

Annex 2 - Target group Survey Summary Report Template – WP1



ITFARM

IT for Interconnection of Social, Economic and Environmental Aspects in Agribusiness

WP1 – Survey on Farms and Current Situation and Demand

(Please provide your findings from the Survey by 15th June 2022 by summarising the feedback from the questionnaires in the following structure using the following formatting: Font Calibri, Font size: 12)

Introduction and profile of the participants

(Including Q1: Age of the participants and Q2: Main scope of the business in Agriculture)

The survey "IT for the interconnectedness of social, economic and environmental aspects of agribusiness" was completed by 16 farmers who apply different technologies in the field of precision agriculture. Considering the norms and the level of cognitive social capital in the country, some of the farmers were given the opportunity to fill in the survey anonymously.

The results of the survey show that 50% of the respondents are between 18-29 years old, 37.5% fall into the second age group between 30-39 years, and 2% of the respondents are between 40-49 years old. This distribution supports the results of previous research, which reveals that young people are more likely to apply innovative technologies in the sector.

The predominant part of the surveyed farmers (11 producers) produce cereals. Of these farmers, four combine crop and livestock production. The number of vegetable producers covered by the survey is three, one of the respondents is a producer of fruit crops, and one is engaged in the field of seed production. This distribution of the respondents is in accordance with the agricultural production structure in the country.

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What technologies are currently in use in businesses? Positive impacts and possible obstacles or challenges in relation to their use. (Q3)

Regarding the question "What technology is currently in use in your business?", farmers indicated that they use an average of 2.38 of the listed technologies, with a standard deviation of 1.82. The minimum number of technologies applied by one farmer is one and the maximum is seven. The most frequently implemented technology is the meteorological station, as 37.5% of the respondents answered that it is available on their farms. Next is the investment in intelligent fertilizer management (31.25% of farms). The precondition for the latter is the significant increase in the price of fertilizers in the last few months. On this basis, further expansion of the use of precision fertilization technologies can be expected. Summary information on the relative share of holdings applying a precise technology is presented in tabular form (Table 1).

Table 1: Precise technologies applied by farmers

What technology is currently in use in your business?	Number of farmers	Relative share of respondents
Weather connected station	6	37,50%
Soil management	1	6,25%
Seeding management	3	18,75%
Seed drill depth control system	3	18,75%
Electric seeder for small-size vegetable seeds based on power drive and optical fiber detection technology	1	6,25%
Air-assisted high speed precision seed metering device	1	6,25%
Water management	2	12,50%
Automatic irrigation system	1	6,25%
Smart fertilisation management	5	31,25%
Low-cost agricultural robot (prototype)	1	6,25%
Grass yield monitoring	1	6,25%
Field mapping with GIS	1	6,25%
Animal care		
Animal behaviour	2	12,50%
Animal health and welfare	3	18,75%
Inventory monitoring computers	1	6,25%
Weight management	3	18,75%
Feed management	2	12,50%
Automatic milking systems	1	6,25%

Source: ITFARM Project survey

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As the main advantages in the use of the respective technologies, the farmers point out the accuracy and the possibility to control each operation, increase the efficiency of the production, reduce the number of employees on the farm, etc. (Box 1).

Box 1

Advantages of the technologies used

"The use of data provided by the meteorological station in the area of cultivation of perennial crops allows precision in the implementation of plant protection measures and subsequent agro-technical operations";

"Better efficiency";

"Contributes to the rational and accurate use of fertilizers";

"Complete control over animals and location" and others.

Identified challenges in their use

"Investing significant financial resources"

"Software bugs, hacking attacks" and more.

The results of a study within the ITFARM Project

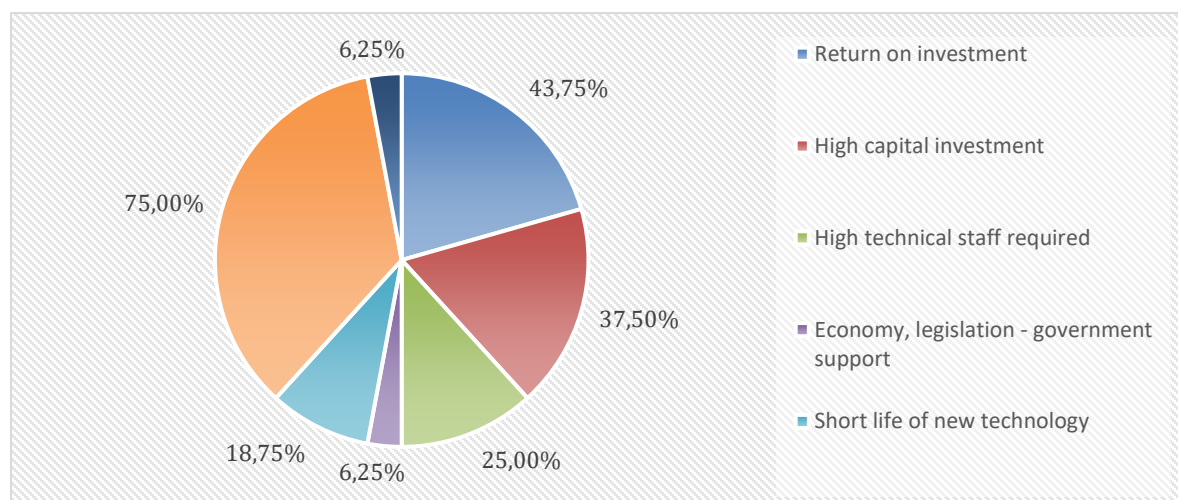
Among the main difficulties mentioned by farmers are: (1) the need for significant financial resources for the purchase of these technologies, as well as (2) high maintenance costs; (3) the lack of a skilled workforce that can use them; and (4) the challenges of software bugs and hacking attacks (Box 1).

Which are the main factors impacting the process of decision-making about introducing and applying new advanced ICT technologies in the businesses? (Q4)

The identified problems in the previous question have a direct impact on the decision to implement precision technologies in business. The relative share of farmers who indicated *"Lack of financial resources for research and purchase of new technologies"* as the main factor is high and amounts to 75% of all respondents. Next, as an important factor in deciding on the introduction of new technologies is the *return on investment* (43.75% of respondents have identified this factor). The third most important factor is *"large capital investment"*. A quarter of respondents are guided by *the need for staff with high-tech knowledge* in decision-making. The short life of new technologies is also identified as an important factor by 18.75% of farmers.



Figure 1: The main factors impacting the process of decision-making about introducing and applying new advanced ICT technologies in business



Source: ITFARM Project survey

Preferred types of additional training opportunities to support the process of introducing new ICT technologies in business. (Q5)

Regarding the additional training opportunities in the process of introducing new ICT technologies in business, 93.75% of the respondents indicated that they would prefer to undergo such trainings. According to the results of the survey, the most preferred form is "training in the form of face-to-face meetings" (62.5% of respondents chose this option), followed by presentations of specific companies - seminars (with a relative share of 37.5%). The share of those who want online training is the smallest, as it is only 18.75% of the respondents.

Practical skills lacking the most in order to apply advanced ICT technologies in businesses. (Q6)

Regarding the lack of practical skills for the application of modern ICT technologies (Figure 2), a quarter of farmers consider the following important: (1) lack of practical knowledge of ICT-related processes (applicable software, equipment, etc.) and (2) the lack of skills to effectively identify and address existing challenges and problems where ICT technologies could be successfully and effectively applied. The lack of soft skills related to the introduction and operation of ICT technologies (research, innovation, etc.) and the lack of

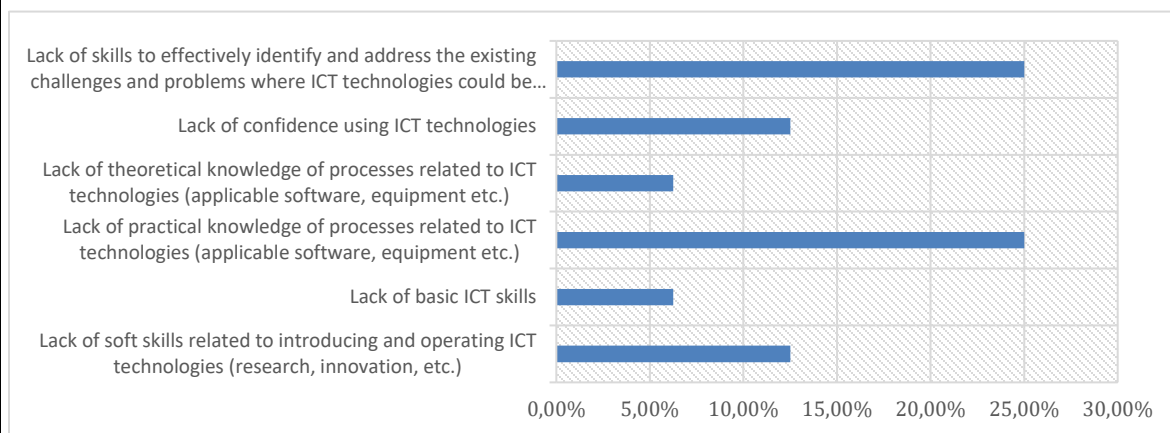
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confidence in the use of ICT technologies were mentioned by 12.5% of respondents. On the other hand, the relative share (6.25%) of those who indicated the lack of basic ICT skills and lack of theoretical knowledge of processes related to ICT technologies (applicable software, equipment, etc.) is the smallest.

Figure 2: Practical skills that farmers think they lack in order to apply modern ICT technologies



Source: ITFARM Project survey

Conclusions:

Based on the results of the survey, it can be stated that the agricultural producers in the country apply separate technologies in the field of precision agriculture, aimed primarily at managing the most expensive activities within the production process. The most widely used technologies in crop production are meteorological stations, smart fertilisation management and seeding management. Regarding the livestock production, investments are made mainly in the areas of health and animal welfare, weight management, feed management and animal behaviour. The lack of financial resources to research and purchase new technologies has been identified as a major factor in the decision-making process regarding the introduction and implementation of new modern ICT technologies in the business. Farmers are willing to take part in trainings in the field of precision technology and the preferred form is face-to-face meetings. As basic practical skills that they lack, most farmers indicated: (1) lack of practical knowledge of processes related to ICT technologies (applicable software, equipment etc.); (2) lack of skills to effectively identify and address



the existing challenges and problems where ICT technologies could be successfully and effectively applied.

Recommendations:

Based on the above mentioned, the following recommendations can be made:

- Presentation of funding opportunities for the purchase of relevant technologies.
- Development and implementation of face-to-face trainings with farmers, covering areas in which they lack knowledge.

