

# Evaluation of the use of inter-company platform relations

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**Abstract.** The research objective of this study is to systematize the experience of organizing digital platforms in the field of inter-company relations to assess the level of their use by Russian enterprises. The research is based on a methodological generalization of published scientific results and an empirical analysis of general trends in the development of the organization of inter-firm interaction based on digital platforms among manufacturing enterprises. The obtained results showed the presence of several types of digital platforms used for the organization of inter-company relations. The practice of Russian enterprises is dominated by simpler platform solutions aimed at increasing the transactional efficiency of inter-firm interactions, allowing their participants to achieve positive effects associated with an increase in the number of counterparties, an increase in sales, a reduction in risks and transaction costs of interaction with counterparties. It is concluded that the possibility of achieving more significant transformational effects is associated with the development of technological ecosystems of platforms, which requires the participating enterprises to significantly transform business processes based on costly investments in capital-intensive and technologically complex solutions.

## 1 Introduction

The process of digitalization is gradually changing the ways of doing business and views on the principles of competitiveness of firms. Digital technologies contribute to the creation of more flexible and operational processes, ensure the collection of big data, improve the decision-making process. Their use allows companies to make products and services more intelligent (Raff et al., 2020), more personalized and increase the value created for customers (Ayanso et al., 2014), open wide opportunities for innovation (Lanzolla et al., 2021). In addition, they are a key factor determining the intensity of cooperation, allowing companies to create common processes and complement each other within the framework of value creation. Digitalization of inter-company transactions is expected to have a more transformative impact on the operation of B2B networks to a greater extent than any other trend. And to fully realize the potential of digital transformation, companies need to implement digital platforms (Sandberg et al., 2020).

To date, there are studies showing that an increasing number of enterprises are using a platform business model to organize their activities. At the same time, there is a wide variety of platform solutions used. Therefore, the research objective of this study is to systematize

the experience of organizing digital platforms in the field of B2B relations to assess the level of their use by enterprises.

## **2 Characteristics of inter-company platform interaction**

Digital platforms are technologies that facilitate interactions between different partners (Constantinides et al., 2018), using appropriate management structures that include a set of rules, standards, and organizational processes to coordinate the actions of participants (Reuver et al., 2018). They are referred to as a modular structure consisting of basic and replaceable modules (Tiwana, 2013). Digital platforms contribute to the shift of the production process from a linear type, organized along the value chain, towards the network, which enables firms to access various resources, integrate critical common knowledge, change the configuration of external and internal resources in order to increase operational efficiency and better respond to the rapidly changing needs of the market (Teece, 2018; Cenamora et al., 2019).

A review of the economic literature indicates the spread and importance of digital platforms in economic practice, while there is a significant variety of types of digital platforms used and the approaches to their description.

One of such common approaches is an approach based on the identification of a type of business model, when platforms are considered not just as a technology or a set of software products (Torregrossa, 2018), but as a strategy used by platform developers to simplify interaction between participants and monetize the platform activity itself. These platform models are contrasted with a linear (pipeline) model based on a hierarchical mechanism or subcontracting, and the main ones are the models of listing fees, models of a bilateral and multilateral platform (Boudreau & Lakhani, 2009). The platform owner has less control over the interaction between vendors and end users. In addition, an external participant is not required to interact with the platform owner during the design and development of a new product and service, while the platform owner can set certain rules and regulations for external participants (Rochet & Tirole, 2006). This model is used by some platforms, such as Facebook and eBay.

Thus, digital platforms can be diverse, ranging from simple information resources and trading platforms to more complex interaction environments based on platform ecosystems. Digital platforms are becoming more complex as they integrate new business models and interact with new forms of technology. At the same time, they will differ in their target orientation, complexity of architecture and a set of platform management mechanisms necessary for cooperation, coordination, and integration of a diverse set of participants.

## **3 Research methodology**

The empirical part of the study is aimed at identifying general trends in the development of the organization of inter-company interaction based on digital platforms. To conduct the study, a questionnaire was sent to enterprises of various industries. Fifty-three enterprises of metallurgy, mechanical engineering, chemical, food and forestry industries, IT-sphere responded to the survey. Respondents were asked to answer questions regarding their practice of using digital platforms to organize interaction with their counterparties. Mostly closed-type questions were used, offering respondents to choose one of the answer options.

The questions contained in the questionnaire were divided into three blocks. The first set of questions concerned the definition of the general characteristics of the main digital platform used for inter-company interaction: the type of the platform used (informational, for sales, purchasing, investment, other - with the possibility of specifying the target orientation

of the platform); the number of participants on the platform (in the form of a closed list of possible answers with an interval representation of the number of participants); the level of regional orientation of the platform (international, national, regional).

The second set of questions was related to the management mechanisms used on the platform: the degree of openness of the platform to new participants (closed, partially closed, open); the strategy used for monetization of platform activities (an interval estimating scale of the percentage of the amount of transactions and the amount of the minimum monetary fee for using the platform); the level of steady operation of the platform (a five-point assessment according to the Likert scale, where 5 corresponds to the situation of the absence of failures in the operation of the platform, 1 - the presence of daily failures); the level of information security on the platform (rating on a five-point Likert scale, where 5 corresponds to a high level of information security, 1- lack of protection and encryption); compliance of the enterprise with the input requirements of the platform (rating according to a five-point Likert scale, where 5 corresponds to the need for serious restructuring of the business processes of the incoming company, 1 - does not require restructuring of the business processes for using the digital platform).

The third block includes issues related to assessing the effects of using digital platforms for their participants — a percentage increase in sales, reducing the risks of working with counterparties, reducing transaction costs, as well as an increase in the number of counterparties in absolute terms.

The results of the analysis of the answers to the described blocks of questions are presented below.

## **4 Research results**

Platform digital solutions are used to conclude transactions for the sale of goods or services produced by enterprises, and for the procurement of necessary resources for production activities. More than 60% of the surveyed firms indicated these goals of platform interactions as basic. Also, firms often resort to using digital platforms to collect information about the main market participants - 34.8% of the surveyed firms. In addition to the main types of platforms mentioned above, firms also use digital platform solutions to exchange significant legal documents with their partners (13% of respondents).

The scope of use of digital platform solutions also determines their scope of platform activity. For procurement purposes, national platforms of medium size with up to five hundred companies are used. As a rule, national digital platforms are also used for informational purposes, but much larger – over one thousand participants. And for the sale of goods and services in the B2B interaction market, firms use both national and international digital platforms, the number of participants on which is also large.

At the same time, which is very logical, there is a close relationship between the number of platform participants and the level of the regional organization (Spearman's rank correlation coefficient is 0.61). International platforms are the largest with the number of participants exceeding 3,000. National platforms can also be described as quite large, but the number of participating firms on them is significantly lower than on international ones - on average from 1000 to 3000. While regional digital platforms can be defined as small (up to one hundred participants) and medium (from 100 to 1000 participants).

The openness of platforms is the main paradigm of organizing the work of the types of platforms indicated by respondents, used by enterprises to organize interaction with key partners – 54% of respondents indicated this principle of organizing the platforms they use. They are followed by partially closed platforms, characterized by the presence of certain barriers for participants to enter the platform (33%).

The creators of the platform pay great attention to information security and stability of work. 4.25 out of 5 points is the average assessment by users of the platforms of the level of information security, and 4.37 is the average assessment of the stability of the platform. At the same time, it should be noted that 20% of respondents are concerned about the issue of information security.

If we talk about the pricing strategy, then there is both a minimum fee for using the platform (a fee charged by subscription) and a percentage of the amount of transactions made. In 50% of cases, the minimum fee for using the platform does not exceed 10,000 rubles, and as a percentage of the transaction is 2-3%.

At the same time, regression analysis reveals the dependence of the percentage of the transaction only on the regional orientation of the platform - the percentage of the transaction on international platforms is on average 4% higher than at the national level. At the same time, further regional differentiation at the national level did not yield statistically significant results, as did an attempt to consider other factors, such as the openness of platforms, the level of information security, the stability of the platform and the frequency of access to the platform.

As for the compliance of the enterprise with the input requirements of the platform, for most enterprises joining the platform is not associated with the need for any changes in business processes, or this transformation is minimal (more than half of the respondents surveyed). At the same time, about 30% of respondents say that there is a need for a significant restructuring of business processes, which indicates the use of more complex platform solutions.

The use of digital platforms provides their users with a number of positive effects. First, the effect of using platforms is associated with facilitating the search for partners, which leads to an increase in the number of counterparties both on the demand side and on the supply side. Thus, firms using platform solutions in their business practice were able to find new partners and expanded their counterparty base by an average of 50-100 firms. And to a greater extent due to the platforms used for the purchase of resources and the sale of goods and services. In addition, as a positive effect, respondents estimated the possibility of an average sales growth of 11-25% in 2021 compared to 2020.

Another important aspect of the functioning of digital platforms is information accessibility and transparency, as well as the availability of certain guarantees to ensure the transaction, which allows platform participants to reduce the risks of interaction with counterparties and, in general, the amount of transaction costs by an average of 11-15%. At the same time, in general, users associate the reduction of transaction costs with the use of information platforms.

In general, there is a correlation between the magnitude of the effects and the fee for using digital platforms, which can indirectly serve as an indicator of the quality of platform management.

## **5 Discussion of the results obtained**

Now, in the practice of Russian enterprises, simpler platform solutions related to the organization of information and communication exchange, in the form of the exchange of legally significant documents and the search and presentation of the necessary information about the participants of the rank, as well as the organization of transactional interaction in the process of value creation, have become the most widespread. Pricing mechanisms, the openness of platforms, the guarantee of information security and stability of work provide platform enterprises with a scale of activity, contributing to attracting participants and realizing the potential of the network effect for them.

The use of digital platforms makes it possible to achieve a number of positive effects associated with an increase in the number of counterparties, an increase in sales volumes, a reduction in the risks of working with counterparties and, in general, a reduction in transaction costs.

At the same time, the conducted research showed that for the overwhelming number of enterprises using digital platform solutions for the organization of inter-company interaction, no significant transformation of their business processes is required, which suggests that they use standard production technologies and interact through digital platforms that connect buyers with manufacturers. In these conditions, the innovative potential of the ecosystem of platforms built on the use of advanced digital technologies is not used. The development of such platforms represents capital-intensive and technologically complex solutions. In addition to investing in equipment and service technologies, solving this issue requires an analysis of institutional conditions, as well as the development of strategic platform thinking of participants.

## 6 Conclusion

As a result of the conducted research, the following results were obtained.

Firstly, an analysis of the publications presented in the economic literature showed that digitalization in the B2B sector is becoming one of the key trends in the development of relations, and platform solutions are increasingly being used by enterprises in various sectors of the economy. Several types of digital platforms are used in business practice, ranging from simple information resources and trading platforms to more complex interaction environments based on platform ecosystems. They differ in their target orientation, complexity of architecture and a set of platform management mechanisms.

Secondly, the practice of Russian enterprises is dominated by simpler platform solutions aimed at increasing the transactional efficiency of inter-company interactions. The digital platforms used, as a rule, do not require significant transformation of business processes from enterprises and are aimed at organizing information and communication exchange, in the form of exchanging legally significant documents and providing the necessary information about the participants of the rank, as well as organizing interaction between consumers and sellers in the form of digital trading platforms.

Thirdly, the use of digital platforms leads to the achievement of positive transaction effects – to an increase in the number of counterparties by an average of 50-100 firms, an increase in sales volume by an average of 11-25%, to reduce the risks of interaction with counterparties by an average of 11-15%, as well as to reduce the costs of organizing inter-firm interactions by 11-15%.

Fourth, more significant transformational effects will be achieved by platform ecosystems based on the use of end-to-end digital technologies. However, the development of such platform ecosystems requires from participating enterprises a significant transformation of business processes based on costly investments in capital-intensive and technologically complex solutions.

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