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A DIGITAL PLATFORM FOR TARIFF REGULATION BY THE FEDERAL ANTIMONOPOLY SERVICE

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Abstract

The article provides a rationale for the relevance of developing a digital platform for tariff regulation of the Federal Antimonopoly Service, as well as its architecture, the construction of which is proposed to be carried out using modern means of intellectualization of management. Presents the typology of digital platforms and their distinctive characteristics, examples of platforms in the global and domestic economy, which provide access to a wide range of developers of software or software and hardware solutions to end-to-end digital technology to work with data. Detailed technological solutions for creating digital platforms are described; historically established interpretation of the concept of "platform" in the market of information and communication technologies, which came into common use several decades ago and still dominates in the minds of many people as "programming platforms", "hardware platforms", etc. This paper proposes to generalize this multitude of "platforms" into one type of tool digital platform, as such platforms actually provide broad access to development and debugging tools, separating it in conceptual terms from other types of digital platforms, the formation of which is relevant for the development of digital economy in the Russian Federation. The proposed material is timed to the formation of the type of conceptual modules that form the architecture of the digital platform of tariff regulation of the Federal Antimonopoly Service.

Keywords: Digital platform, blockchain, systems analysis

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1. Introduction

Control over compliance with antimonopoly legislation in the Russian Federation is entrusted to the Federal Antimonopoly Service (FAS), which ensures compliance with antimonopoly legislation in all areas of activity, including in the field of electricity, land, subsoil, water and other natural resources. At the same time, the management of FAS formulated a number of urgent tasks, the need to solve which is caused by the introduction of digital technologies and the intellectualization of modern society (Bondarenko, 2011; Yablonsky, 2013; Yablonsky et al., 2013). One of such tasks facing FAS is the introduction of a control system aimed at preventing and suppressing violations in the sphere of tariff regulation, as well as increasing the transparency of tariffs for the population. For this purpose it is necessary to develop a modern method of forming tariffs to eliminate tariff discrimination, as well as to eliminate a number of problematic issues, such as: reducing social tension and leveling of tariffs, reducing costs for establishing tariffs and excluding excess profits, automation and reduction of time for taking a tariff decision, etc.

In this regard, the task of mathematical modeling of the tariff formation process and the development of an appropriate digital platform to solve the problem becomes relevant. Currently, there is no solution to the formulated problem in the known literature. The novelty of the proposed architecture is the use of neural network models for the implementation of individual modules and blocks, as well as the creation of an independent digital token based on "blockchain" technology (Bashir, 2019). The proposed material is devoted to the formation of the appearance of conceptual modules that form the architecture of the FAS digital platform of tariff regulation.

2. Problem Statement

A digital platform, the basis of which is a software or hardware-software complex (product) designed for the creation of software or hardware-software conclusions for application purposes. It accelerates the development of software or hardware and software solutions for data processing by providing predefined typical functions and interfaces for data processing on the basis of end-to-end data technology, as well as tools for the development and debugging of software or hardware and software solutions for applications. A digital platform, the basis of which is an ecosystem of information market members, the purpose of which is to accelerate the introduction to the market and transfer to the customers in the sectors of the economy of the conclusion on the automation of their work (IT-services), using end-to-end digital technology to work with data and access to data sources, implemented in the infrastructure of the provided ecosystem (Alvedalen & Boschma, 2017; Karelina, 2020; Spigel, 2017). Business model (model of doing business at home) on providing ability of algorithmic exchange of certain values between important number of independent market members by conducting transactions in a single information environment, leading to reduction of transaction losses due to the use of digital technologies and configuration of labor division system. Based on the above mentioned intrinsic symptoms of digital platforms, a proper comparison of the types of digital platforms, which allows a more structured approach to their typification and its further use in the identification of the type of a particular platform proposed.

The proposed typification of digital platforms is quite general in the sense that perhaps existing and emerging digital platforms have all chances not to fully comply with some or other of the above features

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and properties. In addition, often the awareness of the essence of a particular digital platform is complicated by the fact that the market player has the ability to sell a number of digital platforms of different types at the same time, but in terms of marketing to create it under one brand.

The emergence of mass digital platforms in the last decade, due to digitalization and digital modification, will completely change the system of coordinates of the advanced international movement of production factors, as well as the system of international specialization of states and individual classical transnational firms (Weil & Warner, 2019).

Application of a control system aimed at preventing and suppressing violations in the sphere of tariff regulation and increasing the transparency of tariffs for the population. Analysis of leading approaches and practices of mass platform formation, because these nuances are still poorly covered in Russian literature (Andriole, 2017; Hess et al., 2016; Horlach & Drews, 2016). To solve these problems, it is proposed to introduce a number of technological solutions, which together represent a conceptual architectural solution to create a digital platform.

The state program "Digital Economy" takes into account the creation of Russian digital platforms in a variety of fields, for example, for the provision of municipal offers, for the implementation of studies and developments, and industry-specific digital platforms in industry, agriculture, construction, medicine, and beyond. One of the target characteristics of the program is "the successful operation of at least 10 industry (industrial) digital platforms for leading subject areas of the economy" to 2024.

Industry ministries are already announcing tenders for subsidies to create digital platforms. These digital platforms are expected to become competitive in the international market. However, the test of a major skill, showing that the world's largest digital platforms were formed without a direct role of the country, makes it doubtful that these intentions are destined to materialize. As a result, the content of the country's role in the development of industry-specific digital platforms is being actively discussed in a variety of venues.

3. Research Questions

The following questions were raised during the study:

- How to reduce costs for tariff setting and exclude excess profits?
- How can we automate and reduce the time required to make a tariff decision?
- What technological solutions can be used in the architecture of the digital platform?
- How can social tensions be reduced and tariffs equalized?

4. Purpose of the Study

The purpose of developing the platform is to improve the efficiency and transparency of the application of the system of tariff regulation of the FAS.

The key objectives of the project are:

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- Ensuring comprehensive continuous monitoring of tariffs;
- involvement in the formation of the tariff policy of all participants in regulated activities;
- Ensuring a transparent tariff management structure;
- Creating services for the development of strategies and programs.

In order to achieve these goals, it is proposed to introduce a number of technological solutions, which together constitute a conceptual architectural solution to create a digital platform.

5. Research Methods

In order to create a digital platform, technological solutions are used to develop a digital platform for tariff regulation, which will include the State Information System (SIS) of FAS Russia, expert and analytical tools for users, a tool for structuring the data collected on the actual and planned volumes and costs of services provided in the sphere of tariff regulation using neural network models, as well as an integration tool with the previously digitalized regulated activities.

At the same time, the FAS GIS should represent a state portal, which in its target architecture will concentrate the structured information flows in all the spheres of tariff regulation, provide the FAS, including the subordinate regulators and other participants of the process with the necessary analytical tools and allow solving the issue of qualitative data storage and verification. At the stage of the first launch it is planned to ensure the mutual integration of the FAS GIS with the Gosuslugi portal, including the provision of automated access to the FAS ecosystem of Russia. This will allow the use of personal accounts by all participants of processes (consumers of services, regulated organizations, regional regulators, authorities, etc.), the structured storage of data uploaded through the personal accounts of users of different levels. Ensure data transparency at all hierarchical levels of FAS Russia by creating adequate mathematical models and data processing algorithms. Will convert data archives of all levels of regulators from the status of "a set of documents on the topic" in the status of "structured data array". The first launch of this and all subsequent blocks is planned to be carried out starting from the sphere of regulation in the electric power industry.

To develop a digital register, providing end-to-end application of distributed register technology at all levels of data storage and verification (continuous control of data reliability), as well as the use of modern methods of data storage and processing (real-time databases, distributed registries, etc.). The digital registry system will be designed to ensure reliable data storage, providing data to all interested parties. Being the technological basis of platform development and a necessary element for the token circulation and management system. This system includes a real-time database, a blockchain platform for fixation and verification of data coming from different levels. At the same time, the system will allow tracking the correctness of data sent by regulated organizations to approve tariffs, as well as linking this data to management decisions made in the field of tariff regulation and provide an opportunity to introduce digital financial instruments linked to the production of monopoly markets.

To develop a digital token, which is an independent financial loop based on a stack of digital values linked to the output of monopoly markets. The system will allow the issuance and circulation of tokens tied to various markets within the scope of tariff regulation. Principles of token issue and binding tokens can be

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different (for example, to the released products, to the volume of products taken into account in tariff regulation, etc.). Also, it is proposed to synthesize a decision support module, which allows at the stage of setting tariffs to analyze their impact on the economic indicators of the regions, depending on changes in the managed parameters and to carry out the development of effective control actions.

6. Findings

The result of the project will be the effectiveness of the platform business model, and the establishment of a corresponding platform competition are guided by several relevant reasons: the presence of the network effect (whether the process of platform customer base growth is self-developing: whether active users directly or indirectly attract fresh users), the amount of loss associated with the transition of a user from one platform to another (how difficult it is for a user to switch from a used platform to a fresh one, or how difficult it is for a user to apply at the same time some number of platforms), the presence of positive turnover relationships between the rise of the customer base and supplier base (if there are more customers, does this lead to more suppliers on the platform, and vice versa).

Instrumental digital platforms provide access to a wide range of creators of software or software-hardware conclusions to end-to-end digital technologies of working with data due to the fact that they contain for themselves ways of technical implementation of these technologies and documented interfaces of access to these tools. Thus, at the expense of application of instrumental digital platforms the terms of development of software or software-hardware means are reduced and their cost price is lowered as a whole: by repeated use of one created and invariably supported inventory of work with data. Instrumental digital platforms include both software libraries and hardware-software devices used to build on their basis or with their introduction more difficult ways of application. Integration in the market affairs of instrumental digital platforms happens by granting by the owner (usually the developer) of the platform the rights to its implementation to the creators of conclusions on its basis through the distribution of licenses or transfer of access to the platform on a service model.

The technological components of the digital infrastructure platform ecosystem include: information sources, methods of information delivery, ways of saving, aggregation and enrichment of information, an instrumental digital platform (or a set of these platforms) and infrastructure for its deployment, IT-services (software conclusions based on an instrumental digital platform), ways of development, debugging and integration of IT-services with the platform and among themselves. IT-services use functions and interfaces for information processing, including with the implementation of end-to-end digital technologies for working with data, implemented in the instrumental digital platform, which is part of the technological base of the infrastructure digital platform ecosystem.

The exchange of values within this type of platform happens between the suppliers and buyers of those or other production resources or goods/services in the provided branch of the economy. The importance of the application platform lies in providing the ability to exchange itself and facilitating the procedure of its implementation through algorithmic and increased transparency.

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7. Conclusion

This paper provides a rationale for the relevance of solving the scientific and practical task of developing a digital platform for tariff regulation in the interests of the Federal Antimonopoly Service of Russia. The architecture of the digital platform at the current stage of the research is represented by three main technological solutions, such as: the creation of GIS FAS Russia, the development of a digital register, the development of a digital token. As modern means of intellectualization of management in the development of the platform it is proposed to use neural network modeling and blockchain platform at certain stages of development. The direction of further research is to expand the number and functionality of the platform modules, as well as their formal and mathematical description and algorithmization.

A conceptual framework for the concept of "digital platform" is proposed. The main properties of the digital platform are revealed and the ability to implement a digital platform in practice is shown.

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References

Alvedalen, J., & Boschma, R. (2017). A critical review of entrepreneurial ecosystems research: Towards a future research agenda. *European planning studies, 25*(6), 887-903.

Andriole, S. J. (2017). Five myths about digital transformation. *MIT Sloan Management Review, 58*(3), 20-22.

Bashir, I. (2019). *Blockchain: architecture, cryptocurrencies, development tools, smart contracts.* DMK-Press.

Bondarenko, V. M. (2011). Contours of the Economy of the Future and the Present: Two Paradigms of Development. *Bulletin of the IE RAS, 11*(2), 25-38.

Hess, T., Matt, C., Benlian, A., & Wiesbyck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive, 15*(2), 123-139.

Horlach, B., & Drews, P. (2016). Bimodal IT: Business-IT alignment in the age of digital transformation. *Strategisches IT-Management,* 1417-1428.

Karelina, E. A. (2020). Opportunities for building effective digital platforms and ecosystems in developing countries. *E-Management, 3*(1), 59-67.

Spigel, B. (2017). The relational organization of entrepreneurial ecosystems. *Entrepreneurship theory and practice, 41*(1), 49-72.

Weil, P., & Warner, S. (2019). *Digital business transformation: changing the business model for a new generation organization.* Alpina Publisher Ltd.

Yablonsky, S. A. (2013). multilateral platforms and markets: Basic approaches, concepts and practices. *Russian Management Journal, 11*(4), 57-78.

Yablonsky, S. A., Muravsky, D. V., & Smirnova, M. M. (2013). Brand management in multistakeholder platforms: the role of co-branding. *Marketing and market research, 5*, 356-363.