

**AMURCON 2020**  
**International Scientific Conference**

**COMPETENCIES OF A CONTEMPORARY EMPLOYEE IN THE  
AGE OF DIGITALIZATION**

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**Abstract**

This article comments on the study of competencies that an employee in the digitalization era should have. Digital changes in the economy impact the employees of a contemporary company, who must be able to use digital and innovative technologies, software, BI – platforms, deal with much information, use electronic communication channels, e-workflow. An employee should be digitally competent, have a set of specific skills necessary for the effective use of digital technologies and Internet resources. An employee should have the ability to select necessary information and develop a new one from a variety of current options. The market is changing the requirements from qualification to competence ones, particularly, to the ability to make decisions in a context of uncertainty and organize effective work, which, like digital literacy, are fundamental for digital competencies. The review of enterprise characteristics in the digital age and the basic knowledge, skills and digital skills that an employee should have, let the authors denote the basic key digital competencies. The authors observe the main components of digital competencies: basic key competencies, communicative and cognitive. The researchers suggest a model of digital competencies necessary for employees in the context of the digital transformation of organizations. It is shown that the defined competencies will provide success and prepare employees to compete in the labour market.

2357-1330 © 2021 Published by European Publisher.

*Keywords:* Digital competencies, digital literacy, digital economy, digitalization



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## **1. Introduction**

Trends of internationalization and globalization have an impact not only on the financial, technological and resource markets but also on employees of contemporary companies. In the age of the digital economy, the excess of information has replaced computerization and electrification, and digital technologies have been integrated into all aspects of the company business activities. Automation of an increasing number of operations in production, the introduction of entirely new enabling technologies and digital business models, as well as entry of new industries, make an impact on staffing needs in society. The process of digitalization of organizations provides the necessity for employees to master the current knowledge, skills and competencies of the digital economy quickly. In the context of digital transformation, candidates have to adapt to new trends and challenges to meet modern companies, be in demand and competitive in the labour market. It is getting quite obvious that a new character of an employee is being developed, which will meet the needs of institutions in the conditions of total digitalization.

## **2. Problem Statement**

However, due to the novelty of this task and the related inadequate attention to transformation processes, there is no developed unified competence model of an employee of a new stage of economic development. There are few works devoted to the analysis of digital competencies and their structuring.

The available research is usually referred to as certain occupations, but it does not give a clear idea of what general competencies will be required for nearly all employees involved in the development of the digital economy. The above allows the authors to come up with the main problem of this study. It explores a set of those competencies of a modern professional that, on the one hand, are necessary for the development of digital economy, on the other hand, allowing a specialist to be successful and much needed in the labour market of a new formation.

## **3. Research Questions**

The subject of the study is the analysis and content of digital competencies that employees in the digital age should have. So according to the problem of the study, it is necessary to answer the following questions:

- what changes taking place in the economy have a significant impact on changes in an employee's competencies
- what competencies can be identified as principal (universal) in the digital age and what elements will make up the model of digital competencies.

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

The main purpose of this research is to study employee competencies and build a model of digital competencies in digital economies.

## 5. Research Methods

The study of the issues involved in the field of this research is based on the results of theoretical and applied scientific publications of Russian and foreign scientists devoted to the staff training for the digital economy, the subject-matter of competences during digitalization, the features of the content of works in the age of digital development. Thus, the authors use the results of the analysis of the peculiarities of innovative staff training for digital economy (Gilster, 1997; Kupriyanovsky, 2017; Otto, 2011; Timofeeva, 2015) requirements for personnel in the digital economy (Belov & Govorova, 2016; Ilomäki et al., 2011; INSEAD, 2018, 2019) corporate competence models developed in leading companies (Cilesiz & Greckhamer, 2020; Raven, 1984). Also, legislative documents and regulations Digital economy Programme, Decree of the President of Russia On the Strategy of information society development in the Russian Federation for the years 2017-2030, Human resources for digital economy Program, as well as official statistical data and expert forecasts for the skilled personnel requirements of the Russian digital economy were used as information background of the research.

The article uses both general scientific and special research techniques, such as content analysis, which allows assessing the scientific background of previous studies, system-activity and factor analysis - to study certain factors that determine the competence model changes of an employee of companies.

## 6. Findings

Due to IT technologies development, humanity has transformed into a new kind of civilization. There has been a change in the information era to the digital one, where data is the main strategic resource. In RF Presidential Edict On the Strategy of information society development in the Russian Federation for the years 2017-2030 digital economy is viewed as an economic sector. A key factor of it is digital data, processing a large amount of information and the usage of analysis results.

In Russia, on July 27, 2017, the Digital Economy Program was approved. It declares the strategy for the development of information society, aimed at improving the citizens' well-being by increasing digital literacy and digital technologies. Artificial intelligence systems and the Internet of Things, the cybernetic approach replaces and substitutes the main components of intellectual capital.

The driving force in the digital economy is the usage of information and communication technologies in all areas of human activity. The transformation of the labour market is due to total automation. As a result of it, physical labour becomes less popular, passive entrepreneurship develops, blockchain technologies expand, and production is informatized.

According to research, between 4% and 47 % of jobs can disappear with a probability of 70% as a result of automation (Schwab, 2016). The least experienced to automation are professions such as computer system analysts, surgeons, psychologists, therapists, human resource managers and general managers.

Tax filing and telephone sales professionals, accountants, arbitrators and judges, contractors, insurance appraisers, real estate agents, couriers and secretaries are also at risk. Not only theorists but also practical workers are concerned with the matters: what makes an impact on an employee and what distinguishes an employee of a digital economy company.

Since the content of the work affects the set of necessary competencies, it is required to determine the differences between enterprises operating in the conditions of digital transformation that affect the employee.

That is their use of digital and innovative technologies, BI platforms, a large amount of information, the introduction of software, digital production, the use of electronic communication channels, electronic document management, high-level automation (Cilesiz & Greckhamer, 2020; Dahlberg & Nokkala, 2015; Fenwick & Edwards, 2016; Gladilina, 2017; Lasarus & Folkman, 1984).

In other words, in the context of digital changes, the requirements for the competencies of employees are rapidly changing, and the candidate for the position is to have digital literacy, a set of certain knowledge and skills that are necessary for the effective use of digital technologies and Internet resources (Timofeeva, 2015).

An analysis of the structure of employees' activities shows that digital competencies are the basis of a person's ability to solve various problems in using information and communication technologies (Acharya et al., 2020).

Thus, according to the American approach, competencies include the behaviour of an employee who has a certain set of necessary qualities, behaves properly and achieves the desired result in his work (Kupriyanovsky, 2017).

The program Digital Economy Personnel lists the key competencies that an employee of the digitalization era should have. The authors get can describe the key universal competencies combining the features of enterprises of the digital era and the basic knowledge, skills and digital skills of an employee that he should have (Table 1).

**Table 1.** Employees' key universal competencies in digital economy

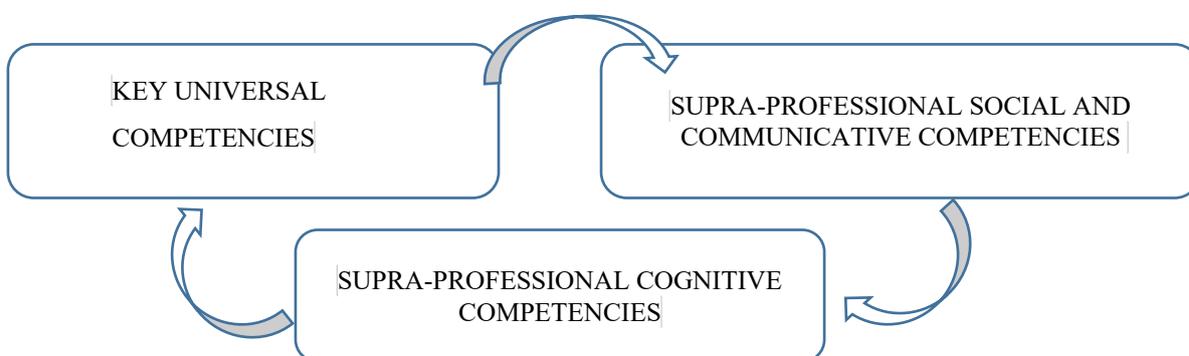
№	The distinctive characteristics of enterprises for digital economy	Basic skills that an employee should have	Key competencies of digital economy
1	Information overload	search, selection, processing, evaluation of information, data and digital content; organization and management of information, data and digital content	Information and data management
2	Complete automation of all processes into a united information system	interaction through the use of digital technologies; information exchange, digital technology data; participation in public life through digital technologies	Communication and cooperation in digital environment
3	Introduction of paperless technologies (digitized documents)	design, development, processing and integration of digital content; ability to use information from electronic media effectively	Creative thinking
4	Digital technologies applied	identification of needs and technological solutions; creative use of digital technologies; competent use of copyrights and licenses	Critical thinking in digital environment
5	High risk of unauthorized access to information	protection of devices (information leakage prevention); personal data protection	Information security and information protection
6	Occurrence of technical equipment problems	identification of needs and technological solutions; competent elimination of	Self-development in the face of uncertainty

		technical problems; identification of the digital competencies that have problems	
7	Intellectualization of activity (automation of decision-making systems)	ability to manage robotic processes; ability to develop consistent and clear commands for computer technology	в цифровой среде Communication and cooperation in digital environment

Thus, because of an overflow of information and a large amount of spam, an employee must have the ability to select the necessary information and create a new one from the set of the current options. The most important professional qualities are getting system and cognitive abilities, the ability to solve complex problems, process a large array and create new data. These competencies are basic, fundamental or key universal. However, as the basic requirements for employees change in the digital economy, the employee is more valued not for a specific specialization, but for the ability to adapt, the ability to self-learn, self-develop, self-educate. The era of the digital economy shifts the focus from the educational aspect to the capabilities of a person. He must constantly be engaged in self-improvement. Training is now focused on mastering and improving the ability to acquire and develop new knowledge that can be used in practice. Thus, it becomes obvious that there is a need for continuous development of both key universal and supra-professional cognitive competencies of employees in modern companies, within the framework of education paradigm throughout one's life.

The market changes its requirements from qualification requirements to competence requirements, specifically to the ability to make decisions in conditions of uncertainty and the ability to organize effective work. Assess the employee's potential by assessing the adequacy of his response to the constant change in the information space. Searching for new employees, the company selects more erudite employees who can perceive constant changes in the information space. Also, a specialist must have communication skills, the ability to negotiate, be customer responsive, and have an open personality, leadership qualities, and adaptability, i.e., social and communicative competencies.

Thus, it is possible to present a model of digital competencies of employees in the digital economy, which consists of the following main elements: professional or key competencies and supra-professional competencies, which in turn are divided into social-communicative and cognitive (Figure 1).



**Figure 1.** Digital competency model of employees in Digital economy

In the context of the intensive development of information, society, state, business, scientific and educational community are faced with the need for a coordinated definition of the requirements for general, professional and additional education for generating and developing digital economy competencies,

realizing that the economy is very dynamic, the required competencies will change rapidly and will not be universal. Therefore, education will have to develop in two ways: - teaching digital competencies in training bachelors, masters, and postgraduates; - training of specialists who have a professional education in the development of digital competencies through short educational syllabi and through building individual educational trajectories.

## 7. Conclusion

The digital economy is especially dynamic, external conditions are constantly changing, forcing new requirements to enterprises and organizations, obeying which they either stay competitive or simply stop working. For their successful transformation, specialists with new competencies are required, so digitalization imposes a significant impact on the character of the company employees, making special demands on them. According to the study, digital world requires an employee not only to have digital competencies, digital technologies and be IT-literate but also constantly develop and educate, master communication skills and emotional intelligence, since they are system elements of the digital competence model and allow them to be competitive in the labour market. This allows the authors to conclude that in the age of digital economy, not only digital competencies come to the foreground, but also employees' personal qualities, as well as their ability to adapt to constantly changing conditions quickly.

Human resources are becoming a strategic asset for both companies and the state, and their success in implementing the technological breakthrough of the digital economy will depend on them. The need to develop human resources, according to the presented model of employees' digital competence, to the new call of the times specify the task of finding new modern approaches to personnel training and retraining, which is the task of the following studies.

## Acknowledgments

The study is performed with financial support from the Grant of the President of the Russian Federation № SS-2668-2020.6 National, cultural, and digital trends of socio-economic and political-legal development in the Russian Federation in the 21<sup>st</sup> century.

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