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Digital Basis for The Scientific and Educational Ecosystems

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ABSTRACT

The article is devoted to the information base studying for the scientific and educational ecosystems' development in Russia. Now approaches to the human resources development are changing in the digitalization of the economy context. The scientific and educational ecosystems' emergence is becoming a natural condition for ensuring the qualitative human resources development. In this article, the authors analyzed the digital ecosystems and online educational platforms available in Russia and contributing to the human resources development. The main directions for the human resources development in the digitalization of the economy context, the features of the digital scientific and educational systems' functioning, the scientific and educational ecosystems' role in the human resources development were identified.

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Introduction

The digital economy, which is based on the various information and communication technologies usage, creates new technological opportunities to ensure the high-quality human resources development.

On the other hand, it should be noted that the digital economy requires special human resources, who should have not only hard and soft skills, but also digital competencies [1].

The human resources development is usually considered as a process of helping a person to accumulate his/her personal and professional knowledge, skills and abilities. They can be used in the future in an industry and organizational context, as well as in the self-realization process.

There has been a gradual transition by now from traditional formal organizational learning systems to the "development ecosystems" design. These ecosystems are designed to ensure the knowledge availability when the need arises, creating ample opportunities for a personal self-education. Digital learning is seen as an implementation tool with the possibility of setting development goals and building an individual trajectory [2].

At the same time, it is important not only to create opportunities for the human resources development, but also to ensure the emerging potential usage. Scientific and educational ecosystems can help in this, as they are designed to facilitate the interaction between stakeholders in this area.

The economic ecosystems concept underlying this study has been formed over the past 35 years; a significant contribution to its development was made by scientists: J. Valdes, B. Cohen, Fukuda K., Watanabe S., Stem E., Y. Harima and others [3-7].

Russian researchers have also been actively working on this issue in recent years, by studying innovation and entrepreneurial ecosystems, socio-economic, digital entrepreneurial ecosystems, an ecosystem approach to professional capacity building etc. [9-15]. Their role in improving business efficiency and sustainable regional development is noted, and the importance of applying the ecosystems concept as a whole in economic and managerial research is highlighted [16].

Methods

The key methods for analyzing the information base for the scientific and educational ecosystems development are: literary sources analysis and analysis of the practice in Russian regions as well as their generalization. Analysis methods make it possible to systematize information about the scientific and educational ecosystems' role in the human resources development, the features of the digital scientific and educational systems' functioning and to determine the main directions for the human resources development in the digitalization of the economy context. The typological method of studying documents was also used. Information on the Internet about the activities of the digital ecosystems and online educational platforms available in Russia was used as documents. The basis of the typological method of research is the similarities and differences identification in the information, the search for stable combinations of properties and grouping. At the same time, the typological method makes it possible to abstract from the entire set of information, focusing on identifying typical elements that act as a digital basis for the scientific and educational ecosystem.

Results

Digital scientific and educational ecosystems are formed on the specialized platforms basis, and this is the main trend currently that allows to bring stakeholders together. The main element of

digital ecosystems is single sign-on technology, which allows a person or organization to work under one account, while using a variety of digital services.

The platform-based ecosystems concept creates opportunities for managing them based on information technology and ecosystem management.

Digital ecosystems created in business are developing in three directions: advertising services, which are created to attract financial resources, monetized and non-monetized services. Monetized online services act as aggregators for specific offers in ecosystems. Further, the digital ecosystem is gradually developing, attracting a certain number of users and gradually introducing either paid services or a subscription to them. Regarding the digital scientific and educational ecosystems development, it can be assumed that the process will develop in a similar way, while providing opportunities for the human resources development.

These ecosystems are considered currently, as a space that allows to develop and realize human potential on the basis of collaboration and integration. At the same time, the personal involvement in the learning and development processes is monitored.

An example of such an ecosystem in Russia is LEADER-ID, which is positioned as a tool for creating technology leaders' communities. More than 1.3 million user profiles have already been registered on the platform, on which their digital footprint is collected about participation in various events and activities. This digital environment is focused on helping in educational, work activities, it also allows users to find like-minded people for projects. The developers note that the Leader-ID profile provides an opportunity to "join millions of entrepreneurs, researchers, students and volunteers to get access to all Boiling Points in Russia and dozens of events that take place every day." Attending these events allows users to learn, assemble a team, enter a high-tech startup, and even attract investors. These are the challenges facing this project.

There are many online educational platforms that are actively used in the distance and e-learning. By the number of mentions on the Internet, the top 10 are: Skillbox, GetCourse, Info-lesson, Skyeng, Uchi.ru, Netology, Foxford, GeekBrains, Skysmart, Yandex.Practice. All these platforms focus on the professional and cross-professional competencies development, but they do not have the task of organizing the acquired knowledge usage. There is a desire to create relevant and advanced content, building opportunities for choice, which, however, may be redundant for users.

A separate area is the competencies diagnostics and the digital portfolio formation that allows the applicant to interact with a potential employer. Such an idea is now being developed on the digital platform for students "Russia is a Country of Opportunities" rsv.ru, which purpose is education, talents' diagnostics and realization for young people.

At the same time, it should be noted that digital platform solutions are the future in the economic digitalization, educational, research and business processes' context.

Human Resources Development in Digitalization of the Economy

The human resources development in the digitalization of the economy context involves a change in approaches to this process organization. The term "digitalization" itself means that digital technologies will be introduced into various fields and areas of activity, development is not an exception.

Digitalization makes it possible to create a new business model, including in educational or research activities. On the basis of digitalization, digital services are being created in this area, it becomes possible, among other things, to manage these services' life cycle. The collection, storage and subsequent processing of information regarding the human resources development creates opportunities for the operational administration of all development-related processes, and the robots and artificial intelligence usage provides an opportunity for digital design and electronic document management.

As an example, it can be mentioned the service Microlearning Diductio, which is already used in five Russian training centers. This service makes it possible to create autonomous training modules for each employee using an interactive cloud platform. This efficient IT solution from Edstein, launched in 2020, allows company to generate content without significant time costs. In fact, this is a centralized learning management system that gives an opportunity to build an individual educational route to develop the competencies necessary for this particular employee. To keep employees motivated to complete training, the service uses a variety of engaging mechanics (quizzes, polls, ratings, badges, personal dashboards).

Another example is SpeakerGuru's VR platform for corporate soft skills development training. MTS invested in it in 2019, which indicates the interest in such technologies from large Russian companies. This technology uniqueness lies in the ability to integrate online learning formats and virtual reality used to practice specific skills.

The key trends in the digitalization of the human resource development process will be big data and their in-depth analytics, which allows predicting the effectiveness of the various technologies' usage, intelligent process automation, which will form recommendations for a person using artificial intelligence.

Features of Digital Scientific and Educational Systems Functioning

Based on the results of the analysis, it can be concluded that the various ecosystems' functioning has common features and characteristics. An example of common features is building an interaction that makes it possible to get a positive synergistic effect for each participant. Common features reflect the specifics and target orientation of a particular ecosystem.

It is important to note that there are still few publications devoted to the scientific and educational ecosystems' functioning. However, their features must be taken into account in the ensuring the human resources quality process based on scientific and educational systems. These ecosystems pursue educational and research purposes first of all, and

These ecosystems pursue educational and research purposes first of all, and the human resources development acts as an additional effect [18-19].

The features of the digital scientific and educational ecosystems' functioning include:

- The "maximum benefits" creation, for example, by training a large number of users at lower costs;
- High adaptability, able to provide a quick response to user requests and frequent changes in the institutional environment;
- Scalability in both local and global contexts with the ability to form different configurations of participants and resources;
- The continued contact possibility both person-to-person and person-to-technology (online resources, mobile devices, etc.);
- The possibility of choosing individual or collective activity in the continuous education process, built both on personalized educational experience and on the collective experience usage in joint interaction and creativity.

Conclusions

The role of scientific and educational ecosystems in the human resources development is to form conditions and opportunities for the qualitative human resources development. The scientific and educational ecosystem, on the one hand, provides an increase in knowledge through the research projects' implementation, and, on the other hand, make it possible to build an individual development trajectory, since a person has a free and organization-independent choice based on his personal interests and needs.

Global trends of globalization and internationalization make modern science and higher education systems key agents in the production and dissemination of new knowledge [17]. Consequently, the role of scientific and educational ecosystems will only increase over time. At the first stage, they will be created on the basis of specific scientific or educational organizations, but due to integration processes and these systems openness, people not associated with the organization will become their participants, the main thing is the opportunities that will develop in a particular ecosystem.

The digital platforms' emergence contributes to the digitization of the particular person's individual development trajectory. The platform solutions variety and their disintegration does not make it possible to track the potential accumulated by a person in a complex way.

At the same time, it should be noted that not all information is currently digitized and it is difficult to collect it in one place for assessing human potential. Companies are only at the first stage of creating their own systems that will collect this information and then use it.

In order to develop human resources in the future, it is required to manage them on the basis of accumulated data, which helps to accelerate the human potential capitalization. At the same time, development itself is becoming more and more personalized, which makes it possible to satisfy the personal interests. It is also important to take into account the fact that interests can change over time and adjust the individual self-realization plan.

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