces as a good sales channel, and 46% think it's digital marketing that is a good sales channel. When it comes to specific questions about agriculture as a future occupation, 41% had a positive answer, while 59% of them answered that they would not engage in agriculture as a future occupation.

A survey carried out at local marketplaces gave the following overall results. 51% of those surveyed confirmed that agriculture is the main economic branch that contributes to the nutrition of the population. 31% of respondents agree that agriculture enables the development of the economy in South Bačka District, 11% believe that agriculture represents local identity in production, while only 7% believe that agriculture is a real chance in the future. When it comes to sales channels, 33% of young people believe that they are traditional marketplaces, 21% - it is retail stores, 15% believe in organised e-markets, while 31% think that digital marketing is the most effective sales channel. For the third group, the answers were that agriculture has a future because this is an agrarian region - 21% of them, if farmers are educated - 15%, if the state participates in development - 13%, that the application of modern technologies is mandatory - 16%, that the organised sales at green markets should

be supported - 16%, 9% of respondents believe that interest organisation is necessary, and 10% of respondents think that success in digitalisation of sales is necessary. The results show that young people of various occupations and passions from 13 to 30 years old have a weaker perception towards agriculture. At the same time, it can be stated that they understand that agriculture is important for feeding the population (51%), that the most important sales channels are traditional markets and digital marketing. Also, they think that South Bačka District is an agricultural region and that agriculture has a future.

The survey conducted physically in front of retail stores had the following results on questions from the thematic units, that agriculture is the main economic branch that contributes to the nutrition of the population is confirmed by 41% of respondents. 31% of respondents agree that agriculture enables the development of the economy in the South Bačka district, 15% think that agriculture represents local identity in production, while only 13% believe that agriculture is a real chance in the future. When it comes to sales channels, 17% of young people believe that they are traditional marketplaces, 39% retail stores, 11% organised e-markets, while 33% think that digital marketing is the most effective sales channel. For the third group, the answers were that agriculture has a future because this is an agrarian region is supported by 19% of them, if farmers are educated - 18%, if the state participates in development - 14%, that the application of modern technologies is mandatory - 19%, organised sales at green markets supported by 12% of the young people, 7% of respondents believe that interest organisation is necessary, and 11% of respondents think that success in digitisation of sales is necessary. The results show that young people of various professions and passions from 13 to 30 years old have a weaker perception towards agriculture and when it comes to the survey in front of retail establishments.

## Critical review and recommendations

Based on the parameters of the state of agriculture in the world, it is simply a clear fact about the necessity of increasing domestic agricultural production. The supply chain of agricultural products implies an integrated interest within the chain starting from agricultural producers, marketplaces, local urban community, consumers and social community (Kuzman et al, 2022). Increasing the awareness of local regions, such as the South Bačka District, regarding agriculture is a prerequisite for development. In order to achieve this, funds are necessary to finance growth and development, which is achieved by properly

selecting and investing in investment projects (Milojević et al, 2019). Assuming that the entire region is cohesive, the current state of agriculture is actually an obstacle to young people's understanding of the agriculture of the future. Increasing the awareness of local communities about the importance of agriculture for local development can develop interests among young people, but also initiate the professional and academic level for solving this problem. Innovations are the driver of economic growth and well-being in countries (French et al, 2014). It is certainly true that the current knowledge in scientific circles is sufficient for investing in local agriculture. Both the value and the financing model are in accordance with the available data on investments (Subić et al, 2021). The research recommendation is primarily related to the initiation of interest in agriculture among young people, the continuation of education at higher levels of study and a realistic perspective in the future.

## Conclusion

The main task of this paper is to present the results of research on the attitudes of young people who attend agricultural school and others, up to the age of 30, whose education and expertise have not been determined. Research thematic units gave the answer that agriculture is important for the development of the district that it is important for the nutrition of the population, but also that insufficient investment is made in the development and education of farmers. Young people understand the importance of agriculture, especially those who attend agricultural school, on the basis of which further processes and procedures can be carried out. Young people who are not related to agriculture have less interest, but they are aware of the role of local agriculture and digitisation of sales as an element of development. The result we wanted to achieve serves as a decision-making parameter for all state, professional and other organisations dealing with agriculture. Also, this research is intended for the needs of further scientific research or for agricultural producers themselves and other business decision makers. The fact that can be particularly emphasised is that even in the South Bačka district, agriculture is exclusively done by the elderly population, as well as that the sales are mostly done through local marketplaces, and the share of sales is also with the elderly. Interesting communication with local decision-makers and highlighting the importance of agriculture on the one hand, and on the other hand creating conditions for youth education and stimulating investment and subsidies on the other hand, will contribute to concrete guidelines for future research in the field of agriculture and the role of youth.

## Literature


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