

Economic efficiency of ecosystems

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Abstract. The digital transformation that we have witnessed in recent years seriously affects all spheres of public life, including economic processes. In the business landscape of the digital economy, new approaches to doing business are being actively formed, aimed more not at competition, but at mutually beneficial cooperation between market players. In order to develop, firms use an ecosystem business model, which is based on the association of a large number of organizations around one strong company in order to comprehensively meet the needs of customers. This is accompanied by a powerful synergistic effect and brings benefits to all participants in its composition. However, since the formation of business ecosystems is a fairly new trend in economic realities, a deep study of a number of issues is required, one of which is the assessment of the effectiveness of their activities.

1 Introduction

According to McKinsey's forecast, already in 2025 the share of digital ecosystems in the world will account for about 30% of income, which will amount to \$60 trillion (fig.1) [1]. Obviously, such a significant share will be formed primarily due to the transformation of the functional processes of the largest companies in various markets and countries. The term "ecosystem", despite the growing popularity both in theoretical studies and in management practice, is still interpreted ambiguously. This, in turn, confuses the ways of its distribution, which is important for suggesting ways to unite, expand and interact with other economic actors, and determine the economic effect. However, this concept itself is still extremely vague, which implies a fairly wide field for its interpretation. To date, this is one of the least studied forms of doing business, and approaches to its construction are quite specific, given that already at the initial stage this is a rather large-scale formation. In the first approximation, a business ecosystem can be identified as a community of firms and their products with a "core" in the form of a central organizing company around which the ecosystem is built. At the same time, such a set is formed and develops differently from similar processes of traditional companies - expansions, mergers, etc. This article attempts to identify ways for further transformation of domestic business ecosystems. The purpose of the study is to identify promising forms of ecosystem development. In this context, the object of research is the business ecosystem as a set of enterprises and their products, the subject is the processes of interaction with its internal elements, as well as other companies and ecosystems.

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DIGITAL ECOSYSTEM

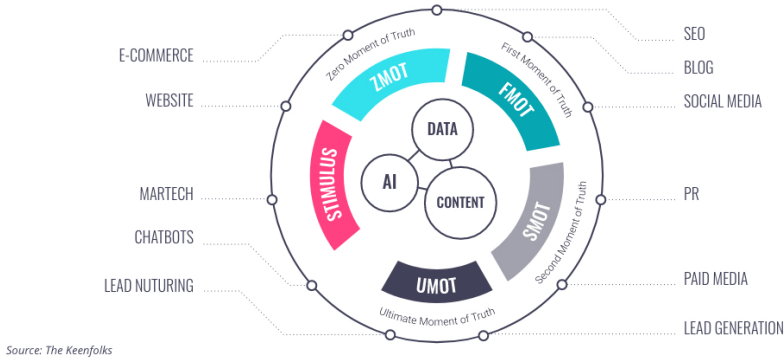


Fig. 1. How the digital ecosystem sets your company for success

Based on the analysis of the theory and practice of building ecosystems, we will specify ways to further build and develop such forms of business organization. The structure of this article involves a consistent analysis of the ecosystem: the boundaries of its distribution, internal and external relations, managerial influences, ways of forming complex products. Consideration of these processes together allows us to propose methods for subsequent transformations as a result of the transition from extensive to intensive development. Creating an ecosystem is advisable for a large company, the size of a corporation. Undoubtedly, an ordinary company can be part of an ecosystem, but cannot be its organizer due to limited resources and difficulties in attracting them. This requires a large amount of investment, the formation of a clear and harmonious set of products, etc. [2]. Due to a more explicit specification of its characteristic features of interaction with the external and internal environment, original mechanisms of formation and development may appear. It will also allow a better understanding of the place of the organizer of the ecosystem and its dependent elements and offer forms of their adaptation to its specifics.

2 Research Methodology

In a large review study [3], the author, after analyzing several dozen works on this topic, formed approaches to the definition of this term into three groups:

- an ecosystem as a technological platform for suppliers of goods and services;
- an ecosystem as a combination of products of one or several companies into an integrated service;
- an ecosystem as an association of various enterprises.

Let us clarify that a common feature of various approaches to the analysis of the phenomenon of business ecosystems is the association of a number of companies (or a number of functional areas within one company) in order to increase the value of their products and/or increase the efficiency of internal processes [4–9]. In this case, there are synergistic and network effects, when the offer of complementary goods not only increases interest in the main one, but also thereby stimulates customers to consume various products more actively within the same ecosystem. A similar triple classification is proposed in the monograph by H. A. Konstantinidi et al. [10], where the set of partners and a complex product are complemented by the interpretation of the ecosystem in the form of a large company, which, through self-development, is managed comprehensively, as a single "living organism". A number of researchers [7] note that the technological platform

involves its filling with services, goods and services not independently by its creator and owner, but by third-party participants (fig.2).

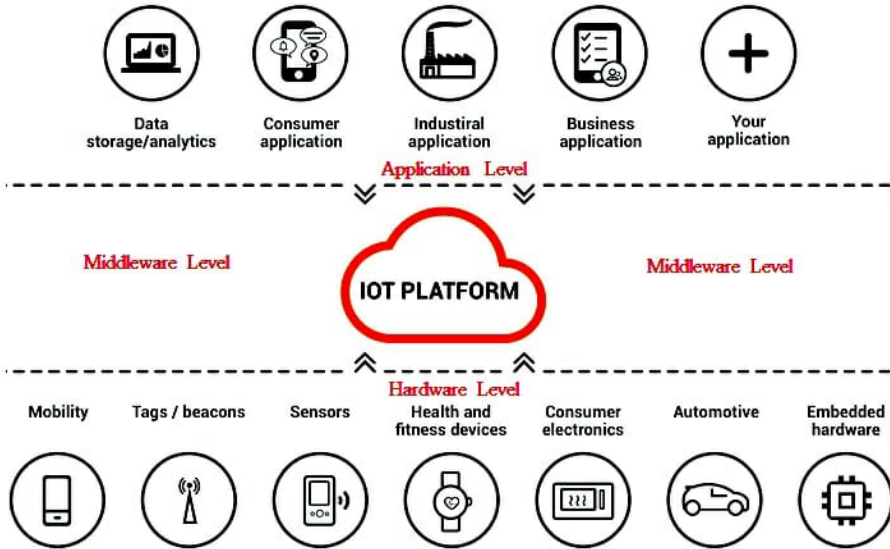


Fig. 2. 16 Types of Technology Platforms.

That is, it indicates the existence of a relationship between the owner of the platform and its clients, clients - content consumers on the one hand and clients-content providers on the other. High-quality and volume content makes it interesting for end users: as noted in the work of H. Legenvre et al. [8], the greater the number of content providers, the more valuable such a platform for the client. Therefore, the entrance to the platform is as easy as possible. Another approach, which interprets the ecosystem as a set of companies, considers such interaction from the position of benefit not for the client, but for the participants themselves. The interaction of its elements can bring benefits only in case of effective cooperation and mutual support in achieving goals [10]. Such groupings often include innovative ecosystems as an association (often on a geographical basis) of companies of various types in technology parks, incubators, clusters, developing fundamentally new technologies through mutually beneficial cooperation. The third variant of the ecosystem is the grocery one. It implies the presence of a variety of services, as well as goods and services that organically complement each other. Thus, the owner of the product ecosystem has the opportunity not only to increase revenues due to higher costs, but also to attract new customers interested in such a service. The main condition and difference between a product ecosystem and a vertically integrated company is the availability of complementary goods and services from various sectors and sectors of the economy that harmoniously complement each other. The difference from the platform lies in the difficult entry into the product ecosystem for new companies, the selection of which is carried out by the organizer. A number of publications in line with systemic economic theory specify the main constituent elements through a set of four types, which are determined on the basis of the spatio-temporal characteristics of each of them [6]. It is understood as a single organism that combines various companies or functions. Through this dual characteristic, one can interpret an individual enterprise or a combination of them [7]. Such a community of companies can be considered in the context of the ecosystem under different sections: – as a set of goods, services, works and management [8]; - a set of cluster, platform, network and business incubator [9]; - a set of production, management influences, technologies and

projects. Similar to the product and platform approaches, BCG Henderson Institute offers its own classification according to functional features: it is an ecosystem of solutions and an ecosystem of transactions. In the first case, this is an association of the parent company and its partners offering various goods and services that complement each other. Here the parent company plays a dominant role in the process of activity of the entire aggregate. In the second, the ecosystem is presented as a company that creates a software product, on the basis of which sellers and buyers converge. The functionality of the parent company in this case is to organize mediation between them: making payments, creating related services, technical support for activities, etc., that is, it controls financial flows between the supplier and the consumer and provides technical and technical interaction between them.

3 Results and Discussions

At the level of ordinary participants in a totalitarian ecosystem, there is something similar to perfect competition - a number of similar substitute products, the choice between which is made by the user; the departure of one of the suppliers will not lead to any noticeable consequences for the entire ecosystem. For example, the departure of a seller from Aliexpress or an application provider to the AppStore and PlayMarket will in no way affect the completeness of the content of these services. Undoubtedly, there are key players with exclusive products in which the owner is directly interested. But to one degree or another, they are also in a competitive environment with similar services from other companies. The second option can be described as authoritarian, where there is also an organizing company, but other elements are included in the ecosystem through partnerships with counterparties or the absorption of the necessary services in the form of subsidiaries. And the organizer is more often the initiator of such a partnership - he is looking for candidates for the implementation of some of the services within the ecosystem. The key factor in this case is the product that its supplier can offer, and its relationship with other goods and services already available within it. Accordingly, after being included in the ecosystem, the organizing company becomes more dependent on a particular partner due to the uniqueness of its service for a complex product of the entire set. In such a model, the supplier of a product or service becomes a monopolist in its direction and directly affects the ecosystem, its quality and reputation. At the same time, the supplier can maintain independence in making managerial decisions within its direction and even continue to provide goods and services outside the ecosystem as an independent product or under an independent brand. An authoritarian approach to building an ecosystem is more often characteristic of local ecosystems, the scale of a country or a group of countries [4-5]. Usually these are projects of representatives of the banking sector, information technology and telecommunications from different countries. Such ecosystems are more often characterized by interaction in the supply of goods and services, where various participants together offer a complex product. The product or service of each participant within the ecosystem is unique. Duplication of products is practically excluded, competition within the aggregate is practically absent. The exclusion of one element from the framework of this population will lead to noticeable consequences for the entire ecosystem. In an authoritarian ecosystem, there is a greater dependence of the organizing company on partners than in a totalitarian one. Due to this uniqueness, softer (compared to the totalitarian approach) interactions between the organizer and other services are formed. The lack of competition within and the narrow specialization of partners entails rather coordinating influences from the company that manages the entire population. Therefore, more often such relationships are fixed in the form of mergers and acquisitions of participants, where for each of them there is a certain degree of freedom in how to develop their own direction, but the general processes are formed by the organizer. In this regard, the dependence on the part of the

partner organization is also increasing. And here it is worth mentioning the study of typical formation models for such ecosystems [6], where there is a direct connection between the dependence of the ecosystem organizer on its elements, due to which either a partnership strategy or the absorption of such a service is built. What is not with the totalitarian approach, where ordinary participants themselves are interested in efficient work and thus more rationally use their resources and ecosystems as a whole. The function of organization, coordination and strategic management at the level of the entire population would be equivalent to all other products [2], where communication links exist not only between the parent and dependent companies, but also between each of the possible pairs. Such mechanisms usually implement innovation and educational ecosystems as a set of organizations without a clear leader, but with the possibility of mutually beneficial cooperation, support and complementarity with each other.

On the basis of the examples discussed above, one more conclusion can be drawn: the ecosystem is built taking into account and on the basis of innovations of various properties. A company that does not have high technology and does not apply original business solutions will not be able to form an ecosystem. This applies not only to innovations in the field of the products themselves offered to the market, but also to an innovative approach to the formation of their totality, when individual elements can be harmoniously grouped into a single integrated product that is interesting both to the client-supplier or client-partner, and the client-consumer. A number of researchers point to such a dependence [3]. It should be noted that in this case we are talking not only and not so much about innovative ecosystems that are formed within certain territories, created primarily for the commercialization of innovations and functioning without the presence of cross-cutting elements that unite them with each other. Representatives of the cluster approach also base this theory on one of the basic institutions for the formation and existence of a business ecosystem through the development and implementation of innovations through the mandatory presence of scientific and educational organizations in a technological cluster (see, for example, [4]). The works of G. B. Kleiner [9] indicate that one of the important components of the business ecosystem should be elements of educational organizations, R&D, business incubators, etc. The business ecosystem is an important and integral element of the digital economy, in which one of the basic elements of formation is the intellectual component. Without a doubt, all the companies cited above as an example of actually functioning domestic business ecosystems are innovatively active, i.e. both consume and create innovative products. But the originality of their products lies not only in their innovative component - a number of goods or services can be called quite traditional. The formation of a business ecosystem is associated with going beyond the traditional understanding of economic sectors. Offering familiar goods and services, it also forms new products, which are a set of familiar, but more valuable products due to original combinations [7]. The total ecosystem product cannot be attributed to any particular industry - this phenomenon should be considered much more broadly.

In addition to the competition processes of business ecosystems, there are also interaction options. The degree of partnership interactions between ecosystems can be either minimal (for example, hosting applications of a conditional competitor on their platforms), or in the form of implementing large joint projects. Such interaction is described in the works of Academician V. M. Polterovich (see, for example, [6]), when competitors receive additional benefits from the joint implementation of projects. In general, such interactions both within the ecosystem and between it and its consumers, suppliers and other elements fit into the concept of transition from competition to partnership described in [11]. For example, three domestic ecosystems - Sberbank, Yandex and VK - are similar in a number of key services: transport and delivery, retail, finance, media, information services, etc. According to these similar features, they can be called competitors not only in level of

these products, but also in general. At the same time, they have implemented or are implementing joint projects that have a positive effect on all participants in this process. Let us consider in more detail the intersection of the products of these and a number of other ecosystems. The AliExpress Russia joint venture was created between the ecosystems of Alibaba Group, Mail.Ru Group (renamed to VK Company) and MegaFon (MegaFon has now withdrawn from this project). Today, the AliExpress ecosystem is one of the global players. The joint venture is the largest marketplace in Russia with a turnover of 55 billion rubles. (according to the report of Mail.ru Group for 2020 financial year). According to the reports of the platform itself, the share of domestic sellers shows explosive growth and currently stands at about 15%. The creation of a special Russian platform with large, but nevertheless local players, may also indicate the desire for a more active development of this marketplace in Russia by overcoming the specific barriers of the local market. Similar intersections can now be identified in the common part of the Sber and VK ecosystems in the field of food delivery by the Delivery Club service through not only its own couriers, but also taxi drivers of the Citymobil service (before its termination). Other services are shared similarly: “Scooter”, “Kitchen in the area”, “Yula”, “CityDrive”, etc. Another feature is the interpenetration of ecosystems [7]. Thus, domestic ecosystems actively interact with each other, including goods and services of others in the circle of their products or developing them through joint ventures.

4 Conclusions

At the present stage of development for the platform and product type of ecosystems, there are two options for building interaction between the organizer and partners that are part of it. The platform ecosystem is more often built on a totalitarian principle. That is, the organizing company provides third-party providers with the opportunity to place their goods and services on this platform, ensuring their moderation - to whom to provide access, and to whom not. In, the framework of such an interaction is distinguished, consisting of four types of participants. Its owners control the intellectual property and operate the platform; providers provide technical functioning, being usually an integral part of the owner company; suppliers create and offer their goods and services based on it; and customers consume them. Thus, a rigid hierarchy is built in which the organizer unconditionally controls the scope and parameters of the functioning of partner suppliers within the technological platform: what services to allow, to what extent, whom to restrict, whom to provide preferences, etc. At the same time, customer access is usually limited only their own desire, while access to the provider platform is controlled by the owner.

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