

Networking in the Platform Development of Ecosystems



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Abstract The article focuses on the issues related to the networking in the platform development of ecosystems based on the analysis of the experimental transformation of network structures in governance following the principles of the new systemic approach. The problem of networking is setting on the basis of platforms and varieties of the organizational structures according to the type of governance. The platform basis of the network structures development in governance has been rationalized from the methodological perspective and exemplified by such kinds of networks as distribution, franchise and outsourcing. The network structures are characterized by efficient performance and appeal for the potential participants willing to be integrated, which explains their expansion and popularity. The digitalization gives new opportunities to the companies which make for the use of the innovative forms of production, consumption and exchange via digital cooperation. New digital structures eliminate barriers between the industries, create potential for cross-functional products and service development. The results of the networking in the platform development of ecosystems confirm the experimental nature of the transformation in the network structures in governance, which makes the ground for further elaboration of the methodology applied for the systemic analysis in the ecosystems' economy development.

Keywords Ecosystem · Networking · Platforms · Organization structures of management · Experiment of networking

1 Introduction

Theoretical basis of the digital economy is developing under a new paradigm of networking in the ecosystems. The concepts of ecosystems are in focus of prominent scientists, international organizations and national governments worldwide. On the one hand, in many international publications the ecosystem is considered

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from the viewpoint of sustainability in the circular economy. The experts estimate that overall population growth leads to the increasing number of consumers and greater resource consumption required for sustenance. It is crucial to differentiate between the prospects of economic growth and prospects of raw materials and energy resources consumption. New technologies and transition to the circular economy provide for the opportunities and advantages of ecologically responsible growth when the resources are limited [2].

The research into the circular economy carried out by BEROC scientists provides evidence that R-imperatives lead to emergence of multiple risks which are inevitable and result from the different development patterns around the globe. Evidently, an effective tool to prevent possible conflicts may be differentiated responsibility attributed to different countries; respectively, the most developed ones will dominate in the development of circular systems whereas the developing ones will have to reassess the strategies and methods they use to address the current challenges while focusing on the introduction of circular economy models [6].

2 Literature Review

Current scientific papers encompass issues on the formation and development of entrepreneurial ecosystems which create new consumer value and emerge as transitional structures between a company and a market [1, 7–10, 12, 18]. Current conditions contribute to the greater interest in the study of network structures in managing technological business projects among the researchers in the global science; the competitive advantages of such projects are determined by an innovative digital (high-tech) idea. For instance, the research team of Danube University Krems (Austria) suggested a classification of the key indices of the digital entrepreneurship efficiency in order to identify its impact on the multidimensional digital transformation of the economic processes. Additionally, they carried out critical analysis of the digitalization and digital entrepreneurship indices taking into account the three dimensions of the modern innovative system: the entrepreneur, the entrepreneurial activity and the ecosystem [19].

In many cases, the best strategy for platform growth may be joining different networks with one another. The success of any platform business depends on attracting a big number of users and data collection on their interactions. Such assets remain valuable in a number of scenarios and on different markets. Companies using them and successful in one of the market segments often diversify their business and improve their economy [22].

3 Methodology

The study of the conditions for networking in the platform development of ecosystems was based on the use of analytical methods for reviewing the scientific interdisciplinary literature of the Scopus and Web of Science databases for the development of ecosystems and their impact on the economic development of organizations. The authors use the methods of organization analysis of digital transformation of networks, platforms and governance structures in specific companies, as well as methods of integration of heterogeneous economic data on the development of economic relations in the development of platform ecosystems.

4 Results

4.1 New Network Structures in Governance

The multiple interconnections in business processes are regulated through the organizational structure in order to create the company’s most efficient mode of operation. The organizational structure is often designed in accordance with the governance principles set by the company. There are different kinds of organizational structure design which have developed and keep developing as the scale of the company development increases, the goals change and the external environment transforms (see Fig. 1).

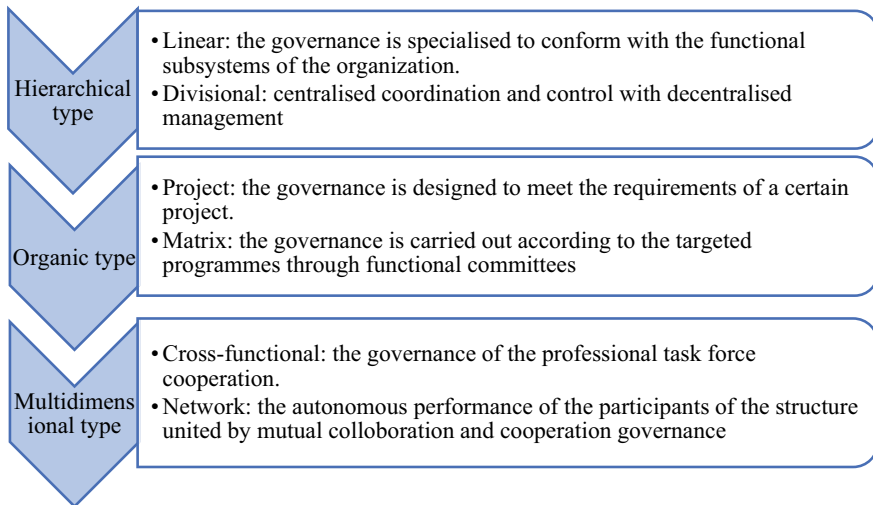


Fig. 1 Varieties of the organizational structures according to the type of governance

The hierarchical type of the governance structures which comprises the linear-functional and divisional governance structures defines the governance organization of the diversified companies for the purpose of their business diversification in the dynamically changing environment. Their implementation in big corporations requires giving certain independence to the business subdivisions.

The global market of goods and services leads to strong competition between the companies, high efficiency and quality of service and quick reaction to the external changes.

The formation of the organic governance structures (project, matrix) implies organization of the targeted functional cooperation between the internal subdivisions combined with project governance. Implementing them in national and transnational corporations allows changing the organizational form while adapting to the changing market environment.

The modern level of sensitivity to the changes in the environment and flexibility in the reaction to them contributes to the emergence of new upgraded organizational structures.

The multidimensional type of the organizational structure (cross-functional, network) is characterized by the multivariance and makes the foundation of the flexible approaches to the organization structuring and ability to react to the internal and external changes. Their implementation allows setting the mode of shared responsibility as per the structure elements, coordinate program execution and performance of the company's branches and regional offices [17].

Each organizational structure of any type displays a number of advantages which play an essential part in the company's performance once it has been implemented and, similarly, each structure has certain flaws which can become a determining factor when changing the organizational form.

The organizational structure always complies with the principles of the company's performance. As such, a structural organization does not guarantee strong performance and success in business, but it is targeted. When the business environment, internal or external factors change, new ideas have to be introduced for the sake of further efficient development.

4.2 Platform Base of the Network Structures Development

The companies responded to the modern-day challenges and desire to monitor the ongoing changes in the market by conducting experiments aiming at governance improvement and finding new organizational forms.

Network cooperation helps to find opportunities for building partnerships, start joint enterprises and define trajectories for business expansion. Various forms of cooperation allow developing multiple network structures characterized by different levels of administration and make beneficial connections within the framework of the internal cooperation as well as the cooperation between companies and groups of

companies. The joint companies specialize in performing certain functions or doing certain kinds of activities when implementing the networking.

The most common kinds of networks are the following ones:

- distribution network, when the main company creates special conditions for cooperation whose goal is distributing goods by separate distributing companies;
- franchise network, it is a special form of partnership between the participants acting on certain purpose under the name of the franchiser;
- outsourcing network, it is a special form of partnership between companies focusing on performing separate functions (work and services).

Network structures are highly economical and attractive from the perspective of integrating participants, which, therefore, has provided for their spread and popularity.

The transition to the new technological mode and digital transformation of the economy have created environment for emergence of network organizations with a virtual structure. The digitalization opens up new opportunities for the companies which allow implementation of new forms of operation, consumption, cooperation and exchange via digital cooperation.

New digital structures break down sector-specific barriers and reveal prospects for cross-functional products and services.

Such a kind of structure is based on cooperation between independent functional partners from different sectors or functional areas through active use of modern information technologies which broaden the horizons of distant cooperation.

The companies do not differentiate between the internal and external members. The participants of such kinds of cooperation act as a team that has been formed according to the respective competences for further distribution of tasks targeting the creation of a unique product. Within the framework of the virtual network model all the stages of making a unique product turn into a complex of services provided for cooperation. All networks comprise a range of interactions among participants, a focus on governance involves the use of institutions and structures of authority and collaboration to allocate resources and to coordinate and control joint action across the network as a whole. The governance is fueled by the technology of work coordination by means of implementing general standards, rules and processes. The partners are constantly involved in the process of information exchange, take collective decisions and use both internal and external fixed and virtual assets. Researchers believe that external network effects are caused by “innovations being based on communication” and the fact that “stronger connections and integrity enhance growth indices” [15].

The attractiveness of integrated information structures is explained by the high economic indices, professionalism of the participants and effectiveness of the network organization. The interaction processes are conducted on the platform base.

The implementation of the platform model includes definite stages of the startup and activation plan:

- Development of a workable organizational structure;

- Implementation of the lean production and flexibility concepts;
- Elaboration of an adequate strategy of market placement.

Experts state that platforms perform better in both short- and long-term periods according to the key financial parameters. Companies only dealing with platforms or such that mostly do platform-based business have average income which is the multiple of 8.9 [14].

The network platform as a part of the technology and software connects all the participants of the partnership for the purpose of creating mutually beneficial possibilities. The practicability of the platform is proven by the network effect and intergroup external effects.

Platforms are multifaceted and their development may take unexpected turns. Their key function is to play an organizing role in creating multidimensional values by completely integrating the abilities and needs of the participants as well as by building up a powerful governance of the whole system. The marginal utility the end consumer gets on the platform is affected by the increase in the number of members in another group of end consumers (e.g., customers) on the platform. Eventually, a platform works as a multiplier for its network.

Successful platforms provide for more effective exchange by reducing transaction costs. However, not all the network projects are successful. Some platform networks fail to reach the scale or never bring profit and disappear; in other cases, should the right business strategy have been selected, a platform can become successful at a later stage of development [4]. Due to this fact, each separate integration is created to be unique and special. The organizational principle is adopted through modelling a new network and is tested, as a rule, by carrying out an experiment.

According to some researchers, the organizational structure of the company affects the way the tasks are completed and the problems are solved. Using an experimental platform for structuring a company can help reveal the problems caused by manipulating the network structure for the sake of increase in performance [21]. With greater experience and working knowledge of the benefits of network structures, as well as an understanding of what outcomes can be expected, decision makers may be more prepared to make changes [11].

The greater is the diversification of the cooperation, the greater impact has the formation of multidimensional platforms responsible for the production and implementation processes. Scientists have to cope with structural issues, such as characterizing the topology of a complex wiring architecture, revealing the unifying principles that are at the basis of real networks, and developing models to mimic the growth of a network and reproduce its structural properties [3].

In the digital economy, the cross-sectoral interaction of structures is based on the digital platforms development [20]. Due to digital platforms, companies reach another scale in terms of almost unlimited numbers of customers, artificial intelligence technologies and other tools providing for high quality. In some situations, platforms may take advantage of their big user database to attract even larger number of users due to the integration of separate extra functions. There are well-known

Table 1 Network organizations with a complex of service offerings for different segments

Country	Company and services
China	WeChat: financial, domestic and government services
Indonesia	Gojek: food delivery, taxi, courier service, financial services
Japan	Line Corporation: logistics for restaurants, food delivery, payment system
Russia	Yandex Go: taxi, carsharing, public transport, shipping services, food delivery and delivery from restaurants
Singapore	Grab: taxi, food and parcel delivery, bike and scooter rentals, credit arrangement, payment system, online healthcare, insurance
USA	Uber: taxi, carsharing, payment system, food and goods delivery

examples of successful network organizations which managed to establish multilateral relations and develop a complex of service offerings for different segments (see Table 1).

The scale of use is one of the main features of any big active platform offering their service to different kinds of end customers. The global survey revealed that there are 176 platform companies around the world whose market value is over 4.3 trillion US dollars [5]. In the OECD countries, the COVID-19 pandemic caused a surge in the use of online platforms; in the segments that do not require personal presence the increase in traffic amounted to 20%. In the countries with better developed digital infrastructure and higher level of digital literacy there was an even steeper increase in the indices. This may serve as evidence that investments in such opportunities can be a way towards developing better resistance to economic upheavals in the future [16].

At the present time, general statistics does not give a clear-cut and full answer to the key questions regarding the role, nature and size of platforms. Defining the economic capacity of the organization of the network structures engaged in platform interactions is a complex task due to the scale of cross-sectoral and transborder potentials and their fast and dynamic development.

In McKinsey’s opinion, the influence of platforms will only accelerate [13]. When estimating the prospects related to platforms, companies have to analyze the key properties of networks that they are going to use and consider the ways to enhance the network effects.

Therefore, the results of the experiments that have been performed allow outlining specific advantages of network structures in governance and detecting the weak spots of the network companies when building up a new platform organization.

5 Discussion

The challenges arising from studying the forms of networking in the platform development of ecosystems are explained by the dominance of the platformization processes in the economic relations. “The new systemic approach” is marked by

certain permanent systemic transformations in the system structure; thus, judging by the inherent properties of the methodologies applied in the hierarchical and networking topology of the systems, we may conclude that the conventional principles of the system theory are subject to deep-rooted changes related to the antecedence of the functions and the subordination of the structure. Therefore, the traditional approach to the generation of the economic value of benefits in the economics has been radically changed as it is based on the development of network effects. It is essential to take into account the principles of the ‘new’ systemic approach in the process of ecosystem activity regulation and their sustainable independent performance over a long period of time from the perspective of designing new network structures in governance.

The above scientific challenge originates from the need to find solutions to the growing social and economic problems related to the systems losing their stability, increasing intellectualization and dematerialization of technologies in the digital environment. The unprecedented development of digital technologies results in the dramatic changes in the concept of the society’s sustainable development, makes a considerable impact on the structures of the economic systems, which, consequently, leads to the reinterpretation of the prospects of the economic growth as well as raw materials and energy resources consumption. The building-up discrepancies between the digital technological development and the economic systems losing their sustainability calls for the introduction of new platform-based business models and stimulation of the new network structures development in governance based on breakthrough information technologies, which will allow creating new workplaces. Thus, the relevance of the research lies in the theoretical and methodological rationalization of the digital economy development according to the principles of the ‘new’ systematic approach and transformation of the network structures in governance.

6 Conclusions and Future Research

The research in the field of networking in the platform development of ecosystems allowed to determine the experimental nature of the transformations happening in the network structures in governance based on the principle of the new systemic approach. The platform base of the network structures development in governance has been methodologically rationalized and exemplified by such kinds of networks as distribution, franchise and outsourcing networks. The network structures are characterized by low-cost performance and integration benefits for the participants, which has led to their expansion and popularity. Digitalization opens up new opportunities for companies as it encourages use of innovative forms of production, consumption, cooperation and exchange via digital cooperation. New digital structure overcome cross-sectoral barriers and contribute to the development of cross-functional goods and services. As in the course of the research dedicated to the networking in the platform development of ecosystems the experimental nature of the network structures transformation in governance has been confirmed, it enables further methodological

elaborations in the systemic analysis applicable to the development of economic ecosystems.

References

1. Balli, A. (2020). Digital entrepreneurship and digital entrepreneurship approach in Turkey: Ankara case. *Journal of Business Research-Tur*, 12(2), 1058–1071. <https://doi.org/10.20491/isarder.2020.895>
2. Brinkman, J. (2015). *Waste to wealth. Creating advantage in a circular economy*. <https://clck.ru/Z47mu>
3. Boccaletti, S., Latora, V., Moreno, Y., Chavez, M., & Hwang, D.-U. (2006). Complex networks: Structure and dynamics. *Physics Reports* 424, 175–308. <https://doi.org/10.1016/j.physrep.2005.10.009>
4. Cusumano, M. (2020). *The bigger some platforms get, the more money they lose, MIT Sloan Experts/Platform Strategy*. <https://mitsloan.mit.edu/experts/bigger-some-platforms-get-more-money-they-lose>
5. Evans, P., & Gawer A. (2016). *The rise of the platform enterprise*. https://www.thecge.net/app/uploads/2016/01/PDF-WEB-Platform-Survey_01_12.pdf
6. Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017). The circular economy – a new sustainability paradigm? *Journal of Cleaner Production*, 143, 757–768. <https://doi.org/10.1016/j.jclepro.2016.12.048>
7. Griessbach, L., & Ettl, K. (2020). The entrepreneurial ecosystem and its impact on female managers in transition economies: The case of Georgia. *Journal of East European Management Studies, Special Issue: SI*, 150–171.
8. Hansen, B. (2019). The digital revolution—Digital entrepreneurship and transformation in Beijing. *Small Enterprise Research*. <https://doi.org/10.1080/13215906.2019.1570321>
9. Karpinskaya, V. A. (2018). Ecosystem as a unit of economic analysis. Systemic problems of domestic mesoeconomics, microeconomics, enterprise economics. In *Proceedings of the 2nd Conference of the Department of Modeling of Production Facilities and Complexes of the CEMI RAS. Issue 2*, 125–141. Moscow, CEMI RAS.
10. Kleiner, G. B. (2019). The economy of ecosystems: A step into the future. *Economic Revival of Russia*, 1(59), 40–45.
11. Lim, J. (2011). Networked governance: Why it is different and how it can work. *Ethos*, 9, 19–26. <https://clck.ru/Z47r2>
12. Mazhitova, S. K., Dzhazykbaeva, B. K., Denisov, I. V., Polozhishnikova, M. A., & Petrenko, E. S. (2020). Business management: “ecosystem” as a new representation of economic relations. *Journal of Economics, Entrepreneurship and Law*, 10(3), 601–614.
13. McKinsey. (2018). *Digital strategy*. <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-strategy-and-corporate-finance-blog/if-youre-not-building-an-ecosystem-chances-are-your-competitors-are>
14. Moazed, A. (2021). *Platform business model*. https://www-applicoinc.goog/blog/what-is-a-platform-business-model/?_x_tr_sl=en&_
15. Muller, E., & Peres, R. (2019). The effect of social networks structure on innovation performance: A review and directions for research. *International Journal of Research in Marketing*, 36(1), 3–19. <https://doi.org/10.1016/j.ijresmar.2018.05.003>
16. OECD. (2020). *The role of online platforms in weathering the COVID-19 shock*. <https://www.oecd.org/coronavirus/policy-responses/the-role-of-online-platforms-in-weathering-the-covid-19-shock-2a3b8434/>
17. Provan, K., & Kenis, P. (2008). Modes of network governance: Structure, management, and effectiveness. *Journal of Public Administration Research and Theory*, 18(2), 229–252. <https://doi.org/10.1093/jopart/mum015>

18. Rochet, J., & Tirole, J. (2006). Two-sided markets: A progress report. *RAND Journal of Economics*, 37(3), 645–667.
19. Satalkina, L., & Steiner, G. (2020). Digital entrepreneurship and its role in innovation systems: A systematic literature review as a basis for future research avenues for sustainable transitions. *Sustainability*, 12, 2764. <https://doi.org/10.3390/su12072764>
20. Simchenko, N. A., Tsohla, S. Y., & Burlay, E. M. (2019). Principles of cross-sectoral network interaction between structures in the digital economy. *Advances in Economics, Business and Management Research*, 83, 50–53. <https://doi.org/10.2991/cssdre-19.2019.10>
21. Shore, J., Bernstein, E., & Lazer, D. (2015). Facts and figuring: An experimental investigation of network structure and performance in information and solution spaces. *Organization Science*, 26(5), 1432–1446. <https://doi.org/10.1287/orsc.2015.0980>
22. Zhu, F., & Iansiti, M. (2019). Why some platforms thrive and others don't. *Harvard Business Review*, 1, 118–125.