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INSTITUTIONS OF NETWORKING IN THE CROSS-INDUSTRY DIGITAL PROJECTS

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Abstract

The article presents an original approach to the interaction of economic agents in the process of joint implementation of cross-industry projects using digital technologies. An analysis of modern research in the field of digitalization development processes has shown the growing role of information and communication technologies in all sectors of socio-economic activity. In the process of joint implementation of projects by agents of different sectors of the economy, stable connections are formed between them. The study and systematization of the ongoing processes of cross-industry cooperation through the development of universal digital platforms will reduce the cost of production of goods and services, reduce the cost of production, monitor its quality in real time and form the optimal structure of national production. A scheme is proposed for the interaction of agents in the form of clusters in various sectors of the economy, which, in turn, interact with each other: this principle, according to the authors, structures the system of external industry connections and simplifies the work of neural networks capable of self-learning and allows more efficient use of digital platforms in the process of implementing joint projects. To ensure accelerated rates of economic growth, development of the national economy and increase its competitiveness, it is necessary to study the world experience in the field of digital technologies, develop own artificial intelligence programs that increase the level of cross-sectoral interaction between economic agents. The materials of this study are fundamental and may be useful to ensure a positive socio-economic effect.

Keywords: Digitalization, institutes, technologies, economic growth, interaction.

1. Introduction

Active processes of offensive globalization and the development of scientific and technological progress have led to the development of the digital economy, which has an impact on the relationship between agents of the economic system. Research in the field of metadata, and the use of universal digital platforms allow us to describe the processes of interconnection between institutions, build them in a logical chain, and therefore to analyze the processes in order to improve artificial intelligence systems.

2. Problem Statement

In the process of joint achievement of economic benefits, agents of different sectors of the economy regularly establish stable ties. Systematization and scientific description of the properties of these processes through the development of universal digital platforms will reduce the cost of production of goods and services, reduce the cost of production, monitor its quality in real time and form the optimal structure of housekeeping.

3. Research Questions

The following issues are considered in the article:

1) A review of the literature on the subject under study;

2) A diagram of the network interaction of economic agents in the process of implementing joint projects;

3) The features of the neural network at the level of inter-industry and inter-institutional interaction of economic agents are considered.

4. Purpose of the Study

The purpose of the research is to study the network interaction of economic agents in the process of joint implementation of digital projects.

5. Research Methods

To achieve this goal, a network approach and a method of analyzing publications were applied.

6. Findings

Many foreign and domestic scientists point to the processes of formation of natural ties between economic agents.

So, R.K. Polyakov and E.A. In the process of the practical implementation of digital transformations, Gordeeva considers it necessary to develop artificial neural networks in industrial practice, capable of self-learning and have "technical vision", capable of conducting systemic diagnostics of the production line (Polyakov & Gordeeva, 2018).

In turn, on the basis of research in the field of digitalization, innovation, business models and sustainable industry, Parida, Sjödin and Reim (2019) conclude that "most of the current research is fragmented by discipline, and is largely due to phenomena and lacking conceptual clarity " (p. 391) and consider it necessary to conduct more research in the field of digitalization processes (Parida, Sjödin, & Reim, 2019).

In the works of TB Efimova, V.A. Khaitbaeva and E.V. Pogorelova pays special attention to the development of urban transport infrastructure using digital platforms that allow "efficiently managing transport processes and also responding to events in real time" (as cited in Efimova, Haitbaev, & Pogorelova, 2018).

Researches of scientists are also devoted to environmental issues and the role of digital technologies in solving emerging problems in this field (Geliskhanov, Yudina, & Babkin, 2018; Tsai, Lan, & Huang, 2019).

Thus, the versatile use of digital innovative technologies in various sectors of the economy, the formation of ecosystems in them is traced, and therefore the development of new, adaptive models becomes relevant (Tiacci, 2020).

In turn, on the basis of the established relationships between enterprises in these sectors, the state and other institutions, the use of universal platforms form a network of institutional interaction between them, the study of which allows form a theoretical and practical basis to ensure the interests of each of the interacting agents in the process of achieving a common goal, which is the basis for the implementation of cross-sectoral projects.

In connection with the historically established single-industry cities in Russia, Ivanova, Antonov, Shabashev, Zobova, and Nesterov (2017) consider it appropriate to develop the corresponding clusters in the regions and thus form a synergistic effect of the interaction of intraregional economic agents in them.

Indeed, this form of interaction between economic agents (Figure 01) in the process of implementing cross-industry projects streamlines the distribution of functions according to a hierarchical principle, which simplifies the modeling of relationships between economic agents with the help of digital counterparts, the use of which makes prediction of ongoing processes within the network using markup language and automation effective in various sectors of the economy and improves improve the compatibility and effectiveness of the interaction between enterprises (Bao, Guo, Li, & Zhang, 2019; Daclin, Chen, & Vallespir, 2016).
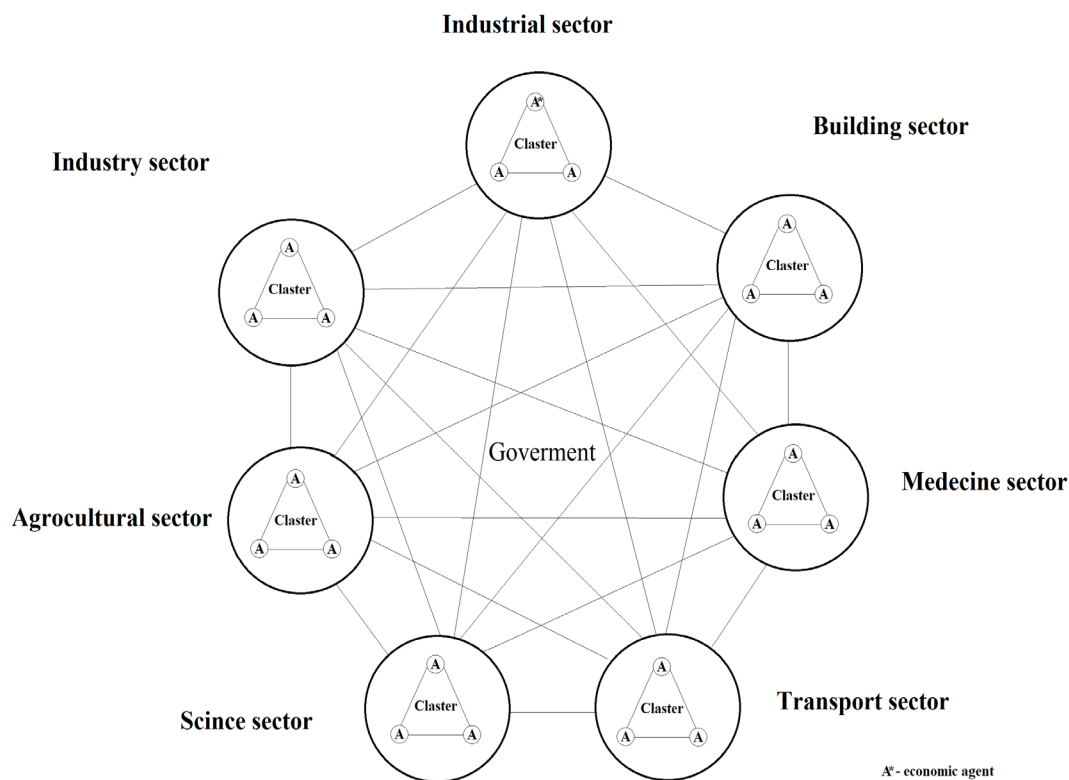
Figure 01. Cross-sectoral interaction scheme

Based on figure 1, using digital platforms, a neural network is formed. Equipping such platforms with artificial intelligence systems opens up the possibility of self-learning of its structural elements within clusters.

If the established form of relations between agents of one industry (for example, in industry) increases the efficiency of intra-industry activity, the system checks the possibility of applying such a system of relations in other industries, depending on their characteristics. This practice is already being studied by foreign scientists as part of the interaction between digital applications working on the functional principle of "3C-3I" structures: communication, computing, management, identification, understanding and interaction, which are used to implement "plug and play" resource units in industrial Internet platform (Wang, Xu, Zhang, Bao, & Zhong, 2020).

This ensures the ability to independently (automatically) optimize the functioning of the neural network, in connection with "a promising direction remains for the development of combined neural network dynamic models, supplementing the dynamic model with a neural network as it is trained", and therefore new opportunities are opening up for accelerated economic growth and strengthening the role government institutions (Evans & Gawer, 2016; Gribanov, 2018) and the development of appropriate digital platforms (Zatsarinnyy & Shabanov, 2019).

At the same time, the high level of transparency achieved with the help of information and communication technologies (ICT) in the process of implementing cross-industry projects helps to increase financial security, which is an integral part of national security and stable economic growth (Volkodavova, Zhabin, Yakovlev, & Khansevyarov, 2020)

In addition to the economic component, the active use of digital technologies among the population contributes to the social activity of citizens in the process of implementing various programs conducted by the state. Such interaction enhances the implementation of socio-economic policies.

Digitalization of various sectors of the economy in developed countries necessitates an accelerated transition of the domestic economy to world standards: according to IMD World digital competitiveness center as of 2019, Russia ranks 38 out of 63 in the digital competitiveness rating. To ensure competition, it is necessary to develop an appropriate mechanism for the optimal development of the economy (Neligan, 2018), in which agents interacted as efficiently as possible.

7. Conclusion

Afterwords it can be concluded that with the development of scientific and technological progress and the active processes of globalization, digital technologies are widely used among economic agents.

The use of advanced information and communication technologies has become a factor determining the level of competitiveness of the state on the world stage in the framework of international cooperation.

To achieve accelerated rates of economic growth, it becomes necessary to actively study the world experience in the field of digital technologies, develop their own artificial intelligence programs, which will increase the level of intersectoral interaction and modernization of production.

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