

Improving Competitiveness of Personnel in the Digital Economy



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Abstract The Program “Digital Economy of the Russian Federation” that is currently being implemented by the government should contribute to the formation of an economic environment that would ensure the most effective interaction between citizens, the scientific community, business and the State, through the development of digital technologies. In addition to developing a specific statutory regulation system, the interaction of actors in the digital economy requires the training of relevant personnel with certain competencies: professional competencies that are required for the development and implementation of digital technologies, and user-specific competencies that are required for the efficient application of potential of information and communication technologies. The goal of this research is to identify relevant competencies that are transforming as a result of digitization of the economy and focused on improving competitiveness of personnel. General scientific methods of cognition serve as the basis for the methodology of the paper. These include observation, generalization, comparison, methods of analytical study of the content of regulatory acts. The digitization process has long been implemented in accounting through the use of various software programs and automated accounting systems that document business processes and are used to automate accounting and draw up financial accounting statements, so the introduction of studying the practical aspects of using software products in the educational process can provide graduates with skills related to the fundamental “digital literacy” of the users. However, in order to improve the competitiveness of personnel in the labor market in the digital economy, consideration must also be given to professional digital skills relating to mastering the digital technologies. That having been said, a set of advanced digital

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competencies that a professional should have is no longer constant. Under the influence of the digital environment competencies become variable; they evolve into “dynamic portfolios”. If this occurs, the business will focus not on personnel, but on the total “portfolio of competencies” of professionals which is formed depending on the business development strategy. The paper has developed a portfolio of digital competencies of modern personnel which in the authors’ opinion must be possessed by professionals to improve their competitiveness in the labor market.

Keywords Automated accounting systems · Digital economy · Digitization of accounting · Digital competencies

JEL Classification I25 · O10

1 Introduction

Over some recent years, digital technologies that have been widely used recently, have been exerting direct influence on the development of the country’s economy and significant changes in people’s lives. Artificial Intelligence, Internet of Things, wireless communication technologies, and robotics have been widely used both in business and in the social sphere. Modern digital technologies have a significant impact on the development of all sectors of the economy, becoming an integral part of modern management systems. In next to no time, efficient use of digital technologies will determine the competitiveness of not only companies and their personnel, but also of individual countries, establishing the infrastructure and legal framework for the digital economy.

The comprehension of the fact that future in general belongs to digital technologies and actors that create, introduce, develop and use these technologies, is increasingly growing. Digitization of the economy involves the development of areas of investment in IT technologies and personnel training in order to create the latest technological solutions and achieve compliance with contemporary trends and requirements of the markets.

Digital economy is a basis for the creation of a brand-new business model, and, accordingly, it changes the format of education and communications, forming new lines of social development.

The development of digital technologies implies an increase in the quantity, quality and variety of interrelations between companies and citizens associated with the emergence of new types of transactions that require professionals to have competencies that are focused on working with state-of-the-art information technologies. The existing practical interaction of economic actors establishes relevant requirements to the development of a statutory regulation system and the formation of new personnel competencies.

Thus, one of the key factors in the development of digital technologies is the availability of highly-qualified personnel with certain competencies: professional competencies that are required for the development and implementation of digital technologies, and user-specific competencies that are required for the efficient application of potential of information and communication technologies.

2 Background and Methodology

Digital economy as a new socio-economic phenomenon which is developing at such a rapid pace that economic theory is lagging far behind in the study of this phenomenon. Currently, the term “Digital Economy” is regarded by theoreticians and practitioners as widely different phenomena and processes; therefore, the basic methodological principles that underlie the research are based on the points of view of Russian and foreign scholars studying digital technologies.

The theory of research is based on the works of contemporary scholars and practitioners in the digital economy. Theoretical research deal with the formation of provisions in higher education, focus on training of professionals in new professions, having such professional competencies which imply their propensity for unconventional creative thinking and contribute to the development of communication skills. It is the education system that determines the efficiency of transition to the digital era which is characterized by new employment relations.

General scientific methods of cognition serve as the basis for the methodology of the paper. These include observation, generalization, comparison, methods of analytical study of the content of regulatory acts in the digital economy. A differentiated examination of the results of the analysis of the use of software of automated accounting systems in enterprise activity has been used as the main methodological principle of the research.

Data from the Federal State Statistics Service of the Russian Federation, provisions of the National Program “Digital Economy of the Russian Federation” and other institutional regulators were used for the justification of authors’ provisions.

3 Discussion and Results

Currently higher education institutions have been set the task of solving the personnel problem; these institutions are to develop education programs for training of specialists that would conform to contemporary requirements and be competitive in the labor market in the context of digitization, since the employers will give preference to “digitally literate” professionals in the near future [2].

Today, among the uses of digital technologies in organizations, the greatest demand is for those that make it possible to automate banking and financial transactions (Fig. 1).

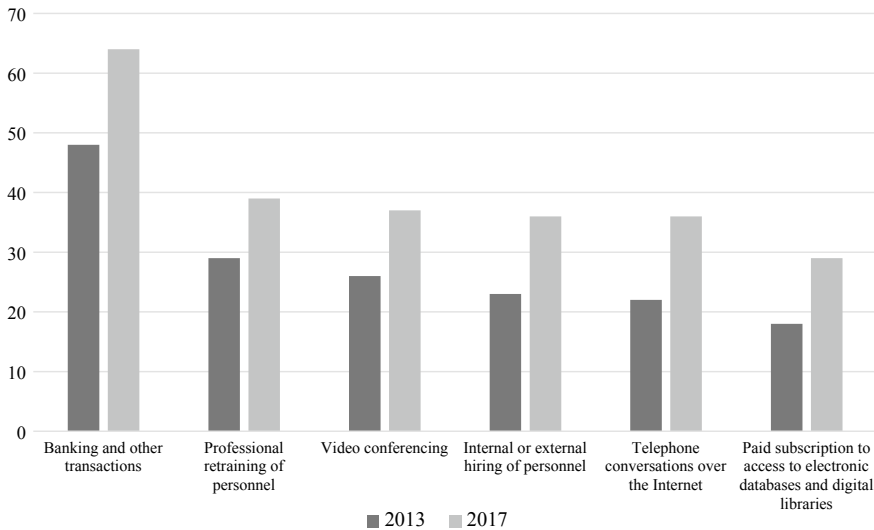


Fig. 1 Uses of digital technologies in organizations (in % of the total number of organizations). Compiled by the authors on the basis of [1]

Ensuring the training of highly-qualified personnel for the digital economy has been identified as one of the top priorities of the Project “Personnel for the digital economy”, which is aimed at achieving training of 400,000 people a year by 2021 within the scope of the vocational education system with key competencies in the digital economy, and this indicator should reach 800,000 graduates a year by 2024; that having been said, special focus is on the graduates of IT specialties [6, 7]. If Russian higher educational establishments currently train about 50,000 of IT professionals a year, then this indicator is expected to increase to 120,000 professionals a year by 2024. Moreover, the emphasis is not on basic education but on additional and professional retraining, since the digital economy is dynamic and developing at a rapid pace, which in turn steps up the requirements for the knowledge and skills of professionals (Fig. 2).

The independent implementation of academic programs of professional improvement and growth of employees has become available to the business since the development of digital technologies, which makes it possible to take into account specific needs and guarantee conformity of training of personnel to the needs of a particular enterprise [11]. Employees, in turn, gain skills and abilities, perform their job duties in a more qualitative manner, significantly increasing and expanding the level of their functionality in accordance with the goals and objectives of the enterprise. Investment in personnel training and development contributes to the development of reputation of an enterprise as an innovative and socially oriented one, as well as the growth of its attractiveness as an employer.

Digitization calls for permanent development of education, which implies permanent education throughout life of a person starting from preschool, secondary, higher

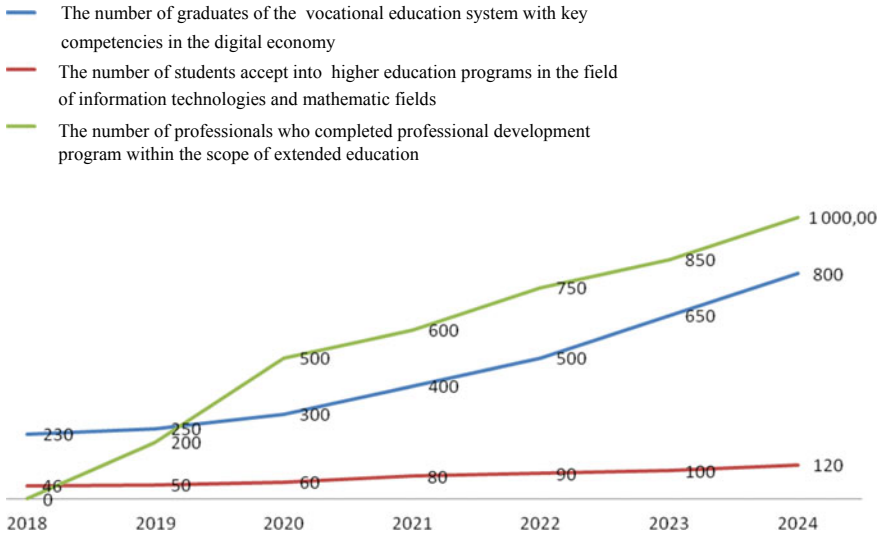


Fig. 2 Indicators of federal project “Personnel for the digital economy”, 1000 people. Compiled by the authors on the basis of [7]

and extended education and ending with systematic postgraduate studies of trained specialists with the possibility of attestation of skill level in the corresponding qualification assessment centers within the framework of the emerging national system of qualifications in the country [3].

It is obvious that the issues of personnel training in accordance with the tightened requirements and aggravated competition become increasingly important in the digital economy. The key driver of global educational trends is the introduction of artificial intelligence systems [14], which stimulate the further development of a growing online education market in turn [15]. In Russia, this trend hasn’t manifested yet.

Digitalization is being introduced in the accounting profession both in a broad sense and in a narrow sense. Digitization of accounting shall be generally understood as organizational and technological processes of the use of new digital technologies in the organization of accounting process, which helped relieve the accountant from the necessity to manually fill out primary documents, accounting registers and reporting, documentation of business transactions related to property accounting, sources of education and obligations on the business accounts, mathematical computation (computation of taxes and charges). Digitization of accounting makes it possible to quickly process data arrays; promptly present analytical information in a visual form (diagrams, graphs, and tables); instantly exchange information between departments, between the head and subordinates, contractors; quickly draw samples, generate consolidated returns; significantly reduce the number of paper media.

The key factors in the development of economic activity also include various data in the digital form, processing of large volumes of such data and the use of analysis results, contributing to the enhancement of efficiency of various businesses in general.

In a narrow sense, i.e. in technical terms, digitization in accounting means the transition from an analog form of processing and presenting information to a digital form, that is, based on the use of Internet technologies. Thus, communication with regulatory authorities, banks and counterparties is carried out through digitization.

Currently a prerequisite for a breakthrough in accounting methods is the development of blockchain technologies that use accounting registration systems and allow storing transaction records in a single register with cryptographic information protection and a secure distribution system. Further development of the accounting system moves towards formation of bases of financial indicators, and bases that characterize social, environmental and other nonfinancial indicators, meeting the criteria of authenticity of and provision of customization of user's interests [13].

Development of the digital economy provokes rapid emergence of an imbalance between personnel and technologies employed, contributes to the development of technological unemployment which requires knowledge of the scope of operations and appropriate information processing methods [8]. Digitization processes and their introduction into accounting entail the need to increase the competency of the respective accounting personnel and improve competition in the market. The pursuance of enhancing efficiency of business processes and digitization development will contribute to the subsequent transformation of professions in a new environment.

Digital economy will still need the profession of accountant, albeit assuming new context, where an accountant is a business partner who is able to assess various risks, think flexibly, continuously improve himself/herself and develop necessary competencies.

At the same time, technologies are considered as the main factor among the success factors of business events, which accounts for about 55% of success, while about 20% of success accounts for personnel. However, an appropriate balance of factors should be achieved [10].

A considerable number of papers deal with the issues of adaptation of accountant's profession to the digital economy environment. For example, Get'man, V. G. gave an estimate of the quality of professional education of students who chose the professions of accountant and auditor in national higher educational establishments, and offered a comprehensive set of measures that make it possible to bring the level of their professional education to requirements specified by the business more in line with professional skills; in particular, he pointed out that, in addition to fundamental accounting skills, graduates need knowledge and skills in the field of information technologies [5].

Soboleva, G.V., Popova, I.N., Terent'eva, T.O. also note that currently the vast majority of requirements for specialists who receive education in accounting involves the use of the latest technologies in the educational process and focuses on the

objective of giving students not only the knowledge that is actively required by the market in accounting today, but also the knowledge that will be needed in the long run [12].

The flow of information, which is received and independently generated by the organization in the course of its financial and economic activity, should be processed, analyzed and stored, which cannot be done without the automation of accounting and analytical systems. The digitization process has long been implemented in accounting through the use of various software programs and automated accounting systems that document business processes and are used to automate accounting and draw up financial accounting statements [9].

A fairly large number of software programs for automated accounting systems (AAS) are available in the modern Russian market; they are based on various accounting techniques and various types of ownership and activities used in organizations (Table 1).

The major purpose of the AAS under consideration is the automation of accounting functionality, that is, ensuring automatic presentation of business processes, operational efficiency, reliability and convenience of data storage and analysis.

When analyzing the practical application of the AAS by organizations, it has been found that the following software programs obtained the widest circulation among the software for the organization of accounting, management and tax accounting process: "1S", "Parus", "Galakitika" and "BEST". The main factors for their common usage include extended functionality, reliability and flexibility, compliance with existing legal standards and requirements, and regular updates [4].

Among the software programs that are most frequently used by the organizations of the Russian Federation, "1S" software, which is a set of software products, became the most widely used product, since it provides ample opportunities for customization, separate item-by-item revenue accounting and expenditure accounting, management and financial accounting in various accounting systems of the organizations, and activity-specific analytics; moreover, it is suitable for multiple types of accounting in one or several organizations of different fields of activity and forms of ownership.

Such automated accounting systems as Parus, BEST, and Info-Bukhgalter are less functional and much less common due to the special-purpose nature of accounting automation [4].

Therefore, it is expedient to introduce into the educational process the study of practical aspects of application of software products for the automation of business processes most commonly used by the organizations of the Russian Federation.

Digitalization of the economy toughens competitive confrontations for the right to possess the latest and commercially promising achievements.

Competitiveness will depend on the timely creation of an appropriate intellectual potential and community of promising specialists with new competencies. At the same time, the human factor, which is at the same time a key resource for economic growth and competitiveness, is a constraining limitation.

The introduction into the educational process of studying the practical aspects of the using of software products can provide graduates with skills related to basic user "digital literacy", therefore, it's necessary to pay attention to professional digital

Table 1 Automated accounting systems that are used in the practical activity of organizations of the Russian Federation

AAS	Characteristics of software and hardware of automated accounting systems	
<i>Software for the organization of accounting, management and tax accounting</i>		
Name	Advantages	Disadvantages
IS	<ul style="list-style-type: none"> • automation of various accounting segments; • versatility; • generation of consolidated returns for in-house needs and controlling bodies; • regular updates of software versions; • promptness of updates of databases and reporting forms 	Poorly integratable <ul style="list-style-type: none"> • costly
Parus	<ul style="list-style-type: none"> • usage by small and medium organizations of various sectors of the economy; • flexibility, high performance and wide functionality; • operation on one or more machines of the local network 	<ul style="list-style-type: none"> • deferred updates
BEST	<ul style="list-style-type: none"> • functional separatedness by application units; • user-friendly and simple interface; • wide variety of teaching materials 	<ul style="list-style-type: none"> • deferred updates; • closeness of the system
Info-Bukhgalter	<ul style="list-style-type: none"> • prompt preparation of standard and regulated reporting; • assessment of financial and operational performance; 	<ul style="list-style-type: none"> • deferred updates
Galaktika	<ul style="list-style-type: none"> • ability to work with multiple charts of accounts at the same time; • maintaining of records in accordance with international standards; • promptness of updates of databases and reporting forms; • making the necessary calculations; • forming and filling all kinds of tax and accounting documents 	<ul style="list-style-type: none"> • lack of problem-solving algorithms; • no control over implementation of a number of operations; • not integratable

(continued)

Table 1 (continued)

AAS	Characteristics of software and hardware of automated accounting systems
Client Bank	<ul style="list-style-type: none"> • remote banking transactions; • real-time supervision of settlement accounts
<i>Financial analysis software</i>	
Vash Finansovyi Analitik, FinEkAnaliz	<ul style="list-style-type: none"> • financial analysis of the organizations at a specific date; • business development forecasts based on the analysis
<i>Automation of internal control system</i>	
EkspressAudit: PROF	<ul style="list-style-type: none"> • control over compliance with legislation in accounting and taxation
AuditNET InternalAudit	<ul style="list-style-type: none"> • administration of the internal audit service
<i>Software programs used for interaction with tax authorities</i>	
ASK NDS-2	<ul style="list-style-type: none"> • transfer of data on economic events, primary documents (invoices), and VAT tax returns to tax authorities
Online cash desks and specialized programs for transferring information to the Federal Tax Service	<ul style="list-style-type: none"> • transfer of the information on settlements of accounts to tax authorities via the fiscal data operators

skills related to mastering digital technologies. At the same time, the set of advanced digital competencies that a specialist should possess ceases to be static.

At the same time, competencies are a continuously accumulated intellectual capital formed through the implementation of modern and effective educational policies. Possessing the necessary competencies, provided to compliance with general trends, will make effective decisions.

Under the influence of the digital environment and the transformation of professions, competencies become volatile, turning into “dynamic portfolios”. In this situation, the companies will focus not on the staff, but on the total “portfolio of competencies” of specialists, which is formed according to certain strategies of the company. Thus, the digital economy, based on digital technologies, creates a demand for specialists who own a “portfolio of digital competencies” (Fig. 3).

The current stage of development of society in the context of the digitalization of the economy is based on the using of a larger amount of information, innovation and the latest technologies, and also person, his knowledge and skills that indicates the need to master the competencies of the digitalization century, which form the digital career history of a specialist.

Of course, the transformation of the profession of accountant and the requirements for it undergo regular changes and the observed processes are quite objective and caused by the acquisition of new qualitative characteristics, attributable to the changes occurring under the influence of the information technologies and the expansion of the digitization area which should be particularly stressed during the learning process of future professionals.

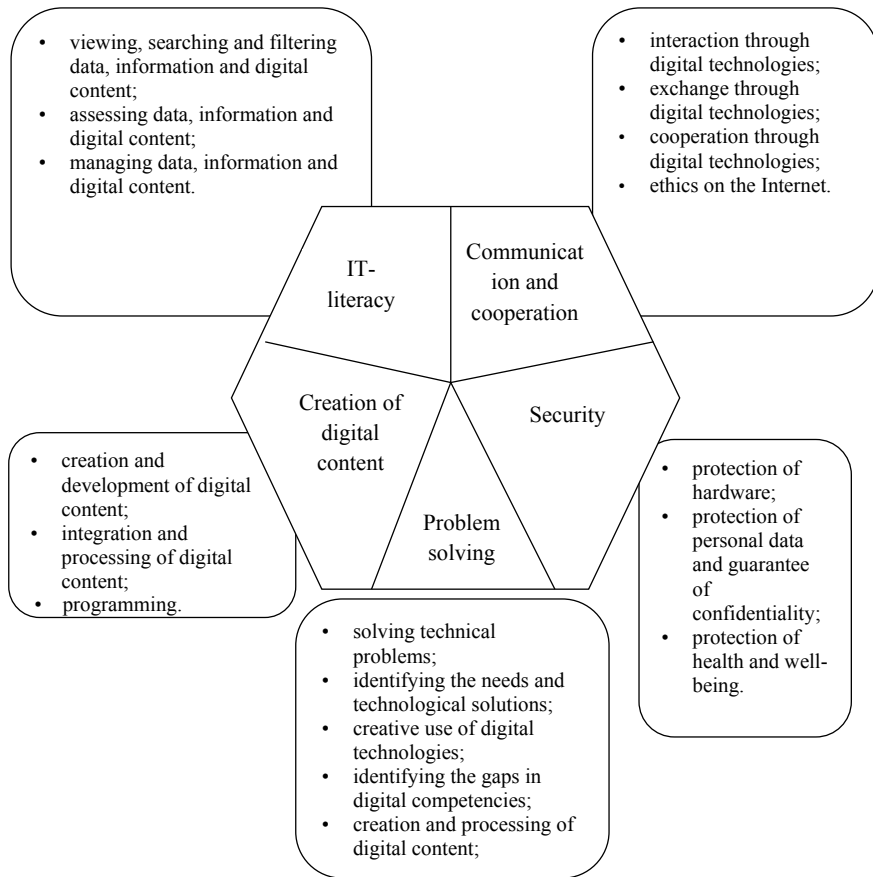


Fig. 3 Portfolio of digital competencies

At the same time, the transformation of educational processes in the preparation of accounting personnel, in order to increase their competitiveness, should occur in the following key positions:

- The implementation of the concept of lifelong education using modern educational technologies, implying the professional development of a person throughout his life, including mastery of new competencies.
- Fortification the digital infrastructure of the educational space, ensuring appropriate conditions by equipping them with appropriate technical devices and programs.
- Implementation of educational programs, applied in practice, of accounting programs and software products that can provide skills from basic user “digital literacy” to professional digital skills related to mastering digital technologies.
- Ensuring the appropriate qualifications of the faculty, allowing the using of digital technologies in educational processes.

- (e) The formation of a business community in the framework of the educational process, providing training in popular promising areas and specialties.
- (f) The flexibility of educational programs that can adapt and adapt to changing market conditions and trends, implying the formation of a portfolio of new digital competencies, such as: IT literacy, communication and cooperation, digital content creation, security and problem solving.

4 Conclusions

Digitization processes in the economy necessitate the transformation of its statutory regulation systems, business processes, education, and the formation of new personnel competencies. The education system determines the efficiency of transition to the digital era and support of the business with highly-qualified personnel, sought-after and competitive on the labor market, as well as meeting the requirements of the business to their professional skills.

The education system should focus on training professionals with certain competencies: user-specific competencies that are required for the efficient application of potential of information and communication technologies as well as professional competencies that are required for the development and implementation of digital technologies, such as: IT-literacy, communication and cooperation, creation of digital content, provision of security, and problem solving.

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