Digital Literacy of the Rural Population of Yakutia

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Abstract. The article presents the results of a study focused on the awareness of the fact that specialists with digital literacy are in demand in rural areas of Yakutia. The authors justify the need for the use of digital technologies in agriculture, analyzing the opinions of individual specialists.

1. Introduction

1.1. Analysis of the general state of the research topic
Modern social and professional relations require digital literacy for every individual. The recording of cognitive problems related to the systematization of digital competence in people’s daily and professional lives allows for a descriptive study to be undertaken in order to determine the digital literacy growth dynamics of the population. It is possible to process a large number of publications on topical issues, but it will be very difficult to find the results of the research on the specifics of the problem you are looking for.

Coordination of seed-related actions on the description of the problem criteria should start with the indicators (Baskakova & Soboleva, 2019) of the multinational and multi-confessional composition of the population, that is not evenly distributed over a vast territory, which determines the socio-economic and demographic identity of the regions of Russia. Therefore, it becomes impossible to apply more detailed and accurate research methods. However, retrospective methods of sociological research as well as statistical observation reveal the fundamental principles of digital literacy of the population in general terms. In addition, the digitalization of many professions is proving essential (Nikolaeva & Ivanov, 2020). It can increase the unemployment rate among the population of our country, which is not able to “keep up with the development of technology” and it is especially dangerous for remote areas of our country. This pattern of events in the near future could exacerbate socio-economic inequalities in the regions.

It is impossible to say that soon the entire population of the country will be able to practice digital technologies at a high level. Obviously, in many areas there is still no access not only to the Internet, but also to mobile communications. Although the state of the economy and computer literacy of the population are sources of differences in broadband penetration. A strong dependence was found on the level of English language proficiency, which affects the interest in global content for Internet subscribers, the prevalence of telework, which attracts broadband users, the level of employment in the service sector, which positively correlates with the need for access to information and unemployment, which reduces the purchasing power of consumers (Sucharev, 2019).
The chronology of digital literacy development is the most vulnerable in rural areas, where it will only seem an easy concern to identify the functions of using digital technologies. When the question concerns the real implementation of the project for the introduction of digital technologies in a number of specialties in rural areas, it turns out that in practice this need is not present. However, it will take several decades to develop technological innovations in agricultural circulation and to train the rural population in modern technologies for productive and domestic purposes.

1.2. Assessment of the study of the problem in the field of agriculture

It is impossible to state unequivocally that in every settlement or village, digital technology can bring benefits as well as benefits. While the challenge of measuring the digital literacy of rural populations is not closed to the parameters of action, it is focused on the generational mobility of the locality.

The introduction of digital technologies in agriculture is a natural process. The need for such an action is a very urgent task. However, there has been a process of shaping the adaptation of digital literacy by specialists in the agricultural sector of the economy. The digital technology of agriculture is only beginning to take hold, so it is impossible to predict what the industry will look like, for example, after 10-15 years. However, it is obvious that all market participants will benefit from the digital transformation of the industry (Nuraliev & Yusupova, 2020).

The article (Leachman, 2019) argues that the wider concentration of e-agriculture consists of technological applications, simplification, support for standards and norms, capacity-building, education and dissemination of knowledge. The author also notes that the most common e-agriculture services provided by governments are seed and fertilizer catalogs, online applications for subsidies, and microfinance for agriculture, but not all governments provide such services.

| Technology               | Households (subsistence farming) | Peasant (farming) agriculture (semi-commercial farming) | Medium-sized agricultural enterprises and APC* (commercial farming) | Large agricultural holdings (commodity-based, export-oriented farming) |
|--------------------------|----------------------------------|--------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------|
| Organic farming          | M                                | H                                                      | M                                                                 | L                                                                   |
| Precision farming        | L                                | L                                                      | M                                                                 | H                                                                   |
| Large scale conveyor animal agriculture | L | L | L | H |
| Drip irrigation          | L                                | M                                                      | M                                                                 | H                                                                   |
| Integrated pest control  | M                                | M                                                      | B                                                                 | H                                                                   |
| Urbanized agriculture    | L                                | L                                                      | L                                                                 | H                                                                   |
| Automation and computerization | L | L | M | H |
| Non-waste (circular) agriculture | H | H | M | M |
| Biofuels                 | L                                | L                                                      | H                                                                 | H                                                                   |

*APC (agricultural production co-operative)
Abbreviations: Implementation potential: H- high, M- medium, L- low.
However, the demand for new technologies from the Russian economic entities of the agro-industrial complex should be emphasized. The forecast (Forecast up to 2030) reflects the main signs of the development of the system of digital transformation of agriculture, and also makes it possible to assess the demand for new technologies from agricultural producers, as presented in table 1.

Matrix analysis of the forecast scenario clearly displays information about which farms are in high demand for new technologies among the economic entities of the agro-industrial complex of Russia. In particular, only large agricultural formations have the opportunity to adapt and implement new technologies. However, the technology of "Non-waste (circular) agriculture" is in demand among small agricultural businesses. However, each technology has a high potential for applying information technologies and automation in the process of organizing and managing agricultural production.

However, these technologies are not widely used. The main reason for such low demand is that the income of agricultural organizations does not allow owners to fully calculate the costs of acquiring new technologies.

It is also necessary to witness the opinion (Buraeva, 2020) concluding that low computer literacy, the shortage of ICT specialists in rural areas, the underdevelopment of information and communication infrastructure, the lack of methodological support and the use of obsolete operating systems cause an insufficient level of digital technology implementation in small and medium-sized agribusiness structures in Russia.

It is necessary to pay special attention to the fact that an essential task for solving problems with digital literacy of the rural population should turn to an indeginous, historically complex combination of a small-town settlement with some natural-scientific specifics of a genus of more global significance. There is a need for a system that combines digital technology with environmental monitoring carried out in rural areas. In this situation, specialists in the field of ecology, nature protection, forestry, crop production and other specialists can be involved in the rural area.

Nevertheless, the current state in which urbanization attracts the younger generation and luring them into the depths of large cities. A competent structuring associated with the rhizome of specialties that will attract the younger generation to rural areas to perform work with nature protection and environmental safety, as well as with the use of digital technologies.

2. Assessment of the demand for specialists with digital literacy
The assessment material should be reviewed in detail, but it will not be possible to cover the full scope of information on various critical parameters. In the context of the surplus market, there is a problem of developing a competent model of agricultural specialists for rural areas, the need for which arises from traditional ways of organizing work. However, job vacancies and the need for a labor force with digital literacy requirements are confined to a narrow range of employees. In rural areas, employees who have a fairly primitive basis of digital literacy are in demand in the municipal administration, accounting and office workers, as well as school teachers. In agriculture itself, digital literacy skills are not needed. This issue needs to be coordinated and addressed separately. Even to the point of artificially creating the appearance of a need for digital technology for agrarian production.

However, among the rural population, the demand for digital literacy is increasing. This increase is related only to recreation and leisure activities, which are more likely to result in unnecessary costs. That is why large-scale projects are required that contribute to the development of legitimate needs for the development of digital literacy in rural areas.

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