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Conference on Land Economy and Rural Studies Essentials**INFLUENCE OF DIGITALIZATION ON EXPECTATIONS AND  
REAL PROSPECTS OF STUDENTS AND EMPLOYERS**

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**Abstract**

The paper considers the issue of the impact of digitalization processes on mutual expectations and real prospects of future young agricultural specialists and employers in the field of the agro-industrial complex. The authors, characterizing the features of the modern stage, state that today there is another global transformation caused by the processes of digitalization. Digitalization determines trends in the labor market and sets new trends in all spheres of society, including education. Digital economy requires professionals with up-to-date knowledge and a set of universal competencies, capable of continuous development of new knowledge, skills and abilities. The analysis of the current situation leads the authors to the conclusion that digitalization, on the one hand, aggravates the existing contradictions in the labor market and educational services, and, on the other hand, gives new opportunities and prospects for self-realization, life and professional identity of young people. The study allowed analyzing the level of the compliance of expectations of future young professionals and their potential employers. It is found out that while young people, entering the labor market, rely on high wages, comfortable working and living conditions and the prospect of career growth, employers express distrust in the quality of their professional training and the level of formation of the necessary competencies, which leads to the need for their retraining or advanced training and as a result to the increase in the costs of employers.

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## **1. Introduction**

Human capital is the main factor in modern economic development. The survival of modern digital economy depends on its quality. New challenges create conditions for flexible employment and present new requirements for both current and potential employees. At the same time, new conditions require employers not only to introduce new technologies into production, but also to change their behavior and thinking.

The success of the development of digital economy in such traditional industries as the agro-industrial complex does not depend on technologies per se, but on workers who effectively apply technologies. The changes in knowledge and skills requirements for workers and specialists in these industries have consequences not only for companies, but also for formal education systems at all levels that train future industry specialists. In this regard, the need to study the impact of digitalization on the labor market and education, disclosing the features of the digital transformation of the labor market in the agro-industrial complex, identifying the level of compliance of the quality of human capital with the requirements of employers through the analysis of their mutual expectations and real prospects.

## **2. Problem Statement**

The problem of the compliance of the quality of human capital with the requirements of modern production and employers is almost always relevant. However, it tends to aggravate during the periods of serious transformations affecting all spheres of society. For example, during the formation of market relations, the issues of aggravating the differences between the labor market and the market of educational services began to be actively discussed. In the modern era of digitalization, this issue is again actualized, but this discrepancy has its own characteristics and suggests new ways to resolve it.

## **3. Research Questions**

The subject of our research is the features of the impact of digitalization on the modern labor market and education, as well as mutual expectations and real prospects of students of an agricultural university planning to return to their villages and employers of the agro-industrial complex.

## **4. Purpose of the Study**

The purpose of the study is to analyze the impact of digitalization processes on the mutual expectations of employers and future young specialists in the agricultural sector in the context of the transformation of the modern labor market and the market of educational services. Moreover the authors try to determine new requirements for the quality of human capital in these conditions, as well as to identify contradictions and find ways to resolve them.

## 5. Research Methods

The main research methods were sociological surveys conducted in 2020–2021 at Omsk State Agrarian University. The objects of research were students of Omsk State Agrarian University and employers of the agro-industrial complex of the Omsk region. The total number of students was 1188. The study sample consisted of 1–5 year students of seven faculties of full-time and part-time education. The sample was quota-nested, providing representativeness. The survey was carried out on the basis of an online questionnaire, which included 52 questions. The total number of interviewed employers was 35. The survey was conducted on the basis of a questionnaire consisting of 15 questions. The survey was accompanied by interviews with 35 respondents. The results of the questioning and interviewing were presented in a generalized form.

## 6. Findings

### 6.1. Impact of digitalization on the labor market and education

Digitalization determines trends in the labor market and sets new ones. It is the impetus for the emergence of creative professions (Skosyreva et al., 2020). New economy needs new professionals - highly educated people of free professions, whom Perkin (1990) called transprofessionals at the end of the twentieth century. They are ready to work in various professional environments due to their thinking and ways of organizing activities (Avraamova & Verpakhovskaya, 2006). Nowadays, we talk more and more about multitasking, universal workers with universal knowledge, capable of retraining, re-profiling, adapting and developing throughout their lives (Sologubova, 2018). Today, even traditional professions in the context of the digital transformation of economy require the formation of additional competencies, the development of cross-functional qualities of a specialist, which requires a change in approaches to additional education and professional retraining, the transition to lifelong learning and the effective combination of training with professional activity (Kosenchuk et al., 2021; Trukhachev, 2019).

In the context of digitalization, an employee is evolving. The usual working conditions are replaced by an irregular schedule, remote work, the ability to use any other devices instead of corporate equipment. There is a shift in focus from incoming information to the result, instead of a career ladder in a corporation, an employee builds his own career ladder and everyone can become a leader. The work is arranged according to the task, instead of hiding information, there is an active exchange of information and the use of cloud technologies instead of corporate mail. The approaches to learning are also being transformed: the focus is shifted from knowledge to adaptive learning; the exchange of experience is replacing standard learning.

In the age of digital transformation, one of the most important competencies is the ability to master new competencies. The digitalization of education involves the development of student's personality, the formation of a unique set of competencies for everyone, a kind of a set of possible educational options for oneself (Larionov et al., 2019). According to the Job Growth and Talent Gap 2017–2027 report, a well-developed digital professional must have experience in soft digital skills (customer focus) and passion (enthusiasm) for learning (Sologubova, 2018).

Digitalization sets new trends in the higher education system and gives new great opportunities. However, the rate of change in the higher education system is much lower than the demands of the market and economy as a whole. Employers often have to eliminate the non-compliance of a significant part of graduates with the modern requirements. Large companies, as a rule, develop in-house continuous education not only in corporate institutions, but also in supervised schools and even kindergartens. Small and medium-sized companies are forced to combine or invent different approaches to hire right people.

Quarantine restrictions caused by the spread of the COVID-19 pandemic gave a sharp impetus to the acceleration of digitalization. The transition to a remote form of work not only intensified and highlighted previously existing problems, but also gave new opportunities for both employees and employers. New vacant positions have appeared against the background of growing unemployment. Many people have realized that the future has already arrived and it is necessary to quickly adapt. For them, the remote form of work has become a reality. Many people have discovered the possibilities of on-line training. Therefore, there is a sharp jump in demand in this area. Companies that have already switched to digital technologies have adapted to new conditions most easily and have managed to reorganize their business processes. Moreover, even after the quarantine restrictions are lifted, regular management practice will include: remote work, on-line recruitment and on-line training (Podcerob, 2020).

Thus, on the one hand under the influence of digitalization the previously existing imbalances and contradictions are exacerbated in the labor market and in education, and, on the other hand, new opportunities and development prospects are arriving.

## **6.2. Features of the digital transformation of the labor market in agro-industrial complex**

In the labor market of the agro-industrial complex, there are many imbalances (gaps) that are increasing in new conditions:

First, rural areas have a higher unemployment rate than urban areas (Popova & Kanavtsev 2018).

Secondly, there is a shortage of quality labor resources. Moreover, there is a shortage of workers, both traditional professions and professions based on digital methods of economic activity (Mnatsakanyan et al., 2020).

Thirdly, there is a shortage of low-skilled labor. This deficit is caused by the reluctance of local residents to work due to difficult working conditions and low wages. They prefer to choose less difficult and more paid work in the city (Larina, 2016). Employers, in their turn give preference to foreign labor closing these positions. However, during the quarantine period, this trend decreased.

Thus, there is high demand in the labor market at the high and low levels, but without medium (The Future of Jobs. Report. World Economic Forum, 2016) (World Development Indicators. 2017. Data Bank Microdata Data Catalog, 2017).

The inconsistency of the quality of the labor force with the requirements of employers is the most significant of the existing imbalances for the digitalization process. Employers tend to place high demands on the experience and specialization of workers. In the agricultural labor market, the professions of an agronomist, engineer, technologist and programmer are more in demand (Larina, 2016).

The demand for specialists in these professions is partially satisfied, first of all, due to the movement of labor from other sectors of economy and only to a small part due to the activity of the vocational education system. However, the quality of the trained labor force for these industries does not meet the needs of the labor market (Mnatsakanyan et al., 2020). There is also a growing demand for leadership positions in large industries of the agricultural sector. Thus, there is a trend in the preference of candidates with additional education in the field of economics and management (Larina, 2016).

According to the general opinion of researchers and practitioners, future agro-specialists should have systems thinking, organizational, managerial skills and knowledge in the field of IT and biotechnology. The changes in the requirements for environmental aspects of activities are also expected, which will require additional skills (Mnatsakanyan et al., 2020). In addition to agricultural education, knowledge of a foreign language is of great importance for working with large foreign companies. Forecasting the emergence of future professions, Moscow School of Management Skolkovo and the Agency for Strategic Initiatives identified six new professions related to agricultural production, which should appear by 2030: agronomist-economist; agricultural ecologist; operator managing automated agricultural systems, machines, mechanisms and devices; city farmer; GMO agronomist; agroinformatics / agrocyberneticist (Atlas of new professions. Agriculture, n.d.).

The problem of staffing the agro-industrial complex is also caused by the reluctance of graduates of agricultural educational institutions to go to work in their specialty (Veklenko & Pugach, 2017). Having received a higher education, rural youth strive to get away from the problems of the village, with which they lived all their childhood. Urban youth, choosing an agricultural university, as a rule, do not plan to link their future work with the agricultural sector.

The youth of the modern digital generation - generation Z are characterized by their strategies of professional self-determination. The traditional process of self-determination, as a rule, was characterized by a choice in favor of a well-paid job, career growth and a guaranteed social package. Modern youth has other guidelines in the choice of a profession. Generation Z is less likely to be oriented toward work for money and financial well-being. Much more important for them is an interesting, enjoyable activity that has social significance and meaning (Ryndak, 2019). Modern young people, capable of multitasking, not constrained by authorities and conventions, are not afraid to tackle complex and seemingly unsolvable tasks; they do not want to have routine and monotonous job.

Creative works, the possibility of self-development and project activities are more attractive for them. Modern youth are not distinguished by their ambitiousness in getting a prestigious job, not striving to rise to the highest rung of the career ladder. For online generation, a horizontal career is more important. They have the desire to become the best in what they do, gain widespread fame, become famous, thus gaining a lot of customers and followers ("Generation Z - the right generation?", 2017). Moreover, the representatives of generation Z do not want to work for a long time, accumulating professional experience and gaining prestige. They strive for quick success and recognition, numerous examples of which are shown in the Internet space.

### 6.3. Expectations of youth

Based on a sociological study the authors considered the expectations of young people studying professions related to agriculture and the agro-industrial complex regarding their future activities, employment. The research showed that the basis of the choice of a future profession among modern youth was mainly the factor of interest in the future sphere of activity (37.7% of respondents), as well as compliance with its personal inclinations, abilities, knowledge, character (18.2%). Only 4.2% of respondents thought about the prestige of their future profession, 6.6% - about high pay, 11.2% - about being in demand in the labor market. The expectations of young people from their professional choice were mostly justified: 82.6% of the respondents answered that their studies corresponded to their life plans, 90% considered their future profession to be respected and socially significant. At the same time, young people were quite confident in their competitiveness in the labor market, employment opportunities: 14.2% of respondents believed that it would be easy for them to find a job in their specialty, 68.5% answered that it was difficult to find a job in their specialty, but it was possible. The study showed that the youth of a provincial agricultural university were characterized by the same strategies in the choice of their future profession, which were characteristic of the digital generation as a whole.

The contradiction was in the fact that after making a conscious choice of a profession that was interesting, consistent with inclinations and character, in demand and socially significant, most young people after graduation did not plan to work in their specialty. Only more than a third (35%) of respondents expressed their desire to work in their chosen specialty, while only 8.3% of young people associated their future with the countryside, mainly rural youth. The share of those planning to return to the village after their study among the natives of the village was 14%, only 2.8% of townspeople wanted to work in the village. It was obvious that modern youth have strong migration attitudes: 30% of young people from the village wanted to stay in the regional center of Omsk, where they studied and only 29% of townspeople planned to stay in it. Young people strived to move from rural areas to cities, from provincial cities to large and dynamically developing megalopolises, capital centers, as well as to other countries (Skosyreva et al., 2020). Due to the departure of the most employable, active part of population, the quality of the human capital of the village is deteriorating.

The statistical data on the dynamics of the number of rural youth in the Omsk region and its share among the rural population of the region are shown in Table 1.

**Table 1.** The number and proportion of youth (citizens 15–34 years old) in the rural population of the Omsk region (2017–2020) (<https://omsk.gks.ru/population>)

	Rural population	Number of rural youth	Share of youth among the rural population (%)	Decrease in rural population	Decrease in rural youth	Share of youth among population decrease (%)
2017	541166	124936	23,1	5417	3684	68
2018	535749	121252	22,6	7198	3392	47
2019	528551	117860	22,3	6769	2821	42
2020	521782	115039	22,04	No data	No data	No data

The analysis of statistical data showed that the rural population of the region was constantly decreasing, as was the number of rural youth. The share of young citizens among the villagers was also decreasing from year to year. The proportion of young people among the total population decline in rural areas was v significant. With regard to young people, the natural decrease of which, as a rule, was small, it was possible to state that its decrease among rural residents was due to migration. Significant parts of rural youth did not associate their future professional identity with the countryside and the agro-industrial complex of the region.

The main reasons for the unwillingness of young people to work in their specialty in the village, their migration sentiments had a socio-economic nature. The majority of respondents explained the absence in their plans of the desire to work in the profession they received, first of all, by the underdevelopment of the rural labor market (lack of jobs in the specialty (24%), low wages in the agro-industrial complex (21%), as well as the underdevelopment of the social sphere (poor working conditions and living conditions (9.5%)). The high level of potential territorial mobility of modern youth was explained by their determination to live and work where the potential of young specialists would be in demand and the prospects for professional growth, self-development and the best working conditions and wages were offered.

The study showed that the most decisive conditions for retaining young people in the countryside were decent wages (52% of respondents), good modern working conditions (15.4%), housing (11.9%) and professional development possibility (9.3%). Thus, young people were considering the possibility to connect their life and professional identity with the countryside only on conditions of initially high wages, or at least a comfortable and promising working environment and solution of social problems.

#### **6.4. Expectations of employers**

The survey of experts - representatives of the agro-industrial complex of the Omsk region showed to what extent the expectations of students coincide or do not coincide with the ideas of potential employers about the qualifications and competencies of university graduates. A questionnaire was developed for the survey, which included 15 questions. First of all, it was necessary to find out whether a company was in need of young specialists. 90% of surveyed employers indicated an insignificant need for young specialists. At the same time, the greatest need was noted for specialists of the following profiles: engineers, livestock specialists, veterinarians.

The next question in the questionnaire was supposed to reveal the opinion of employers regarding what factors influenced the desire of young people to work in the countryside. If students, answering a similar question, put the level of wages in the first place, then employers (80%) were confident that modern working conditions, including technical equipment, digitalization, etc. able to attract young people to work in the countryside played an important role. The second place was occupied by decent wages, and the third place was taken by the organization of social and cultural services. It turned out to be interesting to analyze the employers' assessment of professional knowledge and personal qualities that young specialists lack, as well as a comparison of these results with the assessment of their own qualities by the interviewed students.

Thus, 85.5% of employers believe that modern graduates have little understanding of the real problems and needs of agricultural enterprises and the market as a whole. 73% noted that the students of the agricultural university are not sufficiently prepared for practical activities, 33% are sure that young people lack hard work, responsibility and discipline. Although the students themselves, answering the question “What qualities do you think an employee needs to be competitive in the labor market?” put responsibility and conscientiousness on the third place (50.6%). Approximately the same choice was in the question “Name the most effective means, ways to become a winner in professional competition”, among the answers to which the first three positions were hard work (68.5%), professional superiority (65.1%), intellectual advantage (58%). Thus, the importance of the listed qualities is unambiguous both for employers and for future employees. However, the level of proficiency in them is rather low in the assessment by employers.

Assessing the importance of various professional knowledge, skills, competencies of personal qualities that affect the effectiveness of a specialist's activity, employers, in addition to those mentioned above, noted the importance of possessing digital skills (71%), the ability to work in a team, team (83%), focus on career growth, professional and personal development, professional development (68%), personnel management skills, organizational skills (51%), openness to everything new, adaptability (48%).

According to the research, the most important criteria for enterprises when hiring a young specialist are: marks in diploma, the quality of knowledge (67%), willingness to work, starting with a working profession, 59%). For employers who participated in our survey, criteria such as the prestige of the educational institution that an applicant graduated from, gender, marital status and work experience turned out to be unimportant. 65% of surveyed employers prefer a young specialist who has recently graduated from an educational institution, although without work experience.

Meanwhile, the real need for highly qualified personnel, for example, in the agro-industrial complex of the Omsk region is not high. Thus, according to the Ministry of Agriculture and Food of the Omsk Region, in the 1<sup>st</sup> quarter of 2021, 80 vacant positions were registered in the organizations of the agro-industrial complex of the Omsk Region. Only 23 vacant positions of them can apply to persons with higher education. In 40% of the proposals, the companies do not provide any housing. The level of wages for the offered vacant positions reaches the maximum size of 50 thousand rubles only in 2.5%, and for the majority of vacant positions (65%) wages are less than 20 thousand rubles (List of vacancies in the organizations of the agro-industrial complex of the Omsk region for April 2021, 2021).

## **7. Conclusion**

The dynamics of the lifestyle of Russians, changing under the influence of digitalization, new opportunities appearing primarily among young people, will soon dictate the nature of the relationship between an employee and an employer in all spheres of the economy, including in the agro-industrial complex.

The paradox of the situation is in the fact that, on the one hand, the need for qualified personnel from employers is growing, and on the other hand, for graduates of agricultural educational institutions it is difficult to find work in their profession in accordance with their preferences and expectations.



A survey of students of an agricultural university revealed a number of contradictions that characterize the modern process of professional and life identity of young people in the context of digitalization. These contradictions are as follows. On the one hand, the majority of young people consciously choose an agricultural profession that corresponds to their inclinations, abilities and expectations, then after graduation they do not plan to connect their lives with the countryside. The second contradiction is associated with the imbalance between the expectations of young people planning to return to the village, with the expectations of employers and the real prospect of their successful employment and adaptation. The graduates of an agricultural university are ready to connect their lives and professional identity with the countryside only on conditions of high wages and the solution of their priority social problems.

A survey of expert employers conducted by the authors revealed the following problems. Managers, owners of agricultural enterprises, hiring specialists, understand that modern graduates do not fully meet their requirements and the requirements of modern production in terms of the level of training and the degree of possession of the necessary qualities. They want to have guarantees that an employee who needs to be adapted, to complete or retrain, to equip his life, will work in this farm for at least 5 years. In addition, taking into account the seasonality of work and the low profitability of production, employers are interested in the specialists having versatile knowledge not only in the field of agriculture. Loans, leasing, subsidies, taxes require knowledge of economics, finance and accounting. The costs of retraining, advanced training of personnel and their high turnover force the authors to learn the issues of law and interpersonal relations. When it comes to a small farm, an employer needs a specialist who has a whole range of modern universal competencies. In this case, an employer, as a rule, is ready to bear significant costs for the training and adaptation of a specialist.

A young specialist, who graduated from a university, understands the difference between working conditions, the quality of life in the city and in the countryside. In conditions of greater demand for personnel in cities, the choice is often obvious. A rural employer is deliberately placed in competition for a young, highly professional specialist. To win this competition, an employer needs help. The state should become an interested intermediary between an employer and an employee. The costs invested by an employer in the retraining of specialists, in their consolidation in farms through the construction of housing, should be partially compensated.

For example, a specialist is employed in an agricultural enterprise, a tripartite agreement is concluded, by which the state, an employer and an employee bear the costs of the specialist's adaptation in equal parts for five years. This may be a laborious and troublesome way, but only the mutual work of the interested parties can resolve the described contradictions, and as a result, lead to the emergence of a new generation of trained specialists in the countryside, capable of competently and effectively develop agriculture, bringing it to a new level.

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