Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5, 103-112
2024
Publisher: Learning Gate
DOI: 10.55214/25768484.v8i5.1634

Assessing and mitigating transfer gaps through ecosystem interactions

Tatiana Gileva[1*], Margarita Galimova[2], Rail Khussamov[3], Timur Galimov[4]
[1]Ufa University of Science and Technology, Ufa, Moscow Financial University under the Government of the Russian Federation, Moscow, Russia; t-gileva@mail.ru (T.G.).
[2]Ufa University of Science and Technology, Ufa, Russia; polli66@mail.ru (M.G.).
[3]Moscow Financial University under the Government of the Russian Federation, Moscow, Russia; karabure@mail.ru (R.K.).
[4]Moscow Financial and Industrial University "Synergy", Moscow, Russia; galimovtimur45@gmail.com (T.G.).

Abstract: The purpose of this paper is to determine the most appropriate model of cooperation between an enterprise and the innovation ecosystem of the territory based on the assessment of its readiness to implement joint innovation activities. One of the requirements necessary for the effectiveness of innovation activity is to ensure the continuity of innovation processes along the entire value chain. The peculiarities of different organizations and different levels of readiness of ecosystem participants for innovation activities lead to ambiguity in the choice of possible options for partnership interactions. The paper presents a scheme of development for the territory's innovation ecosystem based on the concept of a minimum viable ecosystem. The concept of transfer gap is introduced as a violation of the continuity of the process of transfer (transfer) of the results of innovation activity along the entire value chain, which does not allow to obtain a competitive result (an innovative product) and/or bring it to the consumer within a competitive timeframe. Researchers identify two components of the transfer gap: technological and managerial. We developed indicators and scales for their assessment. On the basis of analyzing the interests and risks of participants in innovation processes in all links of the innovation chain, the possibilities of the innovation ecosystem to dampen transfer gaps are identified. We form the model of overcoming transfer gaps on the basis of partnership interactions.

Keywords: *Collaboration models, Innovation ecosystem, Innovation process' actors, Interests and risks, Partnership, Role dynamics, Transfer gap.*

1. Introduction

The studies conducted in the field of adaptation of the territory's innovation infrastructure to the digital environment allow us to conclude that the format of functioning of the regional innovation system that corresponds to modern conditions is an innovation ecosystem [1-3]. In this case, innovation infrastructure becomes an organic part of the ecosystem, realizing its functions to create conditions for successful innovation activity due, first, to the composition of ecosystem participants, and, second, through the dynamic role structure and various models of cooperation between them.

A review of the literature shows that currently there is no unified approach to defining the concept of an innovation ecosystem and no clear distinction between different types of ecosystems. Thus, along with innovation ecosystems, industrial [4], partnership [5], and entrepreneurial ecosystems [6, 7], as well as startup ecosystems [8] are relatively independent objects of research. Simultaneously, the definitions and participant compositions of these ecosystems often closely resemble each other, with the primary distinction being the focus on the range of tasks for resolution. A comparative analysis of studies on the formation and activities of innovation, entrepreneurship, and other types of ecosystems allows us to draw the following conclusions:

History: Received: 3 May 2024; Revised: 22 August 2024; Accepted: 5 September 2024; Published: 13 September 2024
* Correspondence: t-gileva@mail.ru

First, an innovation ecosystem is a network of different stakeholders that are connected by both competitive and cooperative relationships and co-create innovative value using an open approach [9]. It integrates all other types of ecosystems in a multi-level network format. The structure of the innovation ecosystem represents an equal interaction of actors with different levels of integration, from individual enterprises and organizations, joint ventures and alliances, to clusters, digital platforms, and ecosystems (entrepreneurial, partnership, industry, etc.). Budden and Murray [10] present the innovation ecosystem framework that supports this.

Second, the composition of innovation ecosystem participants is determined by the essence of the innovation process, with full coverage of all stages of the innovation life cycle. Ecosystem participants fulfill different roles depending on the tasks at hand. The dynamic role structure of ecosystem participants (actors) is the basis of its functioning. At the same time, one ecosystem participant can fulfill several roles simultaneously, the composition of which may change over time [11].

Third, the innovation ecosystem of the territory falls under the digital category, with a digital platform serving as its core. At the same time, the innovation ecosystem may include several platforms, i.e., it is "multicore" [2].

Fourth, recently, there has been an increasing shift in the focus of ecosystem research from defining their essence and structure to finding effective business and collaboration models [9]. The development of the collaboration model follows the principles of open innovation, value co-creation, competitive cooperation [12], and hyper-collaboration [13].

Fifth, for traditional companies, the ecosystem is a way to maintain a competitive position in the business and face challenges from digital competitors, in particular by preventing customers from switching to competitors [14]. However, in doing so [15],

- 39% of companies do not have a clear strategy for managing partner relationships.
- More than half (60-65%) of strategic partnerships fail for common reasons, including unrealistic expectations, failure to align goals, and a lack of trust or communication.
- When executives share data in their ecosystems, 77% do so with restrictions due to concerns about data security.

These facts confirm the importance of solving the problem of developing effective ecosystem cooperation models. Decision-making about interaction with ecosystems, including the innovation ecosystem of the territory, becomes an important strategic choice for each enterprise [16]. At the same time, the nature of interactions largely depends on its level of readiness to implement partnership interactions and on its readiness to work in the digital innovation environment as a whole [2]. As a result, the purpose of this article is to determine the most appropriate model of cooperation between an enterprise and the innovation ecosystem of the territory based on the assessment of its readiness to carry out joint innovation activities.

2. Methods

The development of an innovative ecosystem of the territory, based on interaction, complementarity, and joint development of ecosystem participants (actors), should be carried out taking into account the analysis of their capabilities and the maximum use of established mechanisms and models of interaction, their expansion, and their deepening on the basis of the formation of ecosystem thinking in accordance with the philosophy of "outside-in" [13]. Since the process is iterative, it seems appropriate to use the concept of a minimum viable ecosystem as a methodological framework for the study [17]. Figure 1 visualizes the conceptual scheme of territory's innovative ecosystem development.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 103-112, 2024
DOI: 10.55214/25768484.v8i5.1634

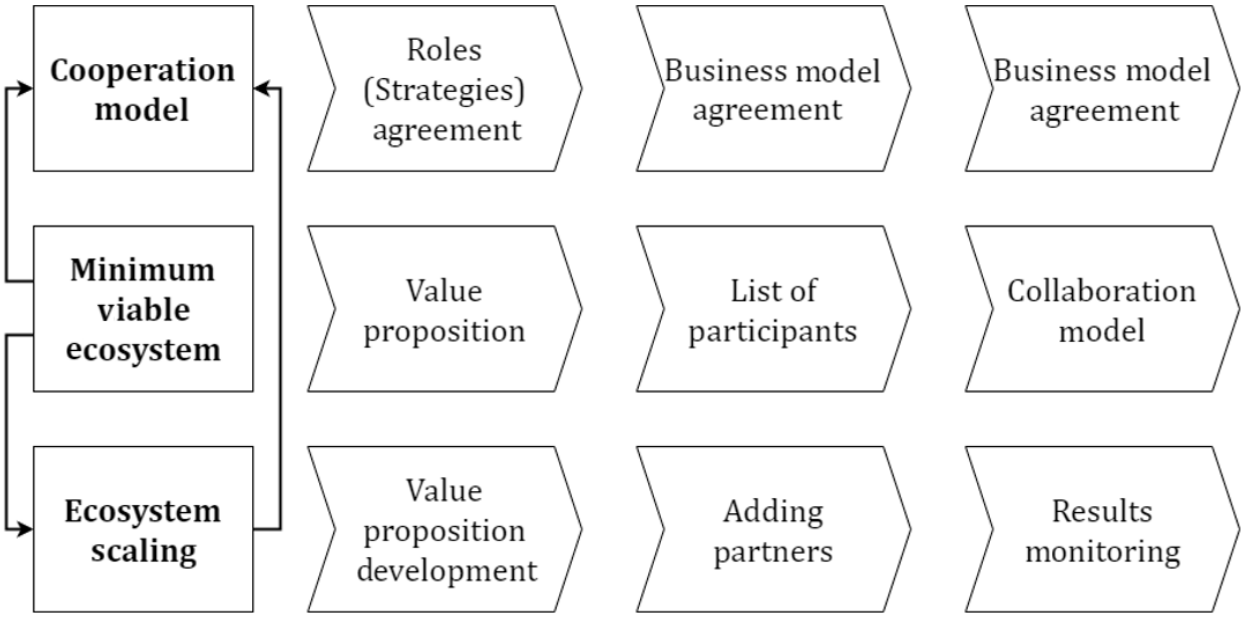

Figure 1.
Conceptual scheme of development of the territory's innovation ecosystem in the digital environment.

We construct the research design based on the analysis,

- First, let's examines the role structure of the innovation ecosystem. he role structure of the innovation ecosystem;
- Secondly, businesses are prepared to innovate and establish collaborations.

To date, there has been a fair amount of research in the area of defining the roles required for successful ecosystems. The most enlarged is the identification of three groups of roles: aggregator, orchestrator, and partner [18]. Within the scope of this paper, the partner role group is of interest. Partners in an ecosystem can differ in the nature of the tasks they perform. For example, a group of partners forms the offer, and a group of partners ensures the work of the platform as the core of the ecosystem [18]. The study [11] proposes the most detailed characterization of the role structure, focusing on the tasks of the innovation ecosystem. A total of 23 roles, organized into several groups, are identified.

We often use matrix models to recommend the most appropriate type of partnership. For example, Lanzolla and Markides [19] recommend selecting partners based on the importance of their data, operational, and resource capabilities. According to different combinations of the selected parameters, four types of partners are distinguished: companions, complementors, suppliers, and strategic partners. Depending on the level of integration and the nature of the partnership, Deloitte analysts [20] distinguish such types of partners as Sales Partners, Delivery Leaders, Ecosystem Pioneers, and Cocreators, which are strategic partners that actively collaborate in the creation and delivery of customer-centric products and services. In defining the collaboration model in Panetta [21] the benchmarks are the strategic and innovative contributions of the potential partner, and the possible roles (archetypes) are: service provider, business partner, trusted ally, and outsider. However, how to assess the level of strategic and innovative contribution in this model remains an open question.

To test the readiness of a potential participant to work in the ecosystem, Accenture analysts [18] propose to use the Ecosystem Capability Index, which shows the capabilities of enterprises in six dimensions: strategy/vision, culture, talent, architecture/collaboration building, technological fit, and innovation. An approach to assessing an enterprise from the perspective of its readiness to cooperate is presented in Tolstykh, et al. [4]. The authors propose two areas of assessment: cooperation maturity

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 103-112, 2024
DOI: 10.55214/25768484.v8i5.1634

(assessed by means of a detailed set of indicators in terms of technical, technological, and managerial maturity) and participants' aspirations for cooperation (assessed by expert judgment). researchers are also developing models to assess an enterprise's readiness for innovation. For example, Boston Consulting Group (BCG) has developed the i2i Innovation Benchmarking Tool to assess the readiness of a company and its innovation programs to operate at a high level of performance [22].

The analysis of the theory and practice of innovation activity implementation has shown that its inefficiency is often caused by gaps in the value chain, arising both between different participants in the innovation process and within individual organizations. Jasinski [23] and Shmeleva, et al. [24] named weak communication between science and business and high level of organizations' closedness for continuous knowledge transfer as the main reasons for such gaps. The authors Kim, et al. [25] and Simms and Frishammar [26] name such classic problems as lack of necessary competencies, including, at the stage of technology transfer from developer to customer, lack of money, lack of market-oriented marketing, commercialization strategy, or experience, as barriers to successful technology commercialization. Paredes-Leon, et al. [27] additionally emphasize the factors of choosing inefficient partners, risks of information leakage, inaccessibility of innovation infrastructure and resources, and inadequacy of decision-making tools to meet new requirements: low speed and sometimes inability to process large amounts of data.

Thus, the potential unevenness of the development of participants in the innovation process necessitates an assessment of their level of readiness to cooperate in the innovation sphere, which will determine both the format of partnership interactions among participants in the innovation ecosystem and their role in the ecosystem.

3. Results and Discussion

It is proposed to use the continuity of the innovation process as a basic benchmark that determines the effectiveness of interactions between the participants in the innovation system. In this regard, in order to solve the problem of choosing the format of partnership interactions, we will introduce the concept of transfer gap, which is understood as a violation of the continuity of the process of transfer (transfer) of the results of innovation activity along the entire value chain, which does not allow to obtain a competitive result (an innovative product) and (or) bring it to the consumer within a competitive timeframe. Companies widely use gap assessment to gauge their preparedness for working in the digital environment [2]. Based on the results of the analysis, and taking into account the requirements of the digital environment, two enlarged areas of transfer gap assessment are identified: technological gap and managerial gap. We have chosen the following parameters as evaluation criteria:

- For the technology gap, technologies and processes, infrastructure, products and services, and data handling;
- For the managerial gap, consider personnel, organizational culture, strategy, financial and economic potential, and readiness of the enterprise to implement partnerships.

We developed scales for each parameter, focusing on ensuring the continuity of the process of transferring the results of innovation activities across the entire value chain, to enhance the validity of the assessment based on empirical analysis. When developing the scales, a four-level scale was used: zero, initial, basic, and advanced levels.

At a low level of technological and managerial readiness among individual participants in the innovation process, overcoming transfer gaps is possible through interaction with other participants in the ecosystem, including those performing the functions of infrastructural support for the innovation process. The interests and risks of each group of participants determine the possibilities for the innovation ecosystem to dampen transfer gaps at different stages of the innovation process (Table 1).

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 103-112, 2024
DOI: 10.55214/25768484.v8i5.1634

Table 1.
Opportunities of the innovation ecosystem to dampen transfer gaps.

Interests of participants in the innovation process (Innovation chain)	**Risks of participants (Discontinuities) in transferring the results of the innovation process**	**Opportunities of the innovation ecosystem**
Innovation chain link: Customer - fundamental research (FR)		
Resource: Existing scientific knowledge, research base, human resources Result: New fundamental knowledge Interest: Intrinsic motivation, academic status, rewards	Risks to the customer: - Lack of or undeveloped environment for FR; - Poor market communication risks to FR: - Loss of academic status and future grants in case of failure; - Absence or territorial remoteness of the consumer	Research institutes, scientific and technical information centers science cities grants technology scouting
Link: Fundamental research (FR)- Applied research (AR)		
Resource: New applied knowledge, IP rights Result: Set of working documentation for production development, prototype (Minimum viable product), IP rights Interests: IP clearance and protection, quick access to resource base, overcoming the valley of death, rewards, status	Risks to FR: - Loss of control / Rights over IP; - Reputational damage; - High transaction costs Risks to AR: - Lack of demand for results; - "Valley of death." - Inaccessibility of laboratory and testing facilities	Business incubators Business accelerators Technoparks Startups SMEs - small innovative Enterprises Technology scouting Patent protection
Link: Applied research (AR) - Experimental development (ED)		
Resource: existing scientific knowledge, research base, human resources, intellectual property (IP) rights Result: New applied knowledge, intellectual property rights Interest: quick access to resource base, control of IP right, remuneration, status	Risks to AR: - Loss of control / Rights over IP; - reputational damage; - High transaction costs Risks to ED: - Lack of demand for results; - "Valley of death." - Inaccessibility of laboratory and testing facilities	Research institutes, science parks technoparks Crowdsourcing platforms Grants Patent research
Link: Experimental development (ED) - Pilot production (PP)		
Resource: Set of working documentation for production development, prototype, IP rights Result: Pilot batch, set of working documentation for production preparation, production model Interests: IP control/rights, minimum transaction costs, income from engineering services, sale of rights (Patents, licenses)	Risks to ED: - Loss of control / Rights over IP; - High transaction costs Risks to the PP: - Inaccessibility of laboratory and testing facilities, production sites; - Lack of resources (Including financial resources); - Lack of demand	Startups, small innovative enterprises Laboratories, experimental sites Shared-use centers Test sites Cluster Technology transfer center
Link: Pilot production (PP)- Manufacturing		
Resource: Production model/Business model, IP rights/License, pilot batch,	Risks to PP: - Loss of control / Rights over IP;	Scientific and educational center

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 103-112, 2024
DOI: 10.55214/25768484.v8i5.1634

Interests of participants in the innovation process (Innovation chain)	Risks of participants (Discontinuities) in transferring the results of the innovation process	Opportunities of the innovation ecosystem
pre-production working documentation set, production model Result: Innovative product/Service, IP-based work, business model Interests: IP control/Rights, minimal cost to set up/Rebuild a business, rapid uptake and market entry, scalability, sustainable revenue streams, embedding in global technology chains	- High transaction costs; - Technology development costs Risks to Manufacturing: - Costs of restructuring / Setting up the business; - Lack of resources; - Difference in the capacity of partners in the innovation chain; - The gap between the requirements of the consumer and the producer; - Finalization costs	Consortium Cluster Strategic alliances Cooperative and integration structures Digital technology transfer platform
Link: Production - Sales		
Interest: Sustainable intermediary income Resource: Business model, product Result: Sustainable sales channels	Risks to manufacturing: - High transaction costs; - Low delivery speed Risks to sales: - Channel costs; - Low level of readiness to purchase innovative products	Marketplaces Digital technology transfer platform Marketing agencies

The nature of interactions in an innovation ecosystem largely depends on the role played by each of its participants. In addition to the functions performed, the choice of role is influenced by the maturity levels of the participants and the ecosystem as a whole [2].

The configurator of possible roles for an enterprise as an actor in the innovation ecosystem is presented in Table 2.

Table 2.
Enterprise ecosystem roles configurator.

Ecosystem role		Enterprise readiness level		
		Low	Average	High
Ecosystem maturity level	High	Recipient	Realizer or donor	Collaboration designer
	Average	Recipient	Co-evolution zone	Task provider or strategist
	Low	"Dead zone"	Achiever	Pilot or donor

Table 3 presents the final model for choosing viable options for ecosystem interactions based on the form (technological, management) and size of the transfer gap.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 103-112, 2024
DOI: 10.55214/25768484.v8i5.1634

Table 3.
A model for bridging transfer gaps through partnerships.

Readiness levels		Technology readiness level			
		Zero	**Elementary**	**Basic**	**Advanced**
Managerial readiness level	Zero	"Dead zone" Crowdfunding platforms Coworking spaces Universities	Recipient Business incubators Shared-use centers Universities	Recipient Business incubators Business accelerators Startups Technology transfer centers	Co-evolution Small innovative enterprises Consortium Clusters
	Elementary	Recipient Consortia Crowdfunding platforms Coworking spaces Universities	Recipient Small innovative enterprises, startups Shared-use centers Technoparks Innovation promotion funds	Co-evolution Business gas pedals Small innovative enterprises technoparks Test sites Innovation promotion funds	Realizer/Donor Scientific and educational centers Clusters Venture capital funds
	Basic	Recipient Business incubators Shared-use centers Crowdfunding platforms	Co-evolution Business accelerator Technology transfer centers Technoparks Test sites Innovation promotion funds	Realizer/Donor Clusters Venture capital funds Scientific and educational centers	Donor / Collaboration Designer Digital technology Transfer platform
	Advanced	Recipient Business incubators Technoparks Shared-use centers	Recipient/Achiever Consortium Clusters	Collaboration designer Scientific and educational centers Digital technology transfer platform	Orchestrator / Collaboration designer" Digital technology transfer platform

The model makes it possible to establish benchmarks regarding the potential ecosystem role of an innovation process participant (Table 2) and select innovation infrastructure objects, interaction with which will increase its level of technological and/or managerial readiness to carry out innovation activities. The proposed model is a step-by-step integration of two types of models:

- Structured models for assessing innovation (or digital) maturity, an example of which is presented in Demir [28];
- Matrix positioning models, based on the parameters of the position model, enable the formation of the recommendations for the most appropriate actions for each position. A classic example of such models are strategic portfolio analysis matrices (BCG, McKinsey, etc.). In terms of defining partner roles in the ecosystem, examples of such models include [19-21].

The features of the model for overcoming transfer gaps developed by the authors of this article are:

- Emphasis on the continuity of the innovation process as a key factor in innovation performance. We use the concept and evaluation of transfer gaps to guide the selection of partnership interactions.
- A set of evaluation scales was developed, taking into account the peculiarities of innovation activities in the digital environment, to improve the validity of the evaluation.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 103-112, 2024
DOI: 10.55214/25768484.v8i5.1634

- Taking into account the interests and risks of participants in innovation processes along the entire value chain when determining the capacity of the innovation ecosystem to overcome transfer gaps.
- Taking into account the dynamics of ecosystem roles and their dependence on the correlation between the maturity levels (readiness) of individual participants and the innovation ecosystem as a whole,

The proposed model has several limitations.

- Expert assessment of a wide range of parameters of technological and managerial transfer gaps requires the involvement of highly qualified experts.
- Recommendations on the direction of ecosystem interactions are not unambiguous, so the final choice may require further analysis and discussion.
- The model does not show the interconnection and sequential evolution of ecosystem roles, making it difficult to form a trajectory of the enterprise's development in the long term.

Overcoming the highlighted limitations implies the need for further research.

4. Conclusions

We introduce the concept of transfer gaps to characterize the factors that disrupt the continuity of the innovation process. We study the interests and risks of different groups of participants along the entire chain of innovation value creation, which lead to two types of transfer gaps: technological and managerial. Based on the causes and forms of manifestation of gaps, parameters and scales for their assessment are defined.

The innovation ecosystem demonstrates its potential to mitigate transfer gaps. A model is proposed that allows for a reasonable choice of partners depending on the levels of technological and managerial readiness of the participants in the innovation chain, taking into account the characteristics and capabilities of entities representing the innovation infrastructure within the ecosystem.

The use of this model will allow specific participants in the innovation ecosystem to choose the most appropriate way to overcome their transfer gaps and eliminate obstacles in the implementation of their innovation activities. The result for the innovation ecosystem as a whole will be the restoration of the continuity of the innovation process as a necessary condition for the effectiveness of innovation activity in the territory.

Focusing on the idea of a minimally viable ecosystem highlights how interaction processes are iterative and how ecosystem roles are always changing. Because of this, it is important to regularly look at the directions and formats of interaction between actors in the innovation ecosystem.

As a direction for further research, we consider the development of a model for the formation of conjugate development trajectories among participants in the innovation ecosystem, ensuring the minimization of transfer gaps along the entire value chain.

Funding:

This research is supported by Russian Science Foundation (Grant number: 23-28-00395).

Institutional Review Board Statement:

Not applicable.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Competing Interests:

The authors declare that they have no competing interests.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 103-112, 2024
DOI: 10.55214/25768484.v8i5.1634

Authors' Contributions:

All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

References

[1] V. V. Akberdina and E. V. Vasilenko, "Innovation ecosystem: Theoretical overview of the subject area," *Journal of Economic Theory*, vol. 18, no. 3, pp. 462-473, 2021.

[2] T. A. Gileva, M. P. Galimova, and R. R. Khussamov, "Methodology for adaptation and development of innovative infrastructure of a territory in a digital environment," *Problems of Economics and Legal Practice*, vol. 19, no. 3, pp. 192-200, 2023.

[3] E. D. Dobrova, "The role of innovation infrastructure in ensuring the formation of the digital economy of Russia," *Issues of Innovative Economics*, vol. 2, pp. 485-506, 2021.

[4] T. Tolstykh, N. Shmeleva, L. Gamidullaeva, and V. Krasnobaeva, "The role of collaboration in the development of industrial enterprises integration," *Sustainability*, vol. 15, no. 9, p. 7180, 2023. https://doi.org/10.3390/su15097180

[5] D. Anderson, N. Truesdale, and K. Gallardo, "Building high impact partner ecosystems," Research Report, Accenture, 2021.

[6] N. V. Trifonova and A. S. Proshkina, "Entrepreneurial ecosystem: main characteristics," *News of the St. Petersburg State Economic University*, vol. 5-1, pp. 86-90, 2022.

[7] S. Stephens, C. McLaughlin, L. Ryan, M. Catena, and A. Bonner, "Entrepreneurial ecosystems: Multiple domains, dimensions and relationships," *Journal of Business Venturing Insights*, vol. 18, p. e00344, 2022. https://doi.org/10.1016/j.jbvi.2022.e00344

[8] The Global, "The global startup ecosystem report - 2023," Retrieved: https://startupgenome.com/all-reports. 2023.

[9] O. Granstrand and M. Holgersson, "Innovation ecosystems: A conceptual review and a new definition," *Technovation*, vol. 90, p. 102098, 2020. https://doi.org/10.1016/j.technovation.2019.102098

[10] P. Budden and F. Murray, "Strategically engaging with innovation ecosystems," Retrieved: https://sloanreview.mit.edu/article/strategically-engaging-with-innovation-ecosystems/. 2022.

[11] F. Schutz, A. Muschner, R. Ullrich, and A. Schafer, "Innovation ecosystem strategy tool," Retrieved: https://www.cerri.iao.fraunhofer.de/content/dam/iao/cerri/de/Leistungsspektrum/InnovationEcosystemStrategies/CeRRI_Innovation%20Ecosystem%20Strategy%20Tool_en.pdf. 2021.

[12] O. Vihansky and D. Katalevsky, "Competitive advantage in the era of digitalization," *Russian Journal of Management*, vol. 20, no. 1, pp. 5– 27, 2022.

[13] M. Kolk, R. Eagar, C. Boulton, C. Mira, and I. Schutz, "Ecosystem innovation–The growth of hyper-collaboration in a fast-moving world," *Prism*, vol. 1, pp. 12-25, 2017.

[14] The Ecosystem, "The ecosystem playbook: Winning in a world of ecosystems," Retrieved: https://www.mckinsey.com/~/media/mckinsey/industries/financial%20services/our%20insights/winning%20in%20a%20world%20of%20ecosystems/winning-in-a-world-of-ecosystems-vf.ashx. 2019.

[15] I. Beech, "112 stats you never knew about strategic partnerships," Retrieved: https://breezy.io/blog/strategic-partnership-stats. 2020.

[16] T. A. Gileva, A. V. Babkin, and G. A. Gilev, "Development of a strategy for digital transformation of an enterprise taking into account the capabilities of business ecosystems," *Economics and Management*, vol. 6, pp. 629-642, 2020. https://doi.org/10.35854/1998-1627-2020-6-629-642

[17] Ecosystems, "Ecosystems 2021 – what will the future bring? Deloitte," Retrieved: https://www2.deloitte.com/content/dam/Deloitte/ch/Documents/financial-services/deloitte-ch-fs-en-summary-ecosystems-2021.pdf. 2019.

[18] M. Lyman, R. Ref, and O. Wright, "Corner stone of future growth: Ecosystems," Retrieved: https://www.slideshare.net/slideshow/cornerstone-of-future-growth-ecosystems/127222126. 2018.

[19] G. Lanzolla and C. Markides, "How to choose the right ecosystem partners for your business," Retrieved: https://hbr.org/2022/03/how-to-choose-the-right-ecosystem-partners-for-your-business. 2022.

[20] M. Schroeck, A. Kwan, J. Gill, and D. Sharma, "Evolving partner roles in Industry 4.0: A partner ecosystem can generate Customer-ready solutions and accelerate time to market," Retrieved: https://www2.deloitte.com/us/en/insights/focus/industry-4-0/partner-ecosystem-industry-4-0.html. 2020.

[21] K. Panetta, "Build alliances to thrive in business ecosystems, Gartner Insights, Information Technology," Retrieved: https://www.gartner.com/smarterwithgartner/build-alliances-to-thrive-in-business-ecosystems. 2019.

[22] Overcoming the Innovation Readiness Gap, "Overcoming the innovation readiness gap," Retrieved: https://web-assets.bcg.com/93/a7/7d03fff34baa993929c81f220e72/bcg-most-innovative-companies-2021-apr-2021-r.pdf. 2021.
[23] A. H. Jasinski, "Barriers for technology transfer: The case of a country in transition," *Journal of Technology Management in China*, vol. 4, no. 2, pp. 119-131, 2009. https://doi.org/10.1108/17468770910964984
[24] N. Shmeleva, L. Gamidullaeva, T. Tolstykh, and D. Lazarenko, "Challenges and opportunities for technology transfer networks in the context of open innovation: Russian experience," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 7, no. 3, pp. 1–24, 2021. https://doi.org/10.3390/joitmc7030197
[25] M. Kim, H. Park, Y. Sawng, and S. Park, "Bridging the gap in the technology commercialization process: Using a three-stage technology–product–market model," *Sustainability*, vol. 11, no. 22, p. 6267, 2019. https://doi.org/10.3390/su11226267
[26] C. Simms and J. Frishammar, "Technology transfer challenges in asymmetric alliances between high-technology and low-technology firms," *Research Policy* vol. 53, no. 3, p. 104937, 2024. https://doi.org/10.1016/j.respol.2023.104937
[27] F. Paredes-Leon, M. Rodriguez-Salvador, and P. F. Castillo-Valdez, "Evaluating the impact of technology transfer from the perspective of entrepreneurial capacity," *Foresight and STI Governance*, vol. 17, no. 1, pp. 80–87, 2023. https://doi.org/10.17323/2500-2597.2023.1.80.87
[28] F. Demir, "A strategic management maturity model for innovation," *Technology Innovation Management Review*, vol. 8, no. 11, pp. 13-21, 2018. https://doi.org/10.22215/timreview/1196

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 103-112, 2024
DOI: 10.55214/25768484.v8i5.1634