

# The Influence of a Resource and Competence Centre on the Multifunctional Development of Agriculture

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**Abstract**— The article deals with the problem of a severe shortage of specialists in the field of management who are able to efficiently introduce innovative technologies in the sectoral labour market. The article describes the competences, including metadisciplinary and digital ones, which an updated manager should possess. The ways of transition to the digital economy are analysed, while up-to-date approaches to the training of future specialists, as well as the development of a “lifelong learning” continuing education system are unfolded. The experience is proposed for replication in the form of an information platform for providing information to organisations of the agro-industrial complex, small farms and rural population about technologies, measures for the development and support of rural areas, level of financial investments made, production potential and possible development reserves. The experience in project management for the promotion and implementation of innovative ideas of students, scientists and other participants of the university ecosystem in the formation of objective foundations for the creation of training grounds for future practices is presented. The article is intended for specialists in the field of education, science, technology transfer and rural development.

**Keywords**—manager, rural areas, resource and competence centre, digital, competence, innovation, accelerated development.

## I. INTRODUCTION

One of the basic projects that can ensure the transition to the accelerated development of national economy is the massive introduction of digital technologies, among others in the agricultural sector, which accounts for more than 4% of national GDP [1]. One of the key barriers that affect the efficiency of organisations from the agro-industrial complex is the severe shortage of innovative staff with universal competences, such as decision-making, final outcome management and teamwork ability.

Improving the educational system, which should provide the digital economy with competences, is an important task for the state, which needs to ensure information and consulting support for all current processes, as well as for processes related to the transition to digital economy.

The purpose of the study is to identify specific mechanisms aimed at simplifying the process of transition of the agro-industrial complex towards the introduction of advanced technologies using the achievements of the digitalisation of society, taking into account the new formats of staff training with the active participation of the latter in the formation of training grounds for future practices on new global markets, including FoodNet.

The weak scientific support and implementation of innovations in agriculture is caused by the low demand for innovation on part of commodity producers, the lack of a project promotion system and poor production efficiency. Training a competent specialist to work under the current conditions, as well as in the field of consulting and engineering, requires the expert to have internal motivation for a high-quality realisation of his professional activities in combination with the acquired soft skills. It is this approach in the training of future specialists that is necessary for the development of the sector and of rural areas.

## II. METHODS

The systematisation of knowledge was obtained by applying a system of regulatory principles, practices and methods through which an objective view can be obtained as regards the study of the influence of the Resource and Competence Centre on the multifunctional development of agriculture. Three main methods of scientific and educational activity were applied while carrying out the present research.

Among the so-called universal methods of enquiry, the following ones were applied: analysis – in the characterisation of certain elements of the digitalisation process; synthesis – in the identification of the general aspects of current education; generalisation – in the determination of the general properties and characteristics of the Resource and Competence Centre as the meeting point of resources in reaction to current challenges; induction and deduction – in the elaboration of an algorithm of a certain entity which can be recommended for application in other regions; and modelling – in the formation of a model of soft skills for the employees of enterprises according to the highlighted key competences and of a model of centre intended as the interaction point for representatives of educational and scientific organisations, employers and state and local governmental bodies, unifying their efforts.

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Empirical methods were used in order to obtain practical knowledge while studying the activity and development process of a specific Resource and Competence Centre, founded and physically based at Omsk State Agrarian University, on the basis of task-oriented observation and experiments within the Centre itself. The involvement of the authors of the research in the activity of the Centre allowed them to make recourse to direct observation and realise the main logical and practical elements of the experimental procedure, the results of which are presented in the present article.

The following peculiar methods from different scientific field have been applied:

- sociological methods – mass survey while elaborating the soft skill model, broadening the descriptive possibilities of the research,
- pedagogical methods – analysis of the processes and products of human activity, considering people as “lifelong” learners,
- behavioural economic methods – experimental research which show how an economic subject makes decisions, taking into account the available money and choosing a consulting agent or hiring a competent employee.

All the applied methods are consistent with the following underlying principles: the principle of objectiveness (estrangement of the researcher from the object at study); the principle of continuity (research was carried out from 2015 to 2019); the principle of replicability (all the steps and phases of the research process can be replicated and verified by other researcher).

In order to determine the conceptual framework of the research the main methodological paradigms of scientific knowledge were studied: empirical inductive (J.S. Mill), conventional (E. Mach, H. Poincaré, P. Duhem and others), neopositivist (B. Russel, L. Wittgenstein, M. Schlick, R. Carnap, H. Reichenbach and others), postpositivist (K. Popper, I. Lakatos, P. Feyerabend and others), postclassical (M. Foucault, T. Kuhn, N. Collins, A. Storer, Ye.M. Mirskiy, E.A. Mirskaya, A.N. Avdulov, A. Yurevich, M. Barber, M. Mulkay, G. Gilbert, L. Laudan, V.I. Arshinov, E.N. Knyazeva, V.G. Budanov, V.M. Rozin, V.E. Lepskiy and others), and dialectical (B.M. Kedrov, D.P. Gorskiy, A.I. Uemov, N.F. Ovchinnikov, V.S. Gott, B.S. Gryaznov, V.S. Shvyrev, V.A. Lektorskiy, V.S. Stepin and others).

The most fitting and applicable paradigm of scientific knowledge for the present research is represented by the conception of positive dialectical epistemology, since the object at study is a system consisting of elements and subsystems which are in opposition as far as their properties, tasks and functions are concerned. This system as to be described in a logical and unambiguous way, which is made possible only by creating partial models of the object of research, which must complementary to each other in the study of the influence of the Centre on multifunctionality. The models obtained are grounded on the principle of binary opposition between objectivism and humanism, comparing and unifying the goals of personal development and development of agriculture.

The theoretical and methodological foundation of the research is composed of scientific works and conceptions, elaborated by domestic and foreign scientists, in which issues related to the development of the agricultural industry, the transformation of education and the consequences of the mass digitalisation of social life are taken into consideration.

### III. RESEARCH RESULTS

The course outlined in the May Decrees of the President of the Russian Federation for the breakthrough scientific, technological and socio-economic development of the Russian Federation requires the elaboration and implementation of up-to-date projects in key sectors and areas of public life [2]. The time is mature for a transformation of the labour market which should be based on the requirements of digital economy [3].

The external challenges currently faced by education and science can be countered only by means of up-to-date educational and scientific projects in the field of digitalisation and training of staff with a sufficient level of competence in order to work in the current digital environment, capable of understanding its advantages and applying unique opportunities in practice.

At the federal level, along with the formation of the sustainable development agenda, the national programme “Digital Economy of the Russian Federation” was elaborated for the period up to 2024; it includes six federal projects: normative regulation of the digital environment, information infrastructure, staff for digital economy, information security, digital technologies and digital government [4, 5].

Studies show that only 20% of commodity producers in the Omsk Region are ready for digitalisation; the remaining 80% of producers require information and consulting support in the field of digitalisation of business processes.

For a successful digital transformation process against the background of the multifunctional development of rural territories, support for specific entities of the agri-food market - agricultural organisations, processing enterprises, peasant (farm) holdings, and private farm holdings - is required [6].

Currently, in line with the development of technological solutions several segments in the global FoodNet market for effective crop and livestock production, viz. automation and robotics, geolocation, artificial intelligence, “big data” (“smart” agriculture), the segment of new varieties of agricultural crops and animal breeds obtained using genomic modeling technologies for organisms with specified requirements, as well as solutions and services for accelerated breeding (accelerated breeding), the segment of processed products obtained from new types of biological raw materials, including biomasses from algae and insects (synthesised proteins), by-products, pseudo-cereal and cell cultures (among others for the production of feed additives, bioplastics and biologically active substances) (new sources of raw materials), the segment of biological preparations and substances for agriculture, including high-quality feeds, feed additives and drugs for veterinary use, as well as pesticides and agrochemicals of biological origin and organic food (available organics), the segment of technologies for the analysis of the nutritional and micronutrient status of human beings, among others with the help of genomic and post-genomic methods, personalised food products, services for the selection of individual diets, as well as innovative delivery

services (personalised nutrition), a severe shortage of qualified staff whose skills and professional competences meet the requirements of the current technological and science-based production can be observed in rural areas [7].

The Resource and Competence Centre (hereinafter “RCC” or “Centre”) founded and based at Omsk State Agrarian University should become an institution capable of participating in the adaptation of regional agriculture to global challenges, summarising the best practices and flagship technologies.

The innovative potential of the agro-industrial complex is exploited only by 4-5% in our country, while in the USA this parameter amounts to 50% [8]. The State Programme for the Development of Agriculture and Regulation of Agricultural Products, Raw Materials and Food Markets for 2013-2020 includes investment in the subprogramme “Technical and Technological Modernization, Innovative Development” for an amount of 23.7 billion rubles. This is the lowest parameter of funding volumes among all subprogrammes in the State Programme.

However, the massive introduction of innovations and increase in the efficiency of agricultural production will give rise to new challenges: the sector will require more qualified staff with new competences. The technical progress, new technologies, the development of society and the transformation of economy lead to a need to substantially revise the horizon of competences that future employees of an up-to-date enterprise in the sector should possess: creativity, people management competence, coordination and interaction skills, emotional intelligence, assessment and decision making, customer-oriented approach, negotiation skills, cognitive flexibility, etc. This “new specialist” must be prepared to work in the context of an uncertain future.

These challenges are being addressed on the basis of the individualisation of the approaches towards the improvement of management processes with an active network interaction of ecosystem participants (educational and scientific organisations, employers and state and municipal authorities) in the activity of the Resource and Competence Centre.

The Resource and Competence Centre handles the following tasks:

- 1) monitoring the human resourcing of the regional agro-industrial complex (quantitative and qualitative analysis) and creating a database of the needs for qualified specialists and working staff, as well as their competences;
- 2) marketing of educational programmes at various levels of education (higher, professional) for managers and specialists with the possibility to build an individual path for the growth of competences through the formation of a continuing education system;
- 3) implementing/coordinating the educational process using elements of digital didactics and its transformation with the application of continuous diagnostic-forming and online technologies;
- 4) identifying the need for digital competences among managers, specialists and working staff in the agro-industrial complex and organising the process of acquisition of the necessary level and specificity of knowledge, skills and abilities (digital skills);

5) developing network interaction with Resource and Competence Centres at federal and global level for the application of the best practices (in the form of hackathons, meet-ups, global online conferences and forums, accelerators, round tables, etc.);

6) managing a unified system for the collection of digital footprints and the formation of the digital profile of students and trainees from various educational levels among the participants of the RCC;

7) scientifically supporting the activities of the stakeholders of the RCC and forming a unified regional information and analytical system of support for the implementation of innovative approaches in the transfer of technologies and breeding achievements in segments of the global STI markets, among others using digital remote solutions;

8) conducting PR events and information and communication activities to promote current achievements in the field of economics, science and technology, to highlight promising outlooks for development and elaboration benefits, and to form a new image of science in the collective consciousness;

9) systematising the experience of introducing practical innovations on the training grounds of future practices according to the segments of global markets, disseminating (transferring) and replicating them, digitally supporting the activities of economic entities on an electronic open data platform.

The subjects of the interaction of the Resource and Competence Centre are highly qualified scientific and pedagogical staff, coaches, mentors and tutors from various fields of activity, research fellows, managers and specialists, representatives of governmental authorities and other participants of the global market ecosystem.

The resource and competence centre carries out the following management functions:

- 1) analysis of human resourcing, of the needs and level of acquisition of competences on part of the participants of educational and scientific processes, of their digital profile, of the efficiency of the technology transfer process;
- 2) planning of the human resourcing process of the regional agro-industrial complex according to the results of the quantitative and qualitative analysis of the needs for qualified specialists, working staff and their competences;
- 3) organisation of educational programme marketing, scientific support for stakeholder activities, introduction of practical innovations on the training grounds of future practices, network interaction with federal and global RCCs, information and communication activities to promote current achievements in the field of science;
- 4) motivation of entities participating in the global market ecosystem who are interested in improving the efficiency and development of rural areas;
- 5) control and coordination in the elaboration, support and implementation of practical innovations, their dissemination and replication.

The centre functional model is presented in fig. 1.

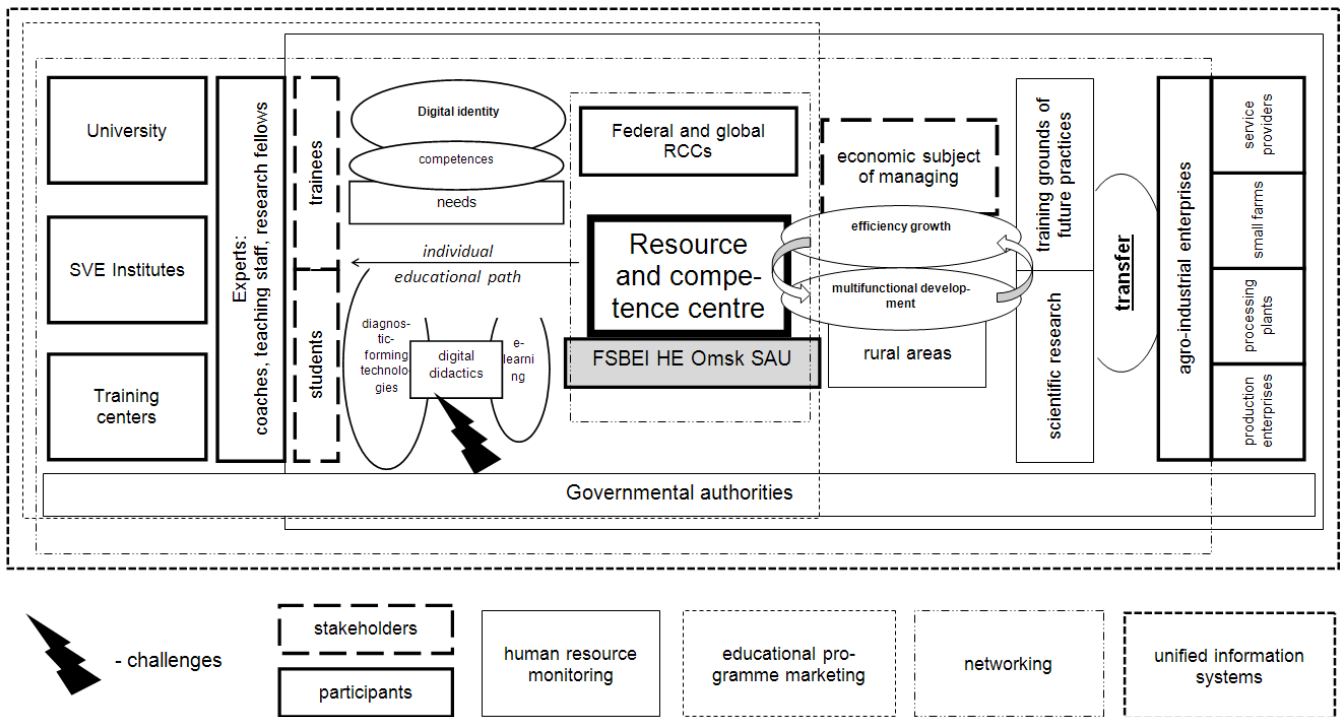


Fig. 1. Functional model of the resource and competence centre

The activities of the Resource and Competence Centre include two main areas:

- 1) human resourcing and competence support;
- 2) information and consulting support

#### A. Human resourcing and competence support

In order to increase the organisation efficiency, highly qualified specialists with a sufficient level of competences are needed, giving them the opportunity to solve non-standard tasks in a production environment, at the same time ready to solve issues of practical and personal development.

We believe that the set of competences currently required in a specialist, on the one hand, depends on the level of professional career, on the other hand, affects the speed of advancement in it. In order to define the desirable value of competence formation on 0-10 scale, an expert review aimed at increasing the reliability of the obtained data and conclusions was carried out; it included the following phases: expert selection, collection of the experts' opinions and analysis of the expert information. 5 highly qualified specialists in the field of management acted as experts. Any of the competences chosen by more than three experts was included in the soft skill matrix for employees. An expert review was carried out as well within monitoring research. For this purpose, the authors elaborated a series of events which allowed them to obtain different parameters by means of

quality analysis using formalised interviews or surveying among workers of agricultural and processing enterprises, employees from the governmental bodies of the agro-industrial complex, scientific and training staff and others (630 people). This selection of data is considered to be representative since the proportional frequency of the selected options is consistent with the proportional frequency of the options among the general public. Since the opinions of specialists and experts are expressed both in quantitative and in qualitative form, the result of the elaboration of their opinions has allowed us to prepare information for decision making about the composition of soft skills. The variety of combinations in specialist categories allows us to comprehensively evaluate the level needed. The results of the study are presented in Fig. 2.

The research testifies that an up-dated specialist must acquire and actively use various competences in his activities, the significance of which is not always directly dependent on career growth, at each stage of its individual professional path.

A competent specialist should be able to go beyond the scope of the object of his profession, to possess creative potential for self-development and self-determination. Along with his/her professional development, such a specialist has the ability to create something innovative to their profession (new methods, techniques, technologies, etc.). S/he "is able to bear responsibility for the decisions made, to determine the goals based on existing value foundations" [9].

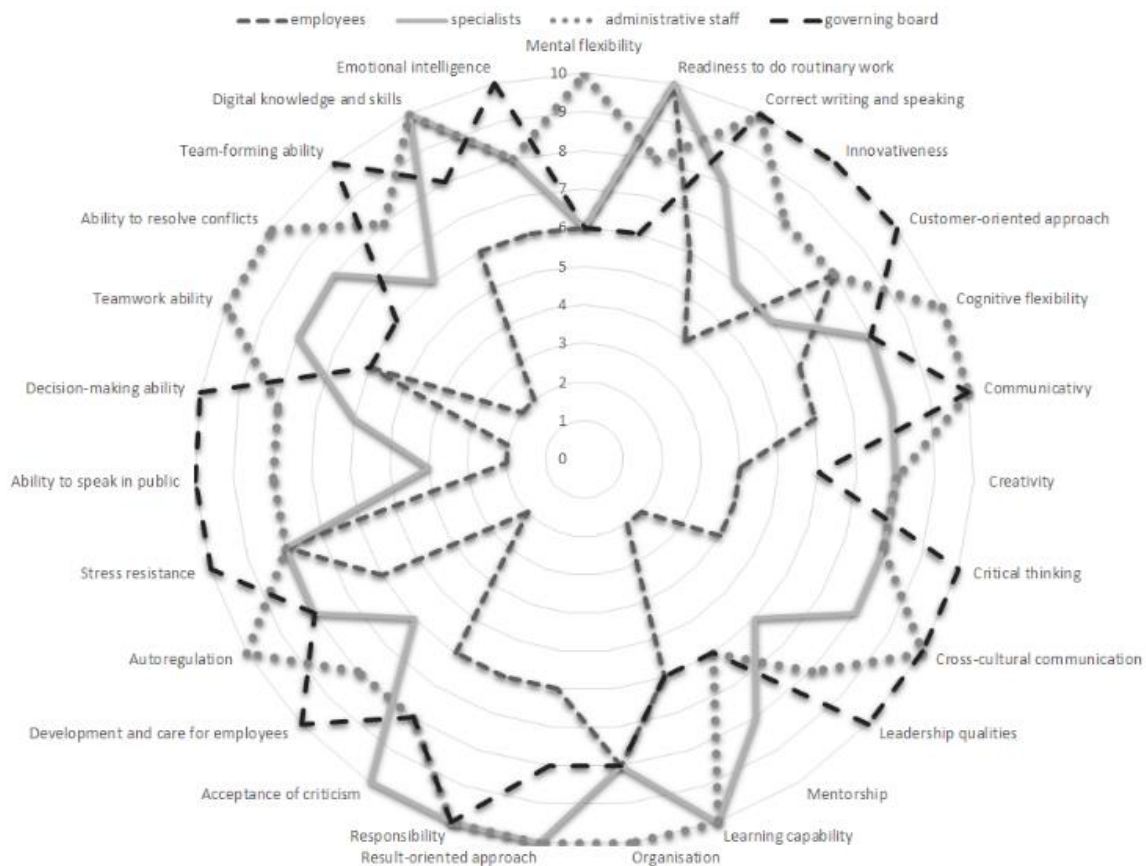


Fig. 2. Soft skills model for specialists

It is this approach in the training of the required competences that is necessary for the development of the sector and of rural areas. As far as this issue is concerned, the Resource and Competence Centre also becomes a link between employees, employers, educational organisations and authorities, which join forces to form a competent specialist.

The educational and professional development path in this model will be tailor-made depending on the initial knowledge and skill level of the individual, the request of the employer and the challenges of the sector. The forms of competence acquisition may vary depending on the terms at the student's disposal: advanced vocational training, educational intensive programme, professional retraining or a new level of education.

The results of the content analysis of educational programmes in various areas of training for professions that are and will be in demand in terms of educational levels in the Region suggest that the range of educational services in the city of Omsk and the Omsk Region for human resourcing of the enterprises of the agro-industrial sector is quite wide. In general, it should be noticed that the training of specialists able to work in agriculture is locally carried out by 7 universities, 15 secondary vocational education organisations and 7 primary vocational education organisations [10]. However, the only higher education institution specialising in sectoral competences is Omsk State Agrarian University, being the regional leader in agricultural education and science, whose graduates are in demand not only in the Omsk Region and other regions of Russia, but also abroad.

A rapid acquisition of the "today and now" necessary competences by specialists and managers becomes possible

with additional retraining or advanced vocational training, which is one of the main elements in the system of continuing professional education. The personalisation of educational vocational programmes enables the formation of individual education paths in line with the requirements of professional standards based on the monitoring of the digital profile of each participant of the educational process. The co-workers of the RCC are tutors with direct access to a unified system of collection of digital footprints, they can propose adjustments in the acquisition process of hard, soft as well as digital skills. Taking into account the specifics and trends of the agro-industrial complex, training programmes for "future professions" (e.g. agro-economist, agro-ecologist, GMO-agronomist, agro-informaticist) are being elaborated, while the programmes of already-taught disciplines are being modified in line with the employers' requirements under the conditions of the innovative development of economy.

The importance of the transformation of educational methods has arisen at a global level and is being discussed on global educational discussion platforms. Thus in his article S. Bennet observed how youngsters from the generation of "digital aborigines" possess deep knowledge and skills as regards work with ITs. As a result of their education and work experience with technologies they have particular preferences and education styles which distinguish them from previous generations of students [11].

The stigma attached to agricultural labour, rural life and the insufficient infrastructural development of rural areas lead to a severe problem of availability of qualified staff. For instance, only 60% of Omsk State Agrarian University graduates belonging to the category of "students from rural areas" return to their "small motherland". Another serious

problem is represented by the massive exodus of graduates from Omsk HEIs to other regions, because of which different measures are being taken to stabilise the migration scenario and to improve the socio-economic situation in rural areas: the realisation of National Projects, the elaboration of the Strategy for the Socio-Economic Development of the Omsk Region, the creation of favourable conditions for attracting investors in the Region, etc. Due to an increase in life quality, the development of rural areas and the efficiency of the activity of economic subjects, a yearly increase in the need for managers and specialists of the agro-industrial complex, including those who meet the current competence trends, can be forecast. The problem of supplying the Region with specialised staff cannot be solved in a qualitative manner without network interaction between all the stakeholders on a common platform of interests, which is what the Resource and Competence Centre can become. Within the RCC fields of activity an intense work on the recruitment of youngsters from rural areas, promotion of agricultural labour, consulting about required future professions, creation of a project-oriented educational and/or professional path based on diagnostic data with the application of up-to-date digital technologies is carried out.

Innovative education based on an individual educational path includes the development of the ability to projectively determine the future [12], responsibility for it, confidence that one's professional abilities skills can influence this specific future, ability to quickly switch between carried out production tasks and even specialties within the framework of one profession or sector, ability to quickly acquire new specialties or changes in them which can occur under the influence of technical transformations.

The challenges of digital economy are strengthened by the fast pace of the global scientific and technological development. Universities nowadays cannot concentrate their educational technologies only on professional training. In order to promote the development of specific areas, sectors and countries, it is necessary to educate future leaders, to supply them with technological competences, with the abilities to perform teamwork and to communicate efficiently. An example of such programmes oriented towards the acquisition of knowledge, skills and competences for an effective management of rural areas is represented by the network-based Master's Degree "Sustainable Agricultural & Rural Development", based on EU educational standards, which enables the exploitation of the best European educational and production practices. A peculiarity of the programme consists in the fact that, along with student training, educational activities are carried out also for teachers, since they are the translators of innovative experiences and competences in the field of efficiency increase of the agrarian production and introduction of innovative projects in the social sphere.

#### B. Information and consulting support

Nowadays many producers of agricultural commodities and the population of rural areas do not possess current information on technologies, measures for the development and support of the agro-industrial complex and rural areas, the level of financial investments, the production potential and possible development reserves due to a low digital literacy. As a result, an operator dealing with information and consulting support, whose involvement can further increase the level of autonomy of management decision making and acquisition of

the achievements of domestic and global science and technique when using up-to-date technologies, is needed.

As part of the implementation of the *May 2018 Presidential Decrees* and the achievement of one of the stated goals, i.e. *"boosting the technological development of the Russian Federation, increasing the number of technologically innovative companies"*, the staff of the Resource and Competence Centre disseminates the experience of introducing practical innovations, provides scientific support for the economic activities of rural areas in promising areas of the Russian Scientific and Technological Initiative under the guidance of the Centre competitors. The Centre provides large-scale information to interested parties about new technologies and breeding achievements, about innovative projects in agriculture, about changes in budget and tax laws and in the market conditions (promotion channels, pricing policy, etc.).

The implementation of the results of scientific research into production by business entities creates the prerequisites for improving the efficiency of organisations in rural areas, increasing their investment attractiveness, enhancing the scale of innovativity of applicable and developable technologies, developing human resource potential, and increasing the efficiency of the agro-industrial complex as a whole.

For the development of small business forms at state level, a wide range of measures is proposed for the development and support of the agro-industrial complex and rural areas, including grants at federal and regional levels. The Centre staff provides producers of agricultural commodities with consulting services on the development of business plans and paperwork for grant support, and further supports the process of effective implementation of projects. An annual increase in government support for these economic entities has been noticed. Thus in 2019, 64 projects for the development of family-owned livestock farms received support, as well as about 200 million rubles in the form of grant income for beginning farmers.

In order to popularise scientific achievements, more than 6,000 articles and reviews are openly published on the Internet, more than 15 footages are shown on regional and federal television based on the results of scientific research, while conferences, round tables, seminars, exhibitions and other events are held with the support of scientists from the Resource and Competence Centre. For example, in 2019 master classes with representatives of industrial partners such as "Diagnosis of Animal Tuberculosis", "Machine Milking of Cows", "Novelties in the Legislation on Cadastral Activities", "Scientific Support and Supplying of Agrochemical Services to the Agricultural Enterprises of the Omsk Region" attracted great attention from the public and were attended by more than 1,500 people.

The low level of individual competences of employees who take management decisions requires the involvement of consultants within the framework of certain production tasks. In the region, consulting on crop production is most in demand, with the share over the total volume amounting to 48.2%. Among organisations and citizens, the services of consultants on marketing, social rural development, rural (agrarian) tourism, construction, software and informatisation are also in demand. It is expected that the number of consulting on part of enterprises and citizens from rural areas will increase by approximately 10% annually (2,500



requests per year), which will lead to an increase in the Centre income (more than 32 million rubles) and tax revenues to the regional budget (more than 9 million rubles).

One of the resources for providing participants of the agricultural market with information about innovative projects in agriculture and promoting the consulting services of the Resource and Competence Centre is the online educational platform for agricultural education and science "A University Open to the Region!" posted on the official portal <http://open.omgau.ru>, which provides access to a database on new technologies, breeding achievements and innovative projects in agriculture, changes in budget and tax laws, and on the market situation. The consulting activity of the Resource and Competence Centre over the past two years has already contributed to a 4.4-fold increase in the number of requests from interested parties using this resource.

Single recommendations from the Centre can be replicated in the practice of both agricultural organisations and peasant (farm) holdings. Thus, in 2018 recommendations were made to improve the efficiency of the cultivation and cattle feeding technologies in the Omsk Region, which can increase the profitability of production up to 11.6-35.2%.

At the present time, there is no single methodological approach to the assessment of the efficiency level of the activity of the Resource and Competence Centre as an institution, the basis of which is informational, scientific and professional support for the activity of economic entities. The authors propose an index of efficiency of the Resource and Competence Centre in the form of an integrated parameter of the quality of work and services which affects the activity of both the client and the RCC itself. The coefficient of the internal economic effect of the work of the Resource and Competence Centre is defined as the ratio of the sum of the enumerated factors (productivity correlated with the expansion of the market and the volume of work and services of the Resource and Competence Centre: increase in price and profitability; economic qualitative parameter: changes in costs per ruble of services/work; quality of elaborations and recommendations: ratio between the number of positive reviews and recommendations and the number of project-related claims; repeated requests on part of the consumer: ratio between the number of projects and the number of projects with clients who repeatedly contacted the Resource and Competence Centre) and the value of the costs of the project or the service provided. The resulting quality of the Resource and Competence Centre for the client is determined by the magnitude of changes in the sum of costs and profits. To determine the quality level of the work and services provided by the Centre, the actual value of the performance index of the RCC efficiency must be correlated with three interval levels: the base level is represented by the critical value of the index; the normative level by the planned value of the index; the target level by the desired (additional) value of the index.

The calculation of the efficiency index of the Resource and Competence Centre for 2018 testifies the correspondence of the actual value to the target (at the initial stage in 2014 - 0.65) and base levels (last year level - 0.68). The efficiency index of the RCC amounts to 0.7 when the coefficient of the internal economic effect from the work of the RCC is 1.1 and the coefficient of positive changes in the client's organisation is 0.63.

During the period of operation of the Resource and Competence Centre (previously the Human Resource Centre), significant results have been achieved in staff training for rural areas and development of rural areas. However, because of the provisions of the May 2018 Presidential Decrees and the need to achieve goals such as "creating an up-to-date and safe digital educational environment that ensures high quality and accessibility of education of all types and levels" and "ensuring the accelerated implementation of digital technologies in economy and in the social sphere", a unified regional information and analytical system of digital support for enterprises, agricultural departments in municipal formations and governmental authorities of the regional agro-industrial complex is proposed to be created on the basis of the Centre, which allows to accumulate diverse analytical and scientific information, to plan the development of agricultural organisations, to make forecasts of spatial and sectoral nature at regional and local levels. The digital support system through the introduction of innovations and the involvement of business in the scientific and educational process will create the conditions for an increase in productivity and efficiency in agriculture, enhancing the level of acquisition of up-to-date digital competences by employees. In addition, the use of the resources of this system will allow for agro-territorial (spatial) planning in the Region, which consists in determining the optimal market zones and justifying the location and volumes for each type of agricultural and processing production.

Digital support for training and for the introduction of scientific innovations and online consulting in the implementation of rural projects, and support to beginning farmers, including high-tech agricultural startups, will become key tools for the multifunctional development of rural areas. In one of its areas of activity focused on the popularisation, development and implementation of innovative ideas of students, scientists and other participants of the ecosystem, the Resource and Competence Centre implements an open innovation model. The transformation of production, education and science is impossible without the search for and operational implementation of progressive solutions [13]. The model consists in the free placement of projects offered to the general public in the so-called "Bank of Innovation Projects" on the online educational platform for agrarian education and science "A University Open to the Region!". The platform is so designed as to facilitate the access to investments for project generators, to connect them with organisations and individuals who are willing to try themselves as investors, as well as with accelerators and funds that are looking for projects. On the digital platform the author can download all the data about the project using the built-in template in the personal account mode. In case of interest in the project, the initiator (i.e. the carrier of the idea) implements the project and communicates with investors and accelerators through this platform.

The application of the digitalisation tool will increase the level of metacompetence of managers, specialists and working staff in the agro-industrial complex to a level that allows quickly making informed decisions, increasing the efficiency of financial and economic activities, and attracting young people to agribusiness.

Changes in the contemporary society are modifying the requirements for competences and qualification of future professionals, for technologies which are relevant in the real sector of the economy, for research that accompanies the

development of all economic sectors. The Resource and Competence Centre thus becomes an innovative platform for continuous learning and lifelong education, cultivating competences, acting as a management centre for the multifunctional development of rural areas.

Over the last few years, scientific research on the multifunctional development of rural areas has been carried out in the Russian Federation by scientists such as A.I. Altukhov, N.I. Antonova, A.I. Kostev, A.V. Davidova, A.S. Danilenko, T.V. Sokolskaya, R.R. Shamin, N.A. Sereda and others. However, the complex issue of the influence of a Resource and Competence Centre on the multifunctional development of agriculture is still understudied and needs further research.

#### IV. CONCLUSIONS

The article describes the experience of operation of the regional Resource and Competence Centre, which ensures the effective interaction of the ecosystem participants (educational and scientific organisations, employers and state and municipal authorities). The efficiency in the implementation of the project developed by the authors is based on the observation of the balance of interests of the stakeholders in solving human resourcing problems, mutual social responsibility and activity.

The activity of the Resource and Competence Centre contributes to the formation of a strategic partnership between entities interested in improving the efficiency of agriculture and the multifunctional development of rural territories in the Omsk Region. The Centre activity is aimed at solving problems related to professional training and staff retraining according to the requests of employers and in line with the challenges of the sector, among others with the development of digital competences; monitoring and forecasting of the staff requirements of the regional labour market; realisation of information, consulting, expert and scientific activities in agriculture.

The network interaction of rural entities through the Resource and Competence Centre can solve problems related to the introduction of highly efficient technologies, increase the efficiency of production and processing of agricultural products, solve the problem of isolation of professional educational institutions, make them receptive to the needs of society and of the labour market, and contribute to the formation of an individual educational and professional path built on the basis of automatic algorithms, diagnostic results and predictive educational formats.

Competences trained within the framework of the proposed system of network interaction can become markers of trends in the multifunctional development of agriculture.

The positive experience of the operation of the RCC can be replicated in the neighbouring regions.

#### REFERENCES

- [1] Obzor rynka sel'skogo khozyaystva [A review of the agricultural market]. Deloitte, 2018.  
<https://www2.deloitte.com/content/dam/Deloitte/ru/Documents/research-center/obzor-rynka-selskogo-hozyajstva.pdf>
- [2] 12 prioritetov prezidenta [12 presidential priorities]. Vesti obrazovaniya, 2018.  
<https://vovazeta.ru/articles/2018/5/8/edpolitics/3153-12-prioritetov-prezidenta-??history=0&pfid=1&sample=159&ref=0>
- [3] Tsifrovaya yekonomika Rossii [Digital economy in Russia], 2019.  
<http://www.tadviser.ru/index.php/%D0%A1%D1%82%D0%B0%D1%82%D1%8C%D1%8F:%D0%A6%D0%B8%D1%84%D1%80%D0%BE%D0%B2%D0%B0%D1%8F.%D1%8D%D0%BA%D0%BE%D0%BD%D0%BE%D0%BC%D0%B8%D0%BA%D0%B0.%D0%A0%D0%BE%D1%81%D1%81%D0%B8%D0%B8>
- [4] Pasport natsional'noy programmy "Tsifrovaya yekonomika Rossiyskoy Federatsii", utv. resheniem prezidiuma Soveta pri Prezidente Rossiyskoy Federatsii po strategicheskemu razvitiyu i natsional'nym proektam 24.12.2018 [Profile of the national programme 'Digital Economy of the Russian Federation', as approved by the presidium of the Presidential Council of the Russian Federation for Strategic Development and National Projects dated 24.12.2018]. Official gazette of the Russian Federation, 2018.  
[https://digital.gov.ru/uploaded/files/natsionalnaya-programma-tsifrovaya-ekonomika-rossijskoj-federatsii\\_NcN2nOO.pdf](https://digital.gov.ru/uploaded/files/natsionalnaya-programma-tsifrovaya-ekonomika-rossijskoj-federatsii_NcN2nOO.pdf)
- [5] Tsifrovaya yekonomika Rossiyskoy Federatsii: programma: rasporyazhenie Pravitel'stva Rossiyskoy Federatsii ot 28.07.2017 No. 1632-r [Digital Economy in the Russian Federation: Programme: Executive Edict of the Government of the Russian Federation dated 28.07.2017 No. 1632-r]. Official gazette of the Russian Federation, No. 32, pp. 5138, 2017.  
<http://static.government.ru/media/files/9gFM4FHj4PsB79I5v7yLVuPgu4bvr7M0.pdf>
- [6] Razvitie sel'skogo khozyaystva v Rossii: realii i perspektivy [Agricultural development in Russia: current state and perspectives]. Medusa, 2019.  
<https://www.kp.ru/guide/razvitie-sel-skogo-khozyajstva-v-rossii.html>
- [7] FoodNet, 2019. <http://www.nti2035.ru/markets/foodnet>
- [8] Ye. B. Naydanova, "Innovatsii v agropromyshlennom komplekse Rossii [Innovation in the agro-industrial complex of Russia]," Novainfo.ru, Vol. 2, No. 30, pp. 77-82, 2015.  
<https://novainfo.ru/article/3017>
- [9] O. F. Piralova, "Kompetentnostnyy podkhod v sisteme mnogourovnnevo obucheniya inzhenera [Competence approach in the multilevel system of engineer education]," Uspekhi sovremennogo estvestvoznaniya, No. 1, pp. 69-71, 2011. (in russ.)
- [10] Prikaz Rosstandarta "OK 009-2016. Obshcherossiyskiy klassifikator spetsial'nostey po obrazovaniyu" ot 08.12.2016 No. 2007-st [Decree of the Russian Federal Agency on Technical Regulating and Metrology "AC 009-2016. All-Russian Classifier of Educational Specialties" dated 08.12.2016 No. 2007-st]. Standartinform, 2016, URL: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_212200/d0f79183b22b7a9a088d3b639ad03e0e87ba39f1/](http://www.consultant.ru/document/cons_doc_LAW_212200/d0f79183b22b7a9a088d3b639ad03e0e87ba39f1/)
- [11] S. Bennett, K. Maton, and L. Kervin, "The 'digital natives' debate: A critical review of the evidence," British Journal of Educational Technology, 2018, Vol. 39, pp. 775-786, 2018.  
<https://doi.org/10.1111/j.1467-8535.2007.00793.x>
- [12] O. V. Shumakova, T. G. Mozhherina, and S. Yu. Komarova, "Training of the future in the conditions of digitalization of economy," Innovatsionnoe razvitie, No. 9 (26), pp. 143-146, 2018. (in russ.)
- [13] A. Yu. Uvarov, S. Wang, C. Kang, et al. Problemy i perspektivy tsifrovoy transformatsii obrazovaniya v Rossii i Kitae [Problems and perspectives of the digital transformation of education in Russia and China]. Moscow: National Research University Higher School of Economics, 2019. (in russ.) [The 2nd Russia-China education research conference Digital Transformation of Education and Artificial Intelligence, September 2019]