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**DIGITAL COMPETENCIES AS THE BASIS OF HR MANAGERS'  
PROFESSIONAL CULTURE**

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***Abstract***

The article aims to study the digital competencies of an HR manager in the changing digital environment of the labour market. The article provides an overview of modern approaches to the digital competency portfolio in different economy sectors. Special focus is given to studying an HR department head's digital competencies, and to the results of developing and testing the digital competency model of an HR manager. The methodology for developing and applying a digital competency model in the context of digital challenge can provide relevant information for modifying a manager's digital competency portfolio. Based on the synthesis of theory and practice, the authors identified trends in the development of an HR manager's digital competencies and developed a number of practical solutions aimed at applying a digital competency portfolio in the HR sphere, whose dynamics transform the professional culture of a manager. The main issue is the lack of a dynamic portfolio of digital competencies in a particular labour sphere that could provide a response to the digital challenge, the professional digital culture of an employee lagging behind the organisational changes, and the delay in targeted digital competency training of employees and future professionals.

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**Keywords:** An HR manager's digital competency model, digital competencies, transformation of professional culture, trends in digital competency development.



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## 1. Introduction

The digitisation of economy has transformed the concept of profession in a short period of time to such an extent that the competency set of an employee in a certain profession turned from a fixed one into a dynamic one, the one that modifies in line with technological and organisational changes. In order to maintain a competitive advantage, companies have to focus not on their staff, but on the aggregate competency portfolio, or “skills stock”, for different professions, which provides the opportunity to create different sets of competencies for specific objectives and projects (Abdrakhmanova et al., 2019). This primarily relates to digital competencies, which have become an integral part of professional skill sets. The mastery of digital skills enable the HR department head to facilitate the implementation of breakthrough approaches in businesses, as the prompt selection of personnel for the specific objective, competent placement and development of employees’ potential in the context of project management, provides a competitive advantage for the company, affects the professional culture of an HR manager and becomes a factor in their professional credentials and employability.

## 2. Problem Statement

Digital competency refers to the combination of knowledge, attitudes and skills essential for those living in a fast-growing digital society (Fleaca & Stanciu, 2019). Comprehensive studies are being conducted and approaches to digital literacy are being identified in different countries. Thus, the model of digital competencies in the European Union report (DigCompEdu) includes 21 digital competencies in five areas: information literacy, communication and cooperation, digital content creation, security and troubleshooting (EU Science Hub, 2019). The report by the National Agency for Financial Research in Russia compiled for the G20 Summit, formulates the G20 approach to measuring digital literacy, including: information literacy, computer literacy, media literacy, communication literacy, and attitudes towards technological innovations (Ershova & Ziva, 2018).

The wave of digitisation has affected the whole world and the issue of digital literacy and digital competencies has become relevant in the professional sphere, in the labour market. Jobs are increasingly requiring employees to gain digital knowledge that produces and disseminates ideas and information. Understanding the factors that different 21st century digital skills and levels are based on is crucial (Laar et al., 2018). Digital literacy is determined by the complex of knowledge and skills necessary for the safe and effective use of digital technologies and Internet resources. It is based on digital competencies: the ability to handle various tasks related to using information and communication technologies: to use and create content using digital technologies, including searching and exchanging information, answering questions, interacting with other people, and computer programming (Brolpito, 2019). Digital skills are understood as well-established, automated models of behaviour based on knowledge and skills of using digital devices, communication applications and networks for accessing and managing information. According to Katkalo et al. (2018), it is important to distinguish between skills related to ordinary digital literacy, understood as basic computer and Internet skills, advanced skills related to digital technology, and specialized professional digital skills that are the basis for high-tech professions and require special training (programmers, web-designers, big data analysts, etc.): these include teamwork, creativity, critical

thinking. The current interpretation of digital competencies and digital literacy is characterized by a focus not only on technological skills, but also on the cognitive and behavioral personality components (Javorský & Horváth, 2014), and the Internet is associated with a wide variety of opportunities, including encouraging own activity, creativity and communication skills, promoting the development of the artistic and economic environment (Camacho et al., 2012).

Studies show that digital skills are connected with artificial intelligence, nanotechnology, robotics, the Internet of things, augmented reality, and the main contexts of digital learning are mobile technologies, tablets and smartphone applications that are becoming increasingly popular among employees (Sous & Rosha 2015). Other studied categorise the following as digital skills: “mastery of project management methods; mastery of tools for working with big data and visualization tools; understanding the basics of cyber-security; skills of working with databases” (Abdrakhmanova et al., 2019, pp. 50-51).

Advanced skills are part of the job functions and support the digital environment (Cedefop, 2016; Potemkina, 2018). There have been studies of digital competency models in different professional spheres, for example, the financial market, important for targeted training of professionals in various positions in this field (Frolova & Borisova, 2019), but there are no similar studies in the field of personnel management.

Information technology affects the approaches to training future professionals for the labour market aimed at increasing the share of time spent using the digital infrastructure of universities for professional purposes (Rusakova et al., 2020), creating conditions for choosing technologies for building digital competencies (Ponomareva et al., 2019), social and professional mobility and the employment of university graduates (Nagornova & Chikin, 2014; Kokhanova & Cheresheva, 2018).

Digital reality has created digital culture. This concept was “the recognition that digital technologies have become an organic part of a modern person’s the life” (Prokudin & Sokolov, 2013, p. 8). The digital subculture of social networks has emerged as a community with its own identity styles and coping strategies which reflects the deep mediatization of social cognition and behaviour (Belinskaya et al., 2019). There are studies that confirm the impact of communication in social networks on the formation of a professional culture as a set of stable values, norms, attitudes and behavioral strategies that take shape and change in a digital environment, in students of various degree fields, including management, and their influence on the professional adaptation of young professionals who started work immediately after graduation (Evgenieva & Usmanova, 2018).

It can be stated that in modern society digital technologies are considered a catalyst for innovative economic growth and improving the life quality of the population in different areas: public services (Belyakova et al., 2019), tourism (Ustina et al., 2019). An HR manager is required to have a set of basic and advanced competencies for performing labour functions related to digitization.

The transfer of certain HR department functions into digital format is gaining momentum, including: IT-recruitment and research, distance staff training, working with specialized information systems and databases on personnel management issues; the use of search engines and information resources for monitoring the labour market, civil and labour laws and others. The life cycle of professions is reduced due to the rapid change of technology. As noted by Abdrakhmanova et al. (2019), “the

introduction of digital technologies determines changes in requirements for professionals: the transformation of competency profiles of certain staff categories (HR managers, market analysts) due to the change in labour tools; growing demand for professionals with “digital dexterity” - the ability and desire to use new technologies to improve business” (p. 39). The regulation of labour relations has also changed: a virtual contract has appeared, as well as a “smart” contract, remote work from a “home office”; gaps have been eliminated in statutes, laws and standards that impede the spread of digital technologies important for HR record keeping: the regulation of the use of personal data by different forms of cyber-physical systems. These changes create a professional digital culture for both the manager and employees. Therefore, coordinated data on digital competencies in the professional sphere of HR management is required, and there are very few such studies.

### **3. Research Questions**

Based on the relevance of addressing the issue of digital competencies in the HR sphere, the following research objectives were set: 1. Determining a comprehensive list of an HR managers’ digital competencies that ensure the implementation of the entire spectrum of labour functions. 2. Developing a model of an HR manager’s digital competencies and applying the methodology to modify the portfolio of a manager’s digital competencies in the conditions of digital challenge. 3. Conducting pilot testing of the Model in professional and educational environments. 4. Summarising the trends in the development of an HR manager’s digital competencies. 5. Identifying how digital competencies affect an HR manager’s professional.

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

The purpose of this study is to identify the comprehensive portfolio of digital competencies of a personnel department head that ensure the implementation of the full range of their functions in the face of the digital challenge of the labour market, and to establish the impact of developing digital skills on an HR manager’s professional culture. To determine the vector of development and the modification of a manager’s digital competencies portfolio, the authors decided to apply the methodology of modeling an HR manager’s digital competencies and summarising the trends in the development of digital competencies for the next decade.

### **5. Research Methods**

The following methods were used for experimental research: modeling, analysis of databases of enterprises and HR portals, expert assessment, ranking competencies, questionnaire surveys, clarifying interviews.

The competency model was developed out using the following algorithm:

- Defining basic concepts. Building the information base of possible digital competencies.

- The project team creating the design of the Digital Competency Model: determining the names for the clusters of digital competencies, the composition and structure of the Digital Competency Model, the indicators of a competence manifestation.
- Expert assessment of the Digital Competency Model project, ranking competencies included in the cluster.
- Refining the Digital Competency Model. Forming the levels of manifestation of competency indicators and their expert evaluation.

The team working on the development of the Digital Competencies Model includes last year bachelor’s degree students majoring in “Human Resources Management”; the expert group has the head of the human resources department of the partner enterprise partner, an IT professional, a group project tutor, and students with at least a one-year experience of working in their degree field for 1 year — advanced IT users (a total of 6 people).

The questionnaire for self-evaluation of the level of competencies included a list of all the competencies included in the final Model. The respondents were asked to note the level of manifestation of the competency indicator which, in their opinion, fully describes their abilities and capabilities. Competency indicators were evaluated on a 4-point scale: 1 point — low level or competency not developed; 2 - basic level of development; 3 – medium level; 4 – advanced level. The pilot study was carried out in two groups - the heads of HR departments at enterprises (10 people) and graduates with a degree in HR management from Ural Federal University (27 people).

The interviews with HR managers centered around the following question: “Is the professional culture of an HR manager changing due to the significant increase in the share of digital competencies in their competency portfolio?” (Suggested closed-type answer options: it is transforming significantly, can be adjusted, is not changing, other).

## 6. Findings

The study of companies’ requirements for digital competencies of applicants, including HR managers, was based on analysing job vacancies on the Internet: HeadHunter.ru and rabota.ru portals (table 01).

**Table 01.** Results of the study of employers’ requirements for digital competencies

Analysis of various job vacancies	Analysis of hr manager’s vacancies
The ability to work with version control systems and managing application integration	The ability to „speak one language” with it specialists
Independent development and implementation of solutions, software architecture design	The ability to use different sources of attraction in the it sector, quality networking
The ability to devise an it strategy	Mastery of tools for quick search and selection of personnel via the internet (social networks, plug-ins and browser extensions, boolean search, sites like smart-talent-search.com)
Ensuring information security	Passion for modern it-technologies - knowledge of popular frameworks and tools
Knowledge of web technologies and specifics of	Understanding the logic of boolean search (boolean

internet promotion	search is a way of organizing queries in a search engine through certain commands)
Monitoring the latest trends and technological innovations in the it market	A strong interest in the it/digital sphere and a desire to develop in it hr & recruitment
Administration skills	
The ability to use social networks	
Conducting business negotiations through social networks	

The analysis shows that there are two types of requirements to the HR manager: basic (digital culture and literacy) and advanced (performing functions related to searching and selecting staff).

The information base for the development of an HR manager's digital competency model was provided by the above-mentioned theoretical sources, student communication with employers during their work placement. Based on the results of the second stage, 4 clusters were singled identified (table 02), including from 3 to 5 competencies singled out as a result of ranking by a group of experts. To specify the definitions of the competencies, indicators of manifestation and levels of indicators, websites of IT companies were used. The final HR Manager's Digital Competency Model includes 16 competencies distributed across 4 clusters (table 02).

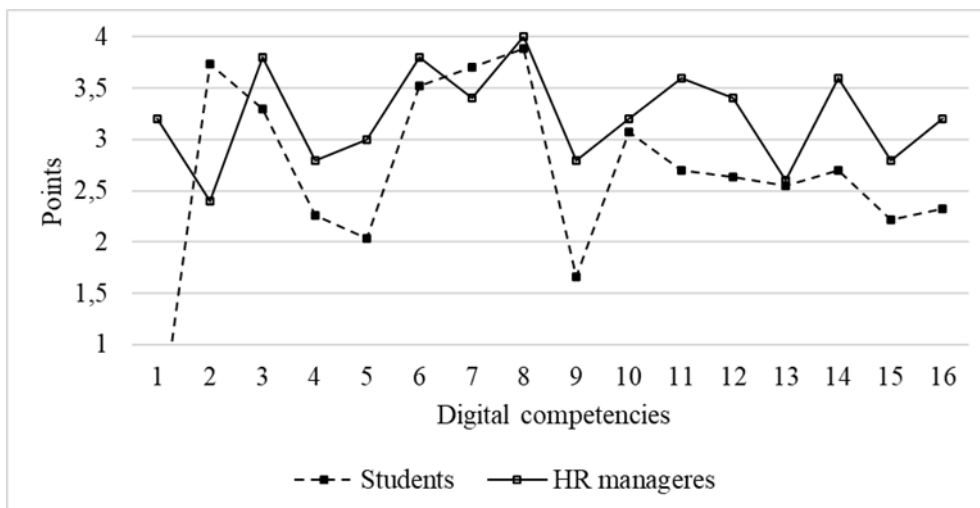
**Table 02.** Results of the study of employers' requirements for digital competencies

<b>Cluster 1. Digital literacy of an HR manager</b>
<b>1. Working with a large amount of data using digital technology.</b> Using Big Data technology, artificial intelligence, distribution registers for processing and using information about the organization's personnel and HR processes.
<b>2. Consolidation of digital HR Content</b> Creating, analysing, comparing and critically evaluating data and information (digital content) in the field of personnel management ensuring the required level of quality and information value.
<b>3. Personal data protection and digital identification</b> Solving the issues of protecting the information environment and personnel indicative data without limitation in their use and dynamic development of information.
<b>4. Digital monitoring of HR Information</b> Searching, storing and tracking sources of information about the HR sphere using digital technologies.
<b>5. Training personnel in the field of digital innovation</b> The ability to introduce and train employees in using new IT technologies necessary for personnel management.
<b>Cluster 2. Digital communication in HR sphere</b>
<b>6. Internet etiquette</b> Mastery of communications in digital spaces in accordance with the rules of ethics.
<b>7. Organization of interactive digital interaction with staff</b> Using diverse forms of digital technologies for communicating with staff, receiving and providing feedback.
<b>8. Digital communication skills</b> Reception and transmission of digital data and information using specialized channels (instant messengers, social networks, emails, etc.) from the source of information to the target audience.
<b>Cluster 3. Making managerial decisions in the digital environment</b>
<b>9. Application of digital knowledge and project management platforms in the personnel management system</b> Working with a digital system for planning, organizing, distributing and tracking tasks, organizing the

process of making managerial decisions in planning, attracting, developing, motivating and engaging personnel.
<b>10. Using digital data to make decisions</b> Making decisions in personnel management through digital processing of information, analysing alternatives, making logical conclusions and choosing the right actions using IT resources.
<b>11. Mastery of digital methodologies</b> Mastery of modern managerial technologies in the digital space (6 sigma, SRUM, Kanban, Lean).
<b>Cluster 4. Use of hardware and software in personnel management</b>
<b>12. Applying SMAAC technologies</b> Application of social resources in IT: social networks, mobile communications, applications, analytics, cloud technologies.
<b>13. Using hardware</b> Selection, configuration and handling of hardware/devices/elements of working equipment and services.
<b>14. Mastery of office software necessary for working with staff</b> Working with office software (Word, Excel, Power Point, etc.), network folders and files necessary for working with company personnel.
<b>15. Mastery of HR software/applications</b> Applying ERP and CRM-systems when working with personnel.
<b>16. Mastery of Internet technologies in the personnel management system</b> Search, selection and application of online applications and digital services (social networks, instant messengers, information portals) for planning, attracting, developing, motivating and engaging staff.

The complete model of an HR manager's digital competencies includes: the names of competencies, definitions of competencies; list of indicators of competency level; levels of competency indicators: advanced; medium, basic, low.

The results of the pilot study of self-evaluation of the level of expression of digital competencies in two groups of respondents are presented in Figure 01 in accordance with the numbers of competencies from table 02.



**Figure 01.** Results of the study of self-evaluation of the level of expression of digital competencies among students and company HR managers

The results show that the level of expression of competencies is justifiably higher among HR managers; the competency profiles of the two groups are mostly different: students are more proficient in

basic competencies, and working professionals have mastery of more advanced competencies. The profiles were found to be similar in the following competencies: “digital communication” (indicator 8), “using digital data for decision-making” (indicator 10), “using hardware” (indicator 13). The difference in profiles was identified in a number of competencies: “working with a large amount of data using digital technologies (indicator 1: students -1.56 points; HR managers -3.20 points.); “consolidation of HR content” (indicator 2; students – 3.74 points; HR managers –2.4 points); “using digital platforms for knowledge and project management in the personnel management system” (indicator 9: students – 1.66 points; HR managers – 2.8 points). This, in the authors’ opinion, can be explained by the fact that 20-year-olds are better at navigating digital reality, are ahead of any other generation in the skills of creating, analyzing, comparing and critically evaluating digital content, data and information. At the same time, graduates are not trained in using technologies for working with Big Data, artificial intelligence, and working with digital data in the HR management subsystems (attraction, development, motivation) and management functions (planning, organization, distribution, control). This data may serve as the basis for changing the university’s educational policy.

It was also identified that the heads of HR departments have mastery of the entire spectrum of digital competencies at a basic level, which confirms the importance of all 4 competency clusters for the HR sphere and has predictive value. New digital tools and technologies for their application can „complete“ the model: expand, narrow down, change, adjust to the updated functions of personnel management in the digital environment. Since this was only a pilot study, the model needs checking for reliability and validity, the data need to be refined using representative samples.

The interview results revealed that digitisation transforms professional culture according to 70% of HR managers who say that the ability to master digital innovations needs to be developed at all stages of a future professional’s development, alongside implementing qualitatively relevant transformations of the training process: from convergent thinking to divergent thinking, from the search for one correct answer to the development of complementary mental abilities, creative thinking, imagination, ingenuity (Fleaca & Stanciu, 2019).

The analysis of the available data, as well as a cross-section of a large body of information on the results of the final degree papers of bachelor’s and master’s degree students majoring in Personnel Management, allowed us to identify the trends in the development of digital competencies in the HR sphere for the coming years (table 03).

**Table 03.** Trends in the development of an HR manager’s digital competencies

2020	2040
Digital competencies are considered as soft skills in the HR manager’s work – soft competencies within the framework of general digital literacy.	Digital competencies are considered as hard skills in the HR manager’s work – advanced professional competencies for the implementation of most HR management functions
Digital literacy is an advantage for employment as an HR department manager.	Digital literacy and mastery of digital technologies is the general labour function of HR managers and serves as an integral criterion in the selection, evaluation (certification) and career development for the head and staff of the HR department.
The concept of “a comprehensive portfolio of the	The comprehensive portfolio of personnel



HR department's digital competencies" is not used. Companies focus on staff, attracting advanced IT specialists to perform individual tasks.	management staff's digital competencies is the basis in the selection, training, development, and evaluation of personnel. Companies use a comprehensive portfolio of digital competencies in various labour fields, which provides the opportunity to form different sets of competencies for specific tasks and projects.
IT recruitment provides staff recruitment for no more than 5% of positions and 10% of companies.	IT recruitment provides staff recruitment for a range of positions in most companies (more than 50%).
Digital competencies are not the basis of professional culture, the percentage of labour functions and/or their integral digital support does not exceed 15%.	Digital competencies are the basis of a manager's and personnel department staff professional culture, a condition for the quality of working life and ensure the growth of the company's human capital. The percentage of labour functions and/or their integral digital support approaches 40%.
University education programmes do not provide timely digital training for advanced digital skills.	University education programmes include basic and advanced digital competencies adequate to the digital challenge of the labour market. The universities' information and communication technologies and digital infrastructure can be used by students of all degree fields.

## 7. Conclusion

Thus, the results of the study emphasize the importance of company managers revising their strategies in line with the development of their employees' digital skills to handle digital transformation and maintain stable competitiveness. The experimentally identified list of an HR manager's digital competencies defines the concept of digital competency for a modern manager, and the comprehensive portfolio of digital competencies in the HR sphere, oriented to innovative business trends and the quality of human capital, is dynamic. Digital competencies transform the professional culture of managers and future professionals into a digital professional culture. The digital competency model is the starting point for innovation at the intersection of IT and HR (Belyakova et al., 2019; Ustina et al., 2019), and digital culture is becoming the basis of an HR manager's professional culture.

The results of the study can provide information, reason for, and an experimental basis for making managerial decisions and recommendations for improving personnel management in the digital environment, including:

- study and application of the actual and potential set of the staff's digital competencies, which will make it possible to devise reliable forecasts of employment, including in its new forms such as remote and platform employment, to ensure targeted development of digital competencies and skills and contribute to the formation of a professional digital culture adequate to the digital challenge in company employees and future professionals;
- developing and updating the personnel management policy of enterprises focusing on the comprehensive portfolio of digital competencies of personnel department staff, which will improve the efficiency of the department and the enterprise as a whole;

- applying the methodology for developing the digital competency model to modify the aggregate portfolio of digital competencies in different economy sectors, which will ensure breakthrough solutions in project management, targeted selection and selective training;
- changing the universities' educational policies in the face of digital challenge, which will allow for an adequate and timely response to the requirements of the labour market and acting in advance, for building a digital culture of a future professional.

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