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**SLESAREV Maxim**

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Academic supervisors:
Yelena KALYUZHNOVA
Professor

Olga M. KHOTYASHEVA
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УНИВЕРСИТЕТ РЭДИНГА

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**СЛЕСАРЕВ Максим Александрович**

# БИЗНЕС-ИНКУБАТОРЫ КАК ЭЛЕМЕНТ ПРЕДПРИНИМАТЕЛЬСКОЙ ЭКОСИСТЕМЫ В РАЗВИВАЮЩИХСЯ СТРАНАХ: ОПЫТ РОССИИ

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Научные руководители:
КАЛЮЖНОВА Елена
доктор философии (Ph.D.), профессор

ХОТЯШЕВА Ольга Михайловна
кандидат экономических наук, доцент

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## ABSTRACT

The thesis analyses the dynamics of business incubation in Russia, its potential and prospects in the context of developing entrepreneurial ecosystem (EE) within the rapidly changing environment.

The theoretical background of the term “entrepreneurial ecosystem” is studied, including its framework, players and roles, key performance indicators as well as regulatory tools which can be used to develop such ecosystems with special focus on business incubation. To build a framework, the author has conducted a literature review analyzing both conceptual and case-study papers on entrepreneurial ecosystems and expanded it with additional research on business incubators.

Comparative analysis of the American, European, Indian, and Chinese models of business incubators in the context of EEs is conducted to describe the features of country-specific EEs and see how they reflect the local economic and market situation. Different cases of business incubators development in different countries are explored (both developed and developing) as well as the areas to identify similarities and differences in their activities and outputs.

The development specifics and trends of business incubation in Russian Federation for about a decade were revealed through the analysis of consecutive surveys conducted from 2012 to 2020. The study shows that during the period in question business incubators in Russia have undergone a few external positive changes, including increased square space, staff quantity, average annual number of residents, annual budget, etc. At the same time, the total number of business incubators also significantly dropped which means that all the above positive changes do not reflect the growth of the business incubation market and the scaling of the most effective structures, but on the contrary, its optimization.

The research has several implications. First, it shows the real state and dynamics in business incubation in Russia thanks to the analysis of complex surveys conducted by the author in 2012, 2016 and 2020. Those surveys contain a wide range of questions covering different important aspects of business incubators’ activities including BI

program, clients, environment, effectiveness, and finance. Practically this is the only study covering business incubation in Russia with that level of detail.

Secondly, the research analyses the influence of the latest events like COVID-19 and the latest trends such as the rapid development of intra-corporate business accelerators on the state of business incubation in Russia to understand the reasons of the recent decline in quantity of BIs and possible ways out.

In addition, the comparative analysis of business incubators in the context of EEs in different countries (USA, Europe, India, China) conducted in the paper helps to discover best practices and possible solutions which could fit Russian market and foster future growth.

# DEDICATION

This thesis is dedicated to my parents, Tatiana Slesareva and Alexander Slesarev, who encouraged me a lot on this way,

To any people, the future generation and policy makers of Russian Federation and any other country which can benefit from results of this work.

## ACKNOWLEDGEMENT

First and foremost, I would like to convey my sincere gratitude to my supervisors Professor Olga Khotyasheva (MGIMO University) and Professor Yelena Kalyuzhnova (Henley Business School) for their endless intellectual support, advice, encouragement, and commitments, without which I could not have made it through some difficult times during my academic research path. My sincere and special thanks go to Professor Irina Heim who have been working with me for the three years of my journey at Henley for her valuable feedback and guidance, which was of great value in shaping my thesis. I also want to thank Professor Maxim Belitski and Professor Tatiana Rowson, who impacted a lot my approach and mindset.

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I want to thank all the members of staff of the Leadership, Organisation and Behaviour, especially Alex Baker, who have been extremely friendly and supportive through my PhD journey.

Last but not least I want to acknowledge and convey my special thanks to all the participants of the surveys and in-depth interviews, representatives of Russian Business Incubators, without whose support and activity I would not have been able to make significant contributions in this study.

# DECLARATION

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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# INTRODUCTION

Entrepreneurship has always been considered as a key tool to ensure economic sustainability and growth, or "a cornerstone of economic development"[1]. That is why in corresponding literature a big focus is made on entrepreneurship support issues as well as creation of enabling business environment, which is true for three specific reasons.

First, studies show that smaller and younger fast-growing companies tend to contribute much more to the process of creation of new jobs. Second, the entrepreneurship support has proven to be a very diversified and dynamic field especially in terms of experiments conducted by policy makers all over the world[2] and big amounts of empirical data gathered in each case. Third, the very concept of idea and innovation commercialization, which is once again best performed by small and medium sized enterprises (SMEs), establishes a direct link between entrepreneurship support and encouraging development of many other sectors, including military industry, inevitably leading to dividing the entrepreneurship studies into many niches of scholarly specialization[3].

Small innovative and venture enterprises face significant financial and managerial difficulties on early stages of their development, which makes it necessary to provide them with sufficient support at start. All countries choose different ways to solve this problem, but the approach in general is the same – the creation of an entrepreneurial ecosystem (EE), or an ecosystem of entrepreneurship. In Russia, a big emphasis in 2010s was made on creation of business incubators as SME support infrastructure and key player (as well as potential driver) of regional EEs. Yet, latest official data clearly shows that the number of business incubators in Russia was gradually declining over the past 5 years which makes it an interesting and important phenomenon to analyse.

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[1] Ratinho T., Amezcua A., Honig B., Zeng Z. Supporting entrepreneurs: A systematic review of literature and an agenda for research. Technological Forecasting & Social Change, 2020. 154. doi:10.1016/j.techfore.2020.119956.

[2] Gilbert B.A., Audretsch D.B., McDougal, P.P. The emergence of entrepreneurship policy // Small Bus. Econ, 2004. 22 (3–4). P. 313–323.

[3] Phan P.H., Siegel D.S., Wright M. Science parks and incubators: observations, synthesis and future research // J. Bus. Ventur. 2005. 20 (2). P. 165–182.

The aim of the research is to analyse the dynamics of business incubation in Russia, its potential and prospects in the context of developing entrepreneurial ecosystem within the rapidly changing environment.

In order to achieve the stated goal, the following objectives were set as part of the research:

(1) provide the theoretical background of the term “entrepreneurial ecosystem”, including its framework, players and roles, key performance indicators as well as regulatory tools which can be used to develop such ecosystems with special focus on business incubation;

(2) describe the role of entrepreneurial ecosystems as a factor of the development of both national economies and international entrepreneurship;

(3) conduct a comparative analysis of the American, European, Indian and Chinese models of business incubators in the context of EEs and, based on the results of the analysis, describe the features of country-specific EEs and see how they reflect the local economic and market situation;

(4) assess the development and trends of business incubation in Russian Federation from 2012 to 2020 based on the surveys and discover gaps for deeper analysis;

(5) conduct in-depth interviews with directors of selected business incubators and other stakeholders of EE in order to better understand the changes in the market and give specific recommendations concerning the best practices studied in the work that could be implemented in order to raise efficiency of business incubators in Russia and foster economic growth.

Object of this research is business incubator (BI) as a part of entrepreneurial ecosystem (EE).

The subject of this research is the state of business incubation in Russia, its potential and prospects in the context of developing entrepreneurial ecosystem and latest changes and trends in global and Russian economy.

This research adopts a descriptive qualitative research design. Descriptive study design is one of the useful approaches to describe the characteristics of the sample

studied. It is appropriate to generalize findings from the representative sample to a larger target.

The research conducted by the author as part of a Ph.D. thesis consists of two parts – a survey of business incubators to conduct a primary analysis of the development of business incubation in Russia in the context of an entrepreneurial ecosystem, and in-depth interviews with directors / representatives of Russian incubators to clarify some of the gaps that arose during the survey.

The research is based on the theoretical framework developed from the literature review on business incubation in developed and developing countries including the concept of entrepreneurial ecosystem by Acs et al. (2014), Mason & Brown (2014), Stam and Spigel (2017), Spigel (2017), Audretsch and Belitski (2017), Roundy et al. (2018), Rijnsoever (2020)[4]. In order to build a framework, the author has conducted a literature review analyzing both conceptual and case-study papers on entrepreneurial ecosystems and expanded it with additional research on business incubators. Different cases of business incubators development in different countries are explored (both developed and developing) as well as the areas to identify similarities and differences in their activities and outputs.

Business incubation market in Russia is analyzed in detail using primary and secondary data. The secondary data from InBIA (International Business Innovation Association), UKBI, World Bank infoDev and UBI Global provide us with macroeconomic data on state of business incubation development across different

[4] Acs Z.J., Autio E., Szerb L. National systems of Entrepreneurship // Global entrepreneurship and development index 2014 / Z.J. Acs, E. Autio, L. Szerb (Eds.). Springer briefs in economics. Chapter 2. P. 13–26. Heidelberg: Springer, 2015. DOI: 10. 1007/978-3-3 19- 14932-5.2; Mason C., Brown R. Entrepreneurial ecosystems and growth oriented entrepreneurship // Final Report to OECD. Paris, 2014. Vol. 30. No 1. P. 77–102; Stam E., Spigel S. Entrepreneurial ecosystems // The SAGE Handbook of Small Business and Entrepreneurship. SAGE. London, 2017; Spigel B. The relational organization of entrepreneurial ecosystems // Enterpren Theor Pract. 2017. 41(1). P. 49–72. URL: https://doi.org/10.1111/etap.12167; Audretsch D., Belitski M. Entrepreneurial ecosystems in cities: establishing the framework conditions // J Technol Tran. 2017. 42(5). P. 1030–51. URL: https://doi.org/10.1007/s10961-016-9473-8; Roundy P.T., Fayard D. Dynamic Capabilities and Entrepreneurial Ecosystems: The Micro-Foundations of Regional Entrepreneurship // The Journal of Entrepreneurship. 2019. 28(1). P. 94–120; Van Rijnsoever F.J. Meeting, mating, and intermediating: How incubators can overcome weak network problems in entrepreneurial ecosystems // Research Policy, 2020. 49(1). URL: https://doi.org/10.1016/j.respol.2019.103884.

countries and regions as well as individual cases and success stories. Also, as these associations and organizations are specialized in business incubation, they accumulate a vast knowledge base on the industry best practices, benchmarks and commonly used performance indicators.

The primary data was collected through Survey-2020 among Russian business incubators as well as in-depth interviews with representatives of selected BIs from September 2021 by December 2021. In general, the survey questions corresponds with the content of Surveys conducted in 2012 and 2016 by Fund for Innovation and Business Incubation (MGIMO University) and therefore includes data on: main strategic challenges the BI are currently facing, the age of the companies that apply to BI, type of BI, the main sources of financing, questions regarding economic climate in the region of operation, questions regarding effectiveness evaluation, industry affiliation of residents, incomes and expenditures, strategic goals and mission, BI staff and director competences, etc.

In 2019 together with United Nations Economic Commission for Europe (UNECE) the author has already conducted the pilot research on the business incubation development and entrepreneurial climate in Russia. The questionnaire covered ten leading Russian entrepreneurship support facilities (business incubators and technoparks).

The research has a number of implications. First, it shows the real state and dynamics in business incubation in Russia thanks to the analysis of complex surveys conducted by the author in 2012, 2016 and 2020. Those surveys contain a wide range of questions covering different important aspects of business incubators' activities including BI program, clients, environment, effectiveness and finance. Practically this is the only study covering business incubation in Russia with that level of detail.

Secondly, the research analyses the influence of the latest events like COVID-19 and the latest trends such as the rapid development of intra-corporate business accelerators on the state of business incubation in Russia in order to understand the reasons of the recent decline in quantity of BIs and possible ways out.

In addition, the comparative analysis of business incubators in the context of EEs in different countries (USA, Europe, India, China) is conducted in order to discover best practices and possible solutions which could fit Russian market and foster future growth.

**Viva statements:**

1. While in the world practice the level of development of business incubation directly depends on the degree of development of the entrepreneurial ecosystem, in Russia, as a result of the study, it was revealed that with the development of the entrepreneurial ecosystem in terms of the number and diversity of participants, business incubators lose their uniqueness and are forced to look for new ways of development for increasing attractiveness for startups.

2. A specific feature of the entrepreneurial ecosystem in Russia is the relative disunity of its participants; in particular, business incubators occupy a rather isolated position, which can partly be explained by the lack of system and inconsistency of state support for the ecosystem as a whole. This level of isolation is so high that most BIs pay very low attention to relatively new and very popular actors of EE like intra-corporate business accelerators which could potentially make business incubators more sustainable and attractive for startups in the case of close cooperation, but in the context of 'isolation' act as a competitor.

3. The impact of coronavirus on the field of business incubation in Russia is controversial and looks like a missed opportunity: despite partial restructuring of internal processes, revision of training programs and modernization of infrastructure, BIs in Russia generally failed to launch complex virtual business incubation programs, which can be explained by the inconsistency of state policy in the field of supporting SMEs and the implementation of anti-COVID measures in general, bureaucratic complexities and high dependence of business incubators on state funding which is now mostly shifted to local authorities.

4. While in developing countries, business incubators are approached with simple projects and they are required to create basic conditions for entrepreneurship, so, in fact, these structures create greenhouse conditions on their own (and not the market), in

developed countries, incubators are treated usually with more complex projects and business models (or for scaling existing businesses), since all the necessary conditions have already been created for running a simple (typical) business within the entrepreneurial ecosystem. This may explain the continued high mortality of startup projects that leave business incubators in developing countries, as well as, for example, the recent process of transforming many business incubators in Russia into ordinary centers providing public services for SMEs.

Each Chapter of this thesis contributes to the relevant literature and area of knowledge.

The first Chapter provides the theoretical background of the "entrepreneurial ecosystem" phenomenon. First, a set of theoretical constructions such as national innovation system (NIS), regional innovation system (RIS), cluster theory, etc. are discussed. Next section of the literature review deals with entrepreneurial ecosystem composition and analyses what components, attributes and key actors of EEs are examined by scholars and considered to be the most important, and why.

The controversial role of government as a policy maker is also discussed. Although the very concept of entrepreneurial ecosystem implies that it should be all-sufficient and independent from external support, nevertheless most researchers put government as an integral part of the ecosystem and agree that EE is not likely to become efficient without creation of necessary initial circumstances. The least investigated topics connected to EEs are studied: challenges in applying EE model to emerging markets as well as EE efficiency issues.

Chapter 2 contains a detailed comparative analysis of the American, European, Indian and Chinese models of business incubators in the context of EEs based on secondary data by the top research centres and associations in this field such as National business Innovation Association (InBIA), UKBI, World Bank infoDev, UBI Global, etc. The features of country-specific EEs are described in the context of local economic and market situation.

In Chapter 3, the current state of Russian business incubation is studied in detail. First, the generalized background is given in the form of EE key elements and features,

overall state of SME, as well as support legislation drawbacks and challenges. Next, the development specifics and trends of business incubation in Russian Federation for about a decade are revealed through the analysis of consecutive surveys conducted from 2012 to 2020, gaps and research questions for deeper study through in-depth interviews are discovered and formulated.

Finally, Chapter 4 is dedicated to the detailed explanation of in-depth interview methodology, data collection process and results discussion. The author's judgments are based on a generalization and qualitative analysis of the collected primary data and are supported by quotations from respondents of the in-depth interview. The better understanding of the changes in the market allows the author to make conclusions and give specific recommendations concerning the best practices studied in the work that could be implemented in order to raise efficiency of business incubators in Russia and foster economic growth.

Therefore, the main contributions of the thesis are as follows:

(1) in terms of theory: the least investigated in the literature topics connected to EEs in emerging economies are discussed, which are then applied to the research of Russian market and tested with quantitative and qualitative research methods.

(2) in terms of methodology: the research implies a unique approach to the analysis of business incubation via comprehensive survey list based on the InBIA international standards and tailored to the Russian market specifics.

(3) in terms of policy implications: being the only study of business incubation on the Russian market covering almost a decade from 2011 to 2020, it sheds light on the real outcomes of policymaking in that field. Also, based on the analysis of in-depth interviews with the representatives of classical and university-based business incubators the author comes up with a set of ideas and recommendations for future development of BIs in the context of entrepreneurial ecosystem and the current trends and challenges faced by incubators in Russia.

# CHAPTER 1. LITERATURE REVIEW

## 1.1. Ecosystem definition issues and allied theoretical concepts

Before the concept of entrepreneurial ecosystem (EE) was developed by scholars, the term *innovation system* (IS) was utilised to describe the internal connections between economic players pushing the economic development and innovation process[5]. Innovation system has several variations based on its scale and geography (e.g., national innovation system (NIS), regional innovation system (RIS)) and can be described as a set of elements located within national (regional) borders that interact in the production, distribution, and implementation of economically useful knowledge, as well as connections between them[6]. Focusing more on criteria for the economic utility of knowledge, Nelson identified the concept of IS as a system of national institutions whose interactions determine the effectiveness of innovation activities of national firms[7]. Finally, Metcalfe tried to summarise all the ideas connected with the phenomenon stating that innovation system is a number of enterprises involved in technology development and transfer jointly or independently[8]. He also described it as a pattern under which the state influences the innovation process. Innovation system may also be seen as a system of interdependent bodies that generates, stores, and delivers knowledge, skills and products based on new technologies.

The term "ecosystem" takes its roots in the sector of biology and can be described as a system of living organisms and a physical environment functioning as one substance[9]. It seems that Valdez was the first scholar to take an attempt of developing a theoretical framework in order to research entrepreneurship issues by applying the

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[5] Lundvall B.-Å. National Innovation Systems: Towards a Theory of Innovation and Interactive Learning. Pinter, London, 1992.

[6] Ibid.

[7] Nelson R. National Innovation Systems. A Comparative Analysis. N.Y. ; Oxford : Oxford Univ. Press, 1993.

[8] Metcalfe S. The Economic Foundations of Technology Policy: Equilibrium and Evolutionary Perspectives / P. Stoneman (ed.) // Handbook of the Economics of Innovation and Technological Change. Oxford (UK) ; Cambridge (US) : Blackwell Publishers, 1995.

[9] Rice M.P., Fetters M.L., Greene P.G. University-based entrepreneurship ecosystems: a global study of six educational institutions // Int. J. Entrepreneurship and Innovation Management. 2014. Vol. 18. Nos 5/6. P. 481–501.

ecosystem model to business processes – in the paper presented during the Small Business Institute Director's Association conference in 1988[10]. Moore first introduced the term *ecosystem* in reference to socioeconomic activities to analyse and explain how economic players and their surroundings interact and evolve together[11]. Moore established the idea of an *entrepreneurial ecosystem* as a grouping of businesses and the entities who make up their surroundings, such as suppliers and contractors, middlemen in the market, customers, and even competitors[12]. If an economy is defined by its ability to obtain greater outcomes at constant costs, then its components' reciprocal complementarity is as important in economics as it is in natural science[13].

The ideas of Moore assisted in further concept of ecosystems in different fields of economy development. For instance, the concept of *digital business ecosystem* was described[14], that is no doubt an integral part of the entrepreneurial ecosystem. In marketing and production fields, *consumer ecosystems* play vital roles in forming sets of products that complement each other and bring collateral value to the consumer. The concept of an *innovation ecosystem* was proposed by Wessner[15].

Many researchers claim that there are indeed some general principals of entrepreneurial ecosystem management backgrounded from the natural ecosystem functioning: (1) preserve and protect the existence of a given ecosystem; (2) think holistically (the individual entrepreneur in centre); (3) support self-regulation; (4) focus on weaknesses; (5) "think strategically, but act in a minimally invasive way"[16]. Furthermore, according to Isenberg, the entrepreneurial ecosystem is to deal with some faults like "lack of public priority for entrepreneurship; ambiguity in entrepreneurship

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[10] Valdez J. The entrepreneurial ecosystem: toward a theory of new business formation // Small Business Institute Director's Association (SBIDA). 1988. P. 102–119. URL: http://sbida.org/

[11] Moore J.F. Predators and prey: a new ecology of competition // Harvard Business Review, Porter. 1993. Vol. 71. No. 3. P. 75–86.

[12] Moore J.F. The Death of Competition: Leadership and Strategy in the Age of Business Ecosystems. New York : Harper Business, 1997.

[13] Ibid.

[14] Corallo A., Passiante G., Prencipe A. The Digital Business Ecosystem. Edward Elgar Publishing Limited, 2007.

[15] Wessner C.W. Entrepreneurship and the Innovation Ecosystem. Policy Lessons from the United States. The Papers on Entrepreneurship, Growth and Public Policy. Jena, Germany, 2004.

[16] Kuckertz A. Let's take the entrepreneurial ecosystem metaphor seriously! // Journal of Business Venturing Insights, 2019.

strategy objectives; unintentional undermining of entrepreneurship ambitions; inadvertent aversion of entrepreneurial finance providers; and distorted results of disorganized programs, such as an educational plan that prompts brain drain"[17].

According to Acs et al., EE is "a dynamic, institutionally embedded interaction between entrepreneurial attitudes, ability, and aspirations, by individuals, which drives the allocation of resources through the creation and operation of new ventures"[18]. Entrepreneurial ecosystem can also be described as regional agglomeration of entrepreneurial activity[19], sometimes also called *startup ecosystem*. Although analysed on the national level, EE is often stipulated as regional communities of interconnected actors[20] related to entrepreneurship. More specifically, EE is a deliberate group of economic players co-evolving towards common goals through collaborative entrepreneurial undertakings[21]. EEs are essential for fostering creativity and entrepreneurship incentives in a knowledge society[22].

According to Roundy and Fayard Entrepreneurial ecosystem is the interconnected system of forces that generate and sustain regional entrepreneurship[23]. The authors also introduced the theory of *entrepreneurial dynamic capabilities*[24]: having classified

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[17] Isenberg D.J. The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy: Principles for Cultivating Entrepreneurship. Institute of International European Affairs. Dublin, 2011.

[18] Acs Z.J., Autio E., Szerb L. National systems of Entrepreneurship // Global entrepreneurship and development index 2014 / Z. J. Acs, E. Autio, L. Szerb (Eds.). Springer briefs in economics. Chapter 2 (P. 13–26). Heidelberg: Springer, 2015. DOI:10.1007/978-3-319-14932-5.2.

[19] Acs Z.J., Stam E., Audretsch D.B., O'Connor A. The lineages of the entrepreneurial "ecosystem approach" // Small Business Economics. 2017. Vol. 49. No. 1. P. 1–10. URL: http://doi.org/10.1007/s11187-017-9864-8

[20] Brown R., Mason C. Looking inside the spiky bits: a critical review and conceptualization of entrepreneurial ecosystems // Small Business Economics. 2017. Vol. 49. No. 1. P. 11–30; Roundy P.T. "Small town" entrepreneurial ecosystems: Implications for developed and emerging economies // Journal of Entrepreneurship in Emerging Economies. 2017. Vol. 9. No. 3; Stam E. Entrepreneurial ecosystems and regional policy: a sympathetic critique // European Planning Studies. 2015. Vol. 23. No. 9. P. 1759–1769.

[21] Brown R., Mason C. Looking inside the spiky bits: a critical review and conceptualization of entrepreneurial ecosystems // Small Business Economics. 2017. Vol. 49. No. 1. P. 11–30.

[22] Link A., Sarala R. Advancing conceptualization of university entrepreneurial ecosystems: The role of knowledge-intensive entrepreneurial firms // International Small Business Journal: Researching Entrepreneurship. 2019. 37(3). P. 289–310. DOI:10.1177/0266242618821720.

[23] Roundy P.T., Fayard D. Dynamic Capabilities and Entrepreneurial Ecosystems: The Micro-Foundations of Regional Entrepreneurship // The Journal of Entrepreneurship. 2019. 28(1). P. 94–120.

[24] Ibid.

company dynamic capabilities into sensing, seizing and reconfiguring activities, they reconnected them with ecosystem main mechanisms (values, norms, human capital, social networks, support services, financial capital, local customers, etc.).

OECD proposes the following definition of an entrepreneurial ecosystem: a set of interconnected business entities (both potential and existing), entrepreneurial organizations (for example, companies, business angels, venture capitalists, banks), institutions (universities, financial authorities, public sector institutions) and entrepreneurial processes (e.g., number of new ventures, pace of entrepreneurial development, number of fast-growing companies, number of serial entrepreneurs, levels of "blockbuster companies", degree of entrepreneurial ambition (entrepreneurs' goals)), which formally and informally come together to communicate, mediate, and manage activities within the local business environment[25].

Analysis of some definitions of entrepreneurial ecosystems found in literature (see Table 1.1.1) shows that most scholars and practitioners see it as an adaptive network of interdependent actors (stakeholders) and a combination of spatially bounded material and non-material factors which interact in a way to enable productive entrepreneurship and efficient business processes. Hence, most researchers stress the importance of entrepreneurial ecosystems particularly in linking multiple stakeholders to encourage new venture growth.

Table 1.1.1 — Definitions of Entrepreneurial Ecosystem in Literature[26].

| Definition | Author(s) |
|---|---|
| "A dynamic, institutionally embedded *interaction* between entrepreneurial attitudes, ability, and aspirations, by *individuals*, which drives the allocation of resources through the creation and operation of new ventures." | Acs et al. (2014) |
| "The entrepreneurial ecosystem is a *set* of different *individuals* who can be potential or existing entrepreneurs, organizations that support entrepreneurship that can be businesses, venture capitalist, business angels and banks, as well as institutions like universities, public sector agencies and the entrepreneurial processes that occur inside the ecosystem such as the business | Mason & Brown (2014) |

[25] Mason C., Brown R. Entrepreneurial ecosystems and growth-oriented entrepreneurship. OECD. The Hague, Netherlands, January 2014. URL: https://www.oecd.org/cfe/leed/Entrepreneurial-ecosystems.pdf

[26] Compiled by author based on various sources.

| | |
|---|---|
| birth rate, the number of high potential growth firms, the serial entrepreneurs and their entrepreneurial ambition." | |
| "Entrepreneurial ecosystems can be defined as a *set* of *interdependent actors* and *factors* coordinated in such a way as to enable productive entrepreneurship in a particular territory, most commonly a large city." | Stam and Spigel (2017) |
| "Entrepreneurial ecosystems are *combinations* of social, political, and cultural elements within a region that support the development and growth of innovative startups and encourage nascent entrepreneurs and other *actors* to take the risk of starting, funding and otherwise assisting high-risk ventures." | Spigel (2017) |
| "Entrepreneurial ecosystems can be defined as a set of *interdependent players* and system-level informational, institutional and socioeconomic settings spatially bounded." | Audretsch and Belitski (2017) |
| "Entrepreneurial ecosystems can be conceptualized as a type of service ecosystem focused on promoting and sustaining entrepreneurial activities. Like service ecosystems, EEs consist of a complex and *adaptive network* of diverse *stakeholders* (e.g., entrepreneurs, investors, consumers, suppliers, and support agents)." | Roundy et al. (2018) |
| "We conceptualize the entrepreneurial ecosystem as a set of *actors* that interact and exchange resources in a *network* under an institutional regime and an infrastructure." | Rijnsoever (2020) |

Researchers agree that there is correlation between ecosystem approach and allied concepts including national and regional innovation systems, innovation clusters, industrial districts, etc.[27] For instance, all these theories are based on an assumption that in terms of competitiveness firms rely a lot on the external resources found within their region rather than internal resources. Just the same as RIS, entrepreneurial ecosystem works on a regional level[28] that is incorporated into national context[29]. *Cluster theory* focuses on benefits and savings based on colocation of entities in the same vertical industry or supply chain which usually means shared infrastructure, common clients,

[27] Stam E., Spigel S. Entrepreneurial ecosystems // The SAGE Handbook of Small Business and Entrepreneurship. SAGE, London, 2017.

[28] Spigel B. The relational organization of entrepreneurial ecosystems // Enterpren Theor Pract 2017. 41(1). P. 49–72. URL: https://doi.org/10.1111/etap.12167; Stam E. Entrepreneurial ecosystems and regional policy: a sympathetic critique // European Planning Studies. 2015. Vol. 23. No. 9. P. 1759–1769.

[29] Acs Z.J., Autio E., Szerb L. National systems of Entrepreneurship // Global entrepreneurship and development index 2014 / Z. J. Acs, E. Autio, L. Szerb (Eds.). Springer briefs in economics. Chapter 2 (P. 13–26). Heidelberg: Springer, 2015. DOI:10.1007/978-3-319-14932-5.2.

knowledge and resource sharing, lowered transactional and transportation costs, etc.[30] Nevertheless, closer comparison shows that this is not necessarily the case for EEs, where firms are more likely to share a core technology or exchange knowledge related to entrepreneurial process (venture financing, mentoring and expertise, startup culture) rather than a common market, customer or any other kind of industrial benefits enjoyed in clusters by companies of all sizes and ages. Moreover, Stam argues that compared to RIS and other theoretical models, key advantage of EE approach is its holistic view, which implies that entrepreneurial activity is the output, while total system-level value creation is the combined outcome[31].

Entrepreneurial ecosystems most commonly appear in areas where assets associated with a particular place exist. For example, the emergence of Oxford as an entrepreneurial ecosystem can relate to its strategic location close to London and Heathrow Airport, its attractiveness as a place to live, the presence of educational infrastructure, in particular the university and its world-famous brand, and its unique cluster of UK government laboratories[32]. Typically, entrepreneurial ecosystems are attractive places to live, either because of their physical attributes that provide recreational opportunities or because of their cultural attractions. These factors attract creative professionals, researchers, and scientists. In this regard, a characteristic of entrepreneurial ecosystems is the shift of employment towards knowledge-intensive sectors, in which many university graduates work.

In some cases, an entrepreneurial ecosystem may emerge from a prior industrial tradition. For example, the emergence of the aircraft industry in the Solent region of the UK is a consequence of the creation of the shipbuilding industry in the region. This is since the very first aircraft were designed to land and take off from the water, and therefore shipbuilding skills were used to develop and manufacture such aircraft that

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[30] Malmberg A., Maskell P. The elusive concept of localization economies: Towards a knowledge-based theory of spatial clustering // Environment and Planning. 2002. A, 34(3). P. 429–449.

[31] Stam E. Entrepreneurial ecosystems and regional policy: a sympathetic critique // European Planning Studies, 2015. Vol. 23. No. 9. P. 1759–1769.

[32] Smith L. H Oxfordshire: key drivers of an entrepreneurial ecosystem. Presentation to OECD LEED Programme Workshop on Entrepreneurial ecosystems and Growth-oriented entrepreneurship. The Hague, 7 November, 2013. P. 36.

could not sink in the sea. However, when the development of aircraft intended for landing on airfields began, the region lost its advantage, and aviation industry enterprises began to appear in other regions. The ecosystem of Swiss medical technology has evolved from precision skills developed and used in the watch industry for decades. The unique combination of biotechnological and engineering skills has made it possible to produce high quality medical devices[33].

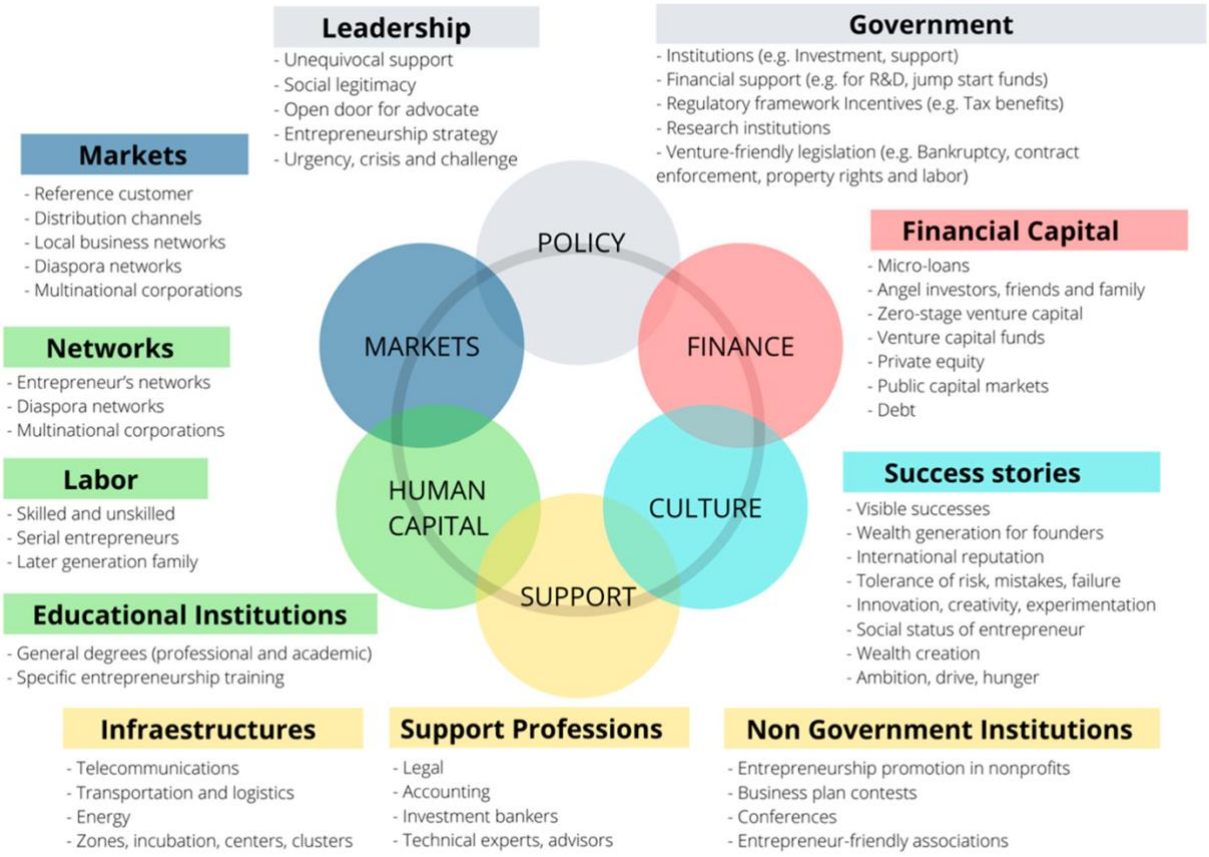
There are several entrepreneurial ecosystem models developed by researchers. One of the most common models is the one created by Isenberg[34]. Within the entrepreneurial system, the economist identifies six areas: leadership and enabling policies, a favorable culture, an extensive set of institutional support measures, product markets favorable for venture investment, high-quality human resources, and the availability of necessary financing (Fig. 1.1.2). These 6 areas, specific to each ecosystem, consist of hundreds of elements that interact with each other in a very complex and peculiar way. In this regard, the definition of common cause-and-effect relationships between elements of the system is of limited value. Isenberg emphasizes the importance of the specific conditions under which entrepreneurial ecosystem was formed: each ecosystem arises under a unique set of conditions and circumstances, and in this regard is unique[35].

[33] Vogel P. Building and assessing entrepreneurial ecosystems. Presentation to OECD LEED Programme Workshop on Entrepreneurial ecosystems and Growth-oriented entrepreneurship. The Hague, 7 November, 2013. P. 15.

[34] Isenberg D. Worthless, Impossible and Stupid: How Contrarian Entrepreneurs Create and Capture Extraordinary Value // Harvard Business Review Press. Cambridge, MA, 2013. P. 11.

[35] Isenberg D.J. The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy: Principles for Cultivating Entrepreneurship. Institute of International European Affairs. Dublin, 2011.

Fig. 1.1.2 — Entrepreneurial Ecosystem Elements (Domains) by D. Isenberg[36].




Although the entrepreneurial ecosystem is geographically limited, it is not limited to a specific geographical scale (campus, region, city), which means that the entrepreneurial ecosystem can be limited both by the borders of the state, and by a smaller geographical region or area, for instance, a city[37]. Examples include such small cities with a developed thriving entrepreneurial ecosystem as Cambridge in England, Colorado, Boulder, Texas, Austin in the USA.

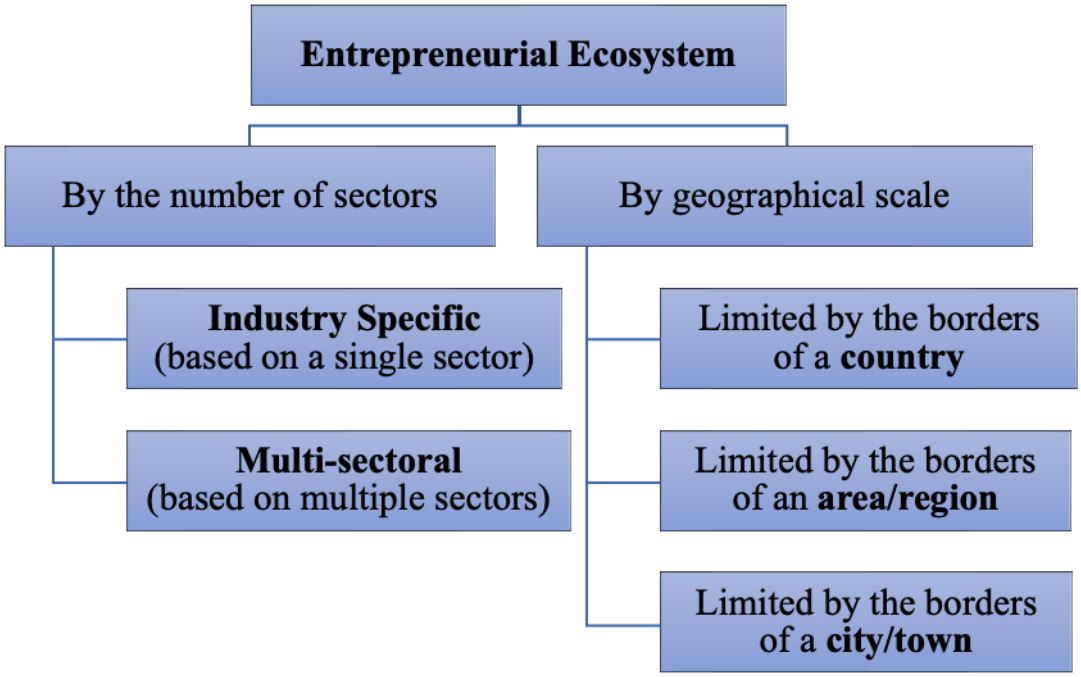
Researchers identify such entrepreneurial ecosystems as industry-specific (a pharmaceutical cluster in Copenhagen, a mobile cluster in North Jutland, Denmark, etc.) or ecosystems that have grown from one industry and gradually began to cover various industries – multi-sectoral (Fig. 1.1.3).

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[36] Isenberg, D. The entrepreneurship ecosystem strategy as a new paradigm for economic policy: principles for cultivating entrepreneurship. Babson, MA, 2011. P. 54.

[37] Guide for Mapping the Entrepreneurial Ecosystem Observe — Analyse — Visualise. German cooperation. Deutsche Zusammenarbeit. P. 10. URL: https://cdn.ymaws.com/www.andeglobal.org/resource/dynamic/blogs/20180326_164606_18189.pdf

Fig. 1.1.3 — Entrepreneurial ecosystem types[38].




The formation of entrepreneurial ecosystems can be explained by the trend towards clustering of economic activity in certain geographic regions, which allows regions to achieve higher economic performance. One of the most successful examples of successful clustering is Silicon Valley, located in northern California in the United States. Its success has been facilitated by a combination of institutional, cultural and social factors that underlie the regional economy, including a relatively open, non-hierarchical regional networked industrial system with transparent borders and access to it[39]. An example of a less successful entrepreneurial ecosystem is Silicon Valley's competitor, the Route 128 entrepreneurial ecosystem outside of Boston.

In the 1970s, Silicon Valley and Route 128 gained international recognition as the world's leading centers of innovation in electronics. Both regions were widely known for their rapid technological innovation, entrepreneurial spirit, and extraordinary economic growth. However, in the early 1980s, the leading manufacturers from both entrepreneurial ecosystems experienced a crisis. Silicon Valley chip makers lost the

[38] Guide for Mapping the Entrepreneurial Ecosystem Observe — Analyse — Visualise. German cooperation. Deutsche Zusammenarbeit. P. 10. URL: https://cdn.ymaws.com/www.andeglobal.org/resource/dynamic/blogs/20180326_164606_18189.pdf

[39] Saxenian A. Regional Competitive Advantage: culture and competition in Silicon Valley and Route 128. Cambridge, MA : Harvard University Press, 1994. P. 59.

semiconductor market to Japan, while Route 128 minicomputer companies lost market share as customers turned to workstations and personal computers.

In the late 1980s the economic performance of the two competing entrepreneurial ecosystems differed significantly from each other. Silicon Valley was a vibrant new generation of semiconductor and computer companies such as Conner Peripherals, Sun Microsystems, and Cypress Semiconductor, as well as well-known regional companies such as Hewlett-Packard and Intel. Unlike the active development of Silicon Valley, Route 128 showed almost no signs of growth and development. The dramatic development of Route 128 ended as abruptly as it began. Startups have not been able to survive the fall in sales and the resulting layoffs at major regional minicomputer companies[40].

Researchers attribute this to the structure of the Route 128 entrepreneurial ecosystem, which was dominated by larger autonomous firms with a traditional hierarchical structure that failed to build long-term mutually beneficial relationships with local governments[41].

Another important characteristic of the entrepreneurial ecosystem is the presence of “non-trade interdependencies”, which take the form of conventions, informal rules and habits that coordinate the actions of economic actors in the face of uncertainty. The concept of "non-trading interdependencies" was proposed by Storper[42]. In accordance with this concept, within the framework of these relations, productive assets are formed which are rare in a modern market economy and determine the geographic specialization of the region in terms of what goods and services are produced in it, how they are produced, what efficiency indicators (revenue and economic growth rates) can be achieved within the region, etc.

Important in the formation of entrepreneurial ecosystems are such areas as information, knowledge, and learning, as well as factors contributing to their

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[40] Silicon Valley Versus Route 128. A look at how companies are shaped by the business and social cultures around them. URL: https://www.inc.com/magazine/19940201/2758.html

[41] Saxenian A. Regional Competitive Advantage: culture and competition in Silicon Valley and Route 128. Cambridge, MA : Harvard University Press, 1994. P. 59.

[42] Storper M The resurgence of regional economies ten years later: the region as a nexus of untraded interdependencies // European Urban and Regional Studies. 1995. № 2 (3). P. 191.

development. Storper and Venables[43] and Bathelt et al[44] emphasize the important role of the concept of “local buzz”, which has many similarities with the concept of “industrial atmosphere” in the cluster, initially proposed by A. Marshall. According to the concept of “local buzz”, the information environment and communications between the subjects of the entrepreneurial ecosystem are created through personal contacts, as well as joint presence of people and companies in one place or region[45]. “Local buzz” is specific information, its circulation and constant updates, planned and unintended learning processes in organized and random meetings, the mutual acquisition of new knowledge and technologies, as well as common cultural traditions and habits in a particular technological field that stimulate the conclusion of agreements and other institutional arrangements. Entrepreneurial ecosystem actors continually contribute to and benefit from the spread of information, news and gossip simply by “being in the environment”[46]. Moreover, “presence” allows firms not only to receive local news, but also to benefit from them.

The entrepreneurial ecosystem differs from the environment that stimulates the creation of new companies by the access of local enterprises to specific resources. These resources differ significantly from the resources used by the government to support new companies. This may explain the frequent failure of governments in various countries to stimulate the creation of new high-growth enterprises. Denmark can be an example, where the government has developed a set of framework measures to encourage entrepreneurial activity over the past decade. The environment created in Denmark, which is considered one of the most favorable in the world, has not led to an increase in the number of fast-growing firms[47]. At the same time, companies located in clusters demonstrate higher growth rates compared to companies from other regions. A similar situation has developed in the Netherlands.

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[43] Storper M., Venables A. Buzz: face-to-face contact and the urban economy // Journal of Economic Geography. 2004. № 4 (4). P. 352.

[44] Bathelt H., Malmberg A., Maskell P. Clusters and knowledge, local buzz, global pipelines and the process of knowledge creation // Progress in Human Geography. 2004. № 28 (1). P. 32.

[45] Ibid.

[46] Gertler M. Tacit Knowledge and the economic geography of context, or The indefinable tacitness of being (there) // Journal of Economic Geography. 2003. № 3. P. 75.

[47] Napier G., Hansen C. Ecosystems for Young Scaleable Firms. FORA Group, 2013. P. 64.

Thus, it can be concluded that the use of government measures aimed at stimulating the growth of the number of new enterprises is often ineffective, since very few companies achieve high growth rates. Higher efficiency of the entrepreneurial ecosystem is achieved thanks to the clustering of economic activity. First, special attention is paid to stimulating the development of fast-growing companies. Secondly, the emphasis is on shaping the local and regional environment and conditions necessary to create and support ambitious entrepreneurs. Thirdly, within the entrepreneurial ecosystem, there is an interaction between entrepreneurs and local governments, as well as the local or regional geographic environment. In this regard, entrepreneurs within the ecosystem receive more assistance and incentives for development.

Although the EE concept have obtained big popularity with researchers, it remains underdeveloped in several respects[48]. First, the field is still lacking in terms of conceptual frameworks for understanding the causal relationships inside entrepreneurial ecosystems[49]. Second, the connectivity of the concept to entrepreneurship and therefore many other fields of study has led to a varied terminology[50], and quite inconsistent units of measure[51].

As stated above, the core value of an entrepreneurial ecosystem lies in its interconnected actors and elements and the way they are linked into a single system working, almost like a biological ecosystem, towards common goal of venture creation and growth. Also, it is obvious that any business, especially a new venture, needs a certain combination of resources, skills, opportunities and support to be able to thrive. This makes it important both from theoretical and practical points of view to be able to define the essential elements of EE as this is the key to understand how it works, which systemic elements form a healthy EE and can be considered as its strengths and

[48] Spigel B. The relational organization of entrepreneurial ecosystems // Enterpren Theor Pract 2017. 41(1). P. 49–72. URL: https://doi.org/10.1111/etap.12167

[49] Borissenko J., Boschma R. A critical reivew of entrepreneurial ecosystems research: towards a future research agenda // Papers in Innovation Studies. 2017.

[50] Morris M.H., Kuratko D.F., Cornwall J.R. Entrepreneurship Programs and the Modern University. Edward Elgar Publishing, Cheltenham, UK, 2013.

[51] Belitski M., Heron K. Expanding entrepreneurship education ecosystems // Journal of Management Development. 2017. 36(2). P. 163–177. DOI:10.1108/JMD-06-2016-0121.

weaknesses as well as in which way it can be stimulated by policy makers in different regions.

### 1.2. Entrepreneurial ecosystems key elements and actors

Studies on certain components of entrepreneurial ecosystems have gained momentum, but researchers tend to value these elements differently highlighting some actors more than others[52]. This different focus found in literature can be misleading as it can conceal the importance of some individual elements. While early research examined the common attributes and elements of high-profile, already successful EEs, such as talented workforce, state support, and success stories[53], more recent studies tend to be more flexible focusing on the complex relationships among ecosystem actors and trying to understand how EEs evolve over time[54]. Another problem which is considered to be a substantial gap in research is that past studies of EEs mostly stick to urban, high-scale and therefore endowed with tangible and intangible resources ecosystems making those studies less integrated and inapplicable to the majority of areas not only in emerging markets but in developed countries as well[55].

The EE components (sometimes also called factors or attributes) vary across literature from six to twelve elements divided in recent studies into systemic and framework conditions[56]. The lists of key elements proposed by some authors are presented in Table 1.2.1. Although some points are common in all lists (e.g. government policies, talent pool, access to financing), there are still some major differences to be

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[52] Velt H., Torkkeli L., Saarenketo S. The entrepreneurial ecosystem and born globals: the Estonian context // Journal of Enterprising Communities: People and Places in the Global Economy. 2018. 12(2). 117–138. DOI:10.1108/JEC-08-2017-0056.

[53] Isenberg D.J. The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy: Principles for Cultivating Entrepreneurship. Institute of International European Affairs. Dublin, 2011.

[54] Mack E., Mayer H. The evolutionary dynamics of entrepreneurial ecosystems // Urban Studies. 2016. 53(10). P. 2118. URL: http://search.ebscohost.com/login.aspx?direct=true&db=edsjsr&AN=edsjsr.26151186&site=eds-live (accessed May 6, 2020).

[55] Roundy P.T. “Small town” entrepreneurial ecosystems: Implications for developed and emerging economies // Journal of Entrepreneurship in Emerging Economies. 2017. Vol. 9. No. 3.

[56] Stam E. “Entrepreneurial ecosystems and regional policy: a sympathetic critique” // European Planning Studies. 2015. Vol. 23. No. 9. P. 1759–1769.

mentioned which illustrate how EE theory evolved over time. As seen on the table, early works imply more factors, which are less systematized[57] or feel overlapping and partly incomplete[58] puts incubator organisations separately from physical infrastructure and support services, at the same time informal networks exist in the proposed framework without formal ones).

The set of factors proposed by Cohen[59] seems more structured although still lacking in terms of several aspects including open markets and cumulative entrepreneurial experience (which leads to leadership skills, inspiring success stories, as well as mentoring and expertise). That was later addressed by Isenberg[60] and Stam[61] who also added network density which was an important step towards flexibility of the model when applied to areas of different scale and population. More recently, Feldman and Zoller have drawn attention to what they call *dealmakers*: individuals in possession of big amounts of social capital who actively help to improve venture creation and growth within their region by constantly building new connections and links between entrepreneurs – people who "live and work in a region and take responsibility for the stewardship of the place"[62].

Table 1.2.1 — Key environmental elements of entrepreneurial ecosystems in economic literature[63].

| Valdez (1988) | Neck et al. (2004) | Cohen (2006) | Isenberg (2010) | Stam (2015) | Spigel (2017) |
|---|---|---|---|---|---|
| – Venture capital availability<br>– Presence of experienced entrepreneurs<br>– Technically | – Incubator organizations<br>– Informal networks<br>– University | – Government<br>– University<br>– Informal network<br>– Formal network | – Conducive culture<br>– Enabling policies and leadership<br>– Appropriate | – Leadership<br>– Intermediaries<br>– Network density<br>– Government | **Cultural:**<br>– Cultural attitudes<br>– Histories of entrepreneurs (success stories) |

[57] Valdez J. The entrepreneurial ecosystem: toward a theory of new business formation // Small Business Institute Director's Association (SBIDA). 1988. P. 102–119. URL: http://sbida.org/

[58] Neck H.M., Meyer G.D., Cohen B., Corbett A.C. An entrepreneurial system view of new venture creation // Journal of Small Business Management. 2004. Vol. 42 (2). P. 190–208.

[59] Cohen B. Sustainable valley entrepreneurial ecosystems // Business Strategy and the Environment. 2006. Vol. 15. No. 1. P. 1–14. URL: https://doi.org/10.1002/bse.428

[60] Isenberg D.J. How to start an entrepreneurial revolution // Harvard Business Review. 2010. Vol. 88. No.6. P. 40–50.

[61] Stam E. Entrepreneurial ecosystems and regional policy: a sympathetic critique // European Planning Studies. 2015. Vol. 23. No. 9. P. 1759–1769.

[62] Audretsch D., Falck O., Feldman M., Heblich S. "Local entrepreneurship in context" // Regional Studies. 2012. Vol. 46. No. 3. P. 379–389.

[63] Compiled by author based on various sources.

| | | | | | |
|---|---|---|---|---|---|
| skilled labor force<br>– Accessibility of suppliers<br>– Accessibility of customers<br>– Favorable governmental policies<br>– Proximity of universities<br>– Availability of land or facilities<br>– Accessibility to transportation<br>– Receptive population<br>– Availability of supporting services<br>– Attractive living conditions | – Government<br>– Support services<br>– Capital sources<br>– Talent pool<br>– Large corporations<br>– Physical infrastructure<br>– Culture | – Professional supports<br>– Capital<br>– Talent | finance<br>– Quality human capital<br>– Venture-friendly markets for products<br>– Institutional and infrastructure support | – Talent<br>– Support services<br>– Engagement<br>– Companies<br>– Capital | **Social:**<br>– Social networks<br>– Investment capital<br>– Mentors and dealmakers<br>– Worker talent<br><br>**Material:**<br>– Universities<br>– Support services and facilities<br>– Policy and governance<br>– Open markets |

Spigel tried to divide all attributes into three groups: cultural attributes, social attributes and material attributes[64]. This theoretical approach seems to be the most flexible and complete to date, as it is precise yet leaves some space for future possible additions and specifications. Of course, even on this stage the framework can be upgraded with new elements. In such a way Velt et al.[65] contributes to entrepreneurial ecosystems theory by extending the literature on the EE components in the "born global" context by dividing systemic elements into 16 elements: leadership and bootstrapping, venture capitalists and angel investors, corporate venture capitalists, formal and informal debt, crowdfunding, knowledge, networks and intermediaries, entrepreneurial and worker talent, as well as three types of services – networking, engagement and professional services. This level of detail including all recent findings and new attributes (e.g. crowdfunding, engagement services), which remain unnoticed and left by many scholars, helped to explore the dynamics of and other relationships between the components, enhancing the overall explanatory power of the model.

[64] Spigel B. The relational organization of entrepreneurial ecosystems // Enterpren Theor Pract. 2017. 41(1). P. 49–72. URL: https://doi.org/10.1111/etap.12167

[65] Velt H., Torkkeli L., Saarenketo S. The entrepreneurial ecosystem and born globals: the Estonian context // Journal of Enterprising Communities: People and Places in the Global Economy. 2018. 12(2). 117–138. DOI:10.1108/JEC-08-2017-0056.

Some of the key elements that most recent EE models share can be described in detail. Entrepreneurial *financing* is a study field that focuses on innovative projects and how they procure and distribute money. Wu et al. argued that entrepreneurial funds are coming from four key sources: formal debt and equity, and informal debt and equity[66]. The key distinction between the two types of sources (formal and informal) is contained in the manner they view and evaluate risks: thus, in order to come to a decision, formal lenders need a high-quality business strategy containing all the required preparations, budgeting, etc.[67] However, informal debt has a significantly smaller borrowing expense primarily thanks to lower initial loan costs, lower level of complexity in terms of leverage, conditions, etc. *Venture capitalists* are the big players in entrepreneurial ecosystem, funding startup companies with venture capital on their early stages. They also receive the intense coaching from the investors for higher growth prospects and return on investment.

*Availability of knowledge* means access to information in forms of technologies, insights and ideas which is vital for innovative companies that are limited in resources from the very beginning[68]. The most important sources of knowledge in EE are universities, R&D departments, as well as experienced entrepreneurs who can act as mentors and experts for young firms. *Entrepreneurial University*[69] play significant role in entrepreneurship development with the correlation on targeted governmental policies, intellectual property protection[70]. Though, Universities with technology-based spin-off policies have to overcome poor infrastructure and low entrepreneurial culture[71].

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[66] Wu J., Si S., Wu X. Entrepreneurial Finance and Innovation: Informal Debt as an Empirical Case // Strategic Entrepreneurship Journal. 2016. Vol. 10. Iss. 3. P. 257–273. URL: https://doi.org/10.1002/sej.1214

[67] Mason C., Harrison R. Informal venture Capital: a study of the investment process, the post-investment experience and investment performance // Entrepreneurship & Regional Development. 1996. Vol. 8. No. 2. P. 105–126.

[68] Oviatt B.M., McDougall P.P. Toward a theory of international new ventures // Journal of International Business Studies. 1994. Vol. 25. No. 1. P. 45–64.

[69] Jacob M., Lundqvist M., Hellsmark H. Entrepreneurial transformations in the Swedish University system: the case of Chalmers University of Technology // Res Policy. 2003. 32 (9). P. 1555–1568.

[70] Lockett A., Wright M. Resources, capabilities, risk capital and the creation of university spin-out companies // Res. Policy. 2005. 34 (7). P. 1043–1057.

[71] Degroof J.-J., Roberts E.B. Overcoming weak entrepreneurial infrastructures for academic spin-off ventures // J. Technol. Transf. 2004. 29 (3–4). P. 327–352.

According to Pittz & Hertz, universities play even more significant role in EE development as on top of their research activities and contribution to talented workforce they often become a local entrepreneurship center (EC), a platform which is critical for bringing together all sorts of actors within the regional EE, fostering entrepreneurial culture, exchanges, and cross-learning[72]. Universities are widely known as major contributors to EEs because of the *knowledge spillovers*[73], which implies that information accumulated in science circles provides entrepreneurs with new opportunities for exploration and commercialization.

*Access to talent* which refers to both skilled workforce and talented entrepreneurs, is also especially important at the initial stage of a new venture[74]. Entrepreneurial talent can also be described as another EE attribute – *leadership*. Any entrepreneurial ecosystem benefits a lot from the existence of successful entrepreneurial leaders (serial entrepreneurs, business mentors, angel investors, etc.) who can have positive influence in terms of knowledge and inspiration[75]. Harper-Anderson claims that leadership is linked to the formation, recognition and legitimation of institutions that govern organizational activity within entrepreneurial ecosystems[76]. According to Hanlon and Saunders, researchers have been designing detailed models of entrepreneurship through

[72] Pittz T.G., Hertz G. A relational perspective on entrepreneurial ecosystems : The role and sustenance of the entrepreneurship center // Journal of Enterprising Communities: People and Places in the Global Economy. 2018. 12(2). P. 220–231. DOI:10.1108/JEC-10-2017-0081.

[73] Audretsch D., Falck O., Feldman M., Heblich S. Local entrepreneurship in context // Regional Studies. 2012. Vol. 46. No. 3. P. 379–389.

[74] Cohen B. Sustainable valley entrepreneurial ecosystems // Business Strategy and the Environment. 2006. Vol. 15. No. 1. P. 1–14. URL: https://doi.org/10.1002/bse.428; Neck H.M., Meyer G.D., Cohen B., Corbett A.C. An entrepreneurial system view of new venture creation // Journal of Small Business Management. 2004. Vol. 42 (2). P. 190–208; Stam E. "Entrepreneurial ecosystems and regional policy: a sympathetic critique" // European Planning Studies. 2015. Vol. 23. No. 9. P. 1759–1769.

[75] Isenberg D.J. The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy: Principles for Cultivating Entrepreneurship. Institute of International European Affairs. Dublin, 2011.

[76] Harper-Anderson E. Intersections of Partnership and Leadership in Entrepreneurial Ecosystems: Comparing Three U.S. Regions // Economic Development Quarterly. 2018. 32(2). P. 119–134. DOI:10.1177/0891242418763727.

theory of networks, social capital, and theory of leadership; however, ecosystem leadership has only been examined on a surface basis[77].

Speaking about *support services and facilities*, startups need plenty of capital to start and expand their new businesses; however, due to resource limitations, they need help to get access to the needed inputs. That is why new companies prefer to grow where these services are readily accessible and cheap because of a broad consumer base[78]. Scholars have primarily researched service suppliers (e.g., legal and accounting) and intermediaries (e.g., business incubators, technoparks, science parks, seed accelerators), but they have less emphasis on engagement services (hackathons, open innovation contests) and networking (trade associations).

*Business incubators*, being the part of entrepreneurial ecosystem, are to support startups by providing cheaper space, access to networks, business assistance, with the mail goal to lower chances of failure for startups[79]. Most articles researching business incubation impact on entrepreneurship focus on technology-based support, available resources, and the location of the incubator[80]. But most part of articles about BIs are more qualitative, with small cases, describing the internal functioning more than impact on entrepreneurial activities[81]. *Science parks* support businesses through shared resources and knowledge, their residents tend to have deep links with local

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[77] Hanlon D., Saunders C. Marshaling Resources to Form Small New Ventures: Toward a More Holistic Understanding of Entrepreneurial Support // SAGE journals. 2007. URL: https://journals.sagepub.com/doi/full/10.1111/j.1540-6520.2007.00191.x?casa_token=ZIPy9rr-UO0AAAAA%3AR-elfhOW5pxdWceldI7yemWTy_ts8NFXBiOBf3_dR15NCwxvU9XB7DJCJOtQzERMsZalpha-3XOF-VQ&

[78] Feld B. Startup Communities: Building an Entrepreneurial Ecosystem in your City. Hoboken, New Jersey : John Wiley & Sons, Inc., 2012.

[79] Adkins, D. A Brief History of Business Incubation in the United States. Ohio: National Business Incubation Association. Athens, 2002; Hackett S.M., Dilts D.M. A systematic review of business incubation research // J.Technol. Transf. 2004. 29 (1). P. 55–82; Phan P.H., Siegel D.S., Wright M. Science parks and incubators: observations, synthesis and future research // J. Bus. Ventur. 2005. 20 (2). P. 165–182.

[80] Amezcua A., Grimes M.G., Bradley S.W., Wiklund J. Organizational sponsorship and founding environments: a contingency view on the survival of business incubated firms, 1994–2007 // Acad. Manag. J. 2013. 56 (6). P. 1628–1654.

[81] Ratinho T, Amezcua A, Honig B, Zeng Z. Supporting entrepreneurs: A systematic review of literature and an agenda for research // Technological Forecasting & Social Change. 2020. P. 154. DOI:10.1016/j.techfore.2020.119956.

Universities[82] and perform in sales and taxes contribution better than off-parks firms[83]. Harper-Anderson states that: while majority of researchers have agreed upon the vitality of connections inside EEs as the channels of knowledge and resources sharing, most papers pay too much attention to entrepreneurs and how they interact with other elements and each other, often leaving out the connections between entrepreneurial support providers and facilities[84].

On top of the attributes mentioned above, EEs comprise *network layers*, where each node is presented by a set of actors – individuals or entities. Startups can learn about the opportunities and tools through their individual (informal, which consists of family, colleagues, and friends) and business-oriented (formal) networks[85].

There are different approaches to EE structure as well. Rijnsoever states that entrepreneurial ecosystem is formed by three subsystems: knowledge subsystem (universities and research centres) which can supply talent, knowledge and technology, business subsystem (enterprises and market) which has value networks capable of commercializing products and ideas, and financial support network (FSN) including venture capital, business angels, public funders, and banks[86]. The first two subsystems (also can be called networks) are occasionally not linked what leads to obstacles for technology transfer and commercialization, whereas the FSN can serve as a bridge between them. Startups have to be active in all three subsystems in order to market innovations. According to this logic, the issue often referred to as a "weak network problem" actually comes to the lack of connectivity between knowledge and business subsystems due to underdeveloped state of FSNs.

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[82] Löfsten H., Lindelöf P. Science parks and the growth of new technology-based firms—Academic-industry links, innovation and markets // Res. Policy. 2002. 31 (6). P. 859–876.

[83] Löfsten H., Lindelöf P. Determinants for an entrepreneurial milieu: science parks and business policy in growing firms // Technovation. 2003. 23 (1). P. 51–64.

[84] Harper-Anderson E. Intersections of Partnership and Leadership in Entrepreneurial Ecosystems: Comparing Three U.S. Regions // Economic Development Quarterly. 2018. 32(2). P. 119–134. DOI:10.1177/0891242418763727.

[85] Bell-Masterson J., Stangler D. Measuring an entrepreneurial ecosystem. 2015. URL: https://www.kauffman.org/what-we-do/research/city-metro-and-regional-entrepreneurship/measuring-an-entrepreneurial-ecosystem

[86] Van Rijnsoever F.J. Meeting, mating, and intermediating: How incubators can overcome weak network problems in entrepreneurial ecosystems // Research Policy. 2020. 49(1). URL: https://doi.org/10.1016/j.respol.2019.103884

Spigel argues, that not all the components and attributes are actually necessary for a striving entrepreneurial ecosystem *as* there are some ready examples of successful regional EEs which developed without several components on start, although the presence of all these factors significantly rise the competitiveness of local ventures[87].

At the same time, despite the growing interest in EE individual elements and actors, a very important stakeholder in entrepreneurial ecosystems is paid almost no attention, which are *clients and customers*[88]. While flourishing EEs studies in major urban areas suggest the essential position that customers play[89], since EE study is based on entrepreneurship, administration, organizational studies, and regional science, scholars also continued to concentrate on businessmen, developers, innovative projects, and policymakers' behavior. Some reports involve consumers in the lists of essential EE factors, and in specific those consumers who are eager to be early buyers of innovative goods and services[90]. However, researchers focus mainly on what affects entrepreneurial production, rather than having a customer-oriented "demand-side: view[91]. This can be considered as a substantial gap in EE analysis, especially considering the potential problems practitioners could face when trying to apply developed EE models to areas of smaller scale and population. Indeed, major differences can be observed in EEs based on the scale of the region they are situated in. A noteworthy distinction between EEs, which is directly linked to their population, is that small towns usually have fewer local consumers, such consumers also have specific tastes than those in larger metropolitan centers[92]. Differences in consumer preferences

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[87] Spigel B. The relational organization of entrepreneurial ecosystems // Enterpren Theor Pract. 2017. 41(1). 49–72. URL: https://doi.org/10.1111/etap.12167.

[88] Roundy P.T. "Small town" entrepreneurial ecosystems: Implications for developed and emerging economies// Journal of Entrepreneurship in Emerging Economies. 2017. Vol. 9. No. 3.

[89] Isenberg D.J. How to start an entrepreneurial revolution // Harvard Business Review. 2010. Vol. 88. No. 6. P. 40–50; Spigel B. The relational organization of entrepreneurial ecosystems // Enterpren Theor Pract. 2017. 41(1). P. 49–72. URL: https://doi.org/10.1111/etap.12167.

[90] Isenberg D.J. How to start an entrepreneurial revolution // Harvard Business Review. 2010. Vol. 88. No. 6. P. 40–50

[91] Priem R.L. A consumer perspective on value creation // Academy of Management Review. 2007. Vol. 32. No. 1. P. 219–235.

[92] Frenken K., Van Oort F., Verburg T. Related variety, unrelated variety and regional economic growth // Regional Studies. 2007. Vol. 41. No. 5. P. 685–697.

in big and small towns have important consequences for the business operations taking place in small town EEs[93].

Motoyama and Watkins stressed the significance of recognizing the connections between ecosystem components, which they describe as an activity between different actors[94]. They established four layers of connections: between entrepreneurs, between organizations of support, between entrepreneurs and main organizations of support, and between different organizations of support. Within an entrepreneurial environment, collaboration between organizations may vary from knowledge exchange (weak links) to conducting collaborative ventures (strong links). Motoyama and Watkins[95] also identified strategic and practical linkages between help organizations.

According to Tiba et al.[96], various structures have been established to define what comprises EEs[97], all of which have been dismissed as attribute "laundry" lists rather than constructs[98]. Spigel states that the components of an EE are maintained and replicated through its relationships with other components, EEs may have various arrangements that depend heavily on the initial degree of relationship intensity between factors[99]. That is why the analysis of ecosystems will concentrate not only on outcomes — entrepreneurship levels — but on inputs such as regional economic, financial, and material attributes that promote entrepreneurial operation and how these attributes connect and replicate the ecosystem.

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[93] Roundy P.T. "Small town" entrepreneurial ecosystems: Implications for developed and emerging economies // Journal of Entrepreneurship in Emerging Economies. 2017. Vol. 9. No. 3.

[94] Motoyama Y., Watkins K. Examining the Connections within the Startup Ecosystem: A Case Study of St Louis, Kauffman Foundation Research Series on City, Metro, and Regional Entrepreneurship. Kansas City, MO : Kauffman Foundation, 2014.

[95] Ibid.

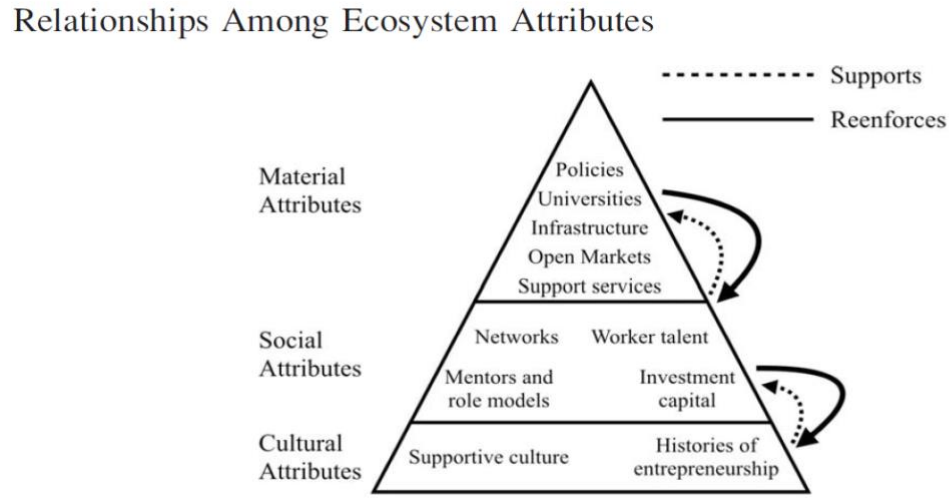
[96] Tiba S., van Rijnsoever F., Hekkert M. The lighthouse effect: How successful entrepreneurs influence the sustainability-orientation of entrepreneurial ecosystems // Journal of Cleaner Production. 2020. P. 264. DOI:10.1016/j.jclepro.2020.121616.

[97] Malecki E. Entrepreneurship and entrepreneurial ecosystems. Geogr. Compass 12. 2018. URL: https://doi.org/10.1111/gec3.12359.

[98] Stam E., Spigel S. Entrepreneurial ecosystems // The SAGE Handbook of Small Business and Entrepreneurship. SAGE, London, 2017.

[99] Spigel B. The relational organization of entrepreneurial ecosystems // Enterpren Theor Pract. 2017. 41(1). P. 49–72. URL: https://doi.org/10.1111/etap.12167

Fig 1.2.2 — Relationships among Ecosystem Attributes[100].




The value of relationships among various attributes indicates that if complementary social and cultural attributes are not sponsored, new material features such as entrepreneurial support agencies, publicly funded startup ventures, modern university technologies, and programs of information transfer are unlikely to succeed. Regional entrepreneurship policies will therefore be based instead of requiring initiatives to establish market communities and networks, on creating structural support for such new programs.

Another EE component which should be examined and is not directly identified by the structure provided by Spigel[101], is called “lighthouses”[102]. Lighthouses are successful startups that can create a community of followers, partners, and loyal customers around themselves and therefore can influence the whole ecosystem acting as trendsetters. Lighthouses are ideally positioned to control their circumstances and establish environments under which they thrive more in a high level of reputation and acceptance[103] by constructing formal (material) and informal (cultural) bodies, such as

[100] Spigel B. The relational organization of entrepreneurial ecosystems // Enterpren Theor Pract. 2017. 41(1). P. 49–72. URL: https://doi.org/10.1111/etap.12167

[101] Ibid.

[102] Tiba S., van Rijnsoever F., Hekkert M. The lighthouse effect: How successful entrepreneurs influence the sustainability-orientation of entrepreneurial ecosystems // Journal of Cleaner Production. 2020. P. 264. DOI:10.1016/j.jclepro.2020.121616.

[103] Feld B. Startup Communities: Building an Entrepreneurial Ecosystem in your City. Hoboken, New Jersey : John Wiley & Sons, Inc., 2012; Harper-Anderson E. Intersections of Partnership and

policies and startup culture, so that they can benefit even more. Secondly, the builders of lighthouses, which also act as a symbol of achievement, have a special part to play. Lighthouse creators actively control other actors in the entrepreneurial ecosystem by interacting with them. Lighthouses thereby form the economic, social, and material characteristics of their EE, encouraging and empowering newer firms that somehow mimic such success stories.

Caiazza argues upon the issue of the efficiency of business incubators and analyses the prerequisites for their development in local markets[104]. One of the reasons for the gap in the level of development of the innovation ecosystem in the north and south of Italy is the disparity in R&D funding in different regions. As a result, the formation of a national business incubation system is not taking place homogeneously.

The main gap in literature seems to deal with the necessity to assess the effectiveness of business incubation using some simple metrics as quality or efficiency[105]. Usually, successful BI are characterized by following main indicators: occupancy, jobs created and firms graduated[106], tenant revenue, number of patent applications per firm and number of discontinued businesses[107], advantages from pooling resources, sharing resources, consulting services, positive effects from a higher public image, networking advantages, clustering effects, geographic proximity, cost subsidies and funding support[108].

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Leadership in Entrepreneurial Ecosystems: Comparing Three U.S. Regions // Economic Development Quarterly. 2018. 32(2). P. 119–134. DOI:10.1177/0891242418763727.

[104] Caiazza R. Benchmarking of business incubators // An International Journal. 2014. Vol. 21. No. 6. P. 1062–1069.

[105] Dee N.J., Livesey F., Gill D., Minshall T. Incubation for Growth: A Review of the Impact of Business Incubation on New Ventures with High Growth Potential. London : NESTA, 2011. URL: www.nesta.org.uk/library/documents/IncubationforGrowthv11.pdf; UKBI. Best Practice in Business Incubation, Business Incubation. Birmingham, 2012.

[106] Allen D.N., McCluskey R. Structure, policy, services, and performance in the business incubator industry // Entrepreneurship: Theory and Practice. 1990. Vol. 15. No. 2. P. 61–77.

[107] Phillips R. Technology business incubators how effective as technology transfer mechanisms? // Technology in Society. 2002. Vol. 24. No. 3. P. 299–316.

[108] Chan K.F., Lau T. Assessing technology incubator programs in the science park: the good, the bad and the ugly // Technovation. 2005. Vol. 25. No. 10. P. 1215–1228.

The other way to assess BI success is to look at main stakeholders' goal and expectations. As Lalkaka pointed out[109], different stakeholders are conscious about different outcomes therefore the very principles of assessing may differ[110]. Some authors also point out that statistical outputs do not fully cover all possible value-added for the startups, as there could also exist "soft" aspects[111].

Theodorakopoulos et al. argue that while assessing BI efficiency the focus should be done on how business incubation management can design growth-oriented community of inside and outside stakeholders (entrepreneurs, academics, business support providers, funders, supply chain agents, etc)[112].

The core of the entrepreneurial ecosystem is usually at least one, and usually several large enterprises that have been operating in the market for a long time, endowed with significant management functions (for example, a head office or division, a subsidiary), as well as R&D and production activities. These enterprises also have the latest technology at their disposal. They play an important role in the development of the ecosystem. First, these enterprises attract talent by hiring a large number of skilled workers, many of whom are university graduates from other regions[113].

Secondly, they provide training for their employees and give them opportunities to move up the career ladder. Through this process, employees who initially had only technical knowledge and were hired to carry out R&D acquire managerial skills and start managing the development and implementation of technologies. These employees

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[109] Lalkaka R. Best practice in business incubation: lessons (yet to be) learned // Belgian Presidency International Conference on Business Centres: Actors for Economic and Social Development. European Union, Brussels, 14–15 November, 2001.

[110] Hannon P., Chaplin P. Are incubators good for business? Understanding incubation practice — the challenges for policy // Environment and Planning C: Government and Policy. 2003. Vol. 21. No. 6. P. 861–881.

[111] Voisey P., Gornall L., Jones P., Thomas B. The measurement of success in a business incubation project // Journal of Small Business and Enterprise Development. 2006. Vol. 13. No. 3. P. 454–468.

[112] Theodorakopoulos N., Kakabadse N.K., McGowan C. What matters in business incubation? A literature review and a suggestion for situated theorizing // Journal of Small Business and Enterprise Development. 2014. Vol. 21. No. 4. P. 602–622.

[113] Feldman M.A., Francis J., Bercovitz J. Creating a Cluster While Building a Firm: Entrepreneurs and the Formation of Industrial Clusters // Regional Studies. 2005. № 39. P. 129–141.

are valuable personnel for small companies that do not have the opportunity to grow personnel themselves.

Thirdly, they are a source of new business creation, as some employees, having gained experience, leave large companies in order to start their own startup. “Cluster maps” showing where the founders of new companies were originally employed indicate that certain companies are the source of a large number of new startups[114].

Fourth, large corporations from other areas or nations play an essential role in the growth of regional EEs, particularly in the periphery regions, by increasing the ecosystem's managerial skill pool and creating commercial prospects for local enterprises. Small enterprises in Aberdeen's North Sea ecosystem (United Kingdom) have been able to offer their goods and services to international energy corporations doing business in the North Sea for instance, and this link has given them access to other global oil and gas markets. Entrepreneurial ecosystem development may also be facilitated by large corporations, such as giving resources and space for local entrepreneurs, establishing programs to support SMEs, and encouraging those firms that strengthen the overall entrepreneurial ecosystem. According to Isenberg, the entrepreneurial ecosystem cannot flourish without large companies that deliberately develop and improve it[115]. But for an entrepreneurial system to benefit from large companies being at its center, these companies must be open and collaborative.

Interestingly, the most effective large enterprises in stimulating the development of an entrepreneurial ecosystem are those that are headquartered in the region where the ecosystem is based and are not part of multinational companies. This trend can be explained by the fact that the main shareholders of local companies, as a rule, are also local, as well as members of the top management of the company. This leads to the fact that these companies are interested in improving the local business environment and supporting its socio-economic development. Equity markets play an important role in the successful functioning of the entrepreneurial ecosystem, which allow fast-growing

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[114] Neck H.M., Meyer G.D., Cohen B., Corbett A.C. An entrepreneurial system view of new venture creation // Journal of Small Business Management. 2004. № 42. P. 190–208.

[115] Isenberg D. Worthless, Impossible and Stupid: How Contrarian Entrepreneurs Create and Capture Extraordinary Value. Cambridge, MA : Harvard Business Review Press, 2013. P. 82.

companies to enter IPOs and thus receive the financing they need for development, rather than through the sale of controlling stakes in local companies to large multinational corporations.

In addition to “lighthouse companies” mentioned above, “blockbuster enterprises” also are an important element of the entrepreneurial ecosystem. They are successful companies that have grown to a significant size and generated significant amounts of income for their founders, investors, top management, and employees. This allows these people to permanently participate in the ecosystem as investors, mentors and serial entrepreneurs, reinvesting their earnings and successful experience. According to Isenberg, the “law of small numbers” operates within the ecosystem, according to which, for a powerful impetus to the development of the ecosystem, only a few successful entrepreneurs are needed[116]. They contribute to the development of the ecosystem by creating side effects associated with the emergence of serial entrepreneurs, business angels, mentors, advisors following their success, attracting venture capitalists and members of the company's volume management, as well as the formation of role models[117].

An example of a “blockbuster enterprise” is Microsoft and its role in making Seattle a vibrant software development ecosystem. During the 1990s, employment in the computer and manufacturing industries increased 6 times from 11,800 to 60,800 jobs thanks to the active development and activity of about 148 Microsoft subsidiaries in Seattle[118]. Another example is Nokia in Finland, which has provided a training ground for a huge number of new startups. However, as the entrepreneurial ecosystem has evolved in Finland, it has changed significantly from one based on a single large company Nokia to one with a large number of small startups. This change indicates a significant dynamism of ecosystems.

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[116] Isenberg D. Worthless, Impossible and Stupid: How Contrarian Entrepreneurs Create and Capture Extraordinary Value. Cambridge, MA : Harvard Business Review Press, 2013. P. 82.

[117] Mason C. Entrepreneurial dynamics and the origin and growth of high-tech clusters // Handbook of Research on Innovation and Clusters: Cases and Policies / C. Karlsson. Cheltenham, UK and Northampton, MA, USA: Edward Elgar, 2008. P. 34.

[118] Mayer H. Entrepreneurship in a Hub and Spoke Industrial District: Firm Survey Evidence from Seattle’s Technology Industry // Regional Studies. 2013. № 47. P. 1717.

In general, one can conclude that the presence of at least one successful local startup that has grown into a large global company is a powerful incentive for the development of the ecosystem: the success of this startup indicates the capabilities of other local entrepreneurs and the potential for significant rewards for the risk of opening their own company in the event of dismissal from a stable job.

Another important thing in the successful development of the entrepreneurial ecosystem is the fact that a large company has a positive impact on the development of the ecosystem, not only in the case of its successful operation, but also at the stage when it encounters difficulties. This is because in the event of financial difficulties or the threat of bankruptcy of the company, some talented employees lose their jobs in a large company and are employed in smaller companies or start their own business. For example, the deterioration in the economic performance of Blackberry maker RIM, located in Canada's Waterloo-Kitchener region, and Finnish Nokia, based in Helsinki, led to the formation of many new startups in these regions.

Economists cite several major layoffs at IBM over the past three decades as a major reason for Boulder's success as a vibrant entrepreneurial ecosystem. As a result, many talented employees appeared on the market who opened their own companies or joined teams of other startups[119]. Isenberg calls the enrichment of the ecosystem by new entrepreneurs and talented employees because of failures in the market of a large company a “whale fall”[120].

The second characteristic of entrepreneurial ecosystems is that that their growth is due to the process of “entrepreneurial recycling”[121]. Entrepreneurs who have created successful (but not necessarily large) companies are subsequently sold to large TNCs. They typically leave the company shortly after it is sold (although some stay with the staff for a short time to take advantage of the opportunity to gain managerial experience in a global company). It is important that these entrepreneurs do not leave the

[119] Isenberg D. Worthless, Impossible and Stupid: How Contrarian Entrepreneurs Create and Capture Extraordinary Value. Cambridge, MA : Harvard Business Review Press, 2013. P. 85.

[120] Isenberg D. When Big Companies Fall, Entrepreneurship Rises // Harvard Business Review. March 18, 2013. URL: https://hbr.org/2013/03/when-big-companies-fall-entrep

[121] Mason C.M., Harrison R.T. After the exit: Acquisitions, entrepreneurial recycling // Regional Studies. 2006. № 40. P. 55–73.

entrepreneurial ecosystem but reinvest the proceeds from the sale of companies and experience in the creation and development of new companies. Some entrepreneurs turn into so-called “serial entrepreneurs” who start new businesses on a regular basis. Other entrepreneurs become business angels, providing seed funding for new ventures and sharing their expertise through board positions. Some even create venture capital funds. Others become advisors and mentors, board members and participate in entrepreneurship education as practitioner consultants. Some entrepreneurs who have sold their companies are involved in creating and supporting activities that improve the business environment, for example, by lobbying the interests of entrepreneurs in government and creating organizations that support entrepreneurship.

Recruiting a significant number of experienced entrepreneurs who have invested time, effort, and experience in supporting the ecosystem, especially in the form of mentoring startups, serving as business angels, and building and managing entrepreneur support organizations, has played a critical role in the success of the entrepreneurial ecosystem in the City of Boulder. In addition, entrepreneurs participating in these initiatives understand that it takes a long period of time to create a viable, sustainable entrepreneurial ecosystem. The quality of ecosystem governance is also critical. Leaders must be ready to partner with new entrepreneurs who intend to create a startup and participate in the development of the ecosystem and accept them into the ecosystem as its new members. At the same time, leaders themselves also need mentoring. Ecosystem governance should be based on meritocracy, not patriarchy. In other words, the most talented and capable people, regardless of their financial wealth and origin, should be at the head of the entrepreneurial ecosystem. Also, the development strategy of the entrepreneurial ecosystem should be long-term. Researchers agree that the government is characterized by an extremely low degree of effectiveness in stimulating entrepreneurial ecosystems, which is also due to the short-term nature of the election cycle[122].

[122] Feld B. Startup Communities: building an entrepreneurial ecosystem in your city. Hoboken: NJ, Wiley, 2012. P. 64.

One of the key features of an entrepreneurial ecosystems is the presence of a large amount of information. In such an environment, people can access information and knowledge on customer needs, new and emerging technologies, new ways to operate or deliver existing products, availability of parts, components and equipment, marketing concepts, and customer service. Access to information allows entrepreneurs to identify deficiencies in products, services or their marketing and promotion that need to be addressed. There is a strong relationship between geographic proximity and knowledge sharing[123]. Organized and random meetings act as the main channels through which such information is disseminated. But usually this is not enough for a more effective exchange of information and knowledge. In this regard, entrepreneurial ecosystems have “bridge assets” that serve to bring people, ideas, and resources together. These connection facilitators are people whose task is to establish a connection[124]. As a rule, most of them act in that role not as a part of their job duties or formal tasks but rather in an informal way.

Culture is essential to the successful development of an entrepreneurial ecosystem. First, the element of culture is the philosophy of inclusiveness. The “give before you receive” principle is an integral part of the community of entrepreneurs — founders of startups, a culture of wide exchange of knowledge, experience, and skills. The attitude towards failure is also important: failure is not considered something shameful, and an entrepreneur who has failed in the development of his own company quickly finds work in other companies as a consultant for other companies, a mentor or assistant to the head. Bad experience is also considered valuable, as is the experience of what not to do. As a result, even after failure, the entrepreneur can quickly return to the market. Entrepreneurial ecosystems are characterized by the values of experimentation and the philosophy of failing quickly. Isenberg believes that if the failure comes quickly, then all is not lost[125]. Within communities of entrepreneurs who invest in startups, many

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[123] Gertler M. Tacit Knowledge and the economic geography of context, or The indefinable tacitness of being (there) // Journal of Economic Geography. 2003. № 3. P. 75–99.

[124] Sweeney G.P. Innovation, Entrepreneurs and Regional Development. London, Pinter, 1987. P. 64.

[125] Isenberg D. Worthless, Impossible and Stupid: How Contrarian Entrepreneurs Create and Capture Extraordinary Value. Cambridge, MA : Harvard Business Review Press, 2013. P. 82.

people experiment with new ideas and are interested in failing quickly if their idea does not find a consumer, does not arouse interest among investors, and turns out to be of little promise. An element of the culture of a successful ecosystem is the presence of transparent boundaries. In other words, the ecosystem allows people to move from one company to another. If a person does this, then he does not become an outcast in society and is not considered a traitor to his employer[126].

The availability of funding is another important characteristic of entrepreneurial ecosystems. Especially important is the presence of a pool of investors willing to provide startup capital, venture funding and practical support. In this case, business angels, entrepreneurs who have already sold their companies, as well as existing entrepreneurs, and senior managers are of the utmost importance, along with seed capital funds and business accelerators.

Universities also play a role in entrepreneurial ecosystems, but they are not a necessary element of all ecosystems. Thus, leading research universities are not found in all ecosystems. For example, a pharmaceutical ecosystem has emerged in Copenhagen, despite the absence of one of the leading universities in the world in the ecosystem. In addition, some researchers consider the practice of transferring technologies developed at universities to enterprises as an obstacle to the commercialization of R&D due to licensing conditions and excessive protection of intellectual property rights[127]. The importance of universities lies in providing qualified personnel to companies, and in the fact that many SMEs were founded by university graduates or their students.

Another important characteristic of the ecosystem is the presence of service providers – lawyers, accountants, recruitment agencies and business consultants who understand the needs of entrepreneurs in personnel and services and can help young companies overcome obstacles in their development by performing non-core activities that entrepreneurs outsource. Such firms are often willing to offer their services to

[126] Feld B. Startup Communities: building an entrepreneurial ecosystem in your city. Hoboken: NJ, Wiley, 2012. P. 64.

[127] Ibid.

startups for free, with the expectation that long-term business relationships will be built over time.

Thus, the characteristics of entrepreneurial ecosystems include the following: the presence of at least one, and usually several “large” enterprises as the core of the entrepreneurial ecosystem, the process of “recycling of entrepreneurs”, the access to a large amount of information and funding, the presence of a specific culture that includes a philosophy of inclusion, availability of service providers, e.g., lawyers, accountants, recruitment agencies and business consultants.

### 1.3. Entrepreneurial ecosystem efficiency & the role of government

According to Isenberg entrepreneurial ecosystem sustainability depends on six dimensions: government policy and strong advocacy of entrepreneurship from public leaders; the availability of human capital (including education); the financial capital and funding available (private equity funds, venture capital funds, public capital markets, micro loans, angel investors, debt financing, which could be available at a presale stage); market potential; the embedded culture of entrepreneurship (risk taking and honorable failure); supports from nongovernment institutions and professional society (venture-oriented professionals such as accountants, lawyers, technical and market consultants)[128].

Some authors add two more critical domains to guarantee the self-sustainability of entrepreneurial ecosystem: industrial dynamics and crowdsourcing[129]. Thus, crowdsourcing is company strategy to obtain relevant innovative ideas, solutions and resources from the external environment[130]. This open innovation concept can boost company capabilities and design effective networking or clustering. Entrepreneurial crowdsourcing could appear in three types: routine tasks, complex tasks, and creative

[128] Isenberg D.J. The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy: Principles for Cultivating Entrepreneurship. Institute of International European Affairs. Dublin, 2011.

[129] Maroufkhani P., Wagner R., Khairuzzaman W., Ismail W. Entrepreneurial ecosystems: a systematic review // Journal of Enterprising Communities: People and Places in the Global Economy. 2018. Vol. 12. No. 4.

[130] Lee S., Nam Y., Seonmi S., Son H. Determinants of ICT innovations: a cross-country empirical study. Technol. Forecast. Soc. Chang. 2015.

tasks. According to Maroufkhani, Wagner, Wan Ismail strong and efficient ecosystem depends a lot on industrial dynamics covering the three subdomains of: changes in customer preferences; changes in the competitive situation; and technology changes[131].

According to Isenberg there are key principles to build sufficient entrepreneurial ecosystem: "stop imitating Silicon Valley, develop the ecosystem around local conditions, engage the private sector, favor high potentials, get a big win on the board, tackle cultural change, stress the roots, do not overengineer clusters, help them grow organically and reform legal, bureaucratic and regulatory frameworks"[132].

Looking for successful/efficient entrepreneurial ecosystem most of researchers turn to the innovation-driven economies, with countries such as Switzerland, the Netherlands and Finland standing out[133]. The top 10 ecosystems are Silicon Valley, London and New York Greater Helsinki, Tel Aviv, Sydney, Houston, Los Angeles, Atlanta, Amsterdam, and Singapore[134].

Interesting research was conducted by Cowell, Lyon-Hill, Tate focusing on the SME and Innovation-driven "gazelle" enterprises expectations from the friendly entrepreneurial ecosystem[135]. Both types of companies indicated the need for: more collaboration within the ecosystem; more financial resources (venture capital) available in their region; more openness from higher education institutions (research, IP, space, faculty and student expertise and workforce potential); better internet service throughout the region; more meetings and forums designed for industry-specific businesses/entrepreneurs. Specifically, they noted how important to improve the health of its regional ecosystem through "harnessing the power of successful entrepreneurs

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[131] Maroufkhani P., Wagner R., Khairuzzaman W., Ismail W. Entrepreneurial ecosystems: a systematic review // Journal of Enterprising Communities: People and Places in the Global Economy. 2018. Vol. 12. No. 4.

[132] Isenberg, D.J. How to start an entrepreneurial revolution // Harvard Business Review. 2010. Vol. 88. No. 6. P. 40–50.

[133] Global Report 2016/17, Global Entrepreneurship Monitor. Global Entrepreneurship Research Association, London. URL: www.gemconsortium.org/report (accessed 20 March 2018).

[134] Shwetzer C., Maritz A., Nguyen Q. Entrepreneurial ecosystems: a holistic and dynamic approach // Journal of Industry-University Collaboration. 2019. Vol. 1. No. 2.

[135] Cowell M., Lyon-Hill S., Tate S. It takes all kinds: understanding diverse entrepreneurial ecosystems // Journal of Enterprising Communities: People and Places in the Global Economy. 2018. Vol. 12. No. 2.

who have ties to the region and supporting with expertise and resources young entrepreneurs[136].

Efficiency and logic of national entrepreneurial ecosystems are being argued a lot recently. It is obvious that number of entrepreneurs cannot be the only metrics to assess the level of "entrepreneurial" country[137], saying Peru or Uganda with the highest self-employment rate in the world, can hardly be characterizes as the best in economic productivity and innovations. Speaking about the fundamental aspects of sophisticated entrepreneurial ecosystem, many authors pay attention on its capability to drive productive resource allocation in countries. At the country level, this dynamic resource reallocation will result in economic growth[138].

In general, government support of entrepreneurship is certainly a priority in policymaking around the world[139]. Huge matrix of programs and incentives have been initiated recently to encourage entrepreneurship[140]. All those initiatives certainly draw attention from scholars of public policy and administration, urban economics, and innovation builders[141]. Generally, to support ecosystem development through entrepreneurship growth, policy makers would focus on either regulatory arrangement, such as taxation adjustments and easy access to capital[142], or institutional activities in

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[136] Cowell M., Lyon-Hill S., Tate S. It takes all kinds: understanding diverse entrepreneurial ecosystems // Journal of Enterprising Communities: People and Places in the Global Economy. 2018. Vol. 12. No. 2.

[137] Acs Z.J., Stam E., Audretsch D.B., O'Connor A. The lineages of the entrepreneurial "ecosystem approach" // Small Business Economics. 2017. Vol. 49. No. 1. P. 1–10. URL: http://doi.org/10.1007/s11187-017-9864-8

[138] Acs Z.J., Autio E., Szerb L. National systems of Entrepreneurship // Global entrepreneurship and development index 2014 / Z. J. Acs, E. Autio, L. Szerb (Eds.). Springer briefs in economics. Chapter 2 (P. 13–26). Heidelberg: Springer, 2015. DOI:10.1007/978-3-319-14932-5.2.

[139] Ratinho T, Amezcua A, Honig B, Zeng Z. Supporting entrepreneurs: A systematic review of literature and an agenda for research // Technological Forecasting & Social Change. 2020. P. 154. DOI:10.1016/j.techfore.2020.119956.

[140] Gilbert B.A., Audretsch D.B., McDougall P.P. The emergence of entrepreneurship policy // Small Bus. Econ. 2004. 22 (3–4). P. 313–323.

[141] Adams R., Jeanrenaud S., Bessant J., Denyer D., Overy P. Sustainability-oriented innovation: a systematic review // Int. J. Manag. Rev. 2016. 18 (2). P. 180–205; Ellwood P., Grimshaw P., Pandza K. Accelerating the innovation process: a systematic review and realist synthesis of the research literature // Int. J. Manag. Rev. 2016.

[142] Nasra R., Dacin M.T. Institutional arrangements and international entrepreneurship: the state as institutional entrepreneur // Entrepr. Theory Pract. 2010. 34 (3). P. 583–609.

academic world[143], mostly to promote academic spin-offs[144]. The most important principal of entrepreneurship support is to take place on different stages of the startup development (pre-seed, seed, growth, and expansion)[145]. There are many studies proving that the governmental support of different actors of entrepreneurial ecosystem can play sophisticated impact on new business development. For example, programs supporting R&D in technology industries speed up the emergence of innovative ventures in the same industry, for example in nanotechnology. Other players of the entrepreneurial ecosystem are small business development centers, funded by Government, who provide small ventures with free consultancy and business trainings, managerial assistance, and capital access. Entrepreneurs who receive this help are more likely to start a new business[146] and succeed in innovation commercialization[147]. Speaking about regional socioeconomic environment there is proved evidence of indirect impact on startups' readiness to start a business[148].

There is certainly a parallel between both entrepreneurial ecosystem and natural ecosystem, but most research are quite silent on the interactions of entrepreneurial ecosystem components[149]. Comparing natural ecosystem and entrepreneurial ecosystem there is a question point in applying main management principals to both. As

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[143] Morris M.H., Kuratko D.F., Cornwall J.R. Entrepreneurship Programs and the Modern University. Edward Elgar Publishing, Cheltenham, UK, 2013.

[144] Patzelt H., Shepherd D.A. Strategic entrepreneurship at universities: academic entrepreneurs' assessment of policy programs // Entrep. Theory Pract. 2009. 33 (1). P. 319–340.

[145] Ratinho T., Amezcua A., Honig B., Zeng Z. Supporting entrepreneurs: A systematic review of literature and an agenda for research // Technological Forecasting & Social Change. 2020. P. 154. DOI:10.1016/j.techfore.2020.119956.

[146] Chrisman J.J. The influence of outsider-generated knowledge resources on venture creation // J. Small Bus. Manag. 1999.37 (4). P. 42.

[147] Becerra-Fernandez I., Taylor A., Buckingham G., Kinney F., Brown D., Entessari A. The NASA/Florida minority institution entrepreneurial partnership: an infrastructure to enable technology transfer to small businesses // J. Technol. Transf. 2000. 25 (2). P. 193–203.

[148] Kibler E. Formation of entrepreneurial intentions in a regional context // Entrep.Region. Dev. 2013. 25 (3–4). P. 293–323.

[149] Kuckertz A. Let's take the entrepreneurial ecosystem metaphor seriously! // Journal of Business Venturing Insights, 2019.

ecosystems should generally be self-regulating[150], a question of management intervention level arises[151].

Over the past decades, the level of interest of governments around the world has increased in the development of entrepreneurship and small and medium-sized businesses as potential tools for slowing down the rising unemployment and the decline in economic growth. This was largely facilitated by the success of such world-famous "techno-entrepreneurs" as the founder of Apple Steve Jobs, the founder of Microsoft — Bill Gates, Larry Page and Sergey Brin from Google and Jeff Bezos from Amazon[152]. In many ways, they have become symbols and incentives for the development of entrepreneurship around the world.

The success of California's Silicon Valley, which has become one of the world's most renowned centers for high-tech entrepreneurship and innovation, has served as a role model for many governments seeking to stimulate economic growth by encouraging entrepreneurship and innovation.

As a result, technological and science parks have been created in different countries of the world. Governments most commonly adhere to the following format: universities and R&D centers are located next to the park, access to venture capital financing is provided to park participants. At the same time, the technopark itself and all its participants are supported by the state. Basically, most governments are trying to copy Silicon Valley and create a similar entrepreneurial ecosystem. However, despite significant government investment in such initiatives, most of them fail to succeed in replicating the success of Silicon Valley and building an entrepreneurial ecosystem. Government attempts to create an entrepreneurial ecosystem by creating a favorable business environment have also failed. As already noted, there are significant differences between the entrepreneurial ecosystem and the creation of an enabling environment for business development and innovation by the government.

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[150] DeFries R., Nagendra H. Ecosystem management as a wicked problem // Science. 2017. 356 (6335). P. 265–270.

[151] Kuckertz A. Let's take the entrepreneurial ecosystem metaphor seriously! // Journal of Business Venturing Insights, 2019.

[152] Entrepreneurial ecosystems and the role of government policy 28.12.2014. URL: https://theconversation.com/entrepreneurial-ecosystems-and-the-role-of-government-policy-35809

After studying the experience of various countries in creating entrepreneurial ecosystems, economists from the Association of Small Businesses of Australia and New Zealand concluded that governments of many countries simply copied Silicon Valley and tried to create an analogue in their countries, paying little attention to the features and opportunities of specific areas[153]. As a result, these attempts were unsuccessful and turned out to be mostly political promotions. In this regard, governments should stop trying to copy Silicon Valley in the US because, despite its success, this entrepreneurial ecosystem was shaped by a unique set of circumstances and any attempt to replicate it elsewhere is unlikely to succeed[154]. Based on this conclusion, the researchers concluded that the creation of an entrepreneurial ecosystem must be carried out based on and considering local conditions.

Thus, there is no universal approach to stimulating the development of ecosystems since each ecosystem is unique. Local cultural traditions, structural features of local banking systems and the specifics of education policy will influence the characteristics of local ecosystems. Therefore, an approach that simply replicates other ecosystems is not viable and is likely to fail. Each ecosystem needs its own approach adapted to local conditions.

At the same time, an entrepreneurial ecosystem cannot be created from nothing. The ecosystem must be based on existing assets and industries with experience, technologies and a skilled workforce that can act as a foundation for creating an ecosystem. Attempts to create high-tech industries from scratch will most likely not lead to the creation of a viable and efficient ecosystem[155].

An ecosystem can be based on traditional industries such as energy, food and beverage, transportation, chemicals, shipbuilding, manufacturing, all of which can

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[153] Martin R., Sunley P. Deconstructing clusters: chaotic concept or policy panacea? // Journal of Economic Geography. 2003. № 3. P. 7.

[154] McKeown T., Mazzarol T, Rice J., Soutar G., Hanson B., Adapa S. Inspiring Future Workplaces: An Australia and NZ Small Business Perspective, Small Enterprise Association of Australia and New Zealand (SEAANZ). — 2018. URL: https://icsb.org/wp-content/uploads/2018/12/Inspiring-Future-Workplaces-Report-FINAL.pdf

[155] Regalado A. In innovation quest, regions seek critical mass // MIT Technology Review. 2013. Vol. 116. № 5. Boston. P. 85; Roberts E.B., Eesley C. Entrepreneurial Impact: The Role of MIT, Kauffmann – The Foundation for Entrepreneurship. Ewing Marion Kauffman Foundation, Kansas City, 2009. P. 54.

provide a platform for creating dynamic, value-added entrepreneurial ecosystems. This is because existing industries have large enterprises that can become the core of an entrepreneurial ecosystem, several significant knowledge-based organizations, and infrastructure that has already been created that attracts people and is perceived as a good and convenient place to live. The government's contribution in this case may be creating the prerequisites for the emergence of entrepreneurial ecosystems, for example, through a well-thought-out investment policy aimed at attracting investments and stimulating residents' investments in the state economy.

At the same time, it is important to involve the private sector in the creation of the ecosystem from the very beginning. In this case, the government plays an indirect role – the role of an intermediary, and not the role of a leader. In trying to stimulate the growth of ecosystems, the government should focus on supporting companies with high growth potential that are able to achieve "big wins" and early success and become role models for other entrepreneurs ("entrepreneurial blockbusters").

However, governments should stop trying to assign the "blockbuster companies" themselves and to redesign the system for these companies. Fast-growing firms are inherently risky, and highly innovative firms are usually unique. This leads to the fact that there is no single formula for success. Government assistance to such companies to succeed is largely about removing obstacles to their growth, such as unfair taxation of small and medium-sized businesses, an anti-competitive culture, excessive bureaucracy, or lack of access to markets, skilled workers, or investment capital[156].

Given that the entrepreneurial ecosystem is a complex and highly dynamic organism, the approach to its development must also change over time. As the ecosystem develops and matures, the government must tailor interventions and support to the stage of ecosystem growth. For example, in the early stage of an ecosystem, the emphasis may be on supporting the startup processes of enterprises, but as the ecosystem grows, companies begin to need help in organizational development, human

[156] Mazzarol T. Growing and sustaining entrepreneurial ecosystems: What they are and the role of government policy, White Paper WP01-2014, Small Enterprise Association of Australia and New Zealand (SEAANZ), 2014. P. 46.

capital development, support for internationalization and expansion of access to financing necessary for further growth.

Government initiatives can be ineffective if they are implemented in isolation from each other. For example, the introduction of entrepreneurship training programs will be ineffective if graduates, after receiving their education, move to countries or regions that are more favorable for entrepreneurship. Increasing the supply of venture capital is unlikely to be effective in the absence of deal flow. Encouraging more people to create start-ups and entrepreneurial activities is likely to have little impact if businesses are created in low-growth regions. In this regard, the stimulating policy pursued by the government should be of a holistic nature.

Approaches to facilitating entrepreneurial ecosystems must simultaneously combine top-down and bottom-up approaches. Appropriate framework conditions are also required. For example, immigration laws should not create barriers to attract talented employees and entrepreneurs, on the contrary, they should stimulate “brain gain”. Property rights must be secured and protected. Both individual and corporate taxation should provide appropriate incentives to both encourage reinvestment and reward risk-taking. On the other hand, instruments such as grants and subsidies should be avoided as they can distort entrepreneurial behavior. At the same time, it is also necessary to adopt bottom-up approaches to improve the environment of the ecosystem. They act as a “glue” to connect various participants in the ecosystem. Moreover, bottom-up approaches should not be seen as the sole responsibility of the government, given that the development of entrepreneurial ecosystems requires the active participation of the business community as well as support from large enterprises. It is important that this participation is based on commercial motives and not on corporate social responsibility[157]. Despite this, when implementing stimulus policies, governments rarely seek to interact with the large companies that underlie the ecosystem. When ecosystems become self-sufficient, there are “tipping points” where government assistance is no longer as important to ecosystem development, and this can significantly reduce government involvement.

[157] Ebdrup T. Understanding business ecosystems. FORA, 2013. P. 45.

Quite often, governments, when stimulating ecosystems, do not understand the difference between a policy to stimulate small and medium enterprises and a policy to stimulate innovative entrepreneurship. In the case of stimulating the development of small and medium-sized enterprises, as a rule, an unsystematic approach is applied, the purpose of which is to increase the number of small and medium-sized enterprises. The disadvantage of this approach is that its application leads to limited growth of new enterprises, short survival and a high rate of bankruptcies, as well as crowding out the vast majority of start-ups from the market. Despite this, states often prefer this approach[158].

Policies to stimulate innovative entrepreneurship, on the contrary, are aimed at supporting enterprises with high growth potential. Such firms are more likely to need help building relationships rather than closing deals. Moreover, they will benefit more from support from other actors in the entrepreneurial ecosystem through increased opportunities for experiential learning and knowledge and information sharing. Given the "peculiar and unstable" nature of the growth of companies, such measures should be consistent with the growth phase of the company and be aimed at supporting companies that, in the process of development, are faced with the need for systemic changes in their structure and work.

In general, one can conclude that the task of the state is to develop a policy that will work, but at the same time avoid the temptation to try to achieve change through direct intervention. The "traditional" approach of supporting small and medium-sized enterprises should be abandoned in favor of a "growth-oriented" approach to enterprises. The traditional approach tends to increase the total number of companies through technology transfer programs, investment in R&D, venture capital financing, or start-up programs. It is based on the "picking the winner" model, which may also include the adoption of support programs, the provision of tax incentives, grants, subsidies, the creation of technology incubators or business incubators. All these measures are aimed at increasing the number of companies. Even though in general they

[158] Coad A.D., Hozl S.-O., Johansson W. High-growth firms: introduction to the special issue // Industrial and Corporate Change. 2014. № 23. P. 91–112.

bring some stimulating effect, they are not able to guarantee success, as they are instruments of direct intervention by the state.

The company growth-driven approach is primarily focused on improving relationships within the ecosystem. At the same time, the focus is on the growth and leadership of new growth companies, building networks and relationships in the entrepreneurial ecosystem. The task of the government according to this approach is to stimulate the expansion of networks at the local, regional, national, and international levels. The highest importance is given to the strategic goals of entrepreneurs as subjects of the ecosystem. Companies looking to grow need help in connecting with suppliers, customers, and other actors in the ecosystem that can provide the resources they need[159].

Based on the analysis carried out, the following general recommendations can be proposed for the implementation of the state policy for the development of entrepreneurial ecosystems.

First, it is necessary to make the formation of an entrepreneurial ecosystem a priority task of the government. Formulating effective policies for the development of entrepreneurial ecosystems requires the active participation of senior government officials who act as “institutional entrepreneurs” and help shape and empower policies and programs.

Second, policies should be broad-focused, comprehensive, and inclusive of all components of the ecosystem, rather than seeking to “pick the most interesting” industries or individual businesses.

Third, the policy pursued by the government should be directed not only to stimulate high-tech companies, but also to stimulate the development of all industries, including low-, medium- and high-tech industries and companies.

Fourth, it is important not to create new companies artificially through direct decision making. Emphasis should be made on the natural growth of companies. In this regard, already existing industries that have developed naturally in a region or country

[159] Entrepreneurial ecosystems and the role of government policy 28.12.2014. URL: https://theconversation.com/entrepreneurial-ecosystems-and-the-role-of-government-policy-35809

should be used as the basis of entrepreneurial ecosystems, rather than trying to create new industries in new regions.

The government needs to perform the functions of managing the process of forming an entrepreneurial ecosystem, while also delegating part of the responsibility and functions to local and regional authorities. In other words, it is effective to use a top-down and bottom-up approach.

The policy should meet the needs of both the businesses and its management teams. A significant difference between the policy aimed at the development of innovative entrepreneurship and the policy aimed at the development of small and medium-sized businesses is the nature of this policy: in the first case, the policy is aimed at forming relations within the environment, in the second — at increasing the number of companies.

### 1.4. Challenges in emerging markets

Some researchers[160] argue that all local entrepreneurial ecosystems differ not only in geographical sense but also because of different entrepreneurial spirit of the societies, legal and institutional environments, which can be described as a micro-culture within the ecosystems.

While analyzing the specifics of emerging markets, such critical issue as huge gap in development of rural and urban ecosystems should be considered. Thus, different requirements of entrepreneurs within those ecosystems are not a surprise. Urban innovative startups seek for angel, venture, and scale-up funding; prototyping equipment and facilities; collaborations with local universities and R&D centers. While SMEs in less technological environment indicate the need for more entrepreneurial

[160] Maroufkhani P., Wagner R., Khairuzzaman W., Ismail W. Entrepreneurial ecosystems: a systematic review // Journal of Enterprising Communities: People and Places in the Global Economy. 2018. Vol. 12. No. 4.

education programs, subsidized office space and clearer pathways through the government regulatory system[161].

Most papers are focused their attention on large established ecosystems, primarily in developed markets. Small towns, especially in emerging markets do not have the populations, infrastructure and other resources equivalent to large entrepreneurial ecosystems. Thus, there is a huge interest in analyzing small towns entrepreneurial ecosystem (STEE). Main findings of the research on STEE prove this issue: the human capital is less solid than in ecosystems in large cities; the markets are less developed; the networks are smaller; the infrastructure is less developed; the entrepreneurship-oriented support services are less robust; the availability of financial resources is lower[162]. Three strategies emerged by which STEEs can potentially overcome size, resource, and location limitations. They can focus on positive factors as less congestion, lower labor, housing costs and their local assets[163]. They can define their borders broadly by connecting to nearby towns and allocating resources from neighboring cities. STEEs social networks are denser and common values are stronger which has implications for the speed of information and resources flow[164].

To understand the difference in entrepreneurial ecosystem design in emerging markets, it would be interesting to turn to the Nigerian entrepreneurial ecosystem to discuss the role of diasporans as transnational actors in the entrepreneurial ecosystem. By linking the network and institutional theories the paper focuses on embryonic entrepreneurial ecosystem[165]. In the uncertainty, transnational actors may be unwilling to limit entrepreneurial activities to interactions that minimizes risks. The role of diasporans in the entrepreneurial ecosystems is diverse: in some context may be more

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[161] Cowell M., Lyon-Hill S., Tate S. It takes all kinds: understanding diverse entrepreneurial ecosystems // Journal of Enterprising Communities: People and Places in the Global Economy. 2018. Vol. 12. No. 2.

[162] Roundy P.T. “Small town” entrepreneurial ecosystems: Implications for developed and emerging economies // Journal of Entrepreneurship in Emerging Economies. 2017. Vol. 9. No. 3.

[163] Mason C., Brown R. Entrepreneurial ecosystems and growth oriented entrepreneurship // Final Report to OECD. Paris, 2014. Vol. 30. No 1. P. 77–102.

[164] Philip Roundy P.T. “Small town” entrepreneurial ecosystems: Implications for developed and emerging economies // Journal of Entrepreneurship in Emerging Economies. 2017. Vol. 9. No. 3.

[165] Fuller-Love N., Akiode M. Transnational Entrepreneurs Dynamics in Entrepreneurial Ecosystems: A Critical Review // Journal of Entrepreneurship and Innovation in Emerging Economies. 2020. 6(1). P. 41–66.

suited as support for local entrepreneurs, while in others, they may be active transnational entrepreneurs in entrepreneurial ecosystems[166].

Limitations in entrepreneurial ecosystem development is discussed in the research on ecosystem narratives[167]. One is described as the “Rust Belt” and according to this narrative, Rust Belt regions are “dying” and “hollowed out”[168]. The narrative reflects such negative psychological conditions as hopelessness, apathy, and cynicism[169]. In its turn, that gives critical impact to the entrepreneurship and other business activities[170], such as pessimism toward new businesses, no belief in self-confidence and startup success. That would also affect investment activities or establishing a stable customer base[171]. There is a four-phase theoretical model (Pre-entrepreneurial ecosystem narrative phase, Nascent EE narrative phase, Competing narratives phase, Dominant EE narrative phase) that tries to explain how entrepreneurial ecosystems narratives appear, emerge and compete with negative regional narratives such as the Rust Belt narrative[172].

China can be seen as a good example for examining challenges business incubators face in emerging countries. According to Xu, the business incubation system in China began to shape in 1987, and since then, business incubators have become one of the most important elements of China's entrepreneurial ecosystem[173]. For many years, the main goal of business incubators has been the technologies commercialization. However, then, incubators supporting export-oriented startups were developed. By

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[166] Fuller-Love N., Akiode M. Transnational Entrepreneurs Dynamics in Entrepreneurial Ecosystems: A Critical Review // Journal of Entrepreneurship and Innovation in Emerging Economies. 2020. 6(1). P. 41–66.

[167] Roundy P.T. Rust belt or revitalization: competing narratives in entrepreneurial ecosystems // Management Research Review. 2019. Vol. 42. No. 1.

[168] Neumann T. Remaking the Rust Belt: The Postindustrial Transformation of North America. Philadelphia : University of Pennsylvania Press, 2016; Sardar Z. Welcome to postnormal times // Futures. 2010. Vol. 42. No 5. P. 435–444.

[169] Bowen E.A., Miller B., Barman-Adhikari A., Fallin K., Zuchlewski D. Emerging adult homelessness in geographic perspective: a view from the rust belt // Children and Youth Services Review. 2017. Vol. 73. P. 213–219.

[170] Mitra D.L., Frick W.C. Civic capacity in educational reform efforts: emerging and established regimes in rust belt cities // Educational Policy. 2011. Vol. 25. No 5. P. 810–843.

[171] Crane F.G., Crane E.C. Dispositional optimism and entrepreneurial success // The Psychologist-Manager Journal. 2007. Vol. 10. No 1. P. 13–25.

[172] Roundy P.T. Rust belt or revitalization: competing narratives in entrepreneurial ecosystems // Management Research Review. 2019. Vol. 42. No. 1.

[173] Xu L. Business incubation in China: Effectiveness and perceived contributions to tenant enterprises // Management Research Review. 2010. Vol. 33. No. 1. P. 90–99.

2007, China's business incubation system had become the largest in developing countries and second in the world after the United States. There are 6 categories of BI in China (for more detail see Chapter 2):

- general technology incubators;
- university science and technology (S&T) parks;
- overseas Chinese scholars park;
- international business incubators;
- special technology incubators;
- small business incubators.

The most common in Shanghai, and China in general, are the first two types of BI. A special type of BI, which has no analogues in the world, is overseas Chinese scholars parks. This program is intended for residents who have returned after studying abroad and are starting their entrepreneurial career. The main purpose of the presented article is to analyze the effectiveness of incubation programs from the point of view of BI residents. 61 residents from 3 leading BIs of Shanghai were interviewed.

The main outcomes are the following. 90% of respondents noted the provision of office and workspace at reduced rates as the most valuable service for startups. In general, all services related to the possibility of using the premises are the most attractive. More than 80% of respondents noted the importance of helping BI in building the attractiveness and brand awareness of startups in the external market. Regarding the role of the BI director or manager, only 15% use his mentoring services, however 82% find it very useful to turn to the BI manager for market connections and contacts. Networking is very important for all respondents, which allows them to exchange experience with other residents and even do joint projects.

100% of the respondents said they attend BI trainings and seminars. This service is much more in demand in the rapidly changing environment of emerging markets. Interestingly, a very small number of respondents use the services of strategic and financial consulting. And the value rating of these services is very low. The most demanded service is assistance in obtaining grants and loans.

## 1.5. Research gaps

Based on the literature review in the field of entrepreneurial ecosystems studies, a certain number of gaps in research can be formulated.

First, scholars usually focus on entrepreneurial ecosystem impact on new ventures and entrepreneurs, but future research is needed to study how ecosystem may influence the capabilities of other ecosystem stakeholders, such as investors, suppliers, and support services. Furthermore, the role of local markets and customers is also underrated, what can be crucial for EEs in the areas of lower scale and population.

Second, governmental policymaking in regulations, fiscal or legal frameworks to support entrepreneurs tend to be long term and indirect, affecting whole industries regardless of company age. Most researchers focus on sources and types of entrepreneurial support rather than on the outcomes. Such critical factors as who is being supported, under what conditions and with what impact on the startup performance metrics, are poorly considered.

Third, scanning the papers on various regional entrepreneurial ecosystems reveals the fact that most cases come from a relatively small set of countries (mostly USA and UK). There are much less papers on emerging economies such as China and India and a relatively small amount of literature on Russia. The same is relevant to the ecosystem design in deferent industries: special attention is given to the high-tech, biotechnology and medical industries. A promising venue for further empirical research is to identify the special features of a single local ecosystem using questionnaire surveys as a means of data collection.

Fourth, though crowdsourcing is mentioned as the factor of ecosystem sustainability, still it is neglected as one of the key contributing elements. Necessity to find the proof that crowdsourcing is a tool that fuels entrepreneurial activity, could stimulate empirical research of different types of crowdsourcing and their value and impact on the entrepreneurial ecosystem effectiveness.

Considering the gaps stated above, the following areas need to be examined:

1. What are the specific features of EE and BI models in emerging economies such as China and India compared to developed ones (US, Europe)? What are the most important drivers of business incubation development in those countries and which features could be successfully adapted to the less studied markets like Russia?

2. What are the characteristics of BIs in Russia, how did they change during the last decade and how do they stand up to the world average? What challenges do Russian BIs currently face, why and how can they be solved?

3. How important is the role of customers in EE framework, both in high-scale and low-scale (small town) ecosystems? What indicators can be used to evaluate its role? What actions on part of local policymakers can be undertaken to stimulate local market openness and willingness to buy local innovative goods and services? What role does crowdsourcing play in the ecosystem and how can we measure its impact on entrepreneurial activity?

4. How can entrepreneurial support measures and its conditions be concretized and become more flexible in terms of company of what age and industry is being supported? How can startup performance metrics be adopted to the same framework?

5. What specifics does EE model have on business incubation development – both in capital area and in regions? What EE components are lacking and what supportive measures should be undertaken? What regional success stories can be found and what were the most important factors of their success?

Each of these questions is subject for a big study. Thus, in the context of this research the focus will be made on the first two.

The ex-ante hypotheses for the current state of the Russian entrepreneurial ecosystem are: (1) the level of development of business incubation directly depends on the degree of development of the entrepreneurial ecosystem in terms of the number and diversity of participants and the strength of the connection between them; (2) the recent drop in the quantity of active BIs in Russia over the last decade can be explained by the processes of consolidation on that market.

To sum it up, entrepreneurial ecosystems are made up of a variety of interrelated commercial entities, entrepreneurial organizations and processes that come along

formally and/or informally in order to communicate, mediate and manage activities in the local entrepreneurial environment.

Entrepreneurial ecosystems appear where there are assets associated with a particular place. A characteristic of entrepreneurial ecosystems is the shift of employment towards knowledge-intensive sectors, in which a large number of university graduates work. Each ecosystem arises under a unique set of conditions and circumstances, and in this respect is itself unique. The formation of entrepreneurial ecosystems can be explained by the trend towards clustering of economic activity in certain geographic regions, which allows regions to achieve higher economic performance.

One of the key characteristics of the entrepreneurial ecosystem is the presence of non-trade interdependencies, which take the form of conventions, informal rules and habits that coordinate the actions of economic actors in the face of uncertainty. Such areas as information, knowledge, and learning, as well as factors contributing to their development are highly important in the formation of entrepreneurial ecosystems. The information environment and communications between the subjects of the entrepreneurial ecosystem are created through personal contacts and joint presence of people and companies in one place or region. The entrepreneurial ecosystem differs from the environment that stimulates the creation of new companies by the access of enterprises to specialized resources in that cluster.

The core of the entrepreneurial ecosystem is at least one, and usually several large enterprises that have been operating in the market for a long time, endowed with significant management functions, as well as functions for R&D and production activities. Another important element of EEs are “blockbuster enterprises” – successful companies that have grown to a significant size and brought significant amounts of income to their founders, investors, top management and employees. This allows these people to permanently participate in the ecosystem as investors, mentors, and serial entrepreneurs, reinvesting their earnings and successful experience.

Entrepreneurial ecosystems’ growth is driven by a process of “entrepreneurial recycling”. Entrepreneurs who have created successful companies subsequently sell

them to large TNCs, while they do not leave the entrepreneurial ecosystem, but reinvest the proceeds from the sale of companies and experience in the creation and development of new companies. Other characteristics of entrepreneurial ecosystems are the “availability of a lot of information” and the availability of funding. Important for the successful development of the entrepreneurial ecosystem is its culture, an element of which is the philosophy of inclusiveness, attitudes towards failure, the value of experimentation and the presence of transparent boundaries. Universities also play a role in entrepreneurial ecosystems, but they are not a necessary element of all ecosystems. The characteristic of the ecosystem also includes the presence of service providers who perform non-core activities for startups.

There is no universal approach to stimulating the development of ecosystems, due to the fact that each ecosystem is unique. An entrepreneurial ecosystem cannot be created from nothing. The ecosystem must be based on existing assets and industries with experience, developments and a skilled workforce that can act as a foundation for creating an ecosystem. It is important from the outset to involve the private sector in building the ecosystem. Given that the entrepreneurial ecosystem is a complex and highly dynamic organism, policy approaches to its development must also change over time. Approaches to facilitating entrepreneurial ecosystems must simultaneously combine top-down and bottom-up approaches.

# CHAPTER 2. BUSINESS INCUBATORS AS A PART OF ENTREPRENEURIAL ECOSYSTEM IN DEVELOPED AND EMERGING COUNTRIES

Having analyzed in Chapter 1 the concept and essence of the entrepreneurial ecosystem (EE), as well as having considered the key theoretical aspects of this phenomenon, including its main constituent elements, in this chapter it is logical to analyze the state of the global business incubation (BI) market in the context of the entrepreneurial ecosystem. This will be done in two perspectives: first, in paragraph 2.1, the average world statistics for the business incubation industry will be studied. Second, in the following paragraphs from 2.2 to 2.5, the characteristic features of business incubators in the context of the entrepreneurial ecosystem will be analyzed sequentially for a number of developed and developing countries and regions. This will allow, by the end of this chapter, to conduct a detailed comparative analysis of the American, European, Indian, and Chinese models of business incubators in the context of EEs, highlighting the best practices.

The comparative analysis is based on secondary data by the top research centres and associations in this field such as National business Innovation Association (InBIA), UKBI, World Bank infoDev, UBI Global, etc. The features of country-specific EEs are described in the context of local economic and market situation.

## 2.1. World business incubator average characteristics

In Russia, the problem of assisting small and medium-sized companies (SMEs) has never been more crucial. Many institutions, funds, and programs are in place to help young businesses, yet practice shows that SMEs still rate the entrepreneurial environment in their regions rather low (3.73 points out of 5 based on the results of the survey of Russian business incubators conducted in July-August 2020).

Currently, many government officials believe that the SME support infrastructure built in the early 2000s is outmoded and needs to be reformed. It was in this context that, in 2018, recommendations were made to “reset” SME assistance measures,

including the “reset” of business incubators (BIs), by the Russian Ministry for Economic Development. It can be noted that these recommended solutions are quite logical and generally suit today's market criteria, but they aren't comprehensive and interrelated in nature, which dramatically decreases their efficiency.

As shown previously, many researchers agree that the key elements of the entrepreneurial ecosystem (EE) are: (1) entrepreneurship (large business, SMEs, innovative startups); (2) infrastructure to support entrepreneurship; (3) scientific sphere (research institutes, universities); (4) the market of venture investments (venture funds, individual investors), and at the stage of formation of the EE also (5) the state (authorities, development institutions). For the successful functioning of the EE, it is important that all the listed entities are present in the region, but also a well-functioning system of horizontal communications between them is established, and the task of the authorities is to foster that kind of network.

The relationship within the entrepreneurial ecosystem is founded on the concepts of resource synergy, common goals, and mutual benefit, in conjunction with which the functions and intended objectives of each of the designated organizations may be identified (see Table 2.1.1). It is crucial to highlight that the success in accomplishing these objectives directly relies on the efficiency of the operation of the whole ecosystem and on the ability to achieve the EE goals stated above — the establishment and growth of firms.

Table 2.1.1 — Functions and desired outcome (benefits) of EE actors[174].

| # | Actor | Role and Functions | Desired Outcomes |
|---|---|---|---|
| 1 | Small and medium-sized enterprises, innovative startups | (1) Execution of the last step of invention commercialization,<br>(2) jobs creation, incl. for students/graduates of educational institutions | (1) Obtaining new knowledge/competencies,<br>(2) attracting investments,<br>(3) networking, expanding the team by new talent,<br>(4) commercializing business ideas,<br>(5) scaling projects |
| 2 | Big companies, corporations | Role of the key “customer”:<br>(1) creates a demand for | Product and service improvement via innovation |

[174] Source: author’s own.

| | | | |
|---|---|---|---|
| | | innovation, technology, R&D, and new products,<br>(2) jobs creation | |
| 3 | Infrastructure for SME support | (1) SME support at all stages of growth and development,<br>(2) project evaluation,<br>(3) bringing startups in connection with industry experts, mentors, venture investors, business angels, etc. | (1) State SME support policy implementation,<br>(2) gaining profit from paid services, workspace for rent, etc. |
| 4 | Universities, scientific sphere | (1) Knowledge production,<br>(2) scientific and technical expertise services for other EE actors,<br>(3) training engineering and technical staff,<br>(4) producing specialists in economics, management, marketing and law | (1) Career guidance and employment of students and graduates,<br>(2) educational program development, incl. practical orientation<br>(3) gaining profit from paid services |
| 5 | Venture market | Assessment and financing of high-risk business projects | Gaining high profits from successfully commercialization of innovative startups |
| 6 | Authorities | (1) Subsidizing the activities of some EE actors (e.g., BIs, technoparks, etc.),<br>(2) stimulating the emergence of all important elements of regional EEs,<br>(3) maintaining the links between EE actors | (1) Improving the investment attractiveness of the national or local economy,<br>(2) increasing tax revenues,<br>(3) jobs creation,<br>(4) solving various social problems |

Speaking about the composition of entrepreneurial ecosystem, incubators, accelerators, technoparks as well as other types of service providers focused on the needs of small businesses, all belong to the SME support infrastructure. Simply put, BIs are considered to be just an integral element of one of the subsystems inside EE. However, incubators play a unique role in the growth of small, creative companies since they serve as a springboard for the creation of new entrepreneurs and bear a heavy social burden in their local area by bringing in new social groups and communities.

As the name suggests, a business incubator is a place where startups and entrepreneurs that lack the necessary finances, expertise, or talent may go to work on their ideas. Business incubators originally developed in the United Kingdom and the United States in the middle of the twentieth century, and in Russia in the early 1990s. They became more popular in the mid-2000s with the number of newly established business incubators reaching a record high in 2009. A lot of quantitative and qualitative shifts have occurred since then in the Russian business incubator sector, as shown by two extensive studies completed in 2012 and 2017.

The International Business Innovation Association (InBIA, USA), which was formerly known as the International Business Incubation Association before rebranding in 2015, compiles statistics on the global scope of business incubator activity (as InBIA, it is currently expanding its scope to include other aspects of the entrepreneurial ecosystem). InBIA estimates that there were over 12,000 business incubators worldwide at the end of 2018, with 93% of them being non-profitable. Most typically, business incubators are set up to carry out government policies aimed at assisting small and medium-sized enterprises (SMEs) and to address any underlying socioeconomic issues in the area they serve. The majority of business incubators in the United States (84%) are aimed at producing new employment, although the goals may be different: promoting entrepreneurial activity and fostering an entrepreneurial culture in the area, activating the commercialization process, and so forth.

Some BIs are established as an integral part of educational institutions, as well as technical parks and even corporations (intra-corporate BIs which will be covered in detail in Chapter 4). Around 1,100 university based BIs were operating in 2018 (excluding accelerators), or around 9% of all incubators, according to UBI Global. By helping students find employment and a career path, such kind of business incubators enhance the educational process' emphasis on real-world application. Speaking about technopark based BIs, it can be noted that by helping technoparks broaden the services they offer current customers while also attracting new types of businesses, BIs benefit both the park's existing customers and the businesses they attract. Industrial zones are home to more than half of all business incubators (52%).

IT startups are present in 54% of BIs, services (44%), manufacturing (40%) and biotech (33%) are among other most common areas in which entrepreneurs start businesses in incubators throughout the globe. However, fewer than half of BIs specialize on a single area, resulting in a diverse pool of startups (referred to as mixed incubators). Tech businesses make up 39% of incubators' focus, whereas service firms make up only 1%.

The business incubator employs an average of 12 employees and covers an average of 3700 square meters, with occupancy rates of residents and anchor tenants approaching 80%. Note that a workspace and rent on favorable terms, as well as aid in developing a business plan, are still among the most requested BI services — supplied by 96% of BIs across the globe. Among highly demanded services also are marketing consulting (provided by 90% of BIs), accounting (present in 84% of BIs), administration (81%), assistance and support in acquiring investments and bank loans (79%), help in creating presentations (77%), establishing communication with academic institutions (73%), etc.

A typical BI comprises 35 residents and from 3 to 4 anchor tenants, while the total yearly stream of enterprises serviced (not permanently present in BI) goes up to 141. Startup entrepreneurs come up with an average of 72 business plans and two patents every year with the help of a BI. It takes an average of 30 months for a resident company to complete its incubation program, and the great majority of them depart because of the need to scale and find larger space, or because they achieve breakeven, which is commonly a criterion for finishing the program.

A business incubator's average yearly running costs are 518,000 USD, with the majority of that amount going toward infrastructure upkeep and employee salaries. Although there are favorable conditions on rental agreements, about 60% of incubators' revenue comes from renting out their facilities to their clients. Public subsidies cover roughly 15% of BI expenses globally, although this may vary substantially in various locations and could reach 40% in extreme cases. For a more detailed breakdown of incubator expenditures and earnings, see diagrams 2.1.1–2.1.2.

Diagram 2.1.1 — Average cost structure of business incubators in the world[175].

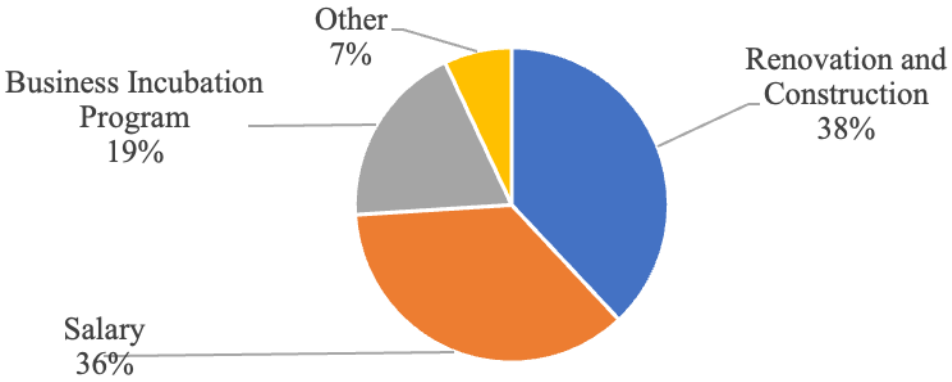
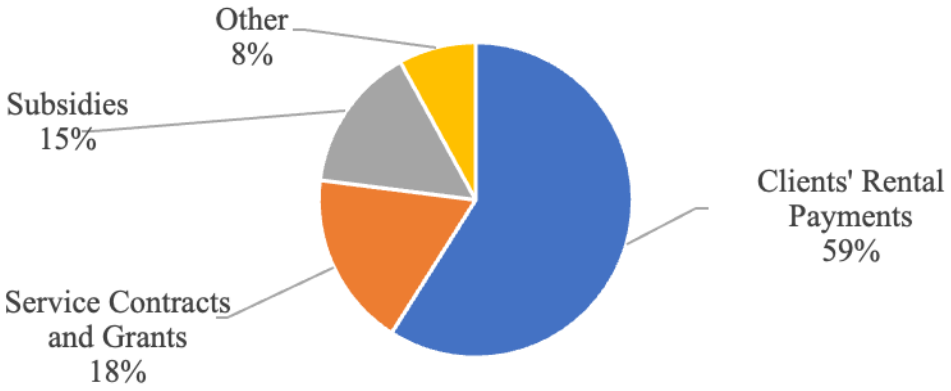



Diagram 2.1.2 — Average income structure of business incubators in the world[176].




It's worth mentioning that the number of different kinds of business incubators has grown greatly in recent years. What we've seen in the mid-2000s is only one form of commercial BI – business accelerator, but we can now speak about an even more comprehensive categorization of incubators. The reason for that is, since the number of BIs throughout the globe has already reached its peak, their services are being tailored to more specific client needs. Table 2.1.2 presents a comparative examination of several kinds of business incubators known today.

[175] InBIA. URL: http://inbia.org
[176] InBIA. URL: http://inbia.org

Table 2.1.2 — Comparison of different types of business incubators[177].

| **Type / Criterion** | **Premises for Rent** | **Services (expertise, consulting, etc.)** | **Own Investment Fund** | **Limited period of participation in the program** | **Group recruitment to the program** | **Competitive selection** |
|---|---|---|---|---|---|---|
| Business Incubator (BI) | Y | Y | N | N | N | Y |
| Business Accelerator (BA) | Y | Y | Y | Y | Y | Y |
| Pre-Accelerator Program | N | Y | N | Y | Y | Y |
| Virtual Business Incubator | N | Y | N | N | N | Y/N |
| Virtual Business Accelerator | N | Y | Y/N | Y | Y | Y |
| *Coworking* | Y | Y/N | N | N | N | N |
| *Makerspace* | Y | Y/N | N | N | N | N |

Although both BIs and BAs maintain the ability to undertake competitive assessment and selection for program participation, accelerators are primarily focused on executing time-limited startup development programs that besides the standard SME support services also entail investments in companies from venture funds affiliated with (or owned by) the accelerator.

Projects in a pre-accelerator are brought to the point where they can attract funding, which is to say, they are ready to go on to the acceleration program. Typically, programs of this kind are created and operated by business accelerators. According to the literature, a “pre-incubator” concept also exists, but it doesn't make any sense since a BI program commonly doesn't need the preparation of projects for entry (opposed to BA programs). If there's an exception, it's generally the business incubators themselves that provide preincubation services (such as support in discovering and developing a potentially viable idea). In some cases, pre-incubators turn out to be organizations conducting entrepreneurial training courses for kids.

The development of virtual BIs and BAs which operate online and render services to their clients through remote access is yet another trend. Virtual incubators may collaborate with startups with lower operating costs and in the earliest phases of development without requiring a physical presence in a particular place. Due to their specifics, it is nearly impossible to evaluate the exact quantity of these organizations,

[177] Source: author’s own.

although some believe that there are few hundreds of virtual BIs in existence worldwide.

Coworking and makerspace can't be regarded full-fledged BIs since they don't supply many of the essential services that constitute an incubator as an SME support tool. Classical incubators at the same time implement some of the activities and processes running inside coworking spaces and makerspaces, which include, for example, entrepreneurs and/or creative individuals working together in a shared infrastructure, exchanging ideas, learning from each other, and jointly creating new innovative products. The latter seems to enable some scholars to compare the concepts of coworking and makerspace with BIs.

Since its inception more than 50 years ago, the business incubator as a concept has proved to be an excellent instrument for supporting small and medium-sized enterprises. 87% of entrepreneurs that successfully finish the BI program survive for more than five years, compared to just 60% of those who begin new businesses outside of BIs. A business incubator resident generates an average of almost 5 jobs which combined with the average number of BI residents and graduates comes up to a substantial share of the employed population. In addition, according to InBIA, in the United States, every $1 of subsidies invested in a startup business incubation program subsequently generates $30 in taxes.

### 2.2. Business incubators as a part of EE in the US

Even though Europe and Asia are steadily moving forward, the US startup ecosystem is still ahead of the curve. In the Global Startup Ecosystem 2020 Analyst Report, Silicon Valley and New York are ranked first and second among startup-friendly regions. There are six more American cities in the top 20: Boston, Los Angeles, Austin, Seattle, Washington, and Chicago.

Despite the crisis and pandemic, 2020 turned out to be extremely successful for the US startup market. According to PitchBook and the National Venture Capital Association, last year venture capitalists invested $156.2 billion in American startups. That is, on average, every day, budding entrepreneurs “get rich” by $428 million. The

return was appropriate: at the end of the year, the US startup industry generated about $290.1 billion[178].

As of May 2022, in the global list of startups worth $1 billion or more (unicorn companies) more than half originate from the US: 585 out of 1,112. The top 10 by value includes four US startup projects: SpaceX ($100.3 billion), Stripe ($95 billion), Instacart ($39 billion) and Databricks ($38 billion)[179].

The number of successful startup projects and unicorn companies is growing faster in the US than worldwide, and this is no coincidence, as the US market is extremely attractive for innovative entrepreneurs from many other countries, and US legislation encourages their relocation in every possible way. In fact, immigrant entrepreneurs account for 25% of all new businesses started in the United States with the highest rates in California, New York, and New Jersey where immigrants represent 40% of all new startups[180]. For example, the country has special conditions for startups that were introduced under Barack Obama – International Entrepreneur Rule[181]. This is permission to develop a startup in the United States for 2.5 years (after which it can be extended for another 30 months), which is received by founders with a share in the project of 10%. The chances of such a permit increase if the project received money from an American investor or a government grant.

There are a lot of venture capitalists and business angel communities in the region, a developed network of tech hubs and a startup culture elevated to the absolute: the whole world is still imitating the US, trying to build its innovation ecosystems.

Among the states with the most comfortable conditions for doing business and developing technology startups are:

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[178] PitchBook-NVCA Venture Monitor. Q4 2020. URL: https://pitchbook.com/news/reports/q4-2020-pitchbook-nvca-venture-monitor

[179] The Complete List Of Unicorn Companies. CBS Insights. URL: https://www.cbinsights.com/research-unicorn-companies

[180] The 20 Most Important Startup Statistics. Fortunly. February 08, 2022. URL: https://fortunly.com/statistics/startup-statistics/#gref

[181] International Entrepreneur Rule. A Rule by the Homeland Security Department on 01/17/2017. URL: https://www.federalregister.gov/documents/2017/01/17/2017-00481/international-entrepreneur-rule

(1) Texas which long held its position in the top 10 best US states for technology development. And while it's still not Silicon Valley, big tech companies are choosing to move to Texas because of its business-friendly environment, including no state income tax and low cost of living.

Tech giant Oracle recently moved its headquarters from California to Houston, and industry icon Elon Musk, whose company Tesla also recently moved to Austin, is associated with the state.

Entrepreneur privileges are expected to provide an influx of investment deals to further develop the state's economy. It's also beneficial for tech entrepreneurs who want to start their own startup because the state's work environment is conducive to talent development and business support.

(2) New York – The New York State government has developed several programs for technology project creators. Entrepreneurs can count not only on the protection of personal assets and the absence of double taxation, but also on additional incentives and funding.

For example, in response to the pandemic, the New York State Energy Research and Development Authority launched the BRIDGES program to revitalize the economy by spurring the growth of technology startups. They can get up to $10 million in support. With this, many expect New York to surpass Silicon Valley as the nation's largest technology hub for startups.

(3) Massachusetts is a strong player in the technology industry. In the regular edition of the Milken Institute's 2020 Top Tech States Index, Massachusetts was ranked #1 in technology in the nation. It has been recognized for its contributions to research and development, as well as his large investments in human capital[182].

The two leading technological universities in the country, based in Massachusetts, Harvard and MIT, bring passionate and educated professionals to the labor market. It is easy for entrepreneurs to attract competent teams here, and this is one of the decisive aspects in creating a successful startup.

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[182] Chart: New report ranks top states for tech. GeekWire. URL: https://www.geekwire.com/2020/chart-new-report-ranks-top-states-tech/amp/

(4) California is the birthplace of the main technological center of the USA, Silicon Valley. Living in this state is quite expensive, but the benefits for startups are huge. Aspiring entrepreneurs find themselves in close proximity to big technology companies such as Apple, Google and Hewlett-Packard. These companies have been the catalyst for the growth of many tech professionals as well as venture capitalists who fund promising startups.

(5) The state of Delaware is especially popular for registering companies. More than 60% of Fortune 500 companies are incorporated in this state due to the state's special legal system for corporate law and low taxes.

Historically, in different regions of the United States, there has been a demand for different innovations. In particular, the largest film studios are located in Los Angeles, so startups related to cinema, creativity, and design are successfully developing there. Silicon Valley is home to Stanford University (around which it was formed) and the offices of the largest IT companies, so it is a hotspot for technology startups. New York is the largest financial center, so the topic of finance and real estate is popular there. Startups in the field of fitness and healthcare are actively developing in Miami. This region is also called the Spanish-speaking financial valley, as there is a very strong Hispanic community there. Boston and Houston have developed medtech and biotech. Seattle is home to the headquarters of many global corporations, including Microsoft and Amazon. Now, startups that work with retail and e-commerce are mainly concentrated there.

The formation and strengthening of regional innovation clusters is one of the national priorities in the US. A notable example of the effective use of the cluster approach in innovation is Silicone Valley, on the territory of which about 90 thousand companies operate, a number of research centers, and several leading universities. The key to its success is in the fact that it was possible to ensure a fruitful intellectual and personnel exchange between the research community and business here.

Another recognized center is Boston's 128 Route at the Massachusetts Institute of Technology. The concentration of biotech, medtech and pharmaceutical companies has turned Boston into the world's biggest life-science hub. A large pharmaceutical cluster

is also located in North Carolina and is called Triangle Park. This technopark is based on the scientific facilities of Duke University and the University of North Carolina.

However, due to the wide spread of remote work (the pandemic has significantly accelerated that process), the very concept of an IT hub has begun to blur, because there is no longer a need for a geographical concentration of talent.

Interestingly, if we compare the map of Republican and Democratic states with the map of the most valuable technology companies and startups over the past 5 years, the differences in the investment climate become apparent. The vast majority of investments and IT startups are in Democratic states (the only exceptions are Texas and Florida). This is due to the fact that the conditions for doing business differ in the tax system in a particular state and the rules of relations between employees and the company. As a rule, the more democratic the state, the higher the state tax and the stricter the rules of employment contracts[183].

There are more than 10 thousand incubators and accelerators in the world, almost a fifth of which are located in the USA. The world's first business incubator appeared in the United States in the middle of the last century[184]. As of March 2022, there are 2,165 incubators ща all kinds in the US. From year to year, the main Silicon Valley accelerator Y Combinator (alma mater for Airbnb, Dropbox, Reddit, etc.) remains the market leader, through which 300-400 startups pass annually[185]. Its incubation program lasts three months, and it is not necessary to come to the USA to participate. YC is offering projects $150,000 in exchange for a 7% stake. Projects can participate in the program both at the seed stage and at later stages. The company helps brands build communication with audiences in the US, Europe, the CIS, India, Brazil, and the UAE.

TechStars is another famous startup incubator in the US. Throughout the year, in different parts of the world, together with corporate partners, they run dozens of local acceleration programs, both industry focused and universal. The company operates

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[183] The United States of Tech Startups. CBS Insights. URL: https://research-assets.cbinsights.com/2021/02/22173254/united-states-tech-startups-map_02222021.png

[184] How a 1950s Egg Farm Hatched the Modern Startup Incubator. Wired. URL: https://www.wired.com/story/how-a-1950s-egg-farm-hatched-the-modern-startup-incubator/

[185] Accelerators & Incubators in United States. Tracxn. URL: https://tracxn.com/d/investor-lists/Accelerators-&-Incubators-in-United-States

almost 50 accelerators around the world. One of the important advantages of the program is that its graduates get lifetime access to Techstars resources around the world. Unlike the more universal YC, this accelerator focuses primarily on IT projects. Participation in the accelerator will “cost” 6% of the company, in exchange for which the startup receives $100,000. Physical presence during the program is mandatory, but Techstars compensates for living expenses by paying an additional $20,000 per team[186].

The top three also include 500 Startups, which runs a large number of acceleration programs around the world as well. It is a global accelerator and venture fund that manages investment projects in 74 countries (for example, in Russia they cooperate with Sberbank). 500 Startups runs short seed programs lasting four months[187].

One of the best accelerators for B2B startups in the US is Alchemist which takes 20-30 companies in each set. Acceleration lasts six months, during which startups have enough time to test the market if they plan to enter the US. Alchemist selects very strong technology teams with outstanding technical founders. Alchemist greatly accelerates the development of projects at the initial stage, the mentors of the accelerator are specialists from the world's leading IT corporations. Winners of 25 teams receive an average of $36,000 for development[188].

Experts single out accelerators AngelPad and Launchpad – the first is based in New York and San Francisco, and the second is in Los Angeles. AngelPad regularly tops the rankings of the best accelerators in the world. Once every six months, the company selects 15 teams for an intensive three-month program, and the selection is quite tough: more than two thousand teams apply to the accelerator at the same time. For $120,000, AngelPad gets a 7% stake in the startup. Launchpad is a little more modest in scale — the accelerator offers startups only $50,000 in exchange for a 6% share.

Another California-based accelerator focused on technology projects at the pre-seed stage is Amplify.LA. The accelerator is headquartered in Los Angeles, and it is much easier for companies based in this region to access the program. Selected startups give

[186] TechStars. URL: https://www.techstars.com/
[187] 500 Startups. URL: https://500.co/
[188] Alchemist Accelerator. URL: https://www.alchemistaccelerator.com/

Amplify.LA a 10% stake in exchange for $100,000, office space and access to a network of mentors[189].

Popular business incubators include Plug&Play, Acceleprise, Dreamit, Berkeley SkyDeck. Plug&Play (PNP) connects B2B startups that develop innovative technologies with Fortune 500 corporations. The accelerator does not take a stake in the company but monetizes through partner corporations. The main focus is not so much attracting a round, but rather piloting the technology within corporations and working out the conformity of products to market needs.

Most of the accelerators are located in San Francisco, Los Angeles, Boston and New York. The iDM USA Landing program, launched in early 2016, is based in New York. As part of it, startups interested in the US market are provided with a complete service: from registering a company in the states, opening a bank account, support in legal and accounting matters, to assistance in product localization, hiring staff, testing effective demand for a product and a full launch of sales in the US market.

In another famous US startup ecosystem, Boston, the MassChallenge accelerator stands out, which actively recruits startups in various sectors with a condition of no more than $1 million in revenue and less than $500,000 in investments. Historically, Boston, with its Massachusetts Institute of Technology and Harvard, has been a center for the development of technology companies. For example, Facebook and Tripadvisor started their business in the city and its environs[190].

Boston is also home to Techstars, one of the most famous business acceleration programs around the world. A bonus for residents is solid list of mentors, partners, and alumni of the program in various parts of the world. At the same time, LearnLaunch is a Boston accelerator focused mainly on education for emerging startups. The program includes courses, deep work with mentors, and assistance in testing hypotheses and business models.

It is very difficult to get into some startup support programs, since the acceptance rate is low (up to 1.9%): for every 7,000 applications, only 106 places will be available.

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[189] Amplify.LA. URL: https://amplify.la/

[190] MassChallenge Accelerator. URL: http://masschallenge.org/accelerator

By comparison, Stanford has an acceptance rate of 5.1% and Harvard has an acceptance rate of about 5.9%. When considering applications, many factors are taken into account: addressing a large market, having a bold idea, and the team behind the company.

In addition to business incubators and accelerators, innovative startups based in the United States can take advantage of one of the government's small business support programs. There are two main programs – Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR). Under them, young projects can receive grants of up to $1 million and the help of experts for free. However, there are strict conditions: a startup must be based in the United States and conduct business there, more than half of its capital must be owned by residents of the country, and the number of staff must not exceed 500 people.

In 2020, venture investments in the United States broke all records: according to the KPMG Venture Pulse report, they exceeded the 2019 figure by 13%[191]. At the same time, the number of transactions has decreased, and their average volume has increased – a sign that investors are trying not to take risks and invest in successful companies that are most likely to increase portfolio returns. Among the largest venture funds and firms are Google Ventures, Andreessen Horowitz, Insight Partners, Sequoia Capital and Bessemer Venture.

The top American venture funds, according to CB Insights, in addition to the already named Sequoia Capital, include Accel, Andreessen Horowitz, Benchmark, Index Ventures, Bessemer Venture Partners, Founders Fund, GGV Capital and IVP.

While New York City is a big hub for startup development, it is not a major player in this field: in Q1 2021, New York companies raised $7.6 billion in capital. This is a record amount for the region, twice the amount indicator for 2020. However, the most valuable US tech companies are on the opposite bank, and Northern California has historically been absorbing the biggest share of venture capital funding[192].

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[191] Venture Capital Funding Report Q4 2020. CB Insights, January 13, 2021. URL: https://www.cbinsights.com/research/report/venture-capital-q4-2020/

[192] New York Sees Startup Funding Spike In 2021. CrunchBase. https://news.crunchbase.com/news/new-york-sees-startup-funding-spike-in-2021/

The main epicenters of entrepreneurship in the US are San Francisco and Silicon Valley: they account for 13.5% of all global deals related to the startup industry. Among the American companies in the list of Top 100 Venture capitalists California is in the lead with Accel, Benchmark, Founders Fund and GGV Capital, as well as IVP and Bessemer Venture Partners located here[193].

The most important venture capital firms and business angel groups in New York and Silicon Valley are presented in Table 2.2.1.

Table 2.2.1 — Venture Capital Firms and Angel groups in New York and Silicon Valley, 2021[194].

| | **New York** | **Silicon Valley** |
|---|---|---|
| **Venture Capital Firms** | • Union Square Ventures<br>• Insight Ventures Partners<br>• Scout Ventures<br>• Thrive Capital<br>• Corigin Ventures<br>• General Atlantic<br>• FirstMark Capital<br>• Time Warner Investments | • TDK Ventures<br>• Corner Ventures<br>• Flourish Ventures<br>• Fenox Venture capital<br>• Hercules Capital<br>• Accel<br>• G2VP<br>• a16z<br>• Sequoia Capital<br>• Khosla Ventures<br>• Kleiner Perkins<br>• Y Combinator<br>• Founders Fund<br>• Google Ventures |
| **Angel groups** | • New York Angels<br>• 37 Angels<br>• Empire Angels<br>• Harvard Business School Angels of Greater New York<br>• JumpStart Angel Network<br>• Golden Seeds<br>• Tri State Ventures<br>• ARC Angel Fund<br>• Long Island Angel Network<br>• Soundboard Angel Fund | • Sand Hill Angels<br>• AngelList<br>• Sand Hill Angels<br>• Band of Angels<br>• South Valley Angels<br>• TiE Angels |

[193] The 20 Most Important Startup Statistics. Fortunly. February 08, 2022. URL: https://fortunly.com/statistics/startup-statistics/#gref

[194] Source: author's own.

| | | |
|---|---|---|
| | • Keiretsu Mid-Atlantic<br>• Georgetown Angels<br>• Bridgewater Associates | |

There are funds in the US that support companies with minority founders: for example, for LGBT founders there is the Gaingels syndicate and the Unconventional Ventures fund, Intel Capital also has a separate financing program. There are many funds and business angels in America with all sorts of segments and interests. Among the most active funds, it is worth highlighting Index Ventures (San Francisco), which financed Revolut; Accel, which supports fintech and insurance; Baseline Ventures, the first to invest in Instagram; and 500 Startups. The money is received mainly by technology startups. In 2020, Life Science products — aimed at health — were at the peak[195].

Universities play a special role in the development of an entrepreneurial culture: almost every university supports student startup projects and, thanks to partnerships with local foundations, opens the door to big business for them. One of the main features of American education is the active (and in some cases even the leading) role of universities in shaping the strategic agenda in business and public administration. In the United States, feedback is set up from businesses that are interested in high-quality training of graduates.

Universities are real places of power for young and talented teams. Universities can invest in startups, fund research, administrations of different states are interested in attracting startups and do a lot for this. A good example of such work is the University of Texas at Austin.

Key American universities that conduct their incubation and acceleration programs are presented in Table 2.2.2.

[195] Venture Capital Funding Report Q4 2020. CB Insights, January 13, 2021. URL: https://www.cbinsights.com/research/report/venture-capital-q4-2020/

Table 2.2.2 — Key universities in the US that conduct business incubation/acceleration programs[196].

| University | Program | Description |
|---|---|---|
| **Stanford University** | LaunchPad | Acceleration program based on practical exercises. Within 10 weeks, teams come together, develop prototypes, prove the viability of their proposal and find key customers and investors. |
| **Massachusetts Institute of Technology** | Martin Trust Center for MIT Entrepreneurship | E-Center is focused on the commercialization of the developments of students of the MIT. To this end, the E-Center financially supports the annual MIT Entrepreneurship Competition. Responsible for promoting entrepreneurial education in MIT courses, providing office space, grants, and mentors. |
| | MIT Global Startup Labs | The MISTI (MIT International Science and Technology Initiative) program promotes the development of young technology entrepreneurs in the regions. The program collaborates with universities and organizes continuing education courses led by MIT student instructors. The educational program includes technical classes, business competitions, lectures and events that help students realize their ideas. |
| **Harvard University** | Launch Lab X GEO | An accelerator within Harvard Innovation Labs that helps student projects grow into sustainable companies. The best of them can receive $100,000 for development. |
| **University of California, Berkeley** | The Berkeley SkyDeck Fund | An investment partner of the SkyDeck Accelerator program at UC Berkeley. They invest $100,000 in every startup that passes through SkyDeck and also participate in later investment rounds with the Berkeley founders. For three years, the fund has invested in projects more than 100 times, for which it received the title of one of the most active seed investors in California. |
| **The Wharton School, The University of Pennsylvania** | Penn Wharton Entrepreneurship | University of Pennsylvania Startup Challenge winners receive over $135,000 in cash. Finalists perform in front of live audiences and judges at Startup Showcase events. The university also has its own innovation fund. |
| **Cornell University** | eLab | A student accelerator that regularly holds demo days and releases 8 to 12 working companies every year. |
| **University of Michigan** | Desai business accelerator | Works with startups at an early stage. It is important that at least one of the founders is a graduate or student of the University of Michigan. Startups can receive investments of up to $25,000 to start a business and more than $500,000 in computing power, legal support, etc. |
| **University of Texas at Austin** | The Austin Technology Incubator | Non-profit organization that uses the resources of business, government and university to advise startups and help them move from an early stage of development to a successful business. |
| **University of Texas at Austin** | Student Entrepreneur Acceleration & Launch | SEAL is a summer accelerator that selects the most promising startups at the university and helps them move to the next level of development. |
| **Yale University** | Tsai CITY | An accelerator that helps students turn an early-stage business idea into a company or product. The accelerator is open to all Yale University students, who can receive a grant to implement the idea. |

[196] Source: author's own.

The number of new companies in the US increased from 3.5 million in 2019 to 4.4 million in 2020, an increase of 24%[197]. For comparison, in the UK, where active investment activity also continues, this indicator grew by only 9%[198]. And in China, it has not changed at all. In total, there were 31.7 million small businesses in the United States in 2020, including 71,153 startups and 8,988 EdTech startups (March 2022)[199,200].

About 7% of US startups work in the field of fintech (at the level of the global average). Innovative businesses related to healthcare, artificial intelligence, game development, advertising technology and the EdTech sector are also popular (schools and universities closed due to the pandemic, so students and teachers were forced to rely on digital learning tools; the primary and secondary education sector was particularly affected). EdTech startups raised $2.2 billion in 2020, according to EdSurge – almost 30% more than in 2019[201].

The creator economy is actively developing in the United States – a business run by creators of blogs, photo, media, audio content, curators of communities of interest, developers of software and tools designed to scale and monetize content. This is not a new trend, but in 2021, startups in this space received a record $1.3 billion in funding[202].

The most promising markets for startups in the US, as well as around the world, have been identified by the pandemic. The main interest of investors has focused on projects in the field of HealthTech and biotechnology, since COVID-19 has made

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[197] Djankov S., Zhang Y. Startups boom in the United States during COVID-19 // The Peterson Institute for International Economics (PIIE). February 17, 2021. URL: https://www.piie.com/blogs/realtime-economic-issues-watch/startups-boom-united-states-during-covid-19

[198] Ibid.

[199] Minaev A. Startup Statistics (2022): 35 Facts and Trends You Must Know. March 24th, 2022 // FirstSiteGuide. URL: https://firstsiteguide.com/startup-stats/

[200] EdTech Startups in United States. URL: https://tracxn.com/explore/EdTech-Startups-in-United-States

[201] Wan T. A Record Year Amid a Pandemic: US Edtech Raises $2.2 Billion in 2020. Jan 13, 2021 // EdSurdge. URL: https://www.edsurge.com/news/2021-01-13-a-record-year-amid-a-pandemic-us-edtech-raises-2-2-billion-in-2020

[202] The Creator Economy Explained: How Companies Are Transforming The Self-Monetization Boom. June 15, 2021 // Research Report. URL: https://www.cbinsights.com/research/report/what-is-the-creator-economy/

medical technological developments the most in demand. In America, such companies raised a record $14.1 billion last year[203].

Fintech solutions are attracting a lot of attention from investors, as the new digital reality has led to the need for a quick upgrade of financial instruments. Not the first year, investments in projects based on AI and neural networks have been popular. In 2020, AI companies raised $33 billion in investments[204].

Some experts call the mental health industry one of the fastest growing areas, including all start-ups that care about the mental health of a person. In 2021, the media confirmed that mental health tech is taking off. In 2020, mental health startups raised a total of $1.5 billion in investments, which is 4 times more than in 2016.

It is obvious that in the US entrepreneurial ecosystem, communications between ecosystem participants and entrepreneurs are well established, and therefore entrepreneurial communities play an important role. Provisers is an example of a business community aimed at building business connections for owners and managers of service businesses. More than 50% of Provisor members are founders and general partners of law and accounting companies whose goal is to find new clients.

Entrepreneurs' Organization (EO) is active not only in the US, but throughout the world, including Russia. The community brings together entrepreneurs of small businesses (from $1 million in turnover) and is aimed at the joint development of participants both in the areas of entrepreneurship and management, and in terms of personal growth.

Young Presidents' Organization (YPO) brings together company leaders, professional managers and business owners from different countries and market segments, including a significant number of product and service IT companies.

One of the most active communities in the US is gathered around On Deck online courses. To get into them, candidates need to pass a selection, including a 15-minute interview. The cost of the courses starts from about $2.5 thousand and they are

[203] DeSilva J., Zweig M. 2020 Market Insights Report: Chasing a new equilibrium. January 11, 2021 // RockHealth.org. URL: https://rockhealth.com/reports/2020-market-insights-report-chasing-a-new-equilibrium/

[204] The United States Of Artificial Intelligence Startups. August 4, 2021 // Research Briefs. URL: https://www.cbinsights.com/research/artificial-intelligence-startup-us-map/

organized in such a way that students gain knowledge and constantly acquire useful contacts. Now their main focus is on the participants of the startup ecosystem, for example, one of the courses is designed specifically for the founders of educational projects. There is also a strong online community around other courses, e.g., Stanford Continuing Studies.

The specifics of the US startup ecosystem are that if there are representatives of minorities among the founders of a startup – for example, LGBT people – then the company will have no problems with networking and social support. The Diversity and Inclusion agenda is relevant and respected: there are many communities, grants, scholarships, bootcamps and other support for which expats, LGBTQ founders and founders with disabilities can apply. A lot of support is also provided to businesses founded by black people.

As mentioned earlier, despite the high degree of competition in the American market, the country deliberately stimulates the influx of innovative projects of foreign entrepreneurs. To become a member of the International Entrepreneur Parole Program, a visa-free entry to the USA for a simplified stay of entrepreneurs in the region, a startup must attract investments from a US private investor in the amount of $250,000 or a grant from government agencies in the amount of $100,000.

Such a grant can be obtained, for example, under the Small Business Innovation Research program, funding comes through the US Small Business Agency (SBA), however, according to the conditions, 50% of the company's capital must still belong to US residents. As a result, the startup gets the right to visa-free entry to the United States for several years with a further possibility of extending the period.

The International Entrepreneur Parole Program is new, so the administrative process is not perfect, and paperwork can take 2-6 months. In the United States, there is a program for talented entrepreneurs who have won industry competitions, received awards, membership in professional organizations, mentions and their own publications in specialized media, as well as with their own O-1 visa. Obtaining such a visa will cost $7-10 thousand and requires the registration of a legal entity in the United States. Such a policy partly distorts global statistics on the number of startups and unicorn

companies, as many entrepreneurs from various countries transfer their businesses to US jurisdiction, after which their projects are no longer included in the list of startups in their real countries of origin.

Other specifics of the US market are that the American consumer is sophisticated and tired of being bombarded with new products from the Valley. Therefore, to enter the US market, your product must be perfectly prepared. One of the solutions that marketers in the US themselves use is to launch first in Canada, refine the product based on feedback from the market, and only then scale to the US.

While fierce competition and a high barrier to entry in the US market may deter young startups, the US attracts hundreds of entrepreneurs from around the world every year with its favorable investment landscape and well-developed start-up infrastructure.

Participation in acceleration programs is expensive (you have to pay with a large share in a company at a low valuation), but it pays off with a powerful networking and attention from investors and the media.

### 2.3. Business incubators as a part of EE in Europe

Entrepreneurial ecosystems, primarily such an element as innovative new companies, are considered in European countries as a source of new jobs and economic growth stimulation[205]. At the same time, the European model of entrepreneurial ecosystems has some peculiarities, for example, if we compare this model with the American one. That is because Europe includes many countries with different levels of development and different entrepreneurial cultures. In addition, Europe has traditionally had strong unions, which means tighter labor laws that protect employees from layoffs by providing them with larger severance pay and longer notice periods compared to the much weaker regulatory framework in the United States.

The education system and the inclination and attitude of people towards risk, as well as the culture of risky entrepreneurship, have a significant impact on the entrepreneurial ecosystem model. One of the strongest in European countries is the

[205] Building Entrepreneurial Ecosystems in Europe. URL: https://www.bruegel.org/events/building-entrepreneurial-ecosystems-in-europe/

British education system. For this system, as for many other European education systems, it is common to reward students for academic success – In fact, for memorization and exam passing skills. The process of admission to British higher education institutions is a confirmation of this: it is based solely on the academic abilities of applicants and their intellectual potential. Any activity that jeopardizes academic success is generally discouraged or banned altogether. This feature of the education system makes it possible to grow talented scientists and researchers, but not successful entrepreneurs. European universities graduate specialists with a low-risk appetite and a high level of fear of failure in entrepreneurship. In other words, graduates of European universities, unlike graduates of American universities, do not see business failure as an integral and important part of entrepreneurial activity and a harbinger of future success. The system of European education creates in people the fear of failure as something shameful, and the European mentality is aimed at avoiding risk and failure at all costs.

European universities, to a lesser extent than American ones, tend to cooperate with companies and corporations, hold fewer discussions on entrepreneurship or starting a business. Instead, they are completely focused on the preparation of competent executives, which can be considered a more traditional goal of the education system[206].

In European countries, close cooperation between the corporate and academic worlds is only in its infancy, as evidenced by the changes in curricula adopted by some of the leading European universities. For example, in Cambridge, the MET Cambridge Engineering program was adopted, in which students interact directly with corporate research centers, which allows you to grow the most “progressive” and “entrepreneurial” technical specialists. At the same time, the greatest attention is paid to practice within the framework of production activities.

Such programs have long been widespread in American universities. For example, in the entrepreneurial ecosystem that has developed around Stanford, the student community of the university is an integral part of entrepreneurship – in fact, it helps

[206] Entrepreneurship Ecosystems in Europe vs the US 06.10.2019. URL: https://medium.com/swlh/entrepreneurship-ecosystems-in-europe-vs-the-us-c0d096f05ca6

entrepreneurs find and implement new ideas. In addition, the direct participation of venture capitalists and business angels in the scientific and entrepreneurial activities carried out at Stanford by its students creates an effective cycle that helps fund the next generation of startups founded by Stanford students. European entrepreneurial ecosystems are characterized by a significantly lower degree of venture activity on campuses[207].

To overcome the problem mentioned above, European countries are making efforts to facilitate the establishment of links between the academic and entrepreneurial communities within the entrepreneurial ecosystem. For example, the startup "Spain" since 2012 seeks to organize interaction between researchers, entrepreneurs, investors and traditional enterprises using a global platform. This startup organizes the Southern Summit every year, an event that attracts the attention of more than 3,000 applicants participating in the competition. Universities also play a critical role in interacting within the entrepreneurial ecosystem and in disseminating knowledge that would not otherwise be commercialized. Despite the growth in the number of students entering research specialties, not all of them can and want to remain in academia. Entrepreneurship is an alternative for students. In this regard, the Center for Entrepreneurship is organizing a series of lectures available to students and members of the business community in order to present entrepreneurship as an alternative career path within the research community. Entrepreneurs taking part in the lectures help students answer questions such as "What is entrepreneurship and is it right for me?" and "I want to start my own business. In which direction should I move?"

Building the entrepreneurial potential of students is starting to be seen as an important aspect of student education in European universities at the current stage. For example, the League of European Research Universities sees research-intensive universities as a training ground for students with entrepreneurial skills. To do this, when developing training programs, the needs of business and society, which may arise soon, are considered. Students are actively involved in real projects and interdisciplinary teams. As part of efforts to increase the competitiveness of the

[207] Ibid.

entrepreneurial ecosystem in European countries, considerable attention is paid to the growth in the degree of commercialization of knowledge created within universities[208].

In European countries, unlike the US, it is more difficult for entrepreneurs to get access to venture capital. More risk-averse, American investors are more willing to provide the funds necessary for the development of startups in the later stages of project financing. This means that innovative startups in European countries need to focus on generating revenue rather than growth in order to stay in the market. With less access to funding at a later stage, European startups are unable to spend much on growth. In this regard, the development of European startups is less rapid compared to American ones, which are supported by venture investors. At the same time, European startups tend to be more resilient and less risky, even though they are not growing as fast as their American competitors. As European countries look to introduce stimulus measures to finance startups at a later stage, European startups are getting more opportunities to compete with US startups in terms of growth.

The lower risk appetite of the European entrepreneurial ecosystem model also leads European startups to start generating income as soon as possible in order to show their investors that they are viable[209]. However, American startups have no such goal, and they postpone the generation of income to later stages, receiving from venture capitalists (VCs) significant amounts of funding at the initial stage, necessary for the rapid growth that venture capitalists in the United States expect from startups. In this regard, a significant feature of the entrepreneurial ecosystem in Europe is that European startups that have received initial funding seek to generate income as quickly as possible, focusing not on rapid growth, but on generating income and proving their ability to bring profit to investors, while in the USA startups cash flows are provided by constant infusions of new funds by institutional investors. At the same time, the focus of European startups on generating income in the shortest period allows them to be more

[208] Martiarena A., Möslinger M., Kert K. Connecting with the entrepreneurial ecosystem. EUR 29988 EN, Publication Office of the European Union, Luxembourg, 2019. P. 12. URL: https://ec.europa.eu/jrc/communities/sites/jrccties/files/jrc118904_tto_workshop_report_connecting_with_the_entrepreneurial_ecosystem.pdf

[209] Bennett J. Entrepreneurship ecosystems in Europe vs the US 21.10.2019. URL: https://ecosystembuilderhub.com/entrepreneurship-ecosystems-in-europe-vs-the-us/

independent of external financing, face less capital dilution and a higher degree of manageability.

Another feature of the European entrepreneurial ecosystem is more difficult access to finance. American venture funds, influenced by the American mentality, more prone to risk, are ready to consider cooperation proposals from a significant number of potential partners and choose the most promising ones. As a result, the leading US venture funds make many deals thanks to the high accessibility for entrepreneurs. American venture capitalists are willing to meet with many potential entrepreneurs in the hope of lucky finds of great ideas and projects.

In European countries, VCs are more conservative and have a higher criterion to be met by startups before the first meeting, which also leads to a perceived higher proportion of meetings that culminate in collaboration and investment. Representatives of European venture funds are not ready to meet with a large number of entrepreneurs[210]. This forces entrepreneurs to be more assertive and more creative in order to secure a meeting with potential investors – such perseverance often ends in success and the provision of the necessary funds to implement the idea.

A feature of the entrepreneurial ecosystem in European countries is that a significant incentive for the development of European startups is the availability of access to the single European market, that is, a large-scale sales market. This allows European startups to quickly conquer a significant number of markets and expand their activities. At the same time, American startups tend to be more focused on conquering the huge, but at the same time heterogeneous, American market. As a direct result of this, European startups tend to be much better at localization and are more culturally accommodating. So, American startups – developers of products from Silicon Valley are guided by a global audience and are forced to serve a variety of users. At the same time, European startups are guided and adjusted to local markets. The consistent market entry that is typical for European startups is a more profitable approach for resource-limited startups, while US growth-oriented startups are competing in a large number of

[210] Bennett J. Entrepreneurship ecosystems in Europe vs the US 21.10.2019. URL: https://ecosystembuilderhub.com/entrepreneurship-ecosystems-in-europe-vs-the-us/

markets at the same time. Many European startups have had great success in their region due to having a strong local component required to run successful entrepreneurial activities in European countries compared to the giant US market[211].

However, the European entrepreneurial ecosystem is characterized by such a disadvantage associated with the peculiarities of the entrepreneurial culture in European countries, as the inability to use the benefits of storytelling to promote a new company. This is evident in the fact that entrepreneurs in European countries tend to be less willing to share their success stories. Since such values as risk-taking and courage are part of the entrepreneurial culture in the United States, American entrepreneurs actively "boast" about their success, tell how they reached heights. Almost every American startup has a success story that tells how its founder created a startup and gained market share. Having a strong story behind every company allows American companies to develop an effective value proposition and create a compelling argument that will win the hearts (not just the minds) of investors, potential employees, and customers. European startups do not have such success stories, as the European entrepreneurial culture is characterized by great modesty. In Europe, it is not customary to share success stories, to put on public display signs of success and a high level of material wealth. Therefore, European startups do not have the opportunity to use storytelling as effectively as their American competitors.

As of May 2022, in the global list of 1,112 unicorn companies 148 originate from Europe with 62 companies from the UK, 29 from Germany and 24 from France. The top 10 by value includes two startup projects from UK – Checkout.com ($40 billion) and Revolut ($33 billion), – and one from Sweden – Klarna ($45,6 billion).

The list of top 15 European countries with the biggest number of startups, unicorn companies and business incubators is presented in Table 2.3.1[212] which exposes several interesting outtakes. First, it can be clearly seen that all European countries are very different in terms of entrepreneurial culture and activity. For instance, countries like

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[211] Entrepreneurship Ecosystems in Europe vs the US 06.10.2019. URL: https://medium.com/swlh/entrepreneurship-ecosystems-in-europe-vs-the-us-c0d096f05ca6

[212] The Complete List Of Unicorn Companies. CBS Insights. URL: https://www.cbinsights.com/research-unicorn-companies

Italy, Spain and Portugal have much lower startup to unicorn ratio than other countries and their top unicorns (if any) are relatively low in value. That means that those countries are focused more on smaller local projects. Also, the number of startups and BIs compared to population can be an indicator of entrepreneurial activity: while there are approximately 94 startup projects and 7 business incubators per 1 mln people in the UK, in Italy those indicators are only 16 and 1,2.

Table 2.3.1 — Number of startups, unicorn companies and business incubators in selected European countries, 2022[213].

| Country | Startups | Unicorns | Top unicorn (by value) | | | BIs |
|---|---|---|---|---|---|---|
| | | | Name | Value | Industry | |
| UK | 6,313 | 62 | Checkout.com | $40.0 bln | Fintech | 461 |
| Germany | 2,313 | 29 | Celonis | $11.0 bln | Data Management & Analytics | 258 |
| France | 1,575 | 24 | Doctolib | $6.4 bln | Health | 163 |
| Spain | 1,406 | 3 | Jobandtalent | $2.35 bln | Internet Software & Services | 78 |
| Netherlands | 1,028 | 6 | Mollie | $6.5 bln | Fintech | 71 |
| Italy | 943 | 1 | Scalapay | $1.0 bln | Fintech | 73 |
| Switzerland | 751 | 6 | SonarSource | $4.7 bln | Internet Software & Services | 45 |
| Sweden | 686 | 8 | Klarna | $45.6 bln | Fintech | 85 |
| Belgium | 579 | 3 | Collibra | $5.25 bln | Data Management & Analytics | 60 |
| Poland | 497 | 0 | - | - | - | 53 |
| Ireland | 440 | 5 | BrowserStack | $4.0 bln | Internet Software & Services | 20 |
| Denmark | 406 | 2 | Pleo | $4.7 bln | Fintech | n/a |
| Portugal | 380 | 0 | - | - | - | 27 |
| Norway | 309 | 4 | Cognite | $1.5 bln | Data Management & Analytics | n/a |
| Austria | 308 | 2 | BitPanda | $4.11 bln | Fintech | n/a |
| Hungary | 307 | 0 | - | - | - | 20 |

Second, the majority of startup projects in Europe are launched in three most popular fields: Fintech, Internet Software & Services and Data Management & Analytics.

Thus, the European entrepreneurial ecosystem model has a set of distinctive features that make it stand out from other models, such as the American one, including

[213] Source: combined by author based on various sources including UBI Global, CB Insights, Tracxn, Startupranking.com data.

lower risk appetite, less cooperation between European universities and companies, a low degree of venture capital activity on campuses, as well as more difficult access to venture capital.

### 2.4. Business incubators as a part of EE in India

India is one of the fastest growing economies. The entrepreneurial ecosystem in India is the third largest and fastest growing ecosystem in the world, with the number of startups growing steadily during 2005-2015 and an unprecedented 10,000 startups in 2015. As of 2019, there were about 50,000 startups in India, about 8900-9300 of them being technology startups[214]. According to another source, the Asian Development Bank, India has one of the most developed startup ecosystems, with 26,000 such companies as of the end of 2020[215]. Only the USA and China are ahead.

In August 2019, startups in India raised $1.4 billion showing a sevenfold increase compared to $182 million the year before. During full 2019, investments in local startups reached $14 billion, in 2020 the figure increased to $63 billion.

According to Suisse Credit Group, though India's startup market is the third largest in terms of value, in 2019 it only had 26 unicorn enterprises (startups with capitalization above $1 billion) compared to 292 unicorns in the US and 162 in China. One of the most expensive startup projects in India was Biocon Biologics, which offers affordable new biological products and substitutes – it was evaluated at $3 billion[216]. As of May 2022, the number of unicorn startups originating from India increased to 66 while for US and China the same indicator was 585 and 174 respectively[217]. The largest capitalization among startups from India belongs to One97 Communications, which offers a platform for mobile commerce and payment solutions in e-commerce. It is

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[214] Indian Startup Ecosystem. URL: https://www.startupindia.gov.in/content/sih/en/international/go-to-market-guide/indian-startup-ecosystem.html#1497938344123

[215] David D., Gopalan S., Ramachandran S. The Startup Environment and Funding Activity in India. ADBI Working Paper 1145. Tokyo: Asian Development Bank Institute, 2020. URL: https://www.adb.org/publications/startup-environment-and-funding-activity-india

[216] Biocon Biologics. URL: https://www.crunchbase.com/organization/biocon-biologics-india-ltd

[217] The Complete List Of Unicorn Companies. CBS Insights. URL: https://www.cbinsights.com/research-unicorn-companies

valued at $16 billion and has received investments from Intel Capital, Sapphire Ventures, Alibaba Group.

In India, according to the Pew Research Center, the middle class has increased 20 times since 1990 (although its share does not exceed 28%, which is significantly lower than in developed countries), digitalization is developing fast, and high-speed Internet is one of the cheapest in the world: $0.26 per 1 GB, which is 45 times cheaper than in the United States. India is ranked 63 out of 190 in the annual Doing Business ranking[218], which reflects the conditions for doing business around the world. The ranking takes into account indicators such as the ease of starting a business, obtaining building permits, registering property and obtaining loans. The authors note that it is still difficult to start a business in India, as there are difficulties with registering property and fulfilling contracts, as well as high taxes. So, paying attention to individual subjects of the country, it is preferable to launch startups in New Delhi, where taxes are relatively low (compared to other parts of India) and the property registration process is simplified. Mumbai and Bangalore are also suitable cities. The latter has already become a mecca for IT specialists – It is the first Indian city with technology parks, where the world's giants began to enter.

The pioneer was the American Texas Instruments, one of the leaders in the production of semiconductor devices, microcircuits and electronics. In addition to such factors as the development of technology parks and IT education in Bangalore, the right decision of the Karnataka state authorities to provide land for Texas Instruments near the airport played a role. The company applied with a similar request to the authorities of the states of Maharashtra (Mumbai) and Tamil Nadu (Chennai) but was unable to obtain permission.

The creation of new companies in India is facilitated by an entrepreneurial ecosystem, the formation of which began in the 1990s. At this time, the country began to increase economic activity, stimulated by liberalization and deregulation, which opened the Indian economy to foreign investment.

[218] Doing Business. URL: https://www.doingbusiness.org/en/rankings

Foreign TNCs from various sectors of the economy began to operate in India, which led to increased competition and forced domestic companies to catch up with their foreign competitors in terms of development[219]. Over time, the Indian divisions of these TNCs, as well as domestic firms, gradually increased their ability to innovate in their activities[220]. In addition, in the 1990s India's software services industry has experienced rapid growth driven by factors such as low labor costs for highly trained staff and reliable connectivity that has enabled remote software development services. Companies such as Infosys, Wipro and TCS have become the backbones of the new knowledge economy and contributed to the growth of employment, wealth and poverty reduction in the country. Increase in startup activity is also associated with the creation of a knowledge economy.

The Indian government has succeeded in creating an entrepreneurial ecosystem in which all the critical elements are present — a large market, highly qualified specialists, and access to financing. The features of the created ecosystem include a low level of exit of entrepreneurs from the ecosystem through mergers or IPOs. Entrepreneurs and venture capitalists only get a return on their investment if they exit successfully. Otherwise, they do not have the opportunity to return the invested resources, which indicates a limited degree of liquidity and the ability to quickly sell the established company and start business again. Another specific feature of India's entrepreneurial ecosystem model is the culture of low tolerance for failure in India and its impact on entrepreneurial activity, in which the failure rate is quite high. This becomes more important, especially in an entrepreneurial environment where a small proportion of startup projects end up being successful. Moreover, despite having one of the world's largest sales markets, the Indian market is characterized by fragmentation and price sensitivity[221]. In general, India's entrepreneurial ecosystem is conducive to the creation of new businesses, including high-tech ones.

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[219] Krishnan R.T. From jugaad to systematic innovation: The challenge for India. Bangalore: Utpreraka Foundation, 2010. P. 64.

[220] Jha S.K., Parulkar I., Krishnan R.T., Dhanaraj C. Developing new products in emerging markets // MIT Sloan Management Review. 2016. № 57 (3). P. 55.

[221] Srivardhini K.J. Entrepreneurial ecosystem in India: Taking stock and looking ahead // IIMB Management Review. 2018. Vol. 30. № 2. P. 179.

Next, the creation of an innovation hub in Bangalore, which was ranked among the top 20 startup cities in the world in the 2019 Startup Genome Project ranking, will be considered[222]. It is also among the top 5 fastest growing startup cities in the world and the top 3 cities in the world for tech startups. The innovation hub in Bangalore hosts about 30% of India's 13,456 startups, and it has been the leader in the number of venture capital investments attracted over the past 5 years. In addition, one in three of the top 50 innovative software companies from NASSCOM is based in this hub.

In the 2019 JLL City Momentum Index, the city topped the list of the world's most dynamic cities (seeking rapid change through technology and innovation). Also, the innovation hub in Bangalore is one of the top 10 megacities for joint research and patenting according to the World IP Report 2019 and is an IT outsourcing hub[223]. All this shows the incredible potential of Bangalore as an innovation hub.

Initially, the innovation hub in Bangalore began to develop as an IT outsourcing center and over time has turned into an established innovation center. The rapid development of information technology in the 1980s and 1990s led to the creation of many new companies in the 2000s in this area. In turn, the creation of these companies and their successful operation attracted even more entrepreneurs to the information technology industry. Gradually, the city became the focus of many startups catering to both the Indian and global information technology market[224]. During the same period, TNCs looking for technical talent set up technology and research and development centers in Bangalore. They tapped into the intellectual potential of the hub and expanded it.

A vibrant entrepreneurial ecosystem at the Bangalore Innovation Hub, from a provider of technical services to an innovator and technology creator to address contemporary challenges in areas such as biotech and health, climate change and

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[222] Indian Startup Ecosystem. URL: https://www.startupindia.gov.in/content/sih/en/international/go-to-market-guide/indian-startup-ecosystem.html#1497938344123

[223] Anchen J. Bengaluru, as it Transforms from India’s IT capital to India’s Innovation Hub 09.12.2019. URL: https://medium.com/@TedxBangalore/bengaluru-as-it-transforms-from-indias-it-capital-to-india-s-innovation-hub-dd5011f7fcbf

[224] Ibid.

mobility, has been fueled by a distinct mindset as well as low-cost skilled workforce and a significant market.

The established research centers have produced a large number of talents in biotechnology and deep technologies, which has stimulated many new start-ups working in the field of medical research and biotechnology to establish medical research and development centers in Bangalore. There are about 1,800 life science, digital health and predictive diagnostics startups in India, of which almost a third (550) are based in Bangalore. In some areas, the share of startups based in Bangalore is higher, for example, almost 60% of biotech companies in India were established and operate in Bangalore.

In the field of medicine and biotechnology, startups from the innovation hub in Bangalore specialize in the following areas:

(1) Diagnosis and treatment of cancer. Companies are combining the Internet of Things with new technologies for early detection of cancer, thereby multiplying the chances of successful treatment. Ranked among CB Insights' top 100 AI startups in the world, Niramai is using machine learning to detect breast cancer at an early stage. Farcast Biosciences has developed a new way to test cancer drugs in tumor cultures to make therapy more personalized. MedGenome has developed a bioinformatics database of over 2 million cancer-related genetic mutations to help hospitals investigate mutations at the molecular level and detect potential drug susceptibility[225].

(2) Mental health and well-being. In recent years, the prevalence of mental illness has been on the rise in India due to the overuse of technology. However, due to the fact that in Indian culture, mental illness is considered something shameful, and people with mental problems are considered outcasts in society, many people prefer to hide their mental problems. Bangalore is leading the way in training mental health professionals to deal with new drivers of mental illness such as gaming, online shopping and social media. In 2019, the National Institute of Mental Health Neurosciences in Bangalore opened India's first clinic dedicated exclusively to technology-related mental health issues. Several innovative start-ups are also working to break the stigma against people

[225] MedGenome Inc. About us. URL: https://research.medgenome.com/about/

with mental illness by offering consumers convenient ways to access medical and mental health care. For example, YourDost provides users with a technical platform that allows users to anonymously seek support from more than 1,000 trained psychologists, counselors, and coaches[226]. To overcome the problem of demand for mental health services outpacing supply, companies like Wysa are offering AI-powered virtual mental health care that combines sensitive listening with evidence-based therapeutic methods.

A significant number of startups at the innovation hub in Bangalore are working in the field of climate and environmental resilience. The consequences of climate change and global warming are an increase in extreme weather events, natural disasters, and seasonal temperature fluctuations. This, in turn, destroys agricultural crops, property and people's lives. For India, these problems are among the most pressing.

In this regard, companies based in the innovation hub in Bangalore are doing their part to reduce carbon emissions and protect the environment. The emphasis is on three areas: environmentally friendly transport, recycling and reuse of water, increasing resilience to natural disasters.

Nearly 100 car makers from Bangalore are aiming to conquer the electric vehicle market. Companies such as Ather Energy, Emflux and Altigreen are actively introducing electric vehicles and their equivalents into people's daily lives. For example, Ather Energy has developed an electric scooter driven by high demand for scooters in India[227]. The Emflux company is engaged in the production of electric motorcycles[228]. The Micelio Foundation provides the latest infrastructure and collaboration space that startups can use to design and prototype new products.

Scientists from the Center for Nano and Materials Science at Jain University in Bangalore and the Central Research Institute of Salts and Marine Chemicals in Gujarat have created a nanoparticle-based solution using a simple sugar syrup that can purify wastewater. This solution acts as a micro-cleaner, removing toxic contaminants from various types of industrial wastewater. Its pollutant removal efficiency is nearly 16 times higher than previous carbon-based adsorbents.

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[226] YourDost. URL: https://yourdost.com

[227] Goodbye scooter. Meet Ather 450X. URL: https://www.atherenergy.com

[228] Electric super bike. URL: http://www.emfluxmotors.com

Melting glaciers form lakes that can suddenly release large volumes of water, causing flooding downstream. Remote sensing technologies can monitor these lakes but cannot measure the volume of water in the lakes or estimate the time of a breakthrough. Scientists at the Indian Institute of Science in Bangalore have developed methods that use data on glacier melt rate, slope and laminar ice flow to estimate the amount of water release and identify those lakes that can cause flooding by the release of water.

The innovation hub in Bangalore has made significant progress in the field of space research, as the Indian Space Research Organization is located in Bangalore, which, with little funding, has made significant progress in the development of breakthrough technologies. Bangalore also hosted the Human Space Flight Center in preparation for India's first manned spaceflight program scheduled for 2022. Thanks to these two scientific organizations, the space research ecosystem was created, which acted as a platform for the implementation of ambitious projects in the private sector in the field of innovative space technologies. In many ways, this became possible due to the training of qualified personnel in these scientific and research organizations. For example, Bellatrix, based in Bangalore, has begun building propulsion systems for satellites of various sizes. Its first product was a water-powered electric propulsion system. Bellatrix is working closely with the Indian Space Research Organization.

The growing demand for small satellites, weighing from 1 to 10 kg, opens a number of opportunities for the development of new technological solutions. For example, Pixxel is building high-quality imagery microsatellites so that AI developers around the world can access data at a level of detail never before possible[229]. Prior to launching the satellites, experts from Pixxel worked with scientists from the Indian Space Research Organization on a nanosatellite project, and part of this collaboration and the experience they gained from it gave them confidence that they could build and launch satellites on their own.

Bangalore's innovation is helping India become a leader in building space infrastructure for its neighboring countries. In 2019, Indian Prime Minister Narendra Modi opened a ground station in Bhutan. This station was built in just nine months by

[229] About Pixxel. URL: https://pixxel.space

Bangalore-based Alpha Design Technologies. The station supports GSAT-9, also known as South Asia Satellite, which provides free access to satellite services for neighboring countries such as Nepal, Afghanistan, Bangladesh, Maldives, Nepal and Sri Lanka.

It can be concluded that the success of the innovation hub in Bangalore in a number of areas is based on close cooperation between scientific and research organizations and private companies. Numerous scientific and research institutes train the talented and qualified personnel required by private companies and develop the latest technologies. In turn, private companies are engaged in the implementation of these technologies. An important factor in the success of the innovation hub in Bangalore is a significant sales market, both domestic (the Indian market) and the markets of neighboring countries. At the same time, Bangalore-based startups are addressing the issues that are most relevant to India at the current stage, which guarantees that they will have demand for their high-tech products.

Speaking about the main support measures for startup entrepreneurship in India, some favorable conditions for startups should be noted. In particular, they are exempted from paying income tax for three years — in case of non-distribution of dividends and the presence of certification from the International Mission Board (IMB). You can also get rid of income tax if the project is recognized by the Department of Industrial Policy and Development of India. In addition, there is an exemption from investment tax[230].

The following requirements must be met in order to be considered a startup, according to the Startup India Action Plan: (1) an enterprise has not yet completed a ten-year term after its incorporation or registration; (2) an enterprise is a private limited company, a partnership firm, or a limited liability partnership; (3) for any of the financial years since incorporation/registration, the yearly turnover has not exceeded Rs. 100 crore (approx. $13 million); (4) an enterprise has a scalable business model with a great potential for job creation or wealth creation, or it is working towards innovation,

[230] Startup India: Eligibility, Tax Exemptions and Incentives. Cleartax. URL: https://cleartax.in/s/startup-india-tax-exemptions-eligibility

development, or enhancement of goods, processes, or services; (5) an enterprise was not founded by dismantling or recreating an existing firm[231].

Another important favorable factor is the active digitalization since 2014. Although the country is lightly urbanized, smartphones and reliable Internet connectivity are present even in rural areas, increasing the potential volume of consumers for tech startups. More than 719 million Indians (54% of the population) already have access to the Internet. That is even though in 2017, for example, only 34% of the population could use it[232].

Despite the availability of tax breaks for startup businesses, in general, taxes in India are relatively high. Thus, the income tax has a progressive rate from 5% to 30%. The tax-free amount is up to $3.4 thousand, but if the annual income exceeds $134.6 thousand, one will have to pay another 15%. And for healthcare and education companies, income tax is increased by 4% compared to the standard rate.

In addition, the peculiarities of the mentality act as a deterrent for the development of entrepreneurship and the entrepreneurial ecosystem. Many entrepreneurs note that it can be difficult for contractors to complete tasks on time, and sometimes agreements are canceled at the last moment. This strongly marks the specifics of doing business in India from the US and China.

Some of India's most notable startups that have grown and become unicorns thanks to comprehensive government support measures include Digit Insurance (insurance services) and Innovacer. The latter is an Indian unicorn in HealthTech, the company collects patient data from various sources – pharmaceutical companies, clinics, laboratories in order to get a complete picture of their health. The platform is already used by more than 37 thousand medical institutions, including in the USA.

Of particular note are three other startups that are already used by tens of millions of people in India and have launched in other countries where there is a significant Indian diaspora:

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[231] Ibid.

[232] Hindustan Times. Connectivity gets better but parts of India still logged out. URL: https://www.hindustantimes.com/india-news/connectivity-gets-better-but-parts-of-india-still-logged-out/story-VSqXriMdGUudWb7eBcWzjN.html

– PayTm is an electronic wallet. The startup is valued at $16 billion, initially it was a bill payment service.

– BYJU'S raised $1.35 billion in funding in 2020, becoming the world's largest EdTech startup by valuation. The company prepares students for exams and provides various educational programs and materials.

– Zomato is a food delivery service. Estimated at $5.4 billion. In addition to India, it successfully operates, for example, in the UAE.

Despite the fact that there are no unicorns among defense and space startups, the Indian authorities have regularly stated in recent years that they are interested in private companies actively developing in these areas. Among others, the following projects are of interest:

– The ideaForge drones have been filmed in Bollywood and are already in service with the Indian Army[233].

– Pixxel (already mentioned above) builds satellites for remote sensing of the earth, which should provide around the clock global coverage.

Agriculture accounts for over 16% of India's GDP[234]. India is the second largest producer of agricultural products in the world (7.39% of world production). At the same time, food security remains one of the most important issues[235]: up to 40% of food in India is wasted, so startups with unique solutions in this area are in demand and has great future potential. In this regard, a number of startup projects in the field of AgroTech also deserve special attention:

– Cropin is a set of solutions for farm management, as well as monitoring and analytics in the field of agriculture[236].

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[233] IdeaForge. URL: https://www.ideaforge.co.in/

[234] Press note: provisional estimates of annual national income, 2020-21 and quarterly estimates (q4) of gross domestic product, 2020-21. Government of India, Ministry of Statistics and Programme Implementation. Published on May 31, 2021. URL: https://mospi.gov.in/documents/213904/416359//Press%20Note_31-05-2021_m1622547951213.pdf/7140019f-69b7-974b-2d2d-7630c3b0768d

[235] Food Waste in India. Chintan Environment and Action Group. URL: https://www.chintan-india.org/sites/default/files/2019-09/Food waste in India.pdf

[236] Cropin. URL: https://www.cropin.com/

– Bijak is another AgroTech startup. The company's platform is the largest in the country, which brings together producers and wholesale buyers of agricultural products[237].

The state plays a big role in the development of startups in India: in 2015, the StartUp India[238] program was launched to promote and recognize talented entrepreneurs and boost the national economy. In fact, this is a state hub, designed to become a point of contact for all participants in the entrepreneurial ecosystem and help in networking, financing, interaction with the authorities, and also provide educational content. On the official website of the program, a huge knowledge base can be found covering many aspects of running a small enterprise in India from registering a startup to finding investors. At the same time, there are other large hubs created to stimulate small and medium-sized businesses, including:

- MeitY Startup Hub – a hub from the Ministry of Electronics and Information Technology of India, bringing together over 2.3 thousand startups, 380 incubators and more than 300 mentors. It is declared as a coordinating, facilitating and monitoring center, provides access to the market and incubators, has its own educational cluster[239].

- iB-Hubs is a large international organization that has a representative office in India, which offers a Technopark for research, recruitment, international product development in VR / AR, cybersecurity, IoT, blockchain and other industries. The company is supported by government agencies. At the moment, iB-Hubs has 5 centers in India, plans are to create 20 technology parks and 500 hubs. They even have their own startup school, designed for four weeks of intensive training and supporting graduates (due to the coronavirus, this direction is temporarily closed)[240].

Various industry organizations and chambers of commerce and industry also play an important role. The largest among them are Federation of Indian Chambers of Commerce and Industry (FICCI)[241], Confederation of Indian Industry (CII)[242] and The

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[237] Bijak. URL: https://www.bijak.in/

[238] StartUp India. URL: https://www.startupindia.gov.in/content/sih/en/reources/knowledge-bank.html

[239] MeitY Startup Hub. URL: https://meitystartuphub.in/

[240] iB-Hubs. URL: https://ibhubs.co/

[241] Federation of Indian Chambers of Commerce and Industry. URL: https://ficci.in/about-us.asp

Associated Chambers of Commerce & Industry of India (ASSOCHAM)[243]. For startups, a similar association is the Startup Association of India (SAI)[244]. All of them organize more than 1,000 specialized events per year, including international ones. In particular, as part of the development of the Make in India national initiative, New Delhi annually hosts Convergence India: a conference, forum and exhibition for digital entrepreneurs in various industries. This is one of the most important events for the IT industry in the country welcoming specialists in Big Data, IoT, analytics, cloud technologies annually.

Another notable event is India Innovation Championship, a large-scale national competition from the University of Chitkar, participants can receive angel investments, government grants, scholarships under accelerator programs as well as participation in annual incubation programs.

Techstars Startup Weekend Siliguri is an annual three-day event for emerging entrepreneurs in the EdTech sector from InHub in collaboration with Google. The most desired participants are projects for schools and colleges. Entrepreneurs have a chance to get into the semi-annual incubator program, get direct venture funding, a free domain for a startup, and useful contacts.

India Electronics Week is an annual event held in Bangalore, India's tech capital, to promote and develop smart products. This is an exhibition that allows you to get acquainted with the best industry practices and get valuable expertise and new connections.

It should be noted that the actions of the Government of India in the formation of an entrepreneurial ecosystem since 2009 have been very consistent and have gone through several important stages presented in Table 2.4.1.

Table 2.4.1 — Indian Government Initiatives to Create a Conducive Ecosystem for Emerging Businesses and Startups, 2009–2019[245].

| Year | Program Name | Description, aims & target |
|---|---|---|

[242] Confederation of Indian Industry. URL: https://www.cii.in/

[243] The Associated Chambers of Commerce & Industry of India (ASSOCHAM). URL: https://www.assocham.org/about-us.php

[244] Startup Association Of India. URL: https://startupassociation.in/

[245] DPIIT Annual Report 2018–2019; Press Information Bureau (2020); NITI Aayog (2016).

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|---|---|---|
| 2009 | Invest India | Establishment of an agency to promote and facilitate investment |
| 2009 | IndiaStack and UiD | To complement the Aadhaar – Universal Identification initiative, a digital push is being made for a cashless, paperless, consent-based scalable infrastructure |
| 2013 | SEBI's Alternative Investment Fund Regulations | New guidelines for angel investors, who offer seed capital to startup businesses |
| 2014 | Make in India | Flagship initiative aimed at transforming India into "global design and manufacturing" destination |
| 2015 | Digital India | Flagship program aimed at expanding egovernance to promote inclusive growth and make India a "digitally empowered society and knowledge economy" |
| 2015 | Skill India initiative | A vocational training and certification program targeted at providing 400 million young people the opportunity for a better livelihood by 2022 |
| 2016 | Startup India Initiative | Flagship initiative to foster the startup culture and establish an ecosystem for innovation and entrepreneurship |
| 2016 | Startup India Online Portal | 367,171 registered startups, 26,374 recognized startups, 221 I tax exemptions, and 264 were funded by SIDBI "Fund of Funds for Startups" (31.12.2019) |
| 2016 | Atal Incubation Centres under Atal Innovation Mission | 31 Atal Incubation Centres have been funded with approx. $20.4 million and $8.1 million disbursed |
| 2016 | SIDBI "Fund of Funds for Startups" | Approx. $1.4 billion contributed to the Alternate Investment funds for investing in startups |
| 2016 | Bharat Interface for Money and United Payment Interface | The National Payments Corporation created a mobile payment app based on the United Payments Interface to enable for smooth and validated payments |
| 2019 | Technology Incubation and Development of Entrepreneurs 2.0 | Program supported by MeitY to encourage socially responsible tech entrepreneurship through incubators that assist SMEs focused on emerging technologies (AI, blockchain, IoT, etc.) |

In India, not only local investors but also international ones are willing to invest money in companies. Venture capital firms such as Nexus Venture Partners, DST Global and 500 Startups are just a few examples of these organizations. As an example, Sistema Asia Fund is a venture capital fund originating from Russia that focuses on startups in Southeast Asia and India and invests in high-tech businesses in the growth and mid-stage. A firm must have a proven business strategy, co-investors, and solutions tailored to the Indian market in order to attract funding. Priority is given to VR/AR, Big Data, AI (artificial intelligence), ML (machine learning), e-commerce, FinTech, EdTech, and MedTech[246].

[246] Sistema Asia Fund. URL: https://sistema.com/funds/sistema-asia-fund

A worldwide venture community centered in San Francisco, Finsight Ventures operates in Los Angeles, New York, Moscow, and Mumbai. Investments more than $1 million have been made in more than 30 cases since 2013. These include FinTech, B2B SaaS, SmartCity, robots, and real estate[247]. Axilor Ventures is a platform where entrepreneurs may get help in the early phases of development (pre-seed and seed). The amount of money invested in 15–20 initiatives each year ranges from $200–500 thousand. More than 400 founders make up the Axilor Ventures community, which is ready to provide mentorship, hasten product delivery, and sign cooperation agreements[248].

There are about 400 investors in the Indian Angel Network, which was founded in 2006 as an association of business angels. A distinctive product and scalability are two of the most important requirements for a business to become a subject of investment while the field is quite broad from agriculture to retail and industry. In addition to the investments, access to mentorship and networking is also provided by IAN[249]. Leo Capital is a Delhi- and Bangalore-based venture capital firm focused on pre-seed investments into SaaS, FinTech, Travel and DeepTech enterprises. The deal is between $500 thousand and $2 million in value. Scalability as well as team cohesiveness and passion, are crucial considerations for the fund[250]. SAHA Fund is a Bangalore-based fund that focuses on women's entrepreneurship in India's developing regions (according to SAHA, only 10 percent of entrepreneurs are women). E-commerce and social media, cloud technology, analytics, education, health, and food tech are among the first areas the fund is looking at[251].

There are many business incubators in India that allow SMEs to get financial support, expertise, and useful contacts. Mostly Indian tech incubators are targeting FinTech, EdTech and Machine Learning startups. In India, business incubators often operate within large hubs. For instance, the previously mentioned MeitY Startup Hub includes 2 large business incubators: Center of Excellence (CoE) STPI (a project for

[247] Finsight Ventures. URL: http://finsightvc.com/
[248] Axilor Ventures. URL: https://www.axilor.com/
[249] Indian Angek Network. URL: https://www.indianangelnetwork.com/
[250] Leo Capital. URL: https://leo.capital/
[251] SAHA Fund. URL: http://www.sahafund.com/

fintech startups that provides them with resources, coaching, technological and financial support) and NCETIS (National Center of Excellence in Technology for Internal Security, a project aimed at helping startups in the field of design and manufacture of electronic systems for internal security which works in collaboration with research laboratories and industrial companies in India.

The previously mentioned Indian Angel Network, supported by the State Department of Science and Technology and the National Science and Technology Enterprise Development Council of India, offers programs from 18 to 24 months and funding up to $1 million for startups in areas such as agriculture, e-commerce, education, financial services, and others. Since 2018, WE HUB, a business incubator for women's entrepreneurship, has been collaborating with i-Hubs in Telangana to support female entrepreneurs. This is the first Indian public institution dedicated to supporting women's businesses, which provides access to the necessary resources to help them grow and get a foothold in the international economy. WE HUB also has its own accelerator program, which ran from September through April in 2019, selecting 11 startups to participate.

The situation when a business incubator and an accelerator are combined on the same site is not uncommon in India. Kerala Startup Mission is a state-owned startup agency in the state of Kerala that has its own acceleration programs. K-Accelerator is designed for three months with a weekly bootcamp (intensive mastering of the material) and helps to establish contacts with potential investors, clients, industry leaders. At the moment, participation in the accelerator is only online[252]. The TimesNext Accelerator is another well-known accelerator for early-stage firms with strong growth potential, allowing entrepreneurs to receive venture capital investments of up to $15,000 throughout project development. The yearly set includes up to 25 startups. Investors get 10-25 percent of the shares in return for funding[253].

In addition to business incubators and accelerators concentrated in hubs, co-working spaces are also very popular among startup entrepreneurs in India. Despite the fact that

[252] Kerala Startup Mission. URL: https://startupmission.kerala.gov.in/

[253] TimesNext Accelerator. URL: https://timesnext.com/timesnext-gang-startup-funding-india/

co-working spaces (unlike the aforementioned organizations) can hardly be considered as a means of stimulating small and medium-sized businesses, they can still be conditionally referred to as an entrepreneurial support infrastructure as part of the entrepreneurial ecosystem, since, on the one hand, they provide businesses with affordable space for rent, and on the other hand, they concentrate a large number of entrepreneurs filtered by sector, thereby contributing to the establishment and development of links between ecosystem players. The coworking space boom in India started in 2018, and there were over 850 of them as of 2019[254]. Furthermore, the country is home to both domestic and foreign coworking spaces (such as the American WeWork). New Delhi, Bangalore, and Pune are the primary locations. Among them, the following deserve special mention:

– Innov8 is co-working spaces network located in eight cities of India: from Delhi to Bangalore. There are 13 locations in total. One can book a separate place or an entire office, coworking is suitable for teams of up to 100 people. Internet, cafeteria, conference rooms are present. Prices start at $79 per month[255].

– CoWrks is an Indian company with 16 locations and over 21,000 clients. Over 40% of CoWrks members are from the tech industry. Offices are located mainly in Bangalore, Mumbai and Delhi. Depending on the specific point, a coworking space can have more than 2.5 thousand jobs and premises that can accommodate a team of up to 1 thousand people[256].

– InstaOffice is a network of co-working spaces covering five cities in India and offering not only offices, but also participation in monthly events (networking, new expertise and entertainment), as well as bonuses from 70 partners, including HR companies, lawyers, hotels. Most of the co-working spaces are located in Bangalore and Gurgaon[257].

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[254] How coworking spaces are overcoming challenges to drive growth in India. YourStory. URL: https://yourstory.com/2019/09/wework-cowrks-awfis-coworking-spaces-thriving-challenges/amp

[255] Innov8. URL: https://www.innov8.work/

[256] CoWrks. URL: https://www.cowrks.com/locations

[257] InstaOffice. URL: https://www.instaoffice.in/

– WeWork is another co-working network with 37 locations across six cities in India. The main part of the offices is located in Bangalore (13) and Gurgaon (7). There are both shared workplaces and separate offices for large teams. Average price (depending on location) starts at $100 per month[258].

A promising direction for startups in India is EdTech. Today, there are over 4,000 startups in this sector in India[259]. Test preparation is one of the priority areas for EdTech startups in India: almost 80% of all investments in the digital education sector in 2020 went to companies engaged in this segment[260]. These include primarily BYJU'S, Unacademy, Embibe, as well as Toppr, Vedantu. However, some of these startups (Vedantu, BYJU'S in particular) also offer classic online education with certificates. Investment in similar online courses in 2020 was 8.4%.

The demand for military and space technologies in India is also huge, as evidenced by the work in the country of about 200 startups in these areas[261]. Since the 1960s, Russia alone has supplied about $65 billion worth of weapons to India; there is a joint venture to produce supersonic cruise missiles BrahMos; in the south of India, the Kudankulam nuclear power plant of Russian design is being built. One of the important steps in this direction was the decision of the Council of Ministers of India to allow private companies to participate in national space exploration projects[262].

### 2.5. Business incubators as a part of EE in China

Being one of the largest economies in the world, China is actively developing its own startup industry and entrepreneurial ecosystem: over the past 10 years, it has

[258] WeWork. URL: https://www.wework.com/l/india

[259] London keen to drive EdTech collaboration with India forward: Janet Coyle, MD at London & Partners // Financial Express. URL: https://www.financialexpress.com/education-2/london-keen-to-drive-edtech-collaboration-with-india-forward-janet-coyle-md-at-london-partners/2204906/

[260] Startup Watchlist: 10 Indian Edtech Startups To Watch Out For In 2021 // Inc42.com. URL: https://inc42.com/infocus/startup-watchlist-2021/startup-watchlist-10-indian-edtech-startups-to-watch-out-for-in-2021/

[261] Starting-up for defence: Government plans to fund at least 250 defence start-ups // Financial Express. URL: https://www.financialexpress.com/opinion/starting-up-for-defence-government-plans-to-fund-at-least-250-defence-start-ups/2220493/

[262] India opens space sector to private players: What it means for ISRO // Financial Express. URL: https://www.financialexpress.com/lifestyle/science/india-opens-space-sector-to-private-players-what-it-means-for-isro/2005105/

changed beyond recognition, which is for a number of reasons, including a large domestic sales market, a relatively large number of business incubators (more than 5 thousand as of 2021) and the digital economy, attracting startups and investors from all over the world.

In this chapter, the features of the Chinese entrepreneurial ecosystem model will be considered. Over the past three decades, the process of economic reform and transformation in China has stimulated the development of entrepreneurship, which has become an increasingly important factor in China's economic growth[263]. Prior to the open-door policy, entrepreneurship in China existed only on a very small scale in the form of a black market and shadow economy[264].

In 1980, four cities located in southern China were approved by the State Council as special economic zones and adopted business support policies, including measures such as the protection of private property rights and tax incentives[265]. Subsequently, the success of these four cities prompted the government to expand this experiment to other provinces in China and allow other regions to gradually introduce the principles of a market economy and the concept of entrepreneurship[266]. In 2000, the total revenue of China's state-owned industrial enterprises and the total revenue of private enterprises were already about the same — about 4 trillion yuan. By 2013, the total revenues of state-owned companies grew by a little more than six times, while the revenues of the non-state sector grew by more than 18 times[267].

In the 1990s, the government began to reform the enterprises located in towns and villages and the state enterprise sector. As a result, most of the enterprises located in towns and villages were de jure or de facto privatized[268]. By 2011, the sector of these

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[263] Guo Q., Canfei H., Deyu L. Entrepreneurship in China: The role of localization and urbanization economies // Urban Studies. 2016. № 12. P. 2585.

[264] Harding H. The concept of “Greater China”: Themes, variations and reservations // The China Quarterly. 1993. № 136. P. 660.

[265] Wang J. The economic impact of special economic zones: Evidence from Chinese municipalities // Journal of Development Economics. 2013. № 101. P. 134.

[266] Xu C. The fundamental institutions of China's reforms and development // Journal of Economic Literature. 2011. № 4. P. 1076.

[267] The Rise of Entrepreneurship in China // Forbes. April 5th 2016.

[268] Wei S.-J., Zhuan X., Xiaobo Z. From “Made in China” to “Innovated in China”: Necessity, Prospect, and Challenges // Journal of Economic Perspectives. 2017. № 31. P. 51.

enterprises has practically disappeared[269]. The number of state-owned companies decreased from 3.2 million (8.64% of the total number of companies) in 2007 to 2.24 million (3.01% of the total) in 2019[270]. Such a significant reduction in the number of state-owned enterprises was part of China's policy in the field of entrepreneurship, aimed, on the one hand, at the consolidation of state-owned enterprises in the form of combining several small state-owned enterprises into one large one, and on the other hand, at stimulating the development of small and medium-sized enterprises, including privatization small state enterprises[271].

Innovative entrepreneurship has been at the core of China's entrepreneurial ecosystem: since the early 1980s, China has been massively acquiring foreign technology to incorporate into all of its industrial enterprises. Over the past 30 years, Chinese entrepreneurs have developed two models of technology adoption and technology learning. The first model was based on the traditional technology transfer scheme implemented in the 1980s and 1990s by most state-owned companies in China, operating mainly in the automotive and electronics industries, in the form of joint ventures. This model of technology transfer involves the integration of the latest technologies and the underlying scientific knowledge. The key process is “reverse engineering” followed by continuous quality improvement, expansion, and improvement of products, starting with simple copying of foreign innovations and ending with an economic transition from import substitution to export orientation.

A similar business ecosystem development model has been successfully implemented in Japan, and with some changes in South Korea. The experience of China, Japan and South Korea shows that there is a relationship between the transition from basic manufacturing capabilities to more sophisticated technological capabilities, and this process goes beyond the simple implementation of R&D results, including the improvement of the organizational structure and the integration of technologies and

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[269] Xu C., Xiaobo Z. The Evolution of Chinese Entrepreneurial Firms: Township-village Enterprises Revisited // Intl Food Policy Res Inst. 2009. Vol. 854. P. 74.

[270] China State Administration for Industry and Commerce Yearbook from 2007 to 2019. URL: http://www.stats.gov.cn/tjsj/ndsj/2019/indexeh.htm

[271] Hsieh C.-T., Zheng M.S. Grasp the large, let go of the small: the transformation of the state sector in China // National Bureau of Economic Research. 2015. № w21006.

markets within the framework of the firms' strategy[272]. The Chinese government has fully supported the implementation of this technology transfer model by intervening directly or indirectly in the process of transferring technology to companies and in some cases even forcibly transferring them. To this end, the Government of China has developed a set of industrial and technological entrepreneurship policies to implement this model, formed an institutional infrastructure to encourage the copying of innovations, promoted the strengthening of ties between basic research and industry in order to use local technological potential through technology transfer from scientific institutions, where they are developed, to industrial enterprises. As a result, it was possible to create a modern national innovation system that stimulates the introduction of technologies at the firm level.

As for the second model for the development of an entrepreneurial ecosystem, implemented in China, it was also based on the introduction of the latest technologies in industry. However, this model was mainly adopted by non-state companies (many of which worked in the electronics industry) and began to be applied after the reform and implementation of the open-door policy. Chinese entrepreneurs have begun to adopt technology by studying customer needs and competing in the market. This model of technology adoption is the most dynamic, as it is influenced by market forces. It originates from the catch-up development model adopted in other countries of Southeast Asia. Cooperating with leading foreign companies, Chinese companies based on their technological developments produced the products they needed, gradually copying the technologies provided to them. In the future, Chinese companies began to create more technologically sophisticated products. This was made possible through interaction with a wide variety of clients, which allowed for a significant variety of external sources of technological developments and the accumulation of an increasing amount of knowledge. At the same time, Chinese companies carried out continuous training of their employees. Thus, the technological development of Chinese companies became possible due to the presence of a large portfolio of customers and a wide range of

[272] Wei Z., Pira F. Chinese Entrepreneurship: Institutions, Ecosystems and Growth Limits // Advances in Economics and Business. 2013. № 1(2). P. 74.

products, which made it possible to maintain a variety of sources of new technologies. Chinese enterprises themselves acted as suppliers of some products, produced mainly under the brands of foreign companies. Afterwards Chinese brands were also created.

The growth of competition, including in the Chinese market, over the past 30 years has led to more prosperity and growth of non-state companies compared to state-owned enterprises. Thus, the second model for the development of an entrepreneurial ecosystem and the introduction of innovations turned out to be more effective than the first, in which the introduction of technologies was carried out under the influence of the state[273]. To further stimulate the development of these companies, local governments have begun to promote local industrial clusters, for example, the one located in Guangdong province. Although the Chinese Government's innovation and entrepreneurship support policy was still mainly aimed at supporting state-owned enterprises, some of the most successful private innovation companies (for example, Lenovo, Haier, Huawei, which have started international expansion) were given special status and access to extensive innovation support measures available mainly to state-owned companies. At the same time, most Chinese private companies continue to strengthen their production capacity, instead of introducing more innovations, some of them even begin to expand their production activities abroad[274].

The researchers note that, with the exception of a number of leading high-tech companies in China, most private enterprises in China are still focused on increasing production and production capacity, and it is difficult for them to master the production of higher value-added products that involve functions such as design and product development, logistics and transportation, marketing, improvement of product distribution systems, etc. Those enterprises that invest more heavily in R&D and take on new functions in order to produce higher value-added products produce and sell

[273] Zhao W., Arvanitis R., Pira F. Innovation policy and local cluster of entrepreneurs in South China // International Journal of Management and Enterprise Development. 2011. Vol. 11. № 2/3/4. P. 111.

[274] Arvanitis R., Qiu H. Research for policy development: Industrial clusters in South China // Graham M., Woo, J. Fuelling Economic Growth. The role of public-private research in development. Ottawa: CRDI/ IDRC, 2018. P. 41.

products mainly in China's domestic value chains. Most Chinese enterprises have few opportunities to implement innovative products in global value chains.

However, only during the period from 1998 to 2007 the number of industrial enterprises in China increased from 165 to 302 thousand, while the volume of production increased by 5.8 times. This is because China has a significant number of entrepreneurs and officials who have the desire to create a powerful “national team” of companies that can compete with the leading transnational companies (TNCs) in the world. At the same time, the state provides support to state-owned companies, as well as private companies that develop and provide innovative developments to state-owned enterprises, which is in line with the catch-up development strategy adopted by the Chinese government. Many leading Chinese companies have grown up following this development model. On the one hand, such a model provides the market demand necessary for private companies, and on the other hand, it allows enterprises to gain access to the necessary institutional resources provided by the state as part of the support for innovative development. For example, a private company can develop by incorporating the results of its R&D projects into state-owned enterprises and by receiving government subsidies and even direct investment in development. In doing so, it can use its manufacturing facilities to serve the needs of overseas customers and incentivize them to transfer more technology to it in exchange for access to the huge Chinese market[275].

As a result, a number of companies from China have managed to become world famous and gain market share even in the high-tech sector. Examples are Huawei, Haier, TCL, and Lenovo, which have followed the above entrepreneurial model. Leading Chinese R&D-intensive companies tended to be closely linked to state-owned enterprises and the public research sector. Three leading Chinese personal computer manufacturers can be seen as examples: Lenovo's predecessor, Legend, was developed with the support of the Institute of Computer Technology of the Chinese Academy of Sciences. Electronics company grew out of its founder's connections with Peking

[275] Dahlman C.J., Jean-Eric Aubert China and the Knowledge Economy: Seizing the 21st Century. World Bank, 2017. P. 4.

University, while Tsinghua Tongfang was established within the walls of Tsinghua University.

Thus, when creating an entrepreneurial ecosystem in China, the government of the country focused on the introduction of the latest technologies, the creation of an institutional framework that stimulates the development and implementation of innovations by supporting cooperation between large state-owned enterprises with significant resources and supported by the state, as well as regional authorities, and private innovative companies. This cooperation allows private companies to gain access to both the resources they need for development and to the sales market, which allows them to invest in technology development. At the same time, the Chinese Government actively promoted the copying of foreign technologies by Chinese companies and import substitution.

Looking more precisely at the adaptation of foreign best practices in developing technological incubators in China the “Torch” state program should be considered. The Torch Program is a guidance program for developing new and high-tech industries in China launched in 1988. It covers several main areas: (1) the creation and development of high-tech specialized zones, (2) the development of technological business incubators, and (3) the provision of seed and venture financing for small and medium-sized enterprises.

The Torch Program's primary emphasis is on small and medium-sized businesses (SMEs). The Torch Program, in contrast to many of China's national technology development initiatives, was initially designed to assist individuals and small teams of researchers without prior expertise in business administration in bringing R&D discoveries to market via their own small organizations.

According to the Program, the creation of high-tech specialized zones was ensured through the creation of national scientific and technological industrial parks, IT parks and centers for increasing labor productivity, an integral and key part of which were BIs.

In China, the Ministry of Science and Technology oversees the Torch Program's promotion at the national level and encouraging local governments to become involved.

Local governments and administrations of high-tech zones were given the option of selecting the finance and execution methods for most projects. Because of that, the Program's management is based mostly on indicative targets (rather than directive).

The program's initial goals have not been met in full. Chinese officials had hoped that high-tech special zones would become growth areas based on local technological development, but they have become export bases and attracted a large amount of international investment and technology. In 2009, only 46.4% of total exports from high-tech specialized zones came from Chinese national businesses, while 35.5% came from companies with foreign money and 18.1% came from companies founded by investors from Hong Kong, Macao, and Taiwan.[276] Several modifications were made because of the widening gap between expected and actual program outcomes. The most important of these was a shift toward using domestic research resources and lessening reliance on FDI from outside.

There are currently a wide range of funding sources for Chinese BIs, including local authorities and quasi-state organizations; higher education institutions and research centers; state and private enterprises (including those with foreign capital); international organizations, etc.

Between 1988 and 2005, just approximately 1% of the overall funding for the Torch Program came from the federal budget, while most of the funding came from the regional budgets. That is, the federal government avoids actively sponsoring the Program, unlike most other national technology projects. Local governments and science and technology industrial park administrations provide complete funding for BIs participating in the Torch Program. Chinese state-owned BIs make up more than 70% of the country's total number.

However, China's financing paradigm for BIs has changed recently. Since 2009, incubators and their client companies have faced a shortage of money as a result of their heavy reliance on public funding. More government involvement has been shown to have a negative impact on the entrepreneurial activity of BIs as well as their market

[276] Heilmann S., Shih L., Hofem A. National Planning and Local Technology Zones: Experimental Governance in China's Torch Program // The China Quarterly 18, October 2013. 1-24. P. 8.

orientation and quality of service, according to research done on the link between government involvement in incubation and the entrepreneurial activity in China. For this reason, Chinese incubators have started to restructure their financing sources and develop resource-sharing networks in order to overcome these difficulties.

The Torch Program's primary qualities include its flexibility and openness to local experimentation, frequent interaction between the federal and local governments, and the broad distribution of knowledge and expertise among local administrations.

According to the Global Startup Ecosystem 2020, in the ranking of entrepreneurial ecosystems for innovative startup projects, Beijing ranks 4th in the world. Another Chinese city, Shanghai, is in the top 10 ecosystems and ranks eighth on the list. Finally, Shenzhen, Hangzhou, and Hong Kong rank among the top 30 ecosystems, ranking 22nd, 28th, and 29th, respectively.

The state supports technology startups with subsidies, tax incentives and other activities as part of its work with support infrastructure. According to Airui Zixun (iResearch China), there are more than 5,000 business incubators in China, with a total number of residents of over 200,000. At the same time, every third unicorn enterprise in the world (a company with a capitalization of $1 billion or more) originates from China.

The COVID-19 pandemic triggered the growth of online services around the world, but in China, the IT industry showed serious growth rates even before the lockdown: the number of Internet users, according to The Economist Intelligence Unit, was at least 800 million in 2019. Not surprisingly, 85% of the total growth of direct investment in China over the past eight years has been in the technology sector.

Recently, China began the third stage of testing its own electronic payment system in the national digital currency. It should accelerate the development of the country's digital economy, make the entire financial sector more convenient and safer. Experts expect that within two to three years the digital yuan will be introduced everywhere, which will open new prospects for business and innovation.

The state strategy of the PRC for 2021–2025 should turn the country into the main innovative state and make China technologically independent. Fundamental research spending in IT will increase by 7% every year. In 2019, the country spent $452 billion

on R&D, according to the Global Innovation Index, and invested about $1.4 trillion in innovative developments ranging from 5G to AI.

A feature of China's innovation ecosystems is its relative openness to foreign innovative startups. In China, there are many grants for foreign SMEs: almost every region, city, technopark or even municipal district has its own program. The difficulty lies only in the fact that access to the full list of such grants is limited: there is no single centralized platform, so startups have to search on the Internet or contact the local organizations by themselves. Among the factors that increase the possibility to attract investments are the presence of innovative technology and people with scientific degrees in the team. The grants include co-financing, interest-free loans and commitments to open an office and create jobs in China.

According to the National Development Commission of the People's Republic of China, there are more than 3,000 venture capital funds registered in the country, managing capital of at least $280 billion. Some of them are:

– Sinovation Ventures is China's leading technology venture capital firm. It has about 350 companies in its portfolio. Priority for investment is given to projects in the early stages: AI, big data, healthcare, education, robotics[277].

– SAIF Partners is a private equity firm in Asia with a $4 billion investment portfolio focusing on cleantech, innovative materials, healthcare and internet projects. In China, the company's offices are located in six cities: Beijing, Shanghai, Shenzhen, Qingdao, Xiamen and Nanjing. Typically, SAIF Partners invests between $10 million and $100 million, aiming for a 10-30% stake in a company[278].

– SOSV is an international venture fund actively working with Chinese accelerators, investing in science-intensive startups focused on mobile Internet, big data, biotechnology, blockchain and hardware. The fund invests in 150 startups a year, allocating $50-70 million for their development. It prefers projects of partner acceleration programs, including Chinaccelerator, MOX, HAX[279].

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[277] Sinovation Ventures. URL: https://sinovationventures.com/
[278] SAIF Partners. URL: http://www.sbaif.com/about-saif.html
[279] SOSV. URL: https://sosv.com/invest/

– ZhenFund — the fund was founded in partnership with Sequoia Capital China. Its portfolio has more than 700 companies, including 10 Chinese unicorns. Fintech, online education, healthcare, e-sports, media, e-commerce, VR and AI are in priority[280].

– Da Vinci Capital — a company with Russian roots works with regional and Asian investors, startup hubs in Hong Kong and Shenzhen. It helps portfolio startups open offices in China and find partners among incubators, paying attention to fintech and IT startups[281].

Not only do local venture funds operate in the country, but also divisions of global companies: Sequoia Capital China, IDG Capital, Shenzhen Venture Capital, Qiming Venture Partners. As a rule, such funds are interested in already operating projects with a proven hypothesis and established sales in the local market.

The number of private investors and business angels in China is growing every year. The Midas List of the top 100 venture capital investors from around the world includes 22 investors from China[282]. The most famous investors are Kaifu Li (invests in AI), Xu Xiaoping (online education, e-commerce, games), Cai Wensheng (entertainment industry), Lei Jun (IT projects), Xue Manzi (fintech, healthcare, education).

The most active investors in the Chinese startup ecosystem are not so much venture capital funds as large technology companies: Baidu, Alibaba, Tencent and JD. Virtually every Chinese unicorn at some point received their support. The most active corporate investor in China is Tencent, which has backed more unicorns than leading venture capital firms such as Sequoia Capital China, GSR Ventures and Matrix Partners China.

Experts claim that a significant part of venture capital in China is concentrated in state funds and corporations. According to Zero2IPO Research, a venture market research center in China, about 1,600 state funds operate here. In 2019, their capital was estimated at about $585 billion. One of the first ones, New Technology Venture Capital Company, was established by the Ministry of Science and Technology.

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[280] ZhenFund. URL: http://en.zhenfund.com/About

[281] Da Vinci Capital. URL: https://dvcap.com/

[282] The Midas List. The World’s Best Venture Capital Investors In 2022. URL: https://www.forbes.com/midas/

Table 2.5.1 — Funding Ecosystem in China Represented by Top Funds on 4 Levels[283].

| **Top National Level Funds** | **Top Province Level Funds** |
|---|---|
| • National Cultural Innovation Fund<br>• National Innovation Fund<br>• Mass Entrepreneurship and Innovation Fund of University<br>• National Small and Medium Enterprise Development Fund<br>• National Rising Fund of InfoTech | • Collaborative Innovation Investment Fund of Zhongguancun<br>• Small and Medium Enterprise Development Fund of Henan<br>• Intelligent Voice and Artificial Intelligence Fund of Anhui<br>• Entrepreneurship Guiding Fund of Guangdong<br>• Financing Guarantee Fund of Shandong |
| **Top City Level Funds** | **Top District Level Funds** |
| • Government Guiding Fund of Funds of Shenzhen Municipal<br>• Technology Innovation Fund of Shanghai<br>• Mass Entrepreneurship and Innovation Fund of Foshan<br>• New Economic Development Fund of Chengdu<br>• Dalian Yulong Fund | • Talent Fund of Chengdu Gaoxin District<br>• Urban and Rural Fund of Chengmai and China-Africa Investment Management<br>• Innovation and Entrepreneurship Fund of Funds of Shanghai<br>• Pudong Venture Capital Fund<br>• Shunde Venture Capital Fund of Funds |

Interestingly, almost all the investment money in China is controlled or influenced by the Chinese Communist Party. Although the current monopolies of the Chinese Internet, such as Baidu and Tencent, are not formally owned by the state, all their projects and activities are coordinated by their main investor – the Chinese Communist Party. This also applies to their startup support programs. Therefore, when working with investors, it is very important to satisfy Party's requests, for example, consider the latest signed legal documents of the CCP's plenary sessions. The Chinese government supports investment in artificial intelligence, big data, science, and hardware. One of China's main goals for the next 10 years is to become a global leader in the field of AI and create an industry with an annual output of 1 trillion yuan. To do this, the government is building technology parks, launching programs to support specialized startups and grants. One of these AI-focused parks covering 55 hectares is due to open in Beijing. The cost of the project in open sources was estimated at $2.1 billion.

[283] Source: author's own.

At the same time, venture and private investment is regulated at the legislative level by the China Securities Commission and the Asset Managers Association, and additional rules are established by the regional authorities of all 34 provinces. The country has an official list of industries in which foreign investment is encouraged or prohibited. Another difficulty is the legal aspect of doing business in China. This is such a complex and bureaucratic process that it is impossible to build a business with China "from afar": you either need to travel there regularly or carefully select a partner permanently residing in the country. In this regard, in order to enter the Chinese market, it is necessary for a foreign startup to look for an intermediary company – for example, an accelerator that will help find investors. Such an intermediary will not only be able to assess the chances of a startup to succeed and attract investments, but also help in business development through knowledge of the local market.

The listed features of the venture capital market, on the one hand, make it relatively easy for technology entrepreneurs to find investments at various stages of a project, and on the other hand, make a startup hostage to the ecosystem of a CCP's policy focus, as well as specifics dictated by local authorities or particular corporation.

A rethinking of the role of BIs in the economy has been prompted by local socioeconomic conditions, like the need to modernize the economy, attract talented Chinese students from abroad, and the need to employ excess labor after restructuring of state-owned enterprises. Consequently, the country now possesses one of Asia's most successful BI systems.

In China, there are six main types of business incubators: (1) multi-purpose BIs, (2) technology-specific, (3) university-based, (4) BIs for immigrant scientists, (5) international businesses BIs, and (6) BIs for state-owned enterprises. Because they include characteristics common to global practice, the first three are classical (early) models, while the latter three can be described as regional adaptations.

The first and broadest type of technology BI in China is the multi-purpose BI (more than 200 incubators), which is accessible to all kinds of new businesses focused on technology. Economic development and employment creation are incubator's primary

goals. The most common services offered are the renting of space and the provision of shared services (Internet access, conference rooms, etc.).

Specialized technology BIs (sometimes referred to as second generation of BIs in China) tend to specialize in some particular sectors such as IT, alternate energy, biotech, new materials, etc. and therefore provide a more specific range of BI services focused on particular technology area, supported by suitable universities and research centers. About 200 BIs of this kind are located in 245 high-tech specialized zones mostly located in Zhejiang, Guangzhou, Shandong and other developed southern provinces.

University-based BIs are the most prevalent type around the world, and their main focus is about the research commercialization and technology transfer, primarily carried out in the higher educational institution itself or in local tech enterprises. As of 2006, there were more than 60 BIs of this kind in China.

As it was necessary to deal with the brain drain from PRC, a distinct BI model for immigrant scientists emerged. Commercialization of technologies and developments by scientists at research centers and universities throughout the globe is the primary strategic focus of this China-specific type of BI.

International BIs, which started to spread in 1996 with the help of United Nations specialists, were created to help Chinese SMEs to expand into global markets (softlanding services). Nine incubators of this sort existed in China as of 2006, in cities such as Xi'an, Shanghai, Chengdu, Wuhan, Tianjin, Suzhou and Chongqing.

China's shift to a market economy as well as restructuring of old sectors need state-owned company incubators to use the labor freed in that process. Workers who have been laid off as a result of the transition will be able to find jobs in 45 special BIs in state-owned enterprises. Infrastructure, office space leasing, and access to internal industry and government communications are the primary services provided.

Chinese business accelerators regularly rank among the top most successful Asian startup supporters. Thus, the following Chinese companies are among the top ten accelerators in the world:

– Bits x Bites (Shanghai) — interested in foodtech and agrofoodtech projects, helps them get up to $500,000 per team. Also invests in early-stage startups as a venture

capital fund. There are already 10 companies in the portfolio that are changing the agriculture and food industries[284].

– HAX (Shenzhen) — the main area of interest lies in the field of DeepTech (technology solutions based on substantial scientific or engineering challenges which require lengthy research & development), eventually residents can receive up to $ 250 thousand investments. Every year, HAX invests more than $25 million as part of the SOSV venture company. The accelerator has its own platform not only in China, but also in Japan (Tokyo) and the USA (San Francisco)[285].

– Chinaccelerator (Shanghai) — works with high-tech companies in the early stages, mainly focused on software development, applications, and e-commerce. Applicants have a good opportunity to get up to $150,000: over 10 years of operation, more than 200 of its residents have been able to attract investments with its help. The acceleration program lasts six months: during this time, mentors help to monetize the project in the Chinese market[286].

As an example, the Chinaccelerator program is divided into two phases: a 3-month growth phase and a 3-month fundraising phase. At the first stage, startups are focused on experiments and the company's development strategy; before the second phase, they hold a demo day, where more than 150 investors are invited. Only after that external investments are attracted. In the process of working in both phases, the team has access to more than 300 mentors.

Among China's accelerators, there are quite a few industry organizations aimed at developing niche projects: medicine, biotechnology, microelectronics, etc. Their number is growing. For example, in the summer of 2020, a blockchain accelerator from the leading technology giant, Tencent Industrial Accelerator, was launched.

China's Silicon Valley is considered not Shanghai and Shenzhen, but Beijing, where the Zhongguancun technopark is located. It is managed by the state-owned Zhongguancun Development Group (ZDG). There are more than 20,000 resident companies, and competition for the attention of startup development specialists is

[284] Bits x Bites. URL: http://bitsxbites.com/
[285] HAX. URL: https://hax.co/
[286] Chinaccelerator. URL: https://chinaccelerator.com/

fierce: on average, Beijing business incubators consider more than 2,000 project applications per month.

One of the main advantages of Zhongguancun over other innovation parks in China is the proximity to the largest technological universities in the country and, as a result, easy access to young talents. There are 40 universities around, including the best in the country, Peking University and Tsinghua University, as well as 200 research institutes and laboratories. The main incubators of the park are Innovation Works, Legendstar, Tsinghua Science Park, Huailongsen International Enterprise Incubator, Bo Ao Liang Chuang and others.

One of the flagships, Innovation Works, focuses on projects in the field of mobile Internet, cloud technologies and e-commerce. Representatives of Alibaba, Huawei, Lenovo and other technology giants invest in the residents of this organization. The second, Legendstar, focuses on advanced technologies in healthcare, medicine, and biology. During over 12 years of operation, this business incubator has nurtured about 600 companies, investing in almost half of the projects. Most of them received investments in the early stages of development. Legend Star itself manages 7 funds with a total investment of about 3.5 billion yuan.

Innovation and technology parks, as well as regional authorities are doing their best to attract foreign residents to innovation parks. It is realistic to get $150,000–$1.5 million there, but this money will eventually remain in China: it will be spent on hiring local personnel, purchasing local equipment and raw materials, and renting local offices. The developed technology or product itself may eventually go to Chinese corporations.

A special role in the development of the entrepreneurial ecosystem in China is played by entrepreneurial communities that are organized under the auspices of large international organizations such as Startup Grind, Angelhack, WeWork labs and local ones that operate within a city. For example, there are many well-known Beijing communities: Startup Grind Beijing (in partnership with Google for Startups), BeHive, AngelHack, etc.[287] Also there are Chinese communities that have gone beyond the

[287] weHustle. Top Beijing Tech and Startup Communities That Help You Grow. URL: https://wehustle.cn/blog/top-beijing-tech-and-startup-communities-that-help-you-grow-59.html

borders of the country and are working with startups in Southeast Asia. For example, China Accelerator and weHustle. Among the largest communities which deserve a special mention:

– Beijing Entrepreneurs Community is the largest English-speaking community of entrepreneurs in Beijing, founded in 2012. In addition to profile meetings, every week (usually on Wednesdays) community members hold a dinner where they can talk on topics close to technology entrepreneurs and listen to experts speak[288].

– Coderbunker in Shanghai is the Chinese office of the international community of technical specialists who exchange experiences, contacts, gather at educational events and help each other find work in various projects[289].

– InnoSpace is a startup community founded in 2011. It is based around the accelerator of the same name, helps projects grow and find investors, and has a large network of international partners. For example, InnoSpace is collaborating with the Intel incubator[290].

– Startup Grind – Shanghai branch of the international community of entrepreneurs organized for startups by Google. There are 2 million members in the community from 125 countries, so this is the right place to find useful connections, specialized training events, support, mentors and even investors. In China, the community appeared in 2013, but it includes not only residents of Shanghai: representatives of 19 cities of China, as well as local and foreign venture organizations and large companies take part[291].

– weHustle is an association of innovators to develop technology entrepreneurship in China and beyond. A convenient platform for those following workshops and technological events, as well as looking for work in startups and corporations in the country[292].

– Ladies Who Tech is a community and NGO in China dedicated to supporting female IT professionals and tech entrepreneurs founded by Jill Tang. The community

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[288] Beijing Entrepreneurs Community. URL: https://www.meetup.com/ru-RU/nomads-entrepreneurs-community/

[289] Codebunker. URL: https://www.coderbunker.com/

[290] Innospace. URL: http://www.innospaceplus.com.cn/

[291] Startup Grind. URL: https://www.startupgrind.com/shanghai/

[292] weHustle. URL: https://wehustle.cn/

arranges events, helps with networking and attracting investments, and actively cooperates with large local and international companies. Ladies Who Tech branches in Shanghai, Beijing, Chengdu, Shenzhen, Hong Kong, Hangzhou and Taipei[293].

– Lean In China is a community founded by businesswoman Virginia Tian (partner of Asia's first gender-focused venture fund, Teja Ventures), with over 100,000 members. Supports She Loves Tech, an international startup competition for women in science, IT, mathematics, and engineering[294].

Active business communities are being formed around accelerators, technology parks, universities, and co-working spaces, as well as in group chats on WeChat, Facebook and other social media. Here one can find tips, events, a list of groups for everyone who is interested in entrepreneurship, vacancies from local entrepreneurs in different regions of the country, etc. A good example is the China Business Community, a community founded in 2018 that aims to bring together entrepreneurs from different countries interested in doing business in China. They hold thematic online meetings, help with logistics, share their experience and contact base, news and announcements of useful city events. There is a mobile application and narrow-topic chats[295].

A good way to join the community is to join the local branch of the international community. For example, in China, Slush China members are quite active in helping each other. Slush started out as a tech startup conference and competition in Finland, but has long since grown into a global, international community with branches in countries as diverse as Japan and China. The first event took place in 2015 in Beijing and has been a significant event for the local innovation industry ever since. Slush China hosts a series of technology events in various cities in China[296].

China regularly allocates subsidies and grants to support technology industries and is one of the world leaders in investments in AI, EdTech, Esport, BioTech, Fintech and Medtech. In the first 8 months of 2020, startups in China raised about $33 billion, the same amount raised in the same period of 2019. Chinese companies that managed to get

[293] Ladies Who Tech. URL: https://www.ladieswhotech.cn/
[294] Lean in China. URL: http://www.leaninchina.com.cn/
[295] China Business Community. URL: https://www.instagram.com/chinabusinesscommunity/
[296] Slush China. URL: https://www.slush.org/events/china/

funding despite the global crisis and pandemic are mainly working in the field of telemedicine, distance learning, logistics and online trading – SMEs in those fields grow faster and attract more investment. For instance, there are about 600 startups in healthcare in China, the total market size is more than $9900 billion. According to a study by Zero2IPO Group, online education startups in China raised about $9.2 billion in 2020 which is 4 times more than in 2019. At the same time the main popular industries for startups remain online services, blockchain, culture and entertainment, clean energy, electric vehicles, XR technologies (combination of augmented, virtual (AR) and mixed reality (MR), but experts note that the golden age of VR in China has passed and now it is the best time for AR and MR startups).

The state actively supports business with tax concessions. In particular, when an entrepreneur in China chooses the right area for opening and launching, they can count on a large number of preferences: from grants and reduced taxes to free offices.

Thus, the key features of the entrepreneurial ecosystem in China are: (1) incredibly high competition; (2) special business etiquette (great importance of connections, prominent role of entrepreneurial communities, passion for copying technologies); (3) a number of national features of the economy, including strong state influence, corporate warfare of technical leaders, and confrontation with the US; (4) dividing business in China into clusters: representatives of the IT and EdTech sectors will be interested in Beijing and, above all, Zhongguancun, pharmaceutical and biotechnology companies in Shanghai, hardware start-ups in Shenzhen, those who develop big data in Guiyang.

To sum it up, European entrepreneurial ecosystems are characterized by a low degree of venture activity on campuses. In European countries, unlike the US, it is more difficult for investors to get access to venture capital. The lower risk appetite of the European entrepreneurial ecosystem model also leads European startups to start generating income as soon as possible in order to show their investors that they are viable. A significant incentive for the development of European start-ups is the availability of access to the single European market, that is, a large-scale sales market. European universities, to a lesser extent than American ones, tend to cooperate with

companies and corporations, hold fewer discussions on entrepreneurship or starting a business.

Innovative entrepreneurship has been at the core of China's entrepreneurial ecosystem: since the early 1980s, China has been massively acquiring foreign technology to incorporate into all of its industrial enterprises. The Chinese government has set up an institutional infrastructure to encourage the copying of innovations and strengthened links between basic research and industry in order to use local technological potential by transferring technologies from scientific institutions where they are developed to industrial enterprises. As a result, it was possible to create a modern national innovation system that stimulates the introduction of technologies at the firm level.

To further stimulate the development of entrepreneurship, local governments have begun to promote local industrial clusters. At the same time, the state provides support to state-owned companies, as well as private companies that develop and provide innovative developments to state-owned enterprises. Leading Chinese R&D-intensive companies tended to be closely linked to state-owned enterprises and the public research sector. The pandemic accelerated the redistribution of financial flows, but China emerged from the situation with minimal losses and continues to attract foreign investment. According to the forecast of the Brookings Institution, China will overtake the United States in terms of economic size in just seven years and become the largest economy in the world.

The Indian government has succeeded in creating an entrepreneurial ecosystem in which all the critical elements are present – a large market, highly qualified specialists, and access to financing. The features of the created ecosystem include a low level of exit of entrepreneurs from the ecosystem through mergers or IPOs. Another specific feature of India's entrepreneurial ecosystem model is the culture of low tolerance for failure in India and its impact on entrepreneurial activity, in which the failure rate is quite high.

Speaking about India, it is important to note that initially the innovation hub in Bangalore began to develop as an IT outsourcing center and over time has turned into a

wealthy innovation center. The rapid development of information technology in the 1980s and 1990s led to the creation of many new companies in the 2000s in this area. In turn, the creation of these companies and their successful operation attracted even more entrepreneurs to the information technology industry. During the same period, TNCs seeking technical talent set up technology and research and development centers in Bangalore. They tapped into the intellectual potential of the hub and expanded it.

BI models may be divided into two broad categories based on comparisons across the US, Europe, China, and India. Inclusive model emphasizes enhancing government measures' efficiency via technological advancements and long-term sustainable regional economic growth through the active efforts of local communities and businesses. This concept has been adopted by the United States and most European nations.

Exclusive model is another type, which is widespread in Central Asia and the Middle East and can be applied to BI development in China and India: in this case authorities administratively integrate BIs into the local community to accelerate the research sector development. This strategy is believed to be very efficient, although it relies largely on foreign funding and assistance as countries that follow this strategy often employ foreign aid to speed up the growth of entrepreneurship.

The differences between the inclusive and exclusive models can be seen from industry key performance indicators across different countries presented in Table 2.5.2.

Table 2.5.2 — Comparative analysis of business incubator industries in US, EU, India and China[297].

| **Characteristics** | **US** | **Europe** | **India** | **China** |
|---|---|---|---|---|
| Main funders of BIs | Non-profit organisations, Universities | Mixed | Federal authorities, Private investors | Regional authorities, Universities, Corporations |
| Evolution model | Inclusive | Inclusive | Exclusive | Exclusive |
| Ecosystem features | • Leading role of universities<br>• High level of attraction for foreign startups<br>• Easy access to | • Hard access to venture capital<br>• Low level of cooperation between universities & | • Culture of low tolerance for failure in India combined with relatively high failure rate | • Strong links between basic research and industry (technology transfer) |

[297] Source: combined by author based on various sources including InBIA, UBI Global, Tracxn data.

| | | | | |
|---|---|---|---|---|
| | venture capital, but high costs<br>• Fierce competition on the market | corporations<br>• Low degree of venture activity<br>• Huge but diverse market | • Easy access to venture investments, including foreign capital<br>• Important role of hubs | • Moderate access to venture investment (including for foreign startups), but high level of regulation<br>• Focus on industrial clusters |
| Number of BIs | 2165<br>(March 2022) | 1500+<br>(2020) | 366<br>(June 2019) | 4849<br>(2020) |
| Average BI square space, sq.m. | 3,041 | 3,000 | 1,500 | 3,456 |
| Yearly average number of residents per BI | 25+ | 20+ | 15+ | 50+ |
| Startup survival rate | 87% | 85% | 75% | 80% |
| Number of startups | 71,153 | 20,000+ | 13,456 | 617 |
| Number of unicorn companies (May 2022) | 585 | 148 | 66 | 174 |

Except for India, which started to grow BIs only in the early 2000s, USA, Europe and China have not so many BI indicators in common with only the survival rate of client companies that can be considered at almost the same level (still a little lower in China). Speaking about other characteristics including the average BI square space and the average yearly number of clients, the figures in China are higher as they are directly related to large-scale public investments in the development of high-tech zones as well as BIs being their important integral element. However, incubators that are too reliant on state funding see a decline in their entrepreneurial activity and final output in sustainable SMEs with competitive products.

Based on the study, it can be noted that, despite the clear division of business incubator development models within the entrepreneurial ecosystem into two designated types, within each type there are also significant differences across countries. Comparing the markets of the USA and Europe (both of which belong to the inclusive model), we can see that while the regional EEs in the USA are built mainly around universities (therefore, university incubators and technology parks play a special role in the development of the ecosystem), in Europe, on the contrary, their connections with other elements of the ecosystem are much weaker. Other significant differences include

less VC activity and more difficult access to high-risk investments in Europe than in the US. At the same time, the European market still has a high capacity and diversity, and the competition in it is lower than in the US, which in its own way creates favorable conditions for the development of startups.

At the same time, significant differences across countries are also observed for the exclusive model, as can be seen in the example of China and India. Thus, the directive development of the EE in China is based mainly on two things: industrial clusters and a complex system of investment funds at various levels – national, provincial, city and district. In India, the focus in public policy is made at a much higher level of openness to the outside world and foreign investment, as well as the creation of hubs that, unlike clusters in China, focus on specific technologies and the technological orientation of startups rather than on particular industries. At the same time, both in China and India, there is a complex yet very consistent program of phased creation and development of an entrepreneurial ecosystem, based on the socio-economic characteristics of the country.

The higher mortality rates of startup projects and the predominance of simple typical businesses among resident companies in BIs in emerging countries seem to be interconnected, as for many entrepreneurs with those simple businesses who turn to BIs greenhouse conditions are artificially created. As soon as these businesses exit the business incubator, they immediately face an aggressive market environment and have a smaller chance to survive, leading to a higher mortality rate.

To sum it up, comparing BIs in the US, Europe, China and India, BI models can be generalized into two types. An inclusive model which dominates in USA and Europe involves maximizing the effectiveness of government measures through the development of innovative technologies and the sustainable economic development of regions through active initiatives from local communities and entrepreneurship. An exclusive model (China and India) implies that federal governments administratively integrate BIs into the local communities to reform the research sector. This approach involves the accelerated development of key EE elements, including venture market and SME support infrastructure, thanks to the borrowing of foreign experience and best

practices adopted to the local specifics, but at the same time it is characterized by a high volume of public investment, and therefore is often implemented with the involvement of foreign investments.

Despite the higher mortality rates of startup projects and the predominance of simple typical businesses among resident companies in BIs in China and India, the analysis conducted in this Chapter shows that these emerging countries are catching up with developed economies in many important indicators, including the number of BIs, startups, unicorn companies, etc.

# CHAPTER 3. SURVEY STUDY: ENTREPRENEURIAL ECOSYSTEM AND THE STATE OF BUSINESS INCUBATION IN RUSSIA

The comparative analysis of business incubation (BI) in the context of entrepreneurial ecosystems (EEs) in developed and emerging economies as well as the average world characteristics of business incubators studied in Chapter 2 provide a necessary and sufficient basis for the detailed analysis of current state of BIs in Russia. To achieve that, the generalized information on EE key elements and features as well as the overall state of small and medium sized enterprises (SMEs) is presented in section 3.1. Additionally, the current support legislation drawbacks and challenges are explored in 3.2.

Next, the development specifics and trends of business incubation in Russian Federation for about a decade are revealed through the analysis of consecutive surveys conducted from 2012 to 2020. The research methodology is described in 3.3 while the comprehensive study and discussion of the survey data are contained in the final section 3.4. The main objective of this chapter is to understand the dynamics and trends on the Russian BI market, explore the underlying reasons for the main changes and ultimately formulate the gaps and research questions for deeper study through in-depth interviews presented in Chapter 4.

## 3.1. Entrepreneurial ecosystem in Russia: key elements and features

According to the National Security Strategy of Russia, one of the goals of countering threats to the economic security of Russia is stimulating the development of small and medium-sized businesses (SMEs)[298].

However, from 2016 to 2020, the number of small and medium-sized enterprises in Russia decreased by 2.4%, while the number of micro-enterprises decreased by 1.5%. The largest reduction among small and medium-sized businesses in Russia was

[298] Decree of the President of the Russian Federation of December 31, 2015 N 683 “On the National Security Strategy of the Russian Federation” // Collection of Legislation of the Russian Federation of January 4, 2016 N 1 (Part II) Art. 212.

observed in small enterprises: their number decreased by 19.3% from 268.9 thousand in 2016 to 217 thousand in 2020, while the number of medium-sized enterprises decreased by 14.5% — from 20.7 thousand in 2016 to 17.7 thousand in 2020 (Table 3.1.1). At the same time, at the end of 2021, the number of SMEs reached the level of 2016, mainly thanks to an increase in the number of micro-enterprises by 2.6% during 2021[299].

It can also be noted that throughout the entire period from 2016 to 2021 the share of micro-enterprises in the total number of SMEs in Russia has been steadily growing – from 95.0 to 96.1%, which occurred against the background of a gradually decreasing share of small enterprises (from 4.6 to 3.7%, respectively). On the one hand, the first fact could speak of growing entrepreneurial activity, but taking into account both indicators, as well as absolute values, it can be stated that Russia still has a high mortality rate of start-up projects that are not able to scale up to small and medium-sized enterprises. Interestingly, that trend can be seen even before the COVID-19 pandemic, which began at the end of 2019.

Table 3.1.1 — Number of small and medium-sized businesses in Russia dynamics from 2016 to 2021 (at the end of the year)[300].

| Year | Total SMEs, thousands | Micro-enterprises, thousands | Small Enterprises, thousands | Medium-sized Enterprises, thousands |
|---|---|---|---|---|
| 2016 | 5 841.5 | 5 551.9 (95,0%) | 268.9 (4,6%) | 20.7 (0,4%) |
| 2017 | 5 998.4 | 5 710.4 (95,2%) | 267.6 (4,5%) | 20.4 (0,3%) |
| 2018 | 6 042.9 | 5 772.3 (95,5%) | 251.7 (4,2%) | 18.9 (0,3%) |
| 2019 | 5 924.7 | 5 682.7 (95,9%) | 224.9 (3,8%) | 17.1 (0,3%) |
| 2020 | 5 702.2 | 5 467.4 (95,9%) | 217.0 (3,8%) | 17.7 (0,3%) |
| 2021 | 5 839.0 | 5 608.1 (96,1%) | 213.0 (3,7%) | 17.9 (0,3%) |

The data of Table 3.1.1 can be supplemented with the dynamics of the number of employees of small and medium-sized businesses in Russia (Table 3.1.2). It can be seen that over the period from 2016 to 2020 (excluding 2021 due to the impact of pandemic), the number of employees of all small and medium-sized businesses in Russia decreased by 2.6%, while the number of employees in micro-enterprises increased by 15.6%. The

[299] Unified register of small and medium-sized businesses. URL: https://ofd.nalog.ru/index.html

[300] Source: author's own, based on Unified Register of Small and Medium Business Entities. URL: https://ofd.nalog.ru/index.html

largest reduction in the number of employees was observed in small enterprises: it amounted to 17.3%, while the number of employees in medium-sized enterprises fell by 7.6%.

As a result, the structure of people employed in the SME sector in Russia changed significantly over the entire period under review: the share of people employed in micro-enterprises increased from 40.9% to 47.8%, while the share of people employed in small enterprises decreased by about the same number of percentage points, from 46.7% to 39.8%.

Table 3.1.2 — Dynamics of the number of employees of SMEs in Russia (at the end of the year)[301]

| Year | Total SMEs, millions | Micro-enterprises, millions | Small Enterprises, millions | Medium-sized Enterprises, millions |
|---|---|---|---|---|
| 2016 | 15.92 | 6.52 (40.9%) | 7.43 (46.7%) | 1.98 (12.4%) |
| 2017 | 16.13 | 7.04 (43.7%) | 7.11 (44.1%) | 1.98 (12.3%) |
| 2018 | 15.92 | 7.55 (47.4%) | 6.55 (41.2%) | 1.82 (11.4%) |
| 2019 | 15.36 | 7.46 (48.6%) | 6.20 (40.4%) | 1.70 (11.1%) |
| 2020 | 15.51 | 7.54 (48.6%) | 6.15 (39.6%) | 1.83 (11.8%) |
| 2021 | 14.64 | 6.99 (47.8%) | 5.83 (39.8%) | 1.82 (12.4%) |

Micro-enterprises in Russia are the enterprises with up to 15 employees, they also include individual (sole) entrepreneurs[302]. By March 10, 2022 there were 5726.2 thousand micro-enterprises in Russia with 6.95 million employees (1.23 employees per enterprise on average) which accounts for 96.1% of all SMEs. Small businesses include enterprises with 16 to 100 employees. There were 211.8 thousand small businesses (5.82 million employees, 27.5 employees per enterprise) which is approximately 3.8% of all SMEs in Russia. Medium enterprises have a number of employees from 101 to 250 people. There were 17.96 thousand medium businesses (1.87 million employees, 104.1 per enterprise) – 0.3% of all small and medium-sized businesses in Russia. Table 3.1.3 contains SME differences by the average number of employees and registered assortment of products and services in the period from 2016 to 2021.

[301] Ibid.

[302] Federal Law of July 24, 2007 N 209-FZ “On the development of small and medium-sized businesses in the Russian Federation”. P.2. Art. 4 // Collection of Legislation of the Russian Federation of July 30, 2007 N 31 Art. 4006.

Table 3.1.3 — SME differences by the average number of employees and registered assortment of products and services in the period from 2016 to 2021 (at the end of the year)[303].

| Year | Micro-enterprises | | Small Enterprises | | Medium-sized Enterprises | |
|---|---|---|---|---|---|---|
| | Avg. number of employees | Total assortment of products | Avg. number of employees | Total assortment of products | Avg. number of employees | Total assortment of products |
| 2016 | 1.17 | n/a | 27.6 | n/a | 95.6 | n/a |
| 2017 | 1.23 | 2468 | 26.6 | 979 | 97.2 | 263 |
| 2018 | 1.31 | 3548 | 26.0 | 960 | 96.2 | 271 |
| 2019 | 1.31 | 4726 | 27.6 | 1091 | 99.5 | 245 |
| 2020 | 1.38 | 6514 | 28.3 | 1223 | 103.2 | 234 |
| 2021 | 1.25 | 7677 | 27.4 | 1389 | 101.8 | 151 |
| 2022 (March) | 1.21 | 7894 | 27.5 | 1405 | 104.1 | 156 |

Table 3.1.3 clearly shows that in the period from 2016 to 2020 (before the pandemic) the average micro-enterprise in terms of the number of employees grew by 18.0%, while the small business grew by only 2.5%. At the same time, medium-sized enterprises in terms of the average number of employees grew by almost 8.0%. All this, along with the reduction in the number of small businesses and changes in SMEs employment (Table 3.1.2), once again points to an unhealthy trend of small businesses being “washed out” from the Russian economy, associated with the growing mortality of small enterprises and the consolidation of medium-sized businesses.

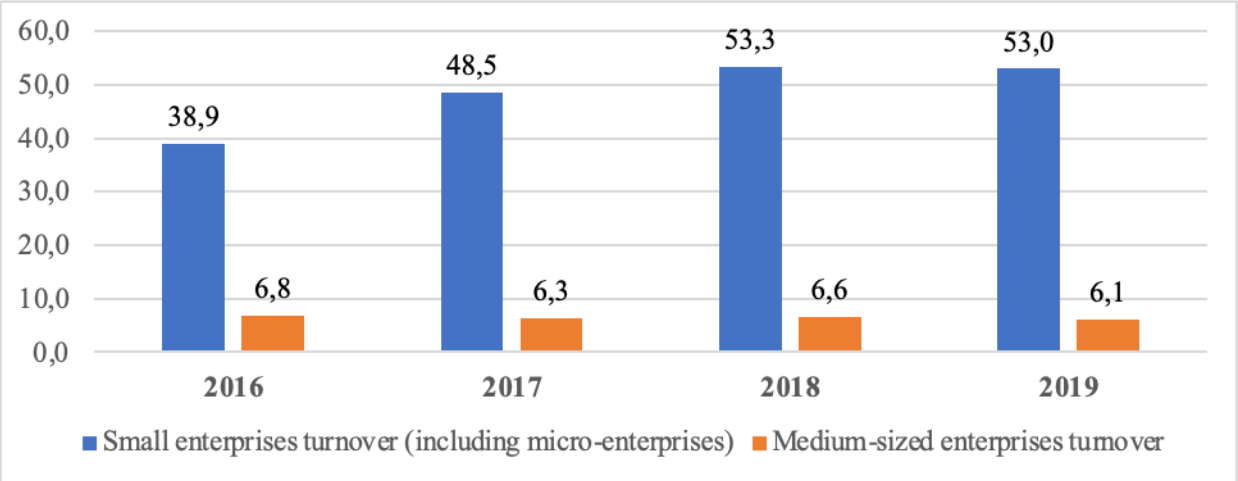
According to Rosstat, the turnover of small enterprises (including micro-enterprises) increased from 38.9 trillion. rub. in 2016 by 36.2% – to 52.9 trillion[304]. rub. in 2019. At the same time, the turnover of medium-sized enterprises decreased from 6.8 trillion. rub. in 2016 by 9.2% – to 6.1 trillion. rub. in 2020. The growth in the turnover of small enterprises indicates the development of this sector of Russian business. However, the decline in turnover of medium-sized enterprises is a negative trend. Also, it should be considered that Rosstat does not indicate micro-enterprises and small

[303] Source: author’s own, based on Unified Register of Small and Medium Business Entities. URL: https://ofd.nalog.ru/index.html

[304] Institutional transformations in the economy. Federal State Statistics Service. URL: https://rosstat.gov.ru/folder/14036?print=1

businesses separately in the publicly available reports, so it is hard to tell which type of business grew more in terms of revenue.

Fig. 3.1.4 — Dynamics of turnover of small and medium-sized enterprises in Russia from 2016 to 2019 (trillion rubles)[305].




An important indicator of the state of small and medium-sized businesses in Russia is the share of small and medium-sized enterprises that carried out technological innovations. From 2007 to 2019 the share of these enterprises increased from 4.3% to 5.9% (Fig. 3.1.5)[306], which indicates that small and medium-sized businesses in Russia are becoming more innovative and technologically advanced. At the same time, the share of small enterprises that carried out innovative activities among all small enterprises in 2019 amounted to 5.8%. For comparison, in Japan the same figure was 38.0%, in Austria — 59.9%, in France — 45.5%[307].

Gradually, the proportion of innovative products among all products manufactured in the segment of small and medium-sized businesses is also growing. From 2009 to 2019, the share of these products was insignificant, but increased – from 1.38% to 2.36% (Fig. 3.1.6).

[305] Source: author's own, based on Institutional transformations in the economy. Federal State Statistics Service. URL: https://rosstat.gov.ru/folder/14036?print=1

[306] The share of small enterprises that carried out technological innovations in the reporting year in the total number of surveyed small enterprises. URL: https://rosstat.gov.ru/folder/14477

[307] The share of small enterprises implementing technological innovations in foreign countries. URL: https://ach.gov.ru/upload/iblock/84a/84a3c7f43e5bc65d347a40b37ee91fc5.pdf

Fig 3.1.5 — The share of small and medium-sized enterprises that carried out technological innovations among all SMEs, 2007–2019 (%)[308].

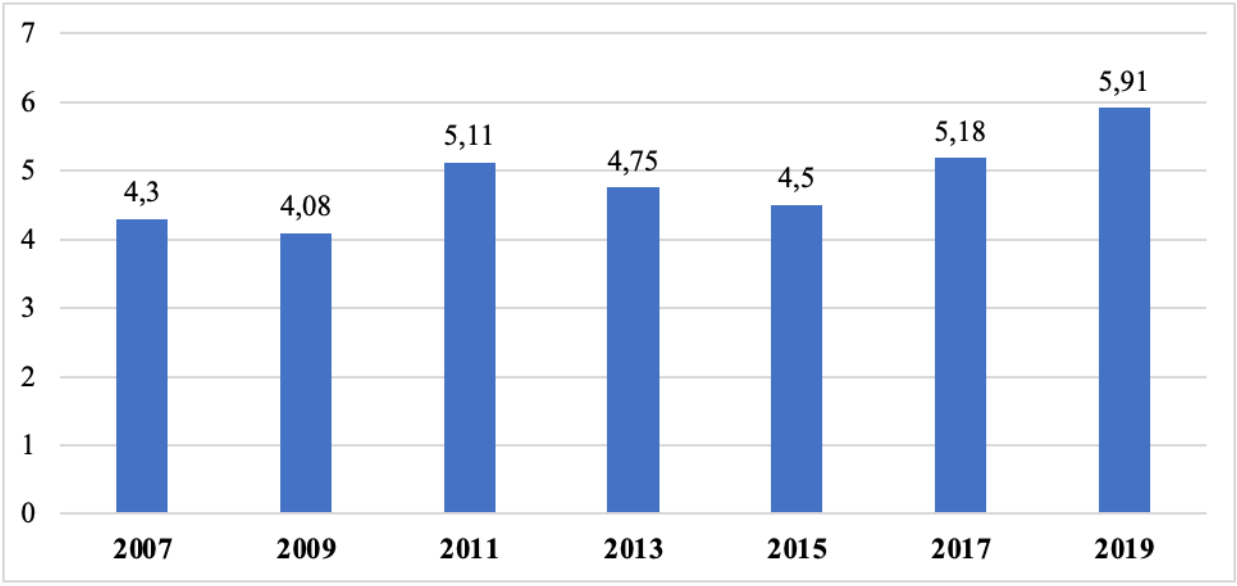
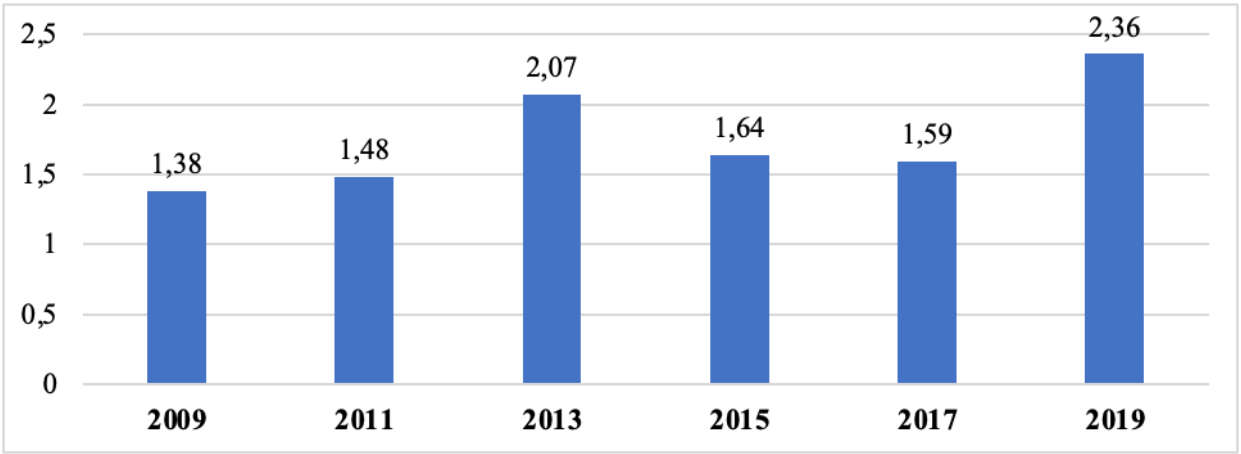



Fig 3.1.6 — The share of innovative products among all products manufactured in the segment of small and medium-sized businesses in Russia, 2009-2019 (%)[309].



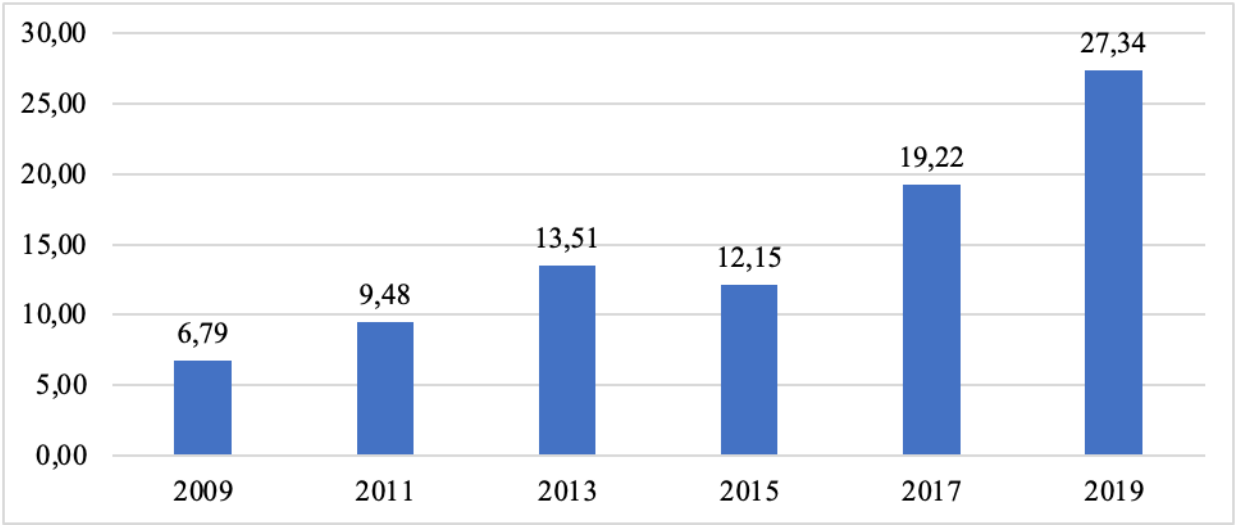

At the same time, in recent years, the costs of innovative activities of small enterprises in Russia have grown from 6.8 billion rubles in 2009 to 27.3 billion rubles in 2019, i.e. more than 4 times (Fig. 3.1.7).

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[308] Source: author's own, based on The share of small enterprises that carried out technological innovations in the reporting year in the total number of surveyed small enterprises. URL: https://rosstat.gov.ru/folder/14477

[309] Source: author's own, based on The share of innovative goods, works, services in the total volume of shipped goods, work performed, services of small enterprises. URL: https://rosstat.gov.ru/folder/14477

Fig 3.1.7 — Costs for innovative activities of small enterprises in Russia from 2009 to 2019 (billion rubles)[310].




The growth in the costs of small enterprises for innovative activities in 2009-2019, the share of innovative products among all products manufactured in the segment of small and medium-sized enterprises and the share of small and medium-sized enterprises that carried out technological innovations in the reporting year among all small enterprises are positive trends in the field of small and medium-sized businesses in Russia, indicating an increase in the degree of innovation of small and medium-sized enterprises. However, Russia still lags far behind Western countries in terms of the share of small enterprises that carry out technological innovations.

Along with clusters in Russia, there are such elements of the entrepreneurial ecosystem as business incubators (BIs), accelerators (BAs) and technology parks (TPs).

Business incubators contribute to the creation of new companies, the creation of new jobs, the growth of tax revenues to the federal and regional budgets, and the attraction of private investment. In Russia, 260 business incubators were created during the entire period under review, while their number is currently declining, as will be shown in the next paragraph. It should be noted that for comparison, more than 1,500 business incubators were created in China over the same period. The first business

[310] Source: author's own, based on Expenses for innovative activity of small enterprises. URL: https://rosstat.gov.ru/folder/14477

incubators in Russia officially began to appear in 2007, while in the period from 2007 to 2016, 61% of all business incubators in Russia were created.

According to a study by the Association of Accelerators and Business Incubators of Russia[311], in 2018 the structure of existing business incubators in Russia was as follows:

- the majority of business incubators in Russia are regional business incubators, which account for 58% of all incubators (151 incubators);

- another 35% of incubators, or 91 incubators, are incubators based on a higher educational institution, that is, business incubators that were created and operate in universities at the expense of funds provided by the university;

- 6% (13 incubators) of business incubators in Russia are infrastructural, that is, they are business incubators located as structural units within technoparks and complementing the range of services provided there;

- 3 incubators (1% of the total) are private;

- only 2 business incubators (less than 1%) are incubators that were created under the program to support small and medium-sized businesses of the Ministry of Economic Development. Their funding was provided by the region in which they are located.

In addition, there are 103 business accelerators in Russia, which are short-term startup support programs. Typically, the duration of this program does not exceed several months, during which entrepreneurs are provided with educational and consulting services by industry experts, as well as assistance in the implementation and development of the project. Funding for the project is provided either by the industry experts themselves or an affiliate venture fund. BAs are created on the basis of business incubators, venture funds, universities, technology parks or large corporations.

The number of business accelerators in Russia began to grow in 2017, when the number of corporate accelerators increased by 9, and that of university accelerators by 8. During the period from 2017 to 2018, 63% of university accelerators operating in Russia were created.

The structure of BAs in Russia is as follows:

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[311] Map of accelerators and business incubators of the Russian Federation. URL: http://www.oneup.ru/analytics/innomap

- 25% of all BAs, which is 26 accelerators, are private accelerators, that is, those operating on a commercial basis with paid acceleration programs. As a rule, these are accelerators at venture funds or organizations that specialize in acceleration activities;

- 21% of BAs are corporate, that is, they were created by companies within the framework of corporate acceleration programs (both internal and external); this fact will be examined more closely in section 4.3;

- 19% of BAs are university accelerators, that is, accelerator programs and accelerators that are implemented within higher education institutions;

- 15% of BAs are regional, that is, created and funded by the authorities of a particular region;

- 9% of BAs are accelerators created as part of the Generation S accelerator program;

- 6% of BAs are accelerators created within the framework of the Federal Targeted Acceleration Program and 5% of BAs are accelerators created under the program of the Accelerator Presidential Grants Fund.

Due to the fact that the creation of BAs and BIs in Russia was started relatively recently, there are only 25 regions of the country where both incubators and accelerators operate, while in 47 regions there are only business incubators and in 13 regions of Russia there are neither.

At the same time, there is an uneven distribution of BIs and BAs across the regions of Russia: 59 out of 91 incubators are located in 17 constituent entities of Russia, while 36 constituent entities of Russia do not have a single business incubator, 91 business incubators are located in 49 constituent entities of Russia out of 85; while 32 regions of Russia have only 1 business incubator[312].

As for technology parks (TPs), as of 2021, there were about 139 TPs in Russia in 66 regions (Table 3.1.8)[313]. Another 120 TPs are being created at the current stage, the creation of 20 technology parks is in the plans of the authorities.

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[312] Map of accelerators and business incubators of the Russian Federation. URL: http://www.oneup.ru/analytics/innomap

[313] List of technology parks in Russia — 2021. URL: https://russiaindustrialpark.ru/tehnopark_catalog_perecheny_spisok_russia

Table 3.1.8 — Number of technology parks in Russia at the beginning of 2021[314].

| Technopark State | Quantity | Number of Regions |
|---|---|---|
| Functioning | 139 | 56 |
| In Construction | 120 | 47 |
| Planned for Construction | 20 | 13 |

In Russia, the first technoparks were created in the early 1990s (the first wave of creation of TPs). Most of them were created and functioned at higher educational institutions. These technoparks did not have the goal of making a profit, and most of them did not function, since they were created only in order to receive additional funds from the budget for a new construction. As a result, most of the technology parks created in the first wave ceased to exist by the early 2000s.

The second wave of creation of technoparks and industrial parks was in 2006–2015. At this stage, TPs were created as non-financial development institutions, whose task is to create conditions for the implementation of long-term investment projects[315].

An audit of Russian TPs conducted by the Accounts Chamber of the Russian Federation in 2015 revealed that neither at the federal level nor at the regional level it was not determined how technoparks should function, and how the effectiveness of their work should be evaluated. Also, gaps in the legislative regulation of TPs in Russia were identified, as well as significant shortcomings in the control and monitoring system, which makes it impossible to assess the results of the functioning of the technology park and industrial park as a tool for the development of industry and entrepreneurship.

At the same time, the state from the federal budget provides large-scale financial support to the created technoparks and industrial parks. So, since 2007, the expenses of the Ministry of Economic Development, the Ministry of Industry and Trade and the Ministry of Digital Development to support technology parks amounted to about 41.7 billion rubles. In 2007-2020, financial assistance was provided to 100 industrial parks and technology parks located in 48 regions of Russia[316].

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[314] Source: Перечень — список технопарков России — 2021 год. URL: https://russiaindustrialpark.ru/tehnopark_catalog_perecheny_spisok_russia

[315] Technopark for a down scarf: ministries are confused about state support 03/16/2021. URL: https://www.gazeta.ru/business/2021/03/15/13512314.shtml

[316] Ibid

The majority of TPs is located in Moscow (28, or 20% of all TPs in Russia), the Moscow region (22 TPs, 16%), the Republic of Tatarstan (7), St. Petersburg region (5), and Udmurt Republic (5)[317].

Technoparks are one of the most problematic elements of the entrepreneurial ecosystem being created in Russia. Along with gaps in the legislative regulation of this tool to support business and industry, as well as control and monitoring, many regions create many technology parks in order to receive funding from the state budget. At the same time, in the absence of criteria for the effectiveness of technoparks, the results of their work cannot be assessed. Moreover, in several cases, the regions have not even determined the type of TPs they are creating. The six technoparks currently under construction as a part of the national program "Development of the Far East" (the construction is planned to be completed by 2024) can be seen as a good example for that[318]. In the future, this program will be implemented until 2035. However, not only the type of each of the created technoparks was not determined by the form of ownership, but also the coordinators and responsible executors, the parameters of the state support provided, the sources and volumes of the required funding, etc.

Auditors from the Accounts Chamber also revealed that the Ministry of Industry and Trade created so many TPs that it could not control their financing effectively leading to mistakes. For example, some of the parks, which had already received the funds from the Ministry of Economic Development, with the funds for the second time. The amount of re-financing was 3.2 billion rubles. At the same time, in the documents of the Ministry of Economic Development and Trade, these technoparks were listed as special economic zones. At the initiative of the Ministry of Industry and Trade, Kaluga International Airport was considered as an industrial facility, which was not. Nevertheless, the airport received subsidies as if it was an industrial park.

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[317] List of technology parks in Russia — 2021. URL: https://russiaindustrialpark.ru/tehnopark_catalog_perecheny_spisok_russia

[318] Decree of the Government of the Russian Federation of September 24, 2020 No. 2464-r On approval of the National Program for the Socio-Economic Development of the Far East for the period up to 2024 and for the future up to 2035. URL: https://www.garant.ru/products/ipo/prime/doc/74587526/

Thus, the creation of technoparks as elements of the EE in Russia is at an early stage and faces a huge number of problems, mainly related to insufficient legal regulation.

### 3.2. EE & SMEs support legislation specifics and challenges in Russia

Even though for several years small and medium-sized businesses have remained one of the federal priorities, the number of small and medium-sized enterprises in Russia is declining. In Russia, the national project "Small and medium-sized businesses and support for individual entrepreneurial initiatives" was adopted, within the framework of which 5 federal projects are being implemented:

(1) expanding the access of small and medium-sized businesses to financial resources, including concessional financing,

(2) accelerating small and medium-sized businesses,

(3) creation of a support system for farmers and the development of rural cooperation,

(4) popularization of entrepreneurship,

(5) improvement of the conditions for doing business[319].

By 2024, the share of small and medium-sized enterprises in the Russian economy should grow to 32.5%, and the number of people employed in small and medium-sized businesses — up to 25 million people[320]. However, the mentioned projects do not provide for the application of a cluster approach to stimulating entrepreneurial activity.

In June 2016, the Strategy for the Development of Small and Medium Enterprises in Russia until 2030 was approved. One of the priority directions of this strategy is

[319] Passport of the national project "Small and medium-sized businesses and support for individual entrepreneurial initiatives" (approved by the Presidium of the Council under the President of the Russian Federation for Strategic Development and National Projects /Minutes of December 24, 2018 N 16/).

[320] National project "Small and medium-sized businesses and support for individual entrepreneurial initiatives". URL: https://www.economy.gov.ru/material/directions/nacionalnyy_proekt_maloe_i_srednee_predprinimatelstvo_i_podderzhka_individualnoy_predprinimatelskoy_iniciativy/

"stimulating the development of entrepreneurial activity in certain territories"[321]. Within the framework of this direction, the constituent entities of the Russian Federation were empowered to stimulate the development of small and medium-sized enterprises in their regions. One of the measures to stimulate the development of entrepreneurship in the regions is "allocation of priority development areas and assistance in the development of clusters of small and medium-sized enterprises"[322].

In January 2019, the Government of the Russian Federation adopted a plan to transform the business climate, which, however, is not aimed at stimulating the creation of an entrepreneurial ecosystem in Russia.

The analysis of legislative initiatives made it possible to conclude that in Russia the state provides entrepreneurs with various types of assistance and support, including the following:

- Educational assistance in the form of development of staff development programs and training of specialists.

- Financial support in the form of subsidies to small and medium-sized enterprises in the amount of 60 thousand to 25 million rubles, the issuance of preferential loans, as well as tax incentives[323].

- Consulting assistance in the form of consultations of professionals and experts.

- Property support in the form of an opportunity for entrepreneurs to use state property (land plots, rent of premises) on preferential terms or free of charge.

- Information assistance through the creation of official websites and regional and federal information systems to provide entrepreneurs with the relevant information and data they need.

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[321] Decree of the Government of the Russian Federation of June 2, 2016 No. 1083-r "On the Strategy for the Development of Small and Medium-Sized Businesses in the Russian Federation for the period up to 2030 and the action plan ("road map") for its implementation." URL: https://www.garant.ru/products/ipo/prime/doc/71318202/

[322] Decree of the Government of the Russian Federation of June 2, 2016 No. 1083-r "On the Strategy for the Development of Small and Medium-Sized Businesses in the Russian Federation for the period up to 2030 and the action plan ("road map") for its implementation." URL: https://www.garant.ru/products/ipo/prime/doc/71318202/

[323] Small business support: state programs for 2020-2021 05/12/2020. URL: https://www.business.ru/article/1360-podderjka-malogo-biznesa-2019-gos-programmy

At the same time, direct federal support prevails in Russia in the form of the participation of small and medium-sized enterprises in public procurement, the provision of subsidies and soft loans to them[324]. Indirect support measures include an extensive system of infrastructure, as well as development institutions, the provision of free consultations, admission of entrepreneurs to participate in fairs and exhibitions free of charge, simplification of the accounting and reporting system, special tax regimes, business training.

However, in Russia there is no comprehensive support for entrepreneurship and there is no cluster policy and policy aimed at creating and developing an entrepreneurial ecosystem. Even though Russia provides significant support to small and medium-sized enterprises in the form of creating infrastructure, these measures have not led to the development of entrepreneurship in the country and a significant increase in its innovative activity. One of the reasons for this is that there are no incentives for cooperation between universities and enterprises, as well as incentives for the growth of innovation activity and an increase in the share of people employed in R&D.

The established infrastructure for supporting small and medium-sized businesses includes the Corporation for Small and Medium-Sized Enterprises, “My Business” business support centers established in each constituent entity of Russia, the Bank for SMEs (Small and Medium-sized Enterprises), lending assistance funds, investment funds that provide financial support to entrepreneurs, SME Business Navigator Portal, providing information assistance to entrepreneurs, various consulting centers, support funds and centers and agencies for the development of small and medium-sized enterprises.

Efforts were also made to introduce certain elements of the entrepreneurial ecosystem in Russia: cluster development centers, business incubators, scientific, techno- and industrial parks, engineering and innovation-technological centers, as well as prototyping centers were created. However, these measures are still not enough: in the Global Innovation Index (GII — 2020), Russia ranks 47 out of 131 countries in

[324] Антонова М.П., Баринова В.А., Громов В.В., Земцов С.П. и др. Развитие малого и среднего предпринимательства в России в контексте реализации национального проекта. Москва : Дело, 2020. С. 67.

terms of the level of innovative development in the context of global clustering. At the same time, from 2015 to 2020, Russia managed to rise by only 2 points. If we compare the position of Russia with the leading countries (USA, Switzerland, the Netherlands, China, Japan), Russia is characterized by extremely low indicators of cluster development: it occupies 95th place in the world ranking, has a low level of cluster concentration — 0.3 and an integral assessment of GII — 3.4 out of 7[325].

Such a lag of Russia from the leading countries in the world in terms of cluster development is due to the fact that over 75% of innovation clusters in Russia began to be created only after 2012. In this regard, at the current stage, clusters in Russia are at the initial stage of their creation and development.

At the same time, two main trends in cluster development of Russia since 2012 can be named:

(1) The Russian Ministry of Industry and Trade provides its own programmatic support for industrial clusters;

(2) The Ministry of Economic Development of Russia implements program support for innovative territorial cluster formations.

In total, 27 clusters in Russia were given the status of pilot innovative territorial clusters, which were included in the list of the Ministry of Economic Development of Russia[326]. Researchers pay attention to the fact that in those regions that have taken the path of cluster development — the Lipetsk region, the Leningrad region, Tatarstan and others, higher growth rates of entrepreneurial activity are observed[327]. For example, in the Leningrad region, more than 8 cluster initiatives were undertaken, while 4 clusters located in the region have a specialized organization and organizational structure[328]. In order to stimulate cluster development in the Leningrad Region, in November 2014, the Center for Cluster Development of St. Petersburg was established. One of the goals of

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[325] Development of innovation clusters in Russia 10.10.2020. URL: https://delprof.ru/press-center/open-analytics/innovatsionnye-klastery-rossii/

[326] Order of the Government of the Russian Federation dated August 28, 2012 No. DM-P8-5060. URL: https://cluster.hse.ru/innovative_clusters

[327] What is missing in Russian small business. 10 incentives for entrepreneurship that work effectively in the world 12.08.2014. URL: http://bishelp.ru/business/podderzhka-predprinimatelej/chego-ne-hvataet-rossiyskomu-malomu-biznesu-10-stimulov-dlya

[328] Industrial and innovation clusters. URL: https://econ.lenobl.ru/ru/budget/clusters/

its activities is to stimulate the growth of competitiveness of small and medium-sized businesses. A regional development institute was also created: the "Industrial Development Center of the Leningrad Region", one of the tasks of which is the development of cooperation and clusters[329]. As part of the cluster approach to the development of the economy of the Leningrad Region, the authorities of the region are gradually building work in each industry.

At the same time, not all initiatives of the authorities to create an entrepreneurial ecosystem were successful: in the early 2010s. the regional authorities announced the construction of several factories of leading automakers near St. Petersburg in order to create an automobile cluster there. However, the project was never implemented, since such localization would not have brought special results and it had no prospects for development[330].

In 2017, the authorities of the Lipetsk region began the active implementation of the cluster strategy for economic development. According to this strategy, it is planned to create an entrepreneurial ecosystem in the region, in which interconnected industries will be concentrated in one place, which will allow for the effective integration of intellectual and financial capital. This integration, in turn, will be able to strengthen and ensure the competitive advantages of products manufactured in the region.

In 2001, the law "On Industrial Policy in the Lipetsk Region" was adopted, which stimulated the formation of favorable conditions for the development of industrial clusters in the region[331]. 12 years after the adoption of this law in 2013, the regional autonomous institution "Center for Cluster Development of the Lipetsk Region" was founded to carry out the cluster policy. Its main goal is to establish effective interaction between companies participating in territorial clusters, public and non-profit organizations, scientific and educational institutions, local governments and public

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[329] Industrial Development Center of the Leningrad Region. URL: http://lenoblinvest.ru/центр-развития-промышленности-ленин/

[330] The Leningrad Region bets on clusters. URL: https://russiaindustrialpark.ru/article/leningradskaya-oblast-stavit-na-klastery

[331] Law of the Lipetsk Region "On Industrial Policy in the Lipetsk Region" dated June 14, 2001 N 144-OZ. URL: http://docs.cntd.ru/document/872603040

authorities, investors for the implementation of joint cluster projects[332]. As part of the ongoing cluster policy in the Lipetsk region, three territorial production clusters were created: in 2014, an innovative territorial cluster of household appliances and a cluster of composite materials and products were created. In 2016, an industrial cluster of machine tool building and machine tool industry "LIPETSKMASH" was created[333].

In the Republic of Tatarstan, 8 clusters have been created over the past few years. By the end of 2020, the number of participants in the IT cluster alone was 114 companies, and in the machine-building cluster — 89 enterprises. The creation of clusters in Tatarstan was facilitated by the adoption in 2016 of the Law of the Republic of Tatarstan dated April 21, 2016 No. 24-ZRT "On Industrial Policy in the Republic of Tatarstan"[334].

Members of the IT cluster are representatives of small and medium-sized businesses of the republic. The cluster provides support to entrepreneurs jointly with the Kama Center for Cluster Development[335]. The average level of cooperation between cluster members in Tatarstan is over 35%. This means that each of the companies supplies another member of the cluster with at least 35% of the annual production volume. This testifies to the success of the implementation of the cluster policy in the region and its developed industrial potential[336].

Another example of an attempt by the authorities of the Russian regions to create an entrepreneurial ecosystem is the creation in 2018 of an innovation cluster in Moscow[337]. It was decided to create this cluster to develop and strengthen interactions between industrial firms, educational institutions, scientific and communication organizations,

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[332] Time to concentrate. 16.06.2017. URL: https://www.kommersant.ru/doc/3325655

[333] Industrial cluster of machine tool building and machine tool industry LIPETSKMASH. URL: https://map.cluster.hse.ru/cluster/129

[334] The Ministry of Industry and Trade of the Republic of Tatarstan. Industrial clusters. URL: https://mpt.tatarstan.ru/promishlennie-klasteri.htm

[335] The Ministry of Industry and Trade of the Republic of Tatarstan. IT cluster. URL: https://digital.tatarstan.ru/it-klaster.htm

[336] Subjects need to pull their clusters through national projects. 31.10.2018. URL: https://inkazan.ru/news/economy/31-10-2018/sub-ektam-nuzhno-vytyagivat-cherez-natsproekty-svoi-klastery-ekspert

[337] Decree of the President of the Russian Federation of November 26, 2018 No. 672 "On the creation of an innovation cluster in the territory of Moscow". URL: https://www.garant.ru/products/ipo/prime/doc/72013028/

and others, that form the SME support infrastructure. Creating this cluster in Moscow, the Moscow Government took as a basis the experience of creating the world's largest high-tech zone Zhongguancun, located in Beijing, China[338] (for details see Section 2.5).

It can be concluded that the regions of Russia are just beginning to create an entrepreneurial ecosystem and introduce a cluster approach. However, even despite this, in a number of regions there is already an increase in the innovative activity of small and medium-sized businesses.

At the federal level, the tools for SME support come down to the following:

(1) special tax regimes for small and medium-sized enterprises, including a simplified taxation system;

(2) establishment of a special procedure for the participation of SMEs in state and municipal procurement as suppliers and contractors;

(3) simplified methods of accounting and financial reporting;

(4) financial support to financial institutions, which, in turn, increase the volume of lending to entrepreneurs on better terms;

(5) moratorium on scheduled inspections by state and municipal control bodies.

State financial assistance — subsidies and subventions — which, in most cases, are supplied based on co-financing and not directly from the federal budget, but indirectly, via regional and municipal budgets, plays a significant role in promoting the growth of SMEs.

Support in the field of taxation, which consists of two components: reducing tax pressure on the business environment (tax incentives under the traditional current tax system) and simplifying the tax accounting and reporting system for SMEs, is one of the most important types of state support for SMEs. The principal (though by no means the sole) document implementing the state's tax policy is the Main Directions of Tax Policy for 2017 and 2018–2019, and one of its primary goals is to encourage the operations of small and medium-sized enterprises.

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[338] The Association of Clusters, Technology Parks and SEZ of Russia. About clusters. URL: https://akitrf.ru/clusters/about/

Additionally, favorable improvements influenced insurance prices. If the firm (insured) derives at least 70 percent of its total revenue from its principal activity, it is eligible for lower (preferential) insurance premium rates (20%). Interestingly, the right to pay insurance premiums at preferential rates must be documented (for example, by a copy of the tax return under the simplified tax system with the tax authority's acceptance mark), whereas the right to apply for reduced interest rates under the simplified tax system does not need to be confirmed by the tax authorities because they are not considered a benefit (letter of the Ministry of Finance of the Russian Federation dated October 21, 2013 No. 03-11-11 / 43791).

Providing taxpayers operating under the patent taxation system with the chance to decrease the cost of a patent by the amount of insurance premiums and limiting the number of reasons for refusal in the patent system are among the anticipated additional incentive measures.

The provision of advantages in state and local procurement is a key instrument for supporting small and medium-sized businesses. According to the Federal Law "On the Contract System in the Field of Procurement of Goods, Works, and Services to Meet State and Municipal Needs" dated April 5, 2013, state and municipal customers are required to purchase goods and services from small businesses in the amount of at least 15% of the total purchases (subject to competitive procurement methods), and this percentage is expected to increase gradually in the future, particularly in light of the new economic environment.

The legislation further stipulates that in case the contractor is a small firm, the contract between the client and the contractor must contain a condition requiring payment within 30 days after the day the acceptance form was signed. Importantly, on May 1, 2017, the President of the Russian Federation signed Federal Law No. 83-FZ dated May 1, 2017 “On Amending Articles 30 and 34 of the Federal Law “On the Contract System in the Procurement of Goods, Works, and Services to Meet State and Municipal Needs”, which changed and expanded the specified requirement: the period of 30 days is now the standard for all purchases, and in cases where the supplier is a small business, it is reduced to 15 days.

Although there are many positive changes in the field of public procurement, several problematic areas remain that need to be studied and addressed:

(1) Suppliers in the context of public procurement are frequently subject to unreasonable requirements, such as the mandatory certification by an organization approved by the state customer, despite the fact that the cost of such certification can reach up to 1.5 million rubles and its completion can be purposefully delayed in the interests of other firms.

(2) The inconsistency of the present rules around public procurement makes it possible to win an auction by price dumping, which benefits unethical suppliers and degrades the quality of the products, works, and services delivered.

(3) Even when scenario (2) is not fulfilled, contracts are often carried out by firms other than “formal winners” at a price much below the market price, which impacts the quality and degree of accountability of the subcontractors.

The increase of financial support is a significant instrument for stimulating the activity of small and medium-sized enterprises. Since 2016, two main development programs have been implemented in this area: National Guarantee System (hereinafter referred to as NGS) which provides SMEs with guarantees, and the SME Lending Incentive Program.

The share of loans with the support of NGS in the total volume of credit support provided to SMEs at the end of 2015, 2016 and 2017 amounted to 1.7%, 3% and 3.1% respectively.

A new program of concessional lending, dubbed "Program 674", was launched in 2017 to encourage banks to lend more to small and medium-sized businesses. This program, which included three major Russian banks (PJSC Sberbank, PJSC VTB Bank and JSC Russian Agricultural Bank), increased the maximum amount of money banks could lend to SMEs from 130 billion rubles to 175 billion rubles. The federal government provides subsidies to the listed banks to compensate for the loss of profits on loans made to small and medium-sized firms in 2017 at a lower interest rate (9.6 percent per annum for medium-sized enterprises and 10.6 percent per annum for small ones).

Concessional financing had a new development in 2018, and in accordance with the Decree of the Government of the Russian Federation of December 30, 2017, 15 Russian credit institutions are already participating in it. The preferential cost of loans is provided by the Bank of Russia granting loans to authorized banks under the guarantee of the Federal Corporation for the Development of Small and Medium Enterprises at an interest rate of 6.5%. Under the "Program 6.5", the annual interest rate for medium-sized enterprises and small businesses is 10% and 11%, respectively. Concessional financing is available for up to three years, and the loan amount should be in the range of 50 million to 1 billion rubles. As of March 1, 2018, SMEs have signed 165 loan agreements totaling in 15.9 billion rubles under the Program.

Some issues remain unsolved in this field, however. For instance, "Program 6.5" offers low-cost financial resources exclusively to businesses in narrowly defined market areas, such as manufacturing industries, high-tech projects, and the medical industry, while the minimum loan amount is relatively high[339]. Experts claim though, that the main difficulties arise from the inability of banks to properly assess potential SME borrowers based on incomplete financial reporting, as well as the difficulties of microentrepreneurs in collecting the necessary documents for filing an application with the bank. That is why many small businesses still prefer private investors and mutual lending institutions, where funds are provided at a higher rate, but considering business specifics, so the level of delinquency of such loans does not exceed 5% (compared to 15–17% in banks)[340]. Additionally, small and medium-sized enterprises in Russia often use traditional consumer credit cards and loans to fund their operations. It is hardly unexpected that just 6% of small company investments in Russia are backed by bank capital, as reported by the World Bank, and that Russia is ranked 148$^{th}$ in the world for the amount of loans to small business.

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[339] Светличный Г.В. Расширение возможностей для малых предприятий и ужесточение требований к заказчикам как основные акценты новаций в госзакупках // Вестник СевКавГТИ. 2017. Т. 1. № 3. С. 7–12.

[340] Паршина Е.Н. Проблемы и меры государственного регулирования малого и среднего предпринимательства в современной России // Наука и образование: хозяйство и экономика; предпринимательство; право и управление. 2017. № 10. С. 90–95.

An important role in stimulating the activities of SMEs is played by the reduction of the administrative burden. Inspections by various regulatory agencies also play a negative role, and active work is currently underway to reduce this administrative burden.

Scheduled inspections of legal organizations and entrepreneurs categorized as small enterprises under Article 4 of the Federal Law "On the growth of small and medium-sized businesses in the Russian Federation" of July 24, 2007 were prohibited from January 1, 2016, until December 31, 2018 (this measure was also undertaken in some regions during the pandemic and starting March, 2022). Also, for the first time, from July 1, 2016, the Russian government has established a list of state and municipal control bodies that can't ask for documents (including permits) or information held by other state bodies, local governments or organizations subordinate to them during an audit.

The result of the above measures was a reduction in the number of inspections. So, according to the Ministry of Economic Development, if in 2015 only 2.1 million inspections were carried out (0.9 million scheduled and 1.2 million unscheduled), then in 2016, already 1.7 million inspections were carried out (0.6 million planned and 1.1 million unscheduled), that is, the decrease ranged from 15 to 30%.

On administrative violations, a warning is given to SMEs who commit an infraction for the first time, rather than an administrative fine, under Russia's 2016 law. This resulted in a 17 percent fall in the number of SMEs being brought to administrative responsibility in the first half of 2017, and a 23.3 percent decrease in the amount of administrative penalties.

In accordance with the Strategy for the Development of Small and Medium Enterprises in the Russian Federation for the period up to 2030, the number of SMEs should increase by 1.3 times and reach 7.7 million, and the share of bank loans issued by SMEs in the total volume of loans issued by banks should be increased to 23%[341]. To

[341] Светличный Г.В. Расширение возможностей для малых предприятий и ужесточение требований к заказчикам как основные акценты новаций в госзакупках // Вестник СевКавГТИ. 2017. Т. 1. № 3. С. 7–12.

make this happen, it is crucial to understand flaws in the legislation and make the necessary fixes.

The major source of legislation in this field is the Federal Law “On the growth of small and medium-sized firms in the Russian Federation” dated July 24, 2007 No. 209-FZ, which should be the starting point for the investigation of flaws. One of the major flaws of the act is the use of a uniform structure for SMEs that does not reflect the reality of today's business sector. It also leads to an erroneous and imbalanced categorization of businesses as micro, small, and medium-sized and hence distorts the whole system of governmental assistance based on this classification.

Particularly in the fields of industry, transportation, commerce, and IT, the criteria for identifying the size of a business should not be the same: if 100 employees indicate a small business in the first and second cases, they should indicate a medium or even a very large business in the third and fourth. Different company sectors need entirely distinct “weight categories” in terms of revenue and profit margins, necessitating that the same difference be applied to the remaining categorization criteria. Furthermore, some researchers propose interregional differentiation of criteria, as the conditions and opportunities for the development of small and medium-sized enterprises in Russia's various regions and major cities may vary substantially, making this an important criterion in the execution of state support policy[342].

The perception of all small and medium-sized enterprises as a single object of support without segmentation may also be seen as a major legislative gap. For instance, the law does not consider the needs that may arise for more mature enterprises, putting an excessive emphasis on helping startups (“tax holidays”, a moratorium on scheduled inspections during the first year of activity, etc.), while only the rising proportion of mature SMEs demonstrates their rising survival in the Russian economy.

In addition, mature and established companies are more likely to depart the shadow sector of the economy, show more investment activity and attractiveness, increase the number of high-performance employments, produce more sophisticated goods, etc.

[342] Бухвальд Е.М., Валентик О.Н. Стратегическое планирование и законодательство о развитии и поддержке малого и среднего предпринимательства. // Известия УрГЭУ. 2017. № 1(69). С. 19.

However, the emphasis of state support on startup enterprises makes it unprofitable to develop and grow long-term, so many entrepreneurs want to open businesses for a short span of time, occasionally shutting them down and creating new ones, as evidenced by the statistics presented in Section 3.2.

While the Law does not define the “social entrepreneurship” term, it's crucial to keep in mind that this is a key notion from a SME-stimulating perspective and should have a specific position in the system of business law. The way the legislation interprets assistance for innovative small and medium-sized enterprises, which is particularly vital for the economy's growth, is also problematic. Without targeted support for innovative small and medium-sized businesses (tax incentives for businesses that develop new products, as well as incentives for corporations that purchase new products developed by smaller businesses), share SMEs in technological innovation is insignificant (only 5% in 2015). It seems logical to add a provision mandating innovative business quotas in special economic zones, etc.

Russian legislation on business regulation is obviously lacking in detail: it gives a simplistic classification of SMEs, which neglects the changing needs of businesses depending on their age, status, and innovative activity, often placing emphasis on support measures that are not the most important (e.g., tax preferences only in the first years of operation, while at this stage small businesses most often work “in the shadows”). These issues need a more adaptable division of SMEs according to the sort of economic activity they engage in. Additional more specific criteria restricting the scope of organizations eligible to receive various types of state assistance should be added to the current basic requirements. As a result, SMEs may take advantage of a variety of perks and assistance programs that are tailored to their unique circumstances.

The summary of the problems by various forms of state support for SMEs and potential ways to solve them are presented in Table 3.2.1.

Table 3.2.1 — Shortcomings of the Russian legislation on various forms of support for SMEs and possible ways of improvement[343].

| Forms of Support | Problems | Possible Solutions |
|---|---|---|
| Tax incentives | (1) The effect of rate cuts is offset by an increase in other fees, incl. property<br>(2) Tightening tax administration<br>(3) The implementation of benefits is at the mercy of the regions | (1) Development of a more flexible system of tax incentives, considering the status and specialization of enterprises, without focusing on start-up SMEs<br>(2) Equalizing the legal imbalance between tax authorities and taxpayers<br>(3) Systematization and clarification of the powers of local self-government bodies |
| State and municipal procurement | (1) The ability to manipulate the course and results of the competition<br>(2) Imperfections in the public procurement mechanism, due to which the quality of purchased goods, works and services may suffer | (1) Improving the criteria for evaluating applications<br>(2) Increasing the anonymity of trading by transferring them to an automated electronic platform |
| Soft loans & concessional lending | (1) Loans on favorable terms are not available for all categories of SMEs, have an inflated minimum threshold and do not consider the specifics of the business<br>(2) Difficulties on the part of banks in assessing borrowers<br>(3) Difficulties on the part of SMEs in processing applications | (1) Customization of preferential loan products for the needs of various categories of SMEs<br>(2) Development of the venture investment market<br>(3) Expansion of information and advisory support for SMEs in matters of concessional lending |
| Reducing the administrative burden | (1) Powers of authorities continue to expand<br>(2) Overemphasis on startups | Continued work on reducing the number of mandatory requirements that result in significant additional costs for SMEs |

A common and very significant problem of state policy in the field of SME support remains the low awareness of entrepreneurs about state support measures, which is recognized by the Ministry of Economic Development of the Russian Federation itself. To resolve this issue, the department plans to monitor the quality of Internet resources informing SMEs about measures of state support, as well as to develop and execute a set of federal TV and online projects to foster entrepreneurial activity[344].

[343] Source: author's own.

[344] Могилевская А. Малый бизнес не слышал о поддержке // Ежедневная деловая газета РБК. 05.07.2017. № 116. 2017. С. 7.

In addition to the solutions listed in Table 3.2.1, the improvement of the SME support infrastructure, which, as of 2017, consists of approximately 700 competence centers that offer comprehensive services to SMEs at all stages of development, including the startup phase, deserves special mention. These centers include microfinance organizations, social innovation and entrepreneurship support centers, BIs and technoparks, centers for export support, etc.

Despite the additional costs for regional and local budgets associated with the maintenance of such organizations, they are ready to execute many operations that guarantee the most efficient functioning of existing legislation, such as advising SMEs about available support programs, providing information and consulting services, assisting in applying for soft loans and participating in tenders, etc. The diversity of support infrastructure types and their various specializations (e.g., in different industries, social groups, types of business, etc.) enables these structures to build a range of services depending on the requirements of target businesses. An additional positive effect for the economy is that the expansion of the support infrastructure in general contributes to the exit of a larger number of small enterprises from the shadow sector of economy.

The quantity of infrastructural facilities rose by 12% in 2016. In line with the revisions made to Federal Law No. 209-FZ, the SME support infrastructure facilities now include multifunctional centers for the provision of state and municipal services (MFCs).

Simultaneously, there is stasis and even deterioration in the venture capital market of Russia, which is a fundamental aspect of EE existence, development, and sustainability. As stated above, venture funds, private venture capitalists, and business angels invest in high-risk (often innovative) enterprises throughout their early phases of development. Although the venture capital market is not a particularly advantageous source of funding for small and medium-sized enterprises, it is able to efficiently assess and select potentially successful concepts and consider the specific needs and requirements of funded enterprises.

Besides the fact that Russia only represents 1% of global venture investment, a very harmful trend can be seen on the market: investment support infrastructure institutions founded by regional authorities tend to invest in more predictable, yet possibly less profitable enterprises, thereby breaching the rules of the venture market. For instance, in Moscow, specialized venture funds, such as the Fund to Promote Investment in Small Scientific and Technical Companies, tend to lower the amount of high-risk investments (e.g., 63.4 million rubles in 2015 against 50.1 million rubles in 2016 from the mentioned Fund).

As a result, Russia's governmental regulation and support measures for small and medium-sized enterprises still have certain severe flaws that prevent SMEs from receiving a concrete incentive for growth while also preventing them from becoming the primary engine of economic development. Despite the existing obvious differences in economic realities and mentality, the development of entrepreneurship is based on common principles that must be put in the basis of state policy and lawmaking in this area.

### 3.3. Study Design & Methods

This research adopts a descriptive qualitative research design. Descriptive study design is one of the useful approaches to describe the characteristics of the sample studied. It is appropriate to generalize findings from the representative sample to a larger target.

The research conducted by the author as part of a Ph.D. thesis consists of two parts — (1) a survey of business incubators to conduct a primary analysis of the development of business incubation in Russia in the context of an entrepreneurial ecosystem, as well as (2) in-depth interviews with directors / representatives of Russian incubators to clarify some of the gaps that arose during the survey (Chapter 4). This paragraph describes the methodology for conducting the survey, including the content of the questionnaire, the criteria for respondents selection and the technology used for data collection.

The research is based on the theoretical framework developed from the literature review on business incubation in developed and developing countries. In order to build a framework, I have conducted a literature review analyzing both conceptual and case-study papers on entrepreneurial ecosystems and expanded it with additional research on business incubators. I explored different cases of business incubators development in different countries (both developed and developing – Chapter 2) and areas to identify similarities and differences in their activities and outputs (e.g., see Table 2.5.2).

Business incubation market in Russia is analyzed in detail using primary and secondary data. The secondary data from InBIA (International Business Innovation Association), UKBI, World Bank infoDev and UBI Global provide us with macroeconomic data on state of business incubation development across different countries and regions as well as individual cases and success stories. Also, as these associations and organizations are specialized in business incubation, they accumulate a vast knowledge base on the industry best practices, benchmarks and commonly used performance indicators.

The primary data was collected through Survey-2020 among Russian business incubators. This data is needed to design and test a conceptual model based on theoretical framework on a sample of Russian business incubators. In general, the survey questions corresponds with the content of Surveys conducted in 2012 and 2016 by Fund for Innovation and Business Incubation and therefore includes data on: main strategic challenges the BI are currently facing, the age of the companies that apply to BI, type of BI, the main sources of financing, questions regarding economic climate in the region of operation, questions regarding effectiveness evaluation, industry affiliation of residents, incomes and expenditures, strategic goals and mission, BI staff and director competences, etc.

To partly cover the research questions, in 2019 together with United Nations Economic Commission for Europe (UNECE) the author has already conducted the pilot research on the business incubation development and entrepreneurial climate in Russia. The questionnaire covered ten leading Russian entrepreneurship support facilities (business incubators and technoparks).

The questionnaire in Survey-2020 is logically divided into 5 sections associated with different aspects of business incubators' work: (1) BI Program, (2) Clients, (3) Environment, (4) Effectiveness and (5) Finance. More specifically, the aspects covered in each section can be seen in Table 3.3.1.

Table 3.3.1 — Key aspects of business incubators' work divided into 5 sections Covered by Survey-2020[345].

| # | **Section** | **Key aspects covered** |
|---|---|---|
| 1 | BI Program | • Type of BI, focus on any industry or social groups<br>• Services, terms |
| 2 | Clients | • Age and stage of the companies that apply to BI<br>• Industry affiliation of residents |
| 3 | Environment | • Economic climate in the region of operation<br>• Main strategic challenges the BIs are currently facing |
| 4 | Effectiveness | • Strategic goals and mission<br>• Key performance indicators used<br>• BI staff and director competences, etc. |
| 5 | Finance | • Main sources of financing<br>• Incomes and expenditures |

The 2020 survey questionnaire included most of the questions from past surveys, making it possible to speak about the comparability of the obtained data for subsequent comparative analysis (section 3.3). Below are the survey questions with a brief rationale for their inclusion in the study.

1. Business Incubator Snapshot (full name, address, phone, email, website, year of foundation, current space, director's full name & email, number of full-time & no-staff employees, capacity and actual number of resident). This set of questions is necessary to determine the general indicators of a business incubator, based on which it is possible to draw conclusions about its location, size, age, as well as primary performance indicators (number of residents, workload, full-time and non-staff personnel). The average base indicators are convenient for conducting a comparative analysis of business incubators in Russia and other countries.

2. Evaluate how favorable the business environment is in your area in terms of conducting small business (1 — the least favorable, 5 — the most favorable). A general

[345] Source: author's own.

assessment of the business environment in the region is important for conducting interregional comparisons, as well as for assessing the general economic situation in Russia and individual regions in dynamics.

3. Choose the main strategic challenges the BI is currently facing (select all that apply: Low entrepreneurial activity (lack of customers); Lack of experience in business incubation; Difficulties in finding partners and sponsors; Lack of support from authorities; Poorly developed infrastructure of the district / region; Other (specify)). This question is closed, but the answer options are based on past surveys of 2012 and 2016 and therefore cover all the most common answers.

4. Specify the age of the companies (approximately in % of the total number) that apply to BI: No own company; Up to 1 year; 1-2 years; 2-5 years; More than 5 years. This indicator is important for identifying the degree of demand for a business incubator and its services on the part of a startup business, for the support and development of which business incubation programs are initially created. If there is a high proportion of companies over 2 years among the business incubator new clients, that indicates either a secondary role of the consulting services of a business incubator (since such companies most often apply to receive preferential rent or attract investments), or about low entrepreneurial activity in the home region.

5. Indicate how many clients (in %) at what stage apply to BI: Business Idea; Business Plan; Prototype Product; Industrial design product; Pilot batch of products; Local Sales. This question complements and clarifies the previous one, showing the initial demand for certain services of a business incubator from the target market, as well as the potential initial motivation of entrepreneurs to contact the BI.

6. In what areas and industries is the small business in your region currently developing most dynamic? This question is open due to the economic differences between the regions, as well as the possible industry specialization of business incubators.

7. What are the main problems small businesses face in your region in these conditions? An open question that complements and expands questions 2 and 3.

8. To what extent does the state of the economic climate affect entrepreneurship in your region? (1 — extremely weak, 5 — very strong). It is quite difficult to assess the degree of influence, especially from the side of an observer (in this case, a business incubator), therefore this question contains a conditional rating scale from 1 to 5 points. Of particular interest are the answers to this question in comparison between regions and in dynamics.

A group of questions (9-11) associated with the type of BI – in terms of profitability (for-profit; non-profit), ownership (public; private or public-private) and primary source of financing (no source of financing; higher educational institution; local authorities; non-profit organization; commercial organization; private sponsor / investor; other (specify)). The ratio between profitable and non-profitable and public/private business incubators in the economy says a lot about the role of business incubators as a tool for stimulating small businesses, as well as entrepreneurial ecosystem level of development. A high proportion of profitable business incubators may indicate a high degree of self-organization and self-sufficiency of the ecosystem, which is capable of producing startup projects and keeping all the constituent elements sustainable. The high proportion of unprofitable business incubators, on the contrary, indicates a high level of state intervention, stimulating entrepreneurial activity, including through the creation and financing of unprofitable support infrastructure.

Questions 12 to 14 are related to the assessment of the effectiveness of a business incubator. In particular, respondents should indicate whether performance evaluation of the business incubator is practiced, and if so, in what year it was last carried out and what key performance indicators (KPIs) are used. Among the possible answers to the last question are the following: Occupancy of space reserved for residents / tenants; number of successfully released projects; The volume of investments attracted to projects; number of jobs created by resident companies; The amount of taxes paid by resident companies; Amount of registered patents; Other (specify). Performance indicators may vary depending on the industry specialization of the BI, as well as on the economic tasks that are set by the regional authorities, and therefore this group of questions sheds light on the economic role of the BI within the regional economy.

15. Does your BI work with large corporations in the format of open or custom innovations? Since large corporations are usually the customers of open innovations, this question reflects the degree of involvement of the business incubator in communications within the ecosystem and the degree of its interaction with large business. In addition, work with open innovation projects often serves as a significant additional channel for attracting finance and a method of stimulating staff and residents of a business incubator, which increases the its independence and sustainability.

16. Your BI is interested in access to a centralized database of (check all that apply): Mentors; Experts / expert communities; Investors; Projects; Service providers; Tenders; Other (specify).

The block of questions 17 through 19 is designed to understand the industry specialization or other focus of Russian business incubators. More specifically, question 17 deals with social orientation of BI which is common for mature ecosystems in developed countries like USA. Respondents can choose all that apply from small business representatives, foreign citizens, university students, women, youth (under 25 years old) or other. Question 18 reflects the industry affiliation of BI by its residents: technological, production, service, mixed (companies from various industries) or other. In order to categorize BIs with even more detail, respondents are also asked to choose up to three main areas of specialization from a big list of industries including: computer equipment and hardware, electronics / microelectronics, telecommunications, wireless technology, software, information technology, Internet, media, new materials (films, polymers, etc.), aerospace technology, defense / national security, energy, ecology, nanotechnology, agriculture, biotechnology, health technology, medical equipment, health services, art, construction, fashion, catering, nonprofit organizations, retail, professional services, tourism, etc.

The sectoral specialization of a business incubator serves as a natural economic indicator and is very important for determining the competitiveness of the respective regions and the whole country in the production of certain goods and services, which can serve as a good clue for the authorities on what should be emphasized in stimulating economic activity and support for small and medium businesses.

The next set of questions (20-23) is all about the workspace provided by business incubator to their residents and anchor tenants and its various parameters. First, respondents are asked if the workspace is provided or only services are provided (without the workspace). Both options are possible nowadays, and a high percentage of BIs without workspace (they are usually called virtual business incubators) may be a sign of a well-developed ecosystem (in case of high level of specialization of those virtual BIs) or, on the contrary, may indicate a low level of communication or support infrastructure development of regional ecosystems (that would explain why startups have to reach out for virtual incubators located elsewhere, e.g. in the capital city of the country). That's why answers to the question 20 is important to analyze keeping in mind answers given to questions 17 to 19.

Another important indicator which shows the growth or consolidation in the business incubation industry is the change in BI square in the last 5 years. The next question deals with shares of the total area (in %) allotted for anchor tenants, residents, administrative premises, shared space and other. This indicator reflects the industry focus and specifics of the business incubator from a completely different angle, although it does not directly show the effectiveness of the business incubator. The final question from this block sheds light on the latter, in which respondents are required to answer, what is the average load of the space (in %) allocated to residents? Both very low load rates and very high load rates are indicative of structural or communication problems in the ecosystem.

According to the InBIA international certification standards for business incubators, developed institutions must have a strategic development plan and a documented mission, the presence of which is the subject of questions 24 and 25.

Question 26 is devoted to the importance of a number of the listed goals for a business incubator (to be set on scale from 1 to 5), which again reflects its specifics and tasks implemented as part of the development of the region's economy. The list of goals include: (1) Job creation; (2) Local / regional economies diversification; (3) Stimulating the development of business and industry; (4) Maintaining business activity, attracting companies to the region; (5) Support for export-oriented companies; (6) Regional

business climate improvement; (7) Revitalization of declining areas; (8) Supporting entrepreneurship among women and/or social minorities; (9) Technology commercialization; (10) Creation of additional benefits for funding organizations (joint research, etc.); (11) Net profit.

It is important to note that the respondents assess the importance of these goals based on their applied experience and daily work, and not in accordance with the official founding documents of the organization, which increases the cognitive value and practical meaning of this question.

The next block of questions (from 27 to 32) is aimed at analyzing the personnel of the business incubator, including its head. Respondents, firstly, need to indicate how many full-time employees in the organization are engaged in each of the areas: Administration, Accounting, Legal services, Protocol and Other. Secondly, in addition to full-time staff, business incubators often resort to the services of external specialists – consultants, mentors, service providers, etc., so in question 28, it is required to indicate the number of external staff involved since the beginning of 2019.

Thirdly, much attention in the research questionnaire is paid to the personality, experience, background and professional competencies of the business incubator leader, since the effectiveness of the functioning of any organization in Russia heavily depends on this factor. So, in question 29, respondents need to estimate how much time on average (in % of the total time) the BI leader spends on the following activities: (1) Providing residents and affiliate customers with business development services; (2) Expanding the network of contacts and partners; (3) Interaction with authorities; (4) training; (5) Attraction of financing, search for sponsors; (6) Infrastructure Management; (7) customer acquisition; (8) Accounting and (9) Other.

Next, in question 30 respondents need to indicate how long the head of BI has been working in the field of SME support (in total, as well as time spent in business incubator management and time spent on managing this BI).

Finally, questions 31 and 32 shed light on the background of the BI leader: experience in entrepreneurship (if any) and education (Higher economic, Higher technical, Scientific degree of PhD, Scientific degree of Doctor of Science, Other).

Another aspect of managing a business incubator is the presence and activities of the Supervisory Board, which is the subject of questions 33 to 35. Respondents should indicate the presence of the Supervisory Board of the business incubator, the number of its members, list all its functions (open question), and also select all the professions which represent the background of Supervisor board members from the following list: (1) Representative of financial circles; (2) Representative of the Regional Office for Economic Development; (3) Member of the Chamber of Commerce; (4) Representative of the regional government; (5) Top manager of a large company; (6) Lawyer / business lawyer; (7) university representative; (8) BI Manager; (9) Former BI client; (10) Experienced entrepreneur and (11) Other. The last question is important not only according to INBIA international standards, but also because the composition and structure of the Board of Trustees greatly influences the focus of activities and the direction of development of the business incubator.

An important block of questions (from 36 to 39) is devoted to the services of a business incubator. One of the main KPIs of the business incubator's activity is the average term for providing services to residents – this indicator is convenient both for making cross-country comparative analysis and studying the dynamics of business incubation development in the country. As a rule, too short terms for the provision of services can be explained either by a high mortality rate of startup projects, or by the fact that mostly established companies apply to a business incubator for short-cycle services (consultations, etc.). At the same time, too long terms for the provision of services indicate the impossibility of small businesses to scale and switch to a market basis of functioning (refuse preferential rent, etc.) or that the business incubator is viewed by local enterprises more as a business park with cheap rent than as infrastructure for full business support.

Respondents also need to rate on a scale from 1 to 5 which services from the proposed list are most in demand among customers (1 — least demanded, 5 — the most demanded, n / a — the service is not provided): (1) Initial assistance (writing a business plan, developing a business concept, etc.); (2) Provision of administrative and/or office services; (3) General legal issues; (4) Marketing support (advertising, marketing

research, etc.); (5) Accounting and financial management; (6) Interaction with other customers; (7) High Speed Internet Access; (8) Specialized equipment (computers, kitchen, etc.); (9) Communication with educational institutions (students, specialized laboratories, etc.); (10) Trainings, staff education; (11) Management audit / consulting; (12) Support and training in the field of logistics and marketing; (13) Consulting, assessment by the Supervisory Board; (14) Engaging business angels; (15) Attraction of venture funds; (16) Assistance in obtaining bank loans; (17) Obtaining financial support from BI; (18) Intellectual Property Management; (19) Help in technology commercialization; (20) Assistance in e-commerce; (21) Search for partners; (22) Support for participation in tenders; (23) Escort to foreign markets; (24) Assistance in organizing and optimizing the production process; (25) Comprehensive business training; (26) Economic literacy training; (27) Help in creating presentations; (28) Assistance in product development and testing; (29) Business ethics training. A large number of points in this question is necessary for a more detailed assessment of all aspects of the services provided by a business incubator, as well as the needs of small and medium-sized enterprises in the region.

As mentioned above, an important feature of a developed entrepreneurial ecosystem is the ability to produce startup projects independently and on a regular basis, which is also reflected in the activities of its key players. Thus, in addition to the main program, business incubators introduce pre-incubation and post-incubation services which increase the incoming flow of projects and maximize the potential profit received from each resident. When answering question 38, respondents should indicate whether the business incubator provides pre-incubation and post-incubation services. The final question in the block dedicated to services is open and connected to the plans of business incubator to add new services to those that it already offers.

Another highly important set of questions is about the financial indicators. Answering question 40, respondents have to reveal the main financial indicators of BI based on the results of the last financial year: total revenue and total expense (both in mln rubles). For a more detailed analysis of these indicators questions 41 and 42 were designed. First, respondents are to indicate approximate shares of the articles stated

below in the total revenue structure (in %): Rental, Customer fees for services, Income from grants, Targeted budget financing, Investment income (royalties, dividends) and Other. This information directly shows the level of involvement of BI into the local economy and its connections with other actors of entrepreneurial ecosystem, as well as level of financial independence and stability.

Next, respondents are asked to indicate approximate shares of the articles stated below in the total expense structure (in %): Salary, Infrastructure costs, Expenses associated with the main business incubation program, Debt service and Other. Based on this information, important conclusions can be drawn regarding the level of development of business incubator services, as well as possible internal problems that hinder the development of the organization and are a reflection of threats in the external economic environment.

As an additional touch to all the previous questions connected to services and finance there is question 43: Does your BI participate in the authorized capital of residents? The high share of business incubators participating in the capital of residents can be perceived in two ways. On the one hand, this may indicate a high degree of development of the entrepreneurial ecosystemб as business incubators provide a wide range of services, including venture financing, and startups are prepared to pay for them through a share in their business and its subsequent buyout. On the other hand, on the contrary, this indicator may indicate the embryonic level of ecosystem development, in which business incubators are not able to provide the proper level of support to startup businesses and, due to lack of funding, are forced to invest in the capital of absolutely all business projects.

The biggest block of questions is focused on BI clients and residents. In question 44, respondents are expected to indicate the number of BI clients depending on their status: Residents, Affiliates, Graduates (residents and affiliates), Anchor tenants (including graduates who became anchor tenants and anchor tenants who did not participate in business incubation programs), Graduates remaining in business (including those acquired by other companies) and Clients who quit the business incubation program without completing it. The structure of clients depending on their

status from a new perspective reflects the specifics of the business incubator, and also indirectly shows its effectiveness. But the latter is even more shown by the next monitored indicator — the survival ratio of residents within 2 years after their graduation from the business incubator. Thus, when answering question 45, respondents should indicate the average survival ratio of residents during the first two years after graduation. Since the estimate is approximate, the question has the following options to choose from: Less than 10, From 10 to 30, From 30 to 50, From 50 to 70, More than 70. However, it is common for a business incubator to not track this indicator for graduated residents at all, which is why there is also the option “This indicator is not tracked”.

Resident survival rate is far from the only indicator that business incubators track for their residents, therefore in question 47, respondents must answer what information is collected (Employment, Income, Patents / copyrights, Grants and awards, Investments and equity, Other), and in question 46, how often this information is updated (Not collected, Collected and updated quarterly, Collected and updated once every six months, Collected and updated once a year, Collected and updated once in every 2 years or less often).

There can be quite a lot of indicators monitored by business incubators about their residents and graduates, so only one of them was included in the questionnaire: Provide information on the average number of employees of your clients (Residents, Affiliates, Graduates). This indicator is especially important because it shows the number of jobs created by clients of the business incubator, and therefore reflects the overall contribution of that business incubator to the business activity and development of the region's economy.

To assess the performance of a business incubator, the questionnaire includes question 49: What is the average number of companies graduate from BI every year? Of even greater interest, however, are not the absolute graduation rates of BI clients, but the graduation criteria. Answering question 50, respondents need to evaluate how often each of the following criteria to release a client from the BI program is used (1 — least often; 5 — most often; n/a — the criterion is not used):

– The client company participated in the program for the maximum allowed time;

– The company's needs in the workspace exceed the maximum allowable for the program;

– The client company has reached mutually agreed levels of specific indicators (for example, income level, staff count, market share, etc.);

– Other (specify).

Finally, there are 4 open questions in the questionnaire (51 to 54) designed to better understand the potential of the business incubator future development as well as the possible constraining forces for that process. Firstly, respondents are asked, what kind of impediments the BI face in its activities and what are the constraining forces. Secondly, the respondents have to think of what the government could do to enhance the impact of this business incubator (jobs, joint up services, etc). Thirdly, they have to answer looking back what as a BI director they would do differently?

Last but not least, BI are asked to share some good practices from their experience and day to day activities.

The sample of this research comprises of 33 Russian business incubators which is representative considering the number of incubators remaining active and running on Russian market. To increase the representativeness of the sample, minimize the sampling bias and ensure the accuracy of the conclusions the following main criteria were used in the selection of respondents:

1) The business incubator has been operating for at least 5 years and was running at the moment of the Survey-2020 being conducted.

2) The business incubator has previously taken at least one of the professional development programs for employees in the field of business project development or has a Russian or international certificate in the field of business incubation.

3) The business incubator has a regularly updated website and / or pages on social networks, which publish up-to-date information on the terms and conditions of admission, as well as the services provided to residents.

4) The business incubator provides a range of services that is standard for structures of this type: rent of premises and equipment on preferential terms, business training and consulting, project expertise, assistance in finding and attracting investments, etc.

My aim is to identify the factors influencing effectiveness in Russian context / emerging economies, which can provide a useful theoretical contribution in the ecosystem literature. This is especially important keeping in mind that ecosystems in developing countries may be closer to small town entrepreneurial ecosystem (STEE) model than to a traditional one and therefore have different initial conditions of development. I have designed the survey questions based on STEE model in order to measure the needed variables and explore new factors. That survey may also be a logical extension to the pilot study on the business incubation development and entrepreneurial climate in Russia mentioned above.

The primary data was collected through survey using SurveyMonkey software. The survey was sent to personal and/or work emails of business incubator managers. Additional information was obtained through a set of in-depth interviews with selected business incubator managers which is described in Chapter 4.

The personal data used for research purposes was processed in accordance with General Data Protection Regulation (GDPR) 2016, Personal Data Law of Russian Federation No. 152-FZ, and Data Protection Act (DPA) 2018. Complying with the documents above, I:

– informed participants about which of their personal data would be used, shared and retained, and how;

– informed participants of their rights;

– minimized the use of personally identifiable data wherever possible (e.g. name, address, contact details, personal income, etc.).

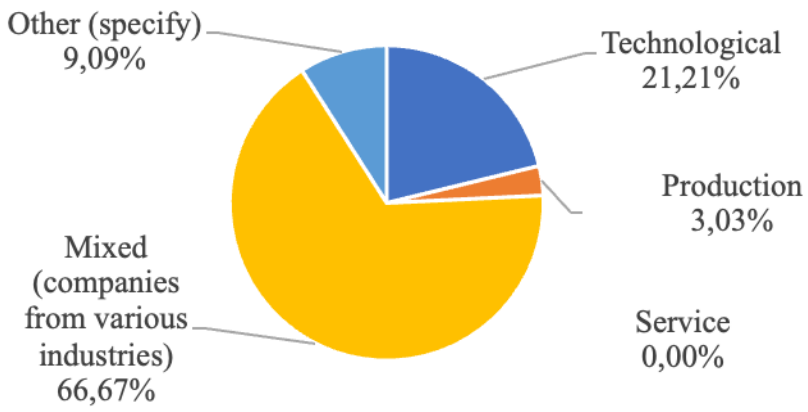
The survey was administered through SurveyMonkey professional software and any data collected is stored on the server operated by SurveyMonkey.

For the primary data collection (survey) I also obtained ethical approval from MGIMO University and Henley Business School. The data collected through the survey include personal information regarding participants (such us full name, address, contact details, etc.) and is anonymized.

## 3.4. Business incubators in Russia: comparative analysis

As per the Second Comprehensive Study of the Business Incubation Market, there were approximately 250 BIs in Russia in 2016, however this number has a strong tendency to rapidly fall (according to the Ministry of Economic Development, in 2018 there were only 143). One of the primary reasons for this is a change in the direction of state policy in this field, as well as a general reduction in spendings on the present system of small enterprise support, mostly because of inability of many existing BIs to meet the performance indicators set by the government (e.g., the number of adopted residents, the volume of trainings conducted, the percentage of occupancy of the space allocated for rent, etc.). This occurs mainly not due to bad administration of these institutions, but rather due to the absence of some essential aspects of regional entrepreneurial ecosystems (EEs) and the practical impossibility of fulfilling the intended KPIs (for instance, low entrepreneurial activity or unavailability of venture investments). Almost one half of Russian BIs refer to difficulties in getting angel and pre-seed investments as the primary factor for the failure of innovative startups. BIs obviously cannot substitute all other crucial EE elements so their existence does not immediately result in the fast growth of entrepreneurship and local innovative business.

Diagram 3.4.1 — Specialization of business incubators in terms of industry affiliation of residents as of the end of 2019[346].




[346] Russian Business Incubators Survey 2020.

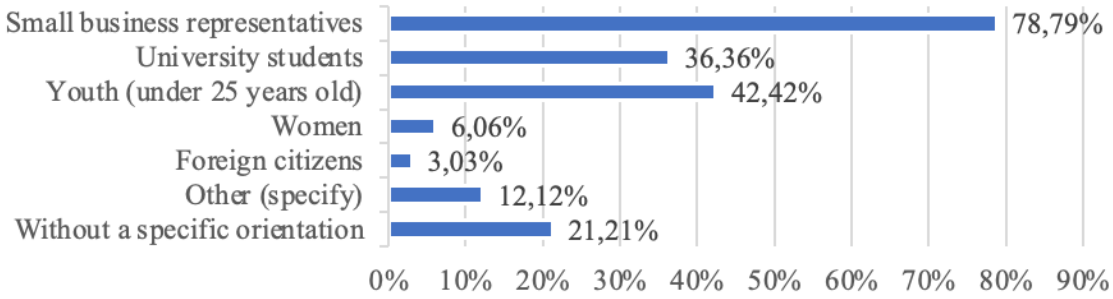
Diagram 3.4.1 reflects that most Russian BIs (almost 67%) belong to mixed type which does not have any specialization. Over the previous decade, a downward trend in the number of services BIs has been observed: in 2010, their proportion was around 6%, and in 2016 — 3.6%. The share of industrial BIs is also declining (by 5.87 percentage points compared to 2016), while technological incubators are growing (by 6.91 percentage points). In general, it may be said that specializing in a certain field in Russia does not justify itself, as it might exacerbate the lack of client companies (reported by 42% of BIs). Globally, the proportion of mixed incubators is comparable to Russia (54%), but at the same time the share of tech focused BIs is as high as 39%.

Due to the specifics of the activities of business incubators only 7% of them in the world are profitable. Y Combinator and Plug and Play are famous examples of BIs that make a net profit from their services. In Russia, the number of profitable BIs is significantly lower, since the majority of them are budgetary institutions or their structural divisions: almost half of all BIs are owned by the regional administration, 28% — by the administration of universities and 21% — by the municipal administration. Private BIs in Russia are mostly unknown, and the very term “business incubator” in their names does not always accurately describe what they actually do.

Nearly 40% of Russian BIs, however, reported their profitability, which is greater than the figure of 28.6% for the same period in 2016, according to the findings. It is important to understand though that budget-funded institutions get income for some of their services, but that only makes up a small portion of their total budget, and that certainly does not cover all their expenses. To be called “profitable” in the strictest sense, your business must be able to cover all its costs without relying on outside sources of financing. To put it another way, the phrase “profitable business incubator” is more suited to describing successful private company incubators and accelerators. Most Russian BIs participate in their residents' capital to a lesser extent than they did in 2016 (17%) and much less compared to world figure — 24%.

Diagram 3.4.2 shows the specifics of the social orientation of BIs in Russia. It is also important to note that more than a third of incubators are focused on supporting entrepreneurs among university students (36.4%) and among young people (42.4%) in general. At the same time, these shares decreased significantly compared to 2016 — from 58.9 and 57.1%, respectively. This may be due to the fact that over the past 5 years there has been a tendency to close business incubators in many Russian universities.

Diagram 3.4.2 — Social orientation of Russian business incubators (% of the number of respondents)[347].




Despite the fact that the percentage of respondents who noted an orientation towards a particular social group increased by 2016 compared to 2011 in almost every category, in the last 5 years there has been a reverse trend: the share of business incubators without a specific social group orientation increased almost 2 times — up to 21.2%. Although the degree of orientation towards representatives of small business remained at the level of 2016, the share of respondents who noted the orientation towards students of universities, youth and women has decreased (from 12.5 to 6.1%).

Diagrams 3.4.3 and 3.4.4 reflect, respectively, the structure of client companies applying to BIs, based on the level of development of projects and their age. It's worth noting that since 2011, incubators have seen a rise in the number of applications from more experienced entrepreneurs. From 44 to 33.6% (2016) and 29.3% (2020), the percentage of BI clients without their own business has progressively declined while the percentage of clients with businesses between one and five years old has climbed. A similar trend was observed in relation to the development level of projects: the share of clients applying to the incubator with a business idea decreased from 45.1 to 29.1%,

[347] Russian Business Incubators Survey 2020.

while the share of customers applying at the sales stage in the local market increased from 9.9% to 17.5%. Based on that, it can be stated that more and more companies already operating on the market are turning to business incubators to scale up already launched projects.

Diagram 3.4.3 — The structure of clients applying to the business incubator, depending on the degree of development of projects (in% of the total number)[348].

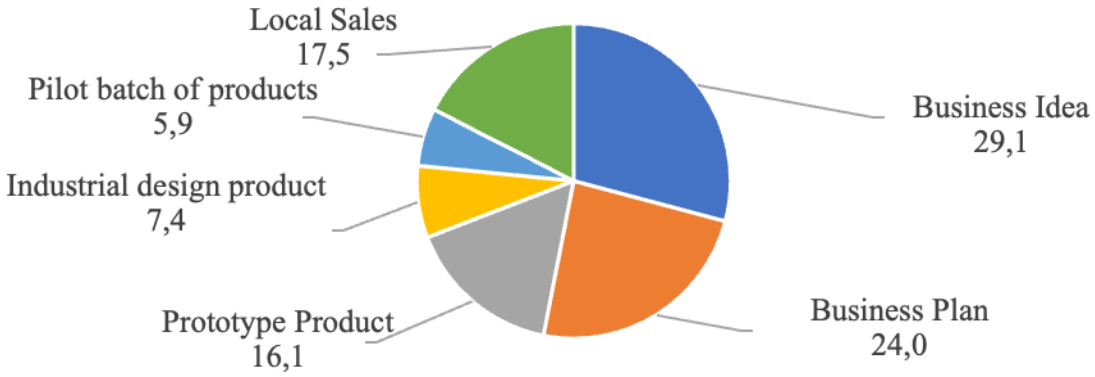
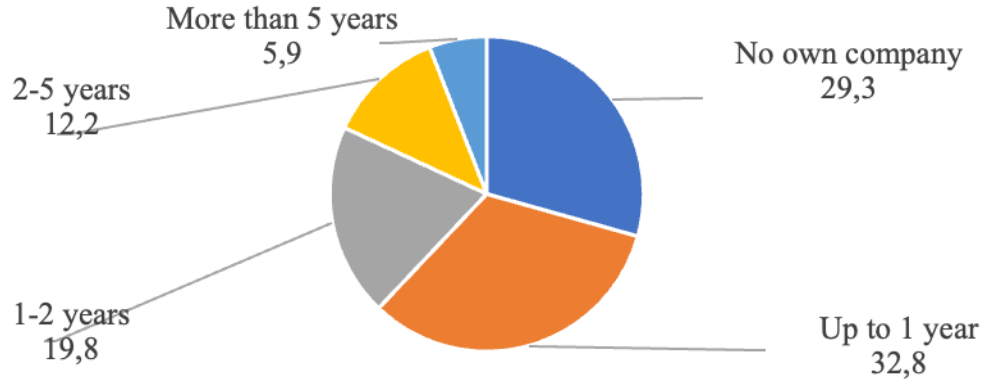



Diagram 3.4.4 — Age structure of companies applying to business incubators (in% of the total)[349].




The most common reason for the graduation of companies from Russian business incubators remains the same as in 2016 – the achievement of maximum time period allowed to stay in the program (this criterion was indicated as the most important by nearly 60% of participants). Considering that the average period for rendering services

[348] Russian Business Incubators Survey 2020.
[349] Russian Business Incubators Survey 2020.

to residents in Russia is one and a half times less than worldwide — 24 months — the specified reason for the release of clients seems to be very controversial. At the same time, the criterion “The company's needs for workspace exceed the maximum permissible by the program”, which is connected with the relatively successful development of startups, was indicated as unused by almost every fifth incubator (18.2%).

94% of BIs in Russia provide workspace to their clients. The average square space of a BI is 3,156 sq. M, that is, 23% more than the same indicator in 2016 — 2,572 sq. M, which indicates not only the closure of small business incubators, but also the process of consolidation in the industry (for 5 years, the space increased in 36.4% of business incubators, while it decreased only in 18.2%). On average, 51.1% of the square space of a business incubator is reserved for residents, 6.5% for anchor tenants, 22.4% for shared space and 15.6% for administrative premises. The utilization of areas allotted for lease to residents in 2020 amounted to 79.9% (more than a quarter of incubators in Russia were able to reach the level of 90%), which is significantly higher than the same indicator in 2016 (73%) and is comparable with the world average level (80%).

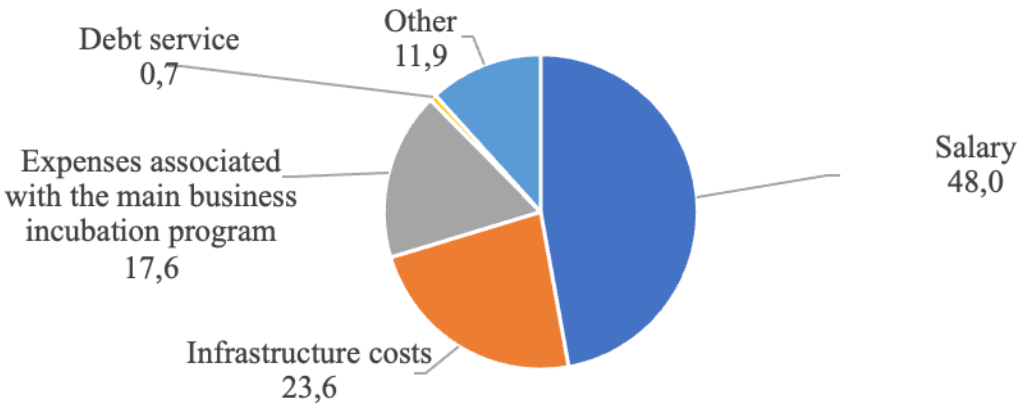
When it comes to the financial aspects of BIs, there are a few notable facts about Russia. Incubators here, on the other hand, have a substantially smaller yearly budget than the global average — almost 9 million rubles, although it is 80% higher than the level of 2016 (which also indicates consolidation). The share of incubators with an annual income of no more than 1 million rubles decreased from 40 to 16%.

Secondly, the main source of income is still targeted budget financing (41.4% in the structure of revenues), while on average in the world the largest share is made by rent payments from clients (59%). An alarming signal here is the fact that compared to 2011 and 2016 the share of targeted budget financing in the income of business incubators not only did not decrease, but, on the contrary, gradually grew (by a couple of percentage points). Rental income is the second most important item, accounting for 28.3% of the budget (see Diagram 3.4.6). Local authorities are increasingly becoming the main source of funding (42.4% of business incubators versus 30% in 2016) and, less often, universities (21.2% versus 27%). 12% of BIs receive funding from commercial

and non-profit organizations, private investors, and 3% operate without any external financial support (in 2016 their share was higher — 9%). Thus, the number of financially independent business incubators capable of covering their costs independently is rapidly falling in Russia, which indicates obvious problems in the development of the entrepreneurial ecosystem.

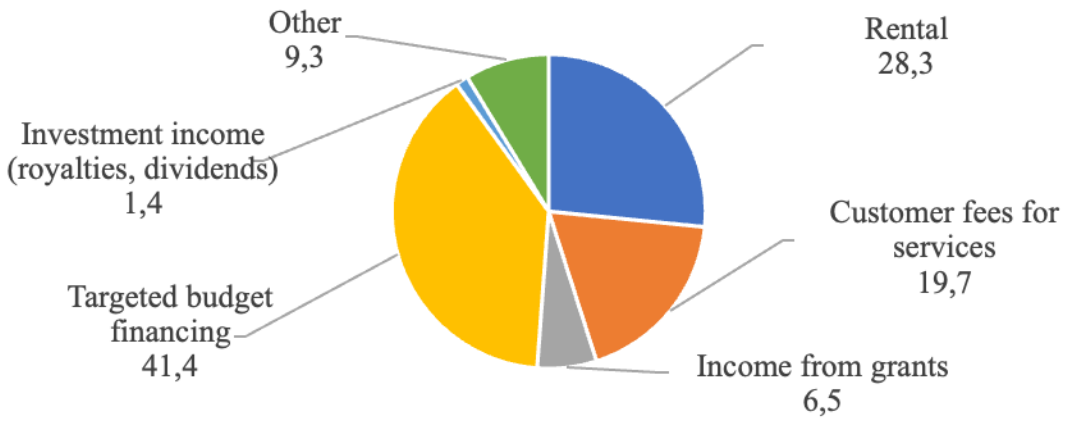
Third, there is a strong "inflection" in the cost structure towards salary — 48% against the world average of 36%, although this share has slightly decreased compared to 2016 (52.9%). The largest expense item for BIs globally is infrastructure (38%), whereas in Russia only 23.6% of funds are spent on infrastructure (see Diagram 3.4.5). This disparity may be explained by the relative novelty of the infrastructure and the underutilization of the workspace.

Diagram 3.4.5 — Average cost structure of Russian business incubators, 2020[350].




[350] Russian Business Incubators Survey 2020.

Diagram 3.4.6 — Average income structure of Russian business incubators, 2020[351].




A fairly noticeable change in the structure of expenses of Russian business incubators since 2011 is the redistribution of costs for the implementation of the business incubation program (decrease from 34 to 17.6%) in favor of expanding the salaries fund (from 36 to 48%), however this tendency has definitely slowed in recent years. Such a drastic shift may be attributed to the fact that the growing number of activities within the primary programs of BIs are carried out by their own staff, with little reliance on external experts and contractors. This aspect is difficult to be determined as beneficial or bad.

Based on the analysis carried out, it is possible to compare the average portraits of the Russian and world business incubator according to the set of the most important criteria (see Table 3.4.7).

The table shows that compared to 2012, business incubators in Russia have undergone a number of external positive changes. Thus, their average square space increased by almost 23% (which is still 15% less than the world average), the staff increased by 27%, and the average annual number of residents almost doubled, reaching the world average. At the same time, if we correlate these data with a significant decrease in the total number of business incubators in our country, it becomes clear that all of the above positive changes do not reflect the growth of the business incubation market and the scaling of the most effective structures (although, undoubtedly, there are

[351] Ibid.

some noteworthy good examples among business-incubators in Russia), but on the contrary, its optimization.

Table 3.4.7 — Average portrait of the Russian and world business incubator, 2016-2020[352].

| Parametres | Russia (2020) | Russia (2016) | World |
|---|---|---|---|
| Total space, sq.m. | 3156 | 2572 | 3700 |
| Staff, people | 19 | 15 | 12 |
| Average annual number of residents | 34 | 18 | 35 |
| Average annual number of anchor tenants | 4 | 4 | 3 |
| Average period for rendering services to residents, months | 19,3 | 24 | 33 |
| Average number of employees per resident | 15 | n/a | 4-5 |
| Average occupancy of space by residents | 79,9% | 73% | 80% |
| Average annual budget | 9 mln RUR | 5 mln RUR | 300,000–600,000 USD |
| Main source of income | Targeted budget financing (41.4%) | Targeted budget financing (40.1%) | Customer rental payments (59%) |
| Main expense item | Salary (48%) | Salary (52,9%) | Infrastructure costs (38%) |

An indirect sign of the weak effectiveness of business incubators in Russia as actors of the entrepreneurial ecosystem are their financial indicators, which differ very much and unprofitably from the global ones. Thus, the main source of BI income in Russia is budget financing, while on average business incubators in the world provide themselves by 60% through rental payments from client companies. The cost structure is also distorted: almost half of the funds go to staff salaries, while in the world the main item of expenditure is the cost of infrastructure and business incubation programs development (including its scaling and transfer to new formats). Between 2016 and 2020 the budgets of Russian business incubators have almost doubled, while their dependence on targeted state funding yet increased.

[352] Source: author's own, based on InBIA data and Russian Business Incubator surveys.

To sum it up, in 2012 and 2016, the first two comprehensive BI studies were done in Russia. Clearly, by 2020 there have been important quantitative and qualitative changes in that field, yet very little findings show any positive dynamics. Growth of Russian business incubation in 2004-2005 relatively quickly led to a stage of maturity, when the main flaws became obvious: low activity and interest of entrepreneurs in incubation services (largely due to the emergence of alternative opportunities), difficulty in obtaining venture funding at the preseeding stage, lack of professional staff, low entrepreneurial culture, etc.

According to the world practice, incubators, accelerators and technoparks are the cornerstone elements of EEs, so the process of entrepreneurship development heavily depends on the level of distribution and efficiency of BI, no less than on the strength and consistency of the state support for SMEs and the accessibility of venture funding.

Thus, the strategic priority of state support for the institution of business incubation as the most important subject of the ecosystem of the Russian Federation becomes obvious, which in combination with major problems in the field of legislation described in Section 3.2 impose a big challenge for the development of EE in Russia. This matter is studied more precisely in the next chapter.

# CHAPTER 4. IN-DEPTH INTERVIEW STUDY: CHALLENGES OF DEVELOPMENT OF BIS AS A PART OF RUSSIAN EE

The analysis of the results of the survey conducted in Chapter 3 sheds light on the structural and quantitative changes in the business incubation (BI) market in Russia over the past decade. At the same time, to obtain the objectives of this research, the results obtained could and should be concretized in a number of perspectives, reflecting recent trends and challenges. Therefore, a set of in-depth interview questions were formulated covering various aspects of BI recent development in Russia starting from the impact of COVID-19 pandemic with the full list of questions presented and discussed in methodological section 4.1. Answers to all of those questions are systematized, studied and discussed in sections 4.2–4.3 and help better understand the challenges BIs currently face in Russia, reasons to their recent consolidation as well as possible ways out.

## 4.1. In-depth interview methodology and questions

Based on Research Questions and the results obtained through the Russian business incubators (BIs) surveys, I have formulated a set of questions for in-depth interviews to be conducted with the managers of selected Russian BIs presented in Appendix A.

The first block of questions is dedicated to the impact of the COVID-19 pandemic on the BI industry and activities. Since COVID-19, which began at the end of 2019, had a complex and difficult to predict impact on all aspects of socio-economic life, including the activities of business ecosystem actors, this issue requires closer study and was deliberately put by the author outside the scope of the survey. Some of the results of the study presented in paragraph 3.4 may be partially or completely related to changes in the economy dictated by COVID-19, therefore, in order to better study these consequences, the author asked the respondents of in-depth interviews a number of clarifying questions covering changes in the number of BI residents, the level of space occupancy, the composition of resident companies and anchor tenants, the presence of

online activities, the internal organizational structure and processes, the government support, etc. (see Appendix A).

The second block of questions is connected to the funding of BIs which has shifted from federal to regional budgets recently. That shift could bring some changes to the funding mechanics, amounts of financing, annual goal for BI and/or ways of reporting as well as have an impact on the ability of BI to implement additional ways of monetization (commercial services, etc.).

The third block of questions studies the phenomenon of intra-corporate accelerators in the context of entrepreneurial ecosystem and their interaction with business incubators in Russia. The corporate business accelerator industry in Russia is currently experiencing a boom that has gone through the pandemic and continues to gain momentum. The cooperation between BIs and corporate accelerators ultimately strengthens the ties of incubators with big business, which is very important for the financial stability of BIs against the backdrop of market instability and a gradual optimization and decrease in funding from the state budget, as well as the overall efficiency of the entrepreneurial ecosystem. That is why it is important to find out if the trend of intra-corporate business incubators and business accelerators creation could become a new driver of the BI industry in Russia.

Finally, as the ties and connections between all actors inside EEs play the most important role and indicate the level of EE development and maturity, the fourth block of questions is about identifying the sustainable long-term relations established between BIs and other EE players including regional universities and university-based business incubators, SME support infrastructure (e.g., technoparks, business accelerators, coworking spaces, hubs, etc.), corporations, venture funds and private angel investors, expert communities, and local authorities.

The sample of in-depth interviews comprises of 19 Russian business incubator managers which is representative considering the number of incubators remaining active and running on Russian market and the sample taken for the research in the form of survey (33 participants). To increase the representativeness of the sample and the

accuracy of the conclusions, as well as minimize the sampling bias, the following main criteria were used in the selection of respondents:

1) The business incubator has been operating for at least 5 years and was running at the moment of the in-depth interview being conducted.

2) The business incubator has previously taken at least one of the professional development programs for employees in the field of business project development or has a Russian or international certificate in the field of business incubation.

3) The business incubator has a regularly updated website and / or pages on social networks, which publish up-to-date information on the terms and conditions of admission, as well as the services provided to residents.

4) The business incubator provides a range of services that is standard for structures of this type: rent of premises and equipment on preferential terms, business training and consulting, project expertise, assistance in finding and attracting investments, etc.

Also, in order to make the research more universal and cover as many aspects of business incubation as possible I tried to include into the sample business incubators from different regions and of different types including classical and university based, for-profit and non-profit, industry focused and mixed, standalone and incorporated into technoparks, etc.

The full list of respondents of the in-depth interviews is presented in Table B1 (Appendix B).

Due to the fact that, according to the author's experience, as well as the results of the surveys, classical business incubators and university business incubators differ very much both in key parameters of activity (the number of residents, the focus of projects, the area, the amount of funding, etc.), and in terms of the level of integration into the entrepreneurial ecosystem of the region, during the analysis of in-depth interviews, the answers of respondents representing these 2 categories of business incubators were analyzed separately. Thus, in the tables presented in sections 4.2–4.4, separate columns are allocated for data on classical and university BIs, and in the quotes it is indicated the representative of which type of BI gave it (CBI states for classical BI, UBI states for university-based BI).

My aim is to better understand challenges that business incubators face in the context of developing entrepreneurial ecosystem in Russia, explain the decline in business incubator quantity on Russian market and other negative trends which can be seen in the Survey results as well find the possible opportunities for the future growth and development.

The data was collected through online calls via Zoom software. Each interview lasted for about 40-50 minutes. The answers were transformed into scripts for careful analysis and systematization. For better understanding of some problems direct citations are presented in the paper which are anonymized.

The personal data used for research purposes was processed in accordance with General Data Protection Regulation (GDPR) 2016, Personal Data Law of Russian Federation No. 152-FZ, and Data Protection Act (DPA) 2018. Complying with the documents above, I:

– informed participants about which of their personal data would be used, shared and retained, and how;

– informed participants of their rights;

– minimized the use of personally identifiable data wherever possible (e.g. name, address, contact details, personal income, etc.).

For the data collection (in-depth interviews) I also obtained ethical approval from MGIMO University and Henley Business School. The data collected include personal information regarding participants (such us full name, address, contact details, etc.) and is anonymized.

### 4.2. The impact of COVID-19 on the state of business incubation in Russia

More than half of the respondents reported that for the first few months after the start of the pandemic in Russia (March 2020), they stopped recruiting new residents and actually suspended their activities. This pause was caused not only by administrative restrictions and directives, but also by the need to rebuild internal processes, adapt communications with residents and business incubation programs to an online format (including for existing residents), and also establish a new procedure for admitting

residents to the business program. -incubation (during the pandemic and lockdown, the premises of almost all business incubators were closed, which made it impossible to accept new residents under the classical scheme), which negatively affects the development of small and medium-sized businesses.

Small businesses, for their part, also became less likely to apply to business incubators during this period — all respondents reported a decline in entrepreneurial activity in their region. Covid restrictions were introduced differently in all regions, but on average, a significant decline in applications to business incubators was observed over 4-5 months.

Interestingly, in the case of classic municipal business incubators, which by law cannot work with companies from the retail sector and standard typical businesses (cafes, beauty salons, etc.), the sectoral composition of residents has not changed much – the number of residents has decreased by an average of 10%, and the total loading of areas by 5-10%. The situation was different for student business incubators, where the share of projects in the field of online retail increased significantly, while, oddly enough, the number of residents did not decrease, but even slightly increased.

In general, the pandemic has shown that it is much easier for student business incubators to adapt to drastic changes in the external environment due to less regulation. Thus, all respondents representing university business incubators (both open and closed) noted that they were able to transfer their program to an online format in just a few weeks. A favorable factor here was the fact that during the quarantine restrictions, the interest of students in obtaining additional training and special knowledge in the field of entrepreneurship increased, and therefore the number of virtual residents (who subsequently became physical residents as quarantine restrictions were lifted) only increased.

Classical business incubators (BIs), unlike university based BIs, need to report to higher structures on pre-agreed indicators included in the plan for the year (for example, the average annual level of occupancy of premises, the number of jobs created by resident companies, the number of educational events held for resident companies and etc.). It took a lot of time to reconcile these indicators, adjust and introduce completely

new KPIs, especially since not all business incubators can provide remote services in accordance with their constituent documents.

Table 4.2.1 shows that even more than a year and a half after the start of the pandemic, far from all business incubators (especially classic ones) were able to adapt to new realities in all aspects.

Table 4.2.1 — Shift to Online Activities of Classical and University Business Incubators in Russia, December 2021[353].

| **Activity** | **Classical BIs implemented (% of respondents)** | **University BIs implemented (% of respondents)** |
|---|---|---|
| Online Admissions | 91% | 100% |
| Online Trainings | 55% | 75% |
| Online Mentoring | 73% | 100% |
| Online Pitching | 18% | 13% |
| Virtual Business Incubation Program | 27% | 25% |

Table 4.2.1 clearly shows that while online admissions and online mentoring were implemented by almost all respondents from both classical and university incubators, only half of the respondents from classical BIs had online trainings at the time of in-depth interviews (as well as 75% of university ones) and full-fledged virtual business incubation programs were offered by only a quarter of all business incubators. That means that in most cases online trainings and other online activities are just a part of the general incubation program rather than a real alternative to it. It is also important to add that, according to many respondents, most business incubators had online admissions even before the start of the pandemic, while pitching was not carried out even offline.

As for the low amount of virtual business incubation programs launched, representatives of business incubators attribute this partly to low demand for such services, partly to inconsistency in the implementation of quarantine measures, and partly to a weak regulatory framework for monitoring, implementing and financing such programs:

– *"There are many issues with the virtual program. Firstly, the clients of such programs are not ready to pay, since the virtual program in their eyes looks like online*

[353] Source: author's own.

*courses and for such a service, they are more likely to turn to more fashionable business coaches or online schools that promise them mountains of gold immediately after graduation. But if we launch the program for free, then a problem arises in terms of its financing: it turns out that we are developing entrepreneurship in another region at the expense of the budget of our region." (CBI)*

– *"We have very low demand for online programs. Perhaps this is due to the fact that SMEs primarily need infrastructure and premises, while training and mentoring play a secondary role for them." (CBI)*

– *"In order for a virtual program to be in demand and mean something to a startup, a business incubator must have a strong recognizable brand, as in the case of the US and Europe. The very fact of participation in such a program (albeit virtually) will be a signal for the investors that it is possible to work with such a startup. We are a small regional business incubator and, apparently, no one is interested in us as a source of knowledge and a virtual guide to the world of entrepreneurship." (CBI)*

– *"We have anti-COVID measures and quarantine restrictions that are intermittent and episodic. Many entrepreneurs would like to go through the incubation program in a full-fledged format, so they don't turn to a virtual incubator and just wait for the next relief." (CBI)*

At the same time, today it is common to talk about the era of "third generation" incubators: traditionally, an incubator was a physical platform where a startup could get access to high-tech, unique infrastructure and equipment. However, the minus of such incubators is high cost of construction and maintenance. Within the framework of a developed ecosystem of entrepreneurship, in which funding for the support infrastructure from the state is minimized, it is unprofitable for the founders of a business incubator to spend serious money both on launching and supporting such sites. In this regard, business incubators in developed countries began to gradually focus on providing not infrastructure, but primarily education, including acceleration programs. Many companies, especially in the IT sector, are going further and making virtual incubators, such as the One Million by One Million (1M/1M) incubator or the corporate incubator of Intel and their Indian partners (IIT Bombay's Society for Innovation and

Entrepreneurship). Such projects help to work with a wide pool of startups without big expenses on infrastructure, and to attract only mature projects with good market prospects for full-fledged cooperation in physical incubator. Obviously, in Russia, no prerequisites have been created for the transition to “third generation” incubators, either judged by legislation, or by the approach to organizing existing incubation programs, or by the needs of the startup entrepreneurs themselves.

Table 4.2.2 presents changes in the internal organizational structure and processes of business incubators caused by the pandemic, as well as the percentage of respondents who have implemented these innovations at the time of the in-depth interview.

Table 4.2.2 — Changes in Internal Structure and Processes of Classical and University Business Incubators in Russia, December 2021[354].

| **Changes** | **Classical BIs implemented (% of respondents)** | **University BIs implemented (% of respondents)** |
|---|---|---|
| Digitalization of internal business processes | 91% | 100% |
| Outsourcing: mentors, marketers, administration, accounting, etc. | 73% | 25% |
| Staff Reduction | 55% | 13% |
| Reducing the squaring of general premises (conference rooms, meeting rooms, etc.) | 64% | 38% |
| Greater focus on anchor tenants | 55% | 50% |
| Increase in the number of laboratories and prototyping centers | 36% | 13% |
| The emergence of interactions with large business – open innovation, etc. | 27% | 50% |
| Consulting and trainings on new topics | 91% | 88% |
| The emergence of the ESG block, the development of the region, etc. | 18% | 38% |

The table shows that the most popular internal changes for both types of business incubators were the digitalization of business processes, updated content of trainings and consulting, as well as greater focus on anchor tenants and a reduction in the space allocated for general purpose premises.

At the same time, the digitalization of business processes for the most part came down to the use of new software in the work (group chats in popular messaging apps for everyday business tasks, Zoom and its analogues for holding corporate meetings and

[354] Source: author’s own.

online trainings) and only in a small number of cases involved the introduction of full-fledged electronic document management (4 respondents), the introduction of a personal account on the incubator website with access to various services for customers and employees (2 respondents) and the creation of a smart assistant (Telegram chat bot) for residents (1 respondent).

91% of respondents representing classical business incubators and 88% of respondents representing university business incubators noted that due to the pandemic, they have completely or partially revised the thematic content of their training programs, with the following most requested topics:

- receiving grants and subsidies;
- measures of state support for SMEs in connection with the pandemic;
- entering marketplaces and aggregators;
- social media marketing;
- business digitalization.

The greater focus on anchor tenants was dictated by several factors. Firstly, during the pandemic, demand from new potential residents decreased. Secondly, it was the anchor tenants, as operating businesses, who suffered the most losses and needed additional support. Finally, anchor tenants provide business incubators with a stable financial income, which is especially valuable in times of economic uncertainty and instability.

The reduction in space allocated for general-purpose premises occurred due to the lesser demand: many meetings and trainings started to be held online. This made it possible to increase the amount of space for rent, however, unfortunately, it did not have a strong effect on the increase in the areas allocated for laboratories, prototyping centers and other specific infrastructure, which is an important point of attraction for SMEs (only 36% of classical BIs). This change affected university business incubators to a lesser extent, since they often use the university infrastructure for their own purposes and do not have their own meeting rooms, laboratories, etc.

The point related to outsourcing turned out to be controversial: this change was reported by 73% of respondents from among the classical BIs and only 25% from the

university-based ones. This contradiction may be explained by the fact that university business incubators are often tightly integrated into the structure of a higher educational institution, and therefore the involvement of external employees from among the teaching staff, as well as administrative and technical personnel, is not considered outsourcing. As for classical business incubators, outsourcing in most cases was associated with the involvement of external business coaches and mentors on the new topics in demand identified above.

Speaking about the positive aspects of the impact of COVID-19, it is worth mentioning the government programs to support small and medium-sized businesses that were launched in 2020 (see Table 4.2.3).

Table 4.2.3 — Government programs to support small and medium-sized businesses during the COVID-19 pandemic[355].

| | |
|---|---|
| Guaranteed market | Current law affords various advantages to small and medium-sized enterprises when purchasing for state or municipal purposes. |
| Subsidizing | Funds are distributed in the form of grants, subsidies, and other forms of targeted financing to help certain areas grow. Subsidies range from 60,000 rubles to 25 million rubles. |
| Tax Holidays | The status of the SME allows the company to receive exemptions from paying taxes and fees to the state budget |
| Exemption from reporting | Small businesses have the right to keep accounting in a simplified manner and submit reports in a simplified form. In addition, representatives of small and medium-sized businesses have benefits in terms of providing statistical reporting |
| Exemption from conducting cash transactions | The requirements of the Central Bank in terms of compliance with cash discipline for small businesses have a number of indulgences and exemptions. For example, SMEs has the right to refuse the cash balance limit |
| Delays in the transition to online cash registers | For most small businesses, there are several delays in the transition to a new generation of cash registers. For some taxpayers, a tax deduction of 18 thousand per unit was introduced |
| Educational programs | State support provides an opportunity for SMEs on preferential terms:<br>• to get an education<br>• conduct training and retraining of specialists<br>• improve the qualifications of employees |

The above programs contribute to the development of business incubators and accelerators, making it easier to implement projects related to startups and provide all the necessary conditions for their development and operation.

[355] Source: author's own.

Also, another positive effect of the pandemic can be considered the development of projects for remote work and study. For example, in St. Petersburg, there are more startups showing stable development and looking for new areas of growth. According to the head of the Ingria Business Incubator (St. Petersburg), startups related to the organization of distance learning formats, video communication services, delivery services, e-commerce and many other IT companies that allow people to work remotely have grown in 2020 by 200–300%. The pandemic has also accelerated the growth of startups in medicine and education in Russia.

According to about a third of respondents, one of the constraints on the activities of business incubators was the reduction in investment in Russian startups. Indeed, according to RBC, in the first half of 2020, the volume of venture investments in Russia amounted to $184 million, which is three times less than in 2019. At the same time, investors had money – it was quarantine restrictions that prevented the conclusion of transactions[356].

Speaking about specific areas of government support, the majority of in-depth interview respondents note that tax support had the most positive effect. Thus, many representatives of business incubators among the most effective measures to support resident companies name “tax holidays” (extension of tax payment deadlines up to 6 months, payment deferrals up to 1 year), reduction of the level of administrative pressure on business (a moratorium on on-site inspections up to December 31, 2020, extension of reporting deadlines to the Federal Tax Service to 3 months), as well as some financial concessions, which, however, did not affect all enterprises.

Thus, for small and medium-sized businesses, insurance premiums from the part of salaries exceeding the minimum wage have decreased to 15%, subsidies to SMEs have ceased to be subject to income tax, and the cost of medical goods has been taken into account as part of the costs when calculating income tax. At the same time, only SMEs

[356] Due to the pandemic, investments in Russian startups have been reduced by three times // RBC Technology & Media. September 23, 2020. URL: https://www.rbc.ru/technology_and_media/23/09/2020/5f6b31d49a7947dee548156d

from the “most affected industries”[357] received tax exemptions for the 2nd quarter of 2020, fixed pension contributions and other more tangible support measures.

Not everyone received financial support either. Among the most significant measures, respondents identify softening the conditions for granting subsidies, increasing the availability of government contracts for small and medium-sized enterprises (SMEs) – for example, by raising the threshold price for government contract that are required to be secured to 5 million rubles, a moratorium on penalties under government contracts, refunds for taxes paid by self-employed in 2019 (there are a large number of self-employed among residents of regional business incubators), expansion of preferential lending programs at a rate of 8.5% and microcredit for SMEs, as well as, oddly enough, credit holidays for up to 6 months on mortgages or consumer loans (small businesses in Russia and the self-employed often take a consumer loan to start a business rather than a commercial one).

Respondents note that, despite the launch of a large number of information services describing the list of measures of state support for SMEs, the demand for consultations on this issue from entrepreneurs has increased significantly. Information support is provided by:

– guide of the Government of the Russian Federation on support measures in the context of a pandemic entitled “Measures of the Government of the Russian Federation to combat coronavirus infection and support the economy”;

– information service of the Ministry of Economic Development of Russia “No-virus Economy”;

– anti-COVID services launched by Federal Tax Service;

– information service of the Bank of Russia on measures to support business in the context of the spread of a new coronavirus infection;

– SME Corporation information service, etc.

[357] Decree of the Government of the Russian Federation of April 3, 2020 No. 434 “On approval of the list of sectors of the Russian economy most affected in the context of the deteriorating situation as a result of the spread of a new coronavirus infection”. URL: http://static.government.ru/media/files/CGHHI9UNm6PFNfn2X2rdgVW9fo757i7A.pdf

Commenting on the introduced support measures, representatives of business incubators emphasize the limitations of their action both in terms of coverage of business areas and in terms of time, which reduces their overall value for most SMEs:

– *"The introduction of measures did not prevent the reduction of SMEs in any way. In my observation, 2020 has been a particularly difficult year, mainly for microentrepreneurs. The pandemic hit businesses in absolutely all areas, despite the fact that enterprises from the list of "most affected industries" received the most tangible support." (CBI)*

– *"The support measures were received with a bang by our residents, especially those related to tax and credit benefits. However, it is not entirely clear what will happen to micro and small businesses, the number of which, according to statistics, is continuously declining, when the loan deferral for SMEs from affected industries, bankruptcy protection for affected industries, deferral of accrued interest payments in 2020 and other support measures end?" (CBI)*

– *"The termination of SME support programs will inevitably lead to a sharp increase in the number of bankruptcies of small and medium-sized businesses. Moreover, it is not enough to just extend the effect of measures to support small and medium-sized businesses. It is necessary to expand their scope." (UBI)*

– *"With the onset of the pandemic, the demand for consulting in the field of state support has increased significantly – due to the crisis, entrepreneurs faced a lot of problems and suffered lack of resources for a detailed study and monitoring of complex and constantly changing legislation." (CBI)*

– *"The demand for information support on part of SMEs was high and we also felt it, but federal government decided to distribute information not through business incubators but through newly created digital portals and local entrepreneurship support centers making it unnecessary for us to invest a lot into our own online programs." (CBI)*

It is worth adding that to support entrepreneurship in some regions, local authorities introduced their own support measures, significantly supplementing and expanding the federal ones. Thus, one of the respondents shared a list of additional measures to

support SMEs introduced in the Penza region, including, for example, preferential microloans for certain categories of entrepreneurs: a loan for residents of regional development centers of the Penza region, a loan “Women's Entrepreneurship. Involving Women in Business”, the “Youth Entrepreneurship” loan, the “Business 45+” loan for startup entrepreneurs over 45, etc.

Unlike federal support measures, regional measures are focused on those enterprises that play a special role in the local economy. Thus, in the Penza region, additional subsidies were introduced to support crop and livestock production, entrepreneurs in single-industry towns (Nikolsk, Serdobsk, Mokshan, Zarechny), entry of SMEs into the financial market, leasing support for industrial enterprises, participation in regional priority projects, reimbursement of part of the costs to enterprises engaged in foreign economic activity, financial support for the costs of entrepreneurship operating in the field of clothing production.

Such a division of federal and regional support measures seems quite logical and justified, however, more than half of the respondents note that the measures taken at the local level were also not enough for resident companies.

Thus, the impact of coronavirus on the field of business incubation in Russia has had a contradictory effect. On the one hand, new realities forced business incubators to partially restructure internal processes, revise training programs and modernize infrastructure, but this did not lead to the mass emergence of virtual business incubation programs, which can be explained by the inconsistency of state policy in the field of supporting SMEs and the implementation of anti-COVID measures in general, bureaucratic complexities and high dependence of business incubators on state funding. The demand for new digital information services from SMEs was largely satisfied by the forces of the federal government, while the main factor in the attractiveness of business incubators remained infrastructure and even more significantly cheap premises for rent.

## 4.3. Corporate accelerators as a potential driver for business incubation development in Russia

As shown earlier, Russia is currently experiencing a stagnation of the business incubation industry, which is happening simultaneously with a surge in the creation of intra-corporate accelerators and incubators. In this regard, a number of questions arise: (1) can these trends be interconnected; (2) what potential the development of corporate accelerators has (whether they could see the same future as business incubators); (3) whether corporate business accelerators can contribute to the revival of business incubation in our country.

The first corporate accelerator was founded in 2011, and in 2015, just in 4 years, there were already 77 corporate accelerators globally inside corporations in 18 industries from 32 countries. Now intra-corporate business acceleration programs are successfully carried out under the auspices of many large companies, such as IKEA, PepsiCo, Microsoft, Unilever, Samsung, Airbus, etc. Such popularity of corporate accelerators is due to their high efficiency within the concept of "open innovation" approach in business.

Companies used to rely heavily on the results of their own R&D when developing and adopting new technologies, but in the past two decades there has been a trend toward reducing development cycles and the time it takes to bring new goods to market. Most major corporations are unable to effectively create innovative solutions in the volume and time necessary because of the strict hierarchical structure they have in place.

"Open innovation" is a relatively new approach being used by organizations to find a solution to this challenge, which entails collaborating with a broad variety of external innovators – from core companies to their own customers and even individuals who are not connected with the company in any way (crowdsourcing).

In fact, corporate accelerators, along with idea contests, hackathons, case competitions, open beta testing of a product, etc., are an effective tool for implementing "open innovations", because within the framework of corporate accelerators, companies

interact with external developers and entrepreneurs who have an innovative idea, but do not have the financial resources to implement it.

Corporations prefer to create accelerators for a number of reasons:

1) creation of a corporate accelerator does not involve significant investments, since external experts can be involved instead of full-time employees for the duration of the acceleration program, and the events themselves can be held on the company's existing premises or on the basis of other organizations – business incubators, technology parks and business accelerators;

2) a high level of interaction and immersion of employees in work with high-tech projects at an early stage;

3) obtaining unique competencies by employees in the process of working with partners in the field of innovation (e.g., with BIs and BAs in the process of organizing a corporate accelerator, higher educational institutions and scientific organizations in the course of searching, assessing and filtering projects, venture investors during the acceleration program and after its completion);

4) bringing a new product to the market in the case of the success of the project and obtaining rights to all or some of the results of the intellectual activity of program participants.

The creation of a corporate accelerator may not pay off in the short term, however, in the medium and long run, it can achieve significant results thanks to the growth of the company's capitalization as a result of: (1) attracting teams (acquring new tech), (2) developing internal projects that allow the corporation to enter new or related markets and reduce costs, (3) as well as the emergence of new customers in the face of accelerator participants and their consumers (often products and services developed as part of an accelerator program are created based on the technologies owned by the corporation itself).

Table 2.1.2 previously compared different types of business incubators, including business accelerator. In particular, accelerators can be characterized by short-term project development programs (3-6 months), a single program for all participants, the presence of own venture fund for investing in startups, etc. At the same time, as a rule, a

business accelerator provides its services in exchange for a 3-8% share in a startup (in some cases also charging additional fees for the services provided). BAs are focused on funding projects with great potential in order to later sell stake in their capital at a much higher price, which is the main source of their income.

A corporate accelerator, unlike a traditional one, focuses on increasing and enhancing the company's operations via the introduction of new solutions. Corporate accelerators are designed largely to address issues linked with a rise in capitalization, and not for the short-term boost in sales or earnings. The use of this tool can result in an increase in capitalization through: (1) the acquisition of new technologies that allow entry into new or related markets while lowering expenses; (2) the growth of investments in the projects of accelerator attendees; and (3) the development of internal projects with the potential for creating spin-offs.

Corporate accelerators implement two main strategies of monetization. Most often, it occurs through the involvement of teams, the acquisition of new technologies or the development of internal projects that will enable the corporation to penetrate new markets, optimize costs, and increase the value of its investments in the projects of accelerator attendees. Also, many companies receive income from the accelerator by attracting new customers from among the accelerator participants and their consumers using the products and services of the corporation. The second principle is adopted by the corporate accelerators of Microsoft and Qualcomm. For instance, Microsoft, thanks to the activities of its corporate accelerator Microsoft Ventures Accelerators, has already increased the pool of its customers by more than 1 million.

It should be added that in rare cases, corporate accelerators gain part of their income by providing paid acceleration services to projects. Thus, the Microsoft Ventures Accelerator in Paris earns an income of 10 euros per day from each member of the participating project team.

Table 4.3.1 provides a more detailed in-depth comparison between business incubators, business accelerators and intra-corporate business accelerators.

Table 4.3.1 — Comparative Analysis of Business Incubators, Business Accelerators and Intra-Corporate Business Accelerators[358].

| Criteria | BI | BA | ICBA |
|---|---|---|---|
| Primary goal of creation | Job creation, economic activity boost | Gaining profit | Company's activities and products improvement, attraction of talent |
| Program focus | Increasing the survival rate of startups | Fastest multiple increase in the startup's valuation | Integration of successful projects into the business ecosystem of the company |
| Founders | Government, Universities | Government, Venture Funds | Corporations partnering with business accelerators |
| Ways of Monetization | Paid rent, additional services | Shares in startup projects, participation fees | Acquisition of talent, technologies, customers |
| Program Duration | Up to 3 years | 3-6 months | 3-6 months |
| Program Frequency | Continuous | 2-3 times a year | 1-2 times a year |
| Resident Selection Criteria | Early stage of development starting at business idea, social orientation (in some cases) | Early stage of development starting at prototype, scalability and venture model of development | Depends on corporation goals, usually affiliation to specific industry |
| Program Exit Criteria | Separate groups of residents upon achieving target indicators / staying in the program for the maximum time | The whole set of residents simultaneously / several months after the final investor pitch | The whole set of residents simultaneously |

The first business accelerator, Y Combinator, was created in 2005 and was a response to the crisis of the early 2000s, which undermined investor confidence in business incubators and venture funds. It was not until the end of 2011 that the Techstars business accelerator partnered with Microsoft to host the first intra-corporate business accelerator, Microsoft Kinect Accelerator. However, it differed from the existing Microsoft Startup Accelerator Program in that it envisioned a short-term, four-month acceleration period. On top of that, all attendees took part in a single course targeted at preparing them for a successful launch.

[358] Source: author’s own.

Many other IT companies followed Microsoft's lead and started their own corporate accelerators. Since telecom businesses had run out of room for further expansion and were compelled to seek for new avenues for growth, corporate business accelerators were created in this sector. The most suitable direction for development was the development of the Internet and mobile applications related to telecommunication companies. In contrast to mobile device manufacturing, this area turned out to be more attractive due to lower entry barriers. The competitive speed of application development compelled telecom enterprises to use the corporate accelerator model.

In medicine and biotechnology, there were specific conditions that necessitated the formation of corporate accelerators. Many organizations operating in this sector are struggling to keep up with the pace of technological change. There was a drop in the number of innovations at the market, and many of them proved to be ineffective at later stages, resulting in large losses. There were several factors contributing to this situation, including a lack of patent protection for blockbuster pharmaceuticals, which resulted in a huge drop in income for the top pharmaceutical corporations at the time. So, in order to speed up drug development cycles while increasing the dropout rate for unviable ideas in the early stages of development pharma companies had to rely on corporate accelerators.

Corporate accelerators in Russia are designed primarily to help firms expand quickly and become more competitive on the local and international markets. Yandex launched the first Russian business accelerator in 2013 to recruit skilled teams and expand the company's technology in response to the rising popularity of Google and other foreign search engines. In 2015, there were 5 corporate accelerators operating in Russia, two more were organized by Russian companies abroad – in Luxembourg (Kaspersky Lab) and Singapore (Life. SREDA, corporate venture fund of Life financial group). Also in 2015, 7 corporate acceleration programs were implemented within GenerationS.

Companies play a number of roles in acceleration programs, not just one. 41% of startups participating in a corporate accelerator perceive companies as strategic partners,

37% as clients, 12% as investors, and 10% as potential buyers of their firm, according to the Startup Barometer 2019 report[359].

As of May 2018, there were 103 accelerators in Russia (39 in 2015), of which 22 (21%) were intra-corporate accelerators. Active growth of corporate accelerators began in 2017, in which their number increased by 9 (28%)[360]. In 2020, almost all sectors of the economy, including innovation, were negatively impacted by the COVID-19 pandemic, so according to the "Venture Russia 2020" report[361], most of the acceleration programs were suspended (some of the accelerators changed format by migrating online), as the key drivers of innovation in normal times are access to new technologies and the ability to launch new products / services, while during a pandemic – the ability to reduce costs and quickly adapt production processes.

The challenging environment facing businesses in 2020 has spurred some companies to accelerate their digital transformation and rethink customer interaction channels, especially in industries such as retail, banking, insurance, tourism and HoReCa. This allowed them to quickly adapt to the forced restrictions associated with the pandemic and continue to successfully conduct their activities. Still in 2020 more than ten new corporate accelerators were launched, including MGNTech (joint accelerator of the Magnit retailer and the Skolkovo Foundation), ForestTech (accelerator of the Priangar Timber Processing Complex with the support of the Global Venture Alliance (GVA) for innovative projects in the forest industry), GreenTech Startup Booster (Russia's first accelerator for startups in the field of ecology, organized by the Skolkovo Foundation together with industry leaders), KAMAZ DIGITAL, Goznak Startup Lab, StartupGrowthLab (Google), The RSHB accelerator (Rosselkhozbank and the Skolkovo Foundation), Ak Bars Startup Lab, The accelerator of the NPO Norilsk Nickel, Kaspersky Exploring Russia (online travel accelerator by Kaspersky Labs), etc.

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[359] Startup Barometer 2019 — Венчурный барометр: Исследование российского рынка технологического предпринимательства. URL: https://vc-barometer.ru/startup_barometer_2019

[360] Ассоциация акселераторов и бизнес-инкубаторов России: Карта акселераторов и бизнес-инкубаторов России. URL: http://www.oneup.ru/analytics/innomap

[361] Venture Russia 2020. Dsight. URL: https://dsight.ru/company/studies-publications/Venture_Russia_FY2020_RUS.pdf

According to “Venture Russia 2021” report, the field of corporate business accelerators in Russia has restored and almost all big companies has at least one affiliated acceleration program[362].

Based on the results of the in-depth interview, some conclusions can be drawn about the impact of the rapid growth of the corporate business accelerator industry on the business incubation market in Russia. First, the vast majority of business incubators surveyed (both classical and university) reported that they never had close interaction with corporate business accelerators (see Table 4.3.2).

Table 4.3.2 — The nature of the interaction of classical and university business incubators with corporate business accelerators in Russia[363].

| **Type of Cooperation** | **Classical Business Incubators** | **University business Incubators** |
|---|---|---|
| Long-term / Strategic | 9% | 13% |
| One-time project(s) | 18% | 24% |
| In touch | 18% | 50% |
| Never communicated | 45% | 13% |
| Total | 100% | 100% |

Table 4.3.2 shows that university business incubators again show themselves as more flexible structures, which, even if they do not cooperate with corporate accelerators on an ongoing basis (only 1 respondent reported long-term/strategic partnerships and 2 reported one-time joint projects – exactly the same as in the case of classical business incubators), they at least keep in touch with corporate accelerators and consider options for cooperation in the future (50% vs. 18%). A representative of only 1 university business incubator replied that its structure had never contacted corporate business accelerators, while among the classical business incubators that took part in in-depth interviews, there were almost half of them. This is due to several factors: (1) university business incubators are more independent in choosing external partners; (2) activity and high interest in the activities of corporate accelerators on the part of students and young scientists; and (3) long-established ties between companies

[362] Venture Russia 2021. Dsight. URL: https://dsight.ru/company/studies-publications/VR2021.pdf

[363] Source: author’s own.

and universities through career centers, recruiting companies, student case competitions, etc.

Based on the data in Table 4.3.2, it is important to answer 2 questions: (1) why do so few business incubators interact with corporate business accelerators and (2) how do those few business accelerators evaluate their interaction with corporate business accelerators?

Answering the first question, representatives of business incubators who do not cooperate with corporate business accelerators referred to several factors. Firstly, according to many of them, corporate business accelerators are closed structures that work within corporations to solve specific business problems and, as a result, are not interested in any partnership or joint projects. This point of view is refuted by the above description of the activities of corporate accelerators and the idea of "open innovations" underlying them, which involves crowdsourcing and work with a wide range of external participants, but the fact remains: due to poor awareness, representatives of business incubators consciously do not take any steps towards convergence with corporate accelerators.

Secondly, among more objective reasons, respondents named the absence of corporate accelerators (or headquarters of large companies that can act as their founders) in their region, which makes cooperation impossible. On the one hand, this is true, because acceleration programs often use the infrastructure of business incubators or technology parks as a platform, which means that geographic proximity is important – while many corporate accelerators tend to operate closer to the capital region. On the other hand, regional incubators could act as local partners of corporate accelerators, on the basis of which it is possible to conduct regional stages of acceleration programs, qualifying rounds, or at least prepare projects for entering a specific accelerator. In addition, regardless of their location, business incubators could remotely provide consulting support, expertise and mentoring to residents of corporate business accelerators, help them find regional partners, conduct online trainings, etc.

Thirdly, several respondents stated that business incubators and corporate accelerators' primary goals are way too different as well as the type of startup

companies which apply for the programs, the vision of the process of training startup projects, and a representative of one university incubator complained about the fact that they do not have enough competencies needed by corporate business accelerators in their programs (perhaps this reason is more common, but not everyone wanted to voice it directly).

Here, business incubators seem to become hostages of their main function within the entrepreneurial ecosystem, while undermining the basic principles of ecosystem development, including self-sufficiency, sustainable growth and interconnection between all actors. Despite the fact that an incubator and an accelerator (especially a corporate one) solve different problems, in a global sense they both work to develop entrepreneurship and increase business activity in their region, not to mention the fact that the existence of close ties between the support infrastructure and large business (albeit through accelerators and other open innovation mechanisms) is a mandatory attribute of any developed entrepreneurial ecosystem as previously shown in chapter 2. As part of the interaction with corporate accelerators, business incubators could gain new experience, enrich the project portfolio, as well as attract additional financing and reduce dependence on the state budget – all this would only contribute to the performance of their main functions.

Respondents who work with corporate accelerators or who have implemented one-time projects with them shared their experience:

– *"It is not only and not so much about additional money. When potential residents learn that we work with certain large companies and know the entry points, this significantly increases our attractiveness as a business incubator and a preliminary stage in preparing startups for future acceleration. That is why we decided that partnerships with corporate accelerators, as an important aspect of work with corporations, should become a separate important area of our activity. For 3 years, we managed to establish partnerships with 2 business accelerators — we hosted an acceleration program once and on an ongoing basis prepare and recommend the best IT projects to them." (CBI)*

– *"Since our university has framework agreements with several large companies, including SBER and X5 Retail Group, our incubator decided to take the path of least resistance and offer acceleration programs at our site. There are preliminary agreements to do that, but the pandemic got in the way — we hope that in the future we will be able to implement this, especially since we have experience in holding events for companies — for example, we held a regional qualifying round of the all-Russian Aeroflot case championship at our site." (UBI)*

– *"If you look at it, business incubators and corporate business accelerators have a lot of common ground: speakers, training program, mentoring, infrastructure. We help our startups to get into the accelerator (if they are suitable by the field of their product and other basic requirements), and the accelerator with which we have a cooperation agreement, in turn, attracts our mentors and recommends us as a platform with affordable rent and services for those projects that did not merge into the structure of the company – some of them become our anchor tenants." (CBI)*

Respondents who maintain contact with corporate accelerators note that this is a good option for strengthening interaction with the corporate sector, which will inevitably become one of the main sponsors in the future: only those incubators that gain support of companies in time and can effectively fulfill orders for them will survive. At the moment, corporate accelerators are able to effectively solve many problems of companies, however, in order to quickly scale them up and get more projects, corporations will rely more on outsourcing, which means that the services of business incubators will be in demand. In this sense, corporate accelerators can indeed be considered as indirect competitors of business incubators, however, with a certain strategy and approach implemented by BIs, this competition can turn into mutually beneficial cooperation. To do this, business incubators will have to adapt by strengthening industry specialization, modernizing infrastructure and revising the content of training programs:

– *"At the moment we are looking into this area. The resources are definitely there, you just need to build points of interaction. There is an understanding that*

*without a major stakeholder, which for a long time was the state, business incubators cannot survive, and now corporations are becoming this player." (CBI)*

– *"Despite the experience in growing businesses, the form and content we have is not exactly what companies expect, so now we are trying to adapt our program to the industry specifics of several corporate accelerators — then the likelihood of being involved in their activities will be much higher." (UBI)*

– *"We communicate with many actors of entrepreneurial ecosystem in our region including universities, venture funds, technoparks and corporations, so accelerators are no exception. Unfortunately, that does not mean close cooperation at the moment – that is more about informational partnership." (CBI)*

– *"The most effective corporate accelerators have created an ecosystem that involves interactions with partner firms, specialists, mentors, and alumni, among others. A collaboration with a renowned BA, such as Techstars, GenerationS, or Internet Initiative Development Fund [IIDF is a well-known venture fund in Russia – author], provides a major boost to the development of corporate accelerator ecosystems. In this instance, the partner helps to efficiently coordinate the work, gives funds to startups (businesses tend not to finance projects in the early stages of growth on their own), and invites the top industry mentors and venture capitalists, which is of great importance to new creative firms. Ideally, company incubators might also be included into this plan." (CBI)*

In fact, a corporate accelerator can only be successful if it is run by a competent team of professionals, comprising personnel with extensive experience in entrepreneurship, ambitious aims, and extensive knowledge. TechCrunch claims that BAs that were not one of the top ones started to struggle in 2013 to attract startups. This is because entrepreneurs lack faith in the effectiveness and expertise of BA teams. This issue might have a detrimental influence on the activities of corporate accelerators in the future. It is obvious that the very nature of the concept of "open innovations" implies a large-scale search for projects, which must be carried out using the resources of partners and relying on technology centers, technology parks and business incubators, where a

large number of desired innovative projects are concentrated, and not limited to a separate territory.

An efficient and straightforward instrument for innovative development, the corporate accelerator attracts competent individuals who are capable of implementing creative solutions to boost capitalization and competitiveness by bringing innovations into the company's operations. Albeit somewhat late from the rest of the world, the corporate business accelerator industry in Russia is currently experiencing a boom that has gone through the pandemic and continues to gain momentum. An unexpected result of the study was that representatives of many business incubators in Russia do not consider this element of the entrepreneurial ecosystem interesting for interaction, often misunderstanding the peculiarities of the work of accelerators within corporations.

Those few business incubators that have already established contact with corporate accelerators note that cooperation ultimately strengthens the ties of incubators with big business, which is very important for increasing the financial stability of incubators against the backdrop of market instability and a gradual optimization and decrease in funding from the state budget, as well as the overall efficiency of the entrepreneurial ecosystem.

If incubators consider corporate accelerators as their indirect competitor or alternative, they will inevitably lose because they are inferior to accelerators in many ways, including the amount of funding, the quality of services, and the attractiveness of the program for client companies. Corporate accelerators also need business incubators though, as the latter concentrate many innovative projects, especially in regions.

Given that the intra-corporate accelerator phenomena will continue to develop, business incubators need to rethink their approach and significantly expand their contacts with these structures.

## 4.4. Integration of Business Incubators with the major actors of entrepreneurial ecosystem in Russia

Having examined in detail the features of the interaction of business incubators with corporate accelerators, it makes sense to turn to other classical actors of the

entrepreneurial ecosystem. Corporate accelerators can be considered a relatively new phenomenon (especially in the Russian market), while business incubators have existed side by side with universities, venture funds, technology parks for a long time. As noted earlier, it is the system of relationships between participants that determines the quality and degree of development of the entrepreneurial ecosystem, in connection with which this issue seems to be especially important.

Answering the question regarding the entrepreneurial ecosystem actors that BIs have established sustainable long-term relations with respondents mainly named universities, other SME support infrastructure (technoparks, business accelerators), corporations, venture funds and local authorities. Table 4.4.1 contains the overall results which are followed by comments and notable quotations for each actor.

Table 4.4.1 — Percentage of classical and university business incubators which established long-term relations with other EE actors in Russia[364].

| EE Actor | Classical BIs | University BIs |
|---|---|---|
| Universities | 63% | 100% |
| Technoparks | 54% | 25% |
| Business Accelerators | 18% | 38% |
| Coworking Spaces | 0% | 13% |
| Corporations | 63% | 88% |
| Venture Funds | 45% | 75% |
| Business Angels | 27% | 13% |
| Expert Communities | 54% | 63% |
| Local Authorities | 100% | 50% |

The table shows that Russian BIs interact most closely with universities and corporations, while business accelerators, business angels and coworking spaces were named as long-term partners least often.

63% of classical BIs (participating in the in-depth interview) managed to establish sustainable long-term relations with universities – speaking about university incubators is of course irrelevant here. Although the percentage seems to be quite high, incubator representatives claim that the cooperation itself albeit constant yet not as intense as intended to be:

[364] Source: author's own.

– *"We work with several regional universities, mainly through mentoring and a number of educational trainings for our residents. But we don't see a constant flow of startup entrepreneurs from students and graduates of these universities – perhaps we should tell students about ourselves more often." (CBI)*

– *"The main direction of cooperation with local universities for us was the holding of startup marathons with subsequent admissions of the best projects to our business incubator." (CBI)*

– *"Our cooperation with universities is more of a formal nature – the university is interested in creating some activity related to business (they do not want to open their own incubator), and we hope to arouse students' interest in business. To be honest, the results are very modest: in the bottom line, these universities come to us with 3-4 projects a year." (CBI)*

– *"Our interaction gives rise to a lot of news stories in the press and on the resources of the university – they write about us and know about us. At the same time, over the years of work, we realized that no matter how close the business incubator is to the campus of the university, students are primarily interested in educational events and motivational trainings, but when it comes to applying to a business incubator, and especially residency, many of them just disappear." (CBI)*

Judging by the answers given above, it seems that cooperation with business incubators is not integrated into the educational process of universities in any way, but practically is an element of PR. Indeed, if, for example, students could defend their real business projects, worked out jointly with business incubators, as graduation works, this would serve as the basis for much closer and more productive interaction than holding startup marathons or meetings with representatives of incubators or their residents.

At the same time those business incubators who haven't established long-term cooperation with universities among reasons most commonly point out the lack of interest on part of universities:

– *"The paradox is that if there is no large university in the region, then small ones do not have the scale to be interested in business incubation. If there is a large university, then it either already has its own business incubator, or had one when it was*

*popular, and, having not received the expected result, it no longer wants to contact business incubators in any form." (CBI)*

– *"In general, there is nothing for universities now that they could get only from a business incubator. And in the public sector, as a rule, if you can do something on your own, then it's easier and more profitable to do it that way." (CBI)*

63% of classical BIs and 88% of university BIs managed to establish sustainable long-term relations with corporations, which is the second best overall score after universities but, according to respondents, this partnership also has many problems. It should be noted that the cooperation of business incubators with corporations, as a rule, comes down to the following: (1) holding "open innovation" competitions on the basis of incubators such as open innovation contests, case competitions, hackathons and other events, (2) subcontracting work on the expertise and consulting of innovative intra-corporate entrepreneurship projects and company spin-offs, (3) conducting trainings and improving qualifications of employees of companies associated with the development of innovative projects, (4) making BI residents and anchor tenants participate in corporate tenders or act as subcontractors, (5) cooperation with intra-corporate business accelerators (analyzed in detail in the previous paragraph).

Table 4.4.2 shows the percentage of classical and university business incubators which implement any of the forms of cooperation with corporations stated above (total can be more than 100% as some incubators indicate several options).

Table 4.4.2 — Shares of classical and university business incubators which implement different forms of cooperation with corporations in Russia[365].

| Type of Cooperation | Classical Business Incubators | University business Incubators |
|---|---|---|
| Open innovation projects | 27% | 50% |
| Expertise and consulting | 36% | 13% |
| Trainings for employees | 18% | 13% |
| Through resident companies | 45% | 25% |
| Through intra-corporate business accelerators | 27% | 37% |

[365] Source: author's own.

The most popular ways of cooperation are (4) for classical BIs and (1) for university BIs. For the first ones that is not good in terms of BI sustainability as only in the case (4) they get profit indirectly – not from the company but rather from the startup company for rent and additional services. For the university BIs, the situation is better as they are more often involved in open innovation projects (e.g., organizing open innovation contests or case competitions) and work more with intra-corporate accelerators. Overall, the shares presented in the Table 4.4.2 shed light on the real state and nature of this cooperation which turns out to be not favorable for business incubators.

Another problem which has a negative impact on the cooperation between incubators and companies is that, according to the in-depth interview respondents, most companies in Russia have poor experience in working with startup projects and efficiently integrating them into their business structure:

– *"It is the "techies", and not the company's management, who most often act as real customers of new technologies. The demand for final products within the corporation ultimately depends on the accuracy of their requests. That is the key reason why many companies fail in their cooperation with incubators and technoparks, as well as in creating their intra-corporate accelerators. In practice, most intra-corporate accelerators and joint programs with incubators are launched with the widest possible technological focus, without any selection criteria and a startup evaluation scale agreed upon with the technical specialists of the customer company, and therefore the real problems of the corporation often remain unresolved." (CBI)*

– *"It is very difficult to find quality managers within corporations who can effectively interact with business incubators. And this is not only a problem for our country: even such giants as Microsoft often hire external experts to implement their innovation initiatives. For the Microsoft Kinect Accelerator, for example, one of the leading business accelerators Techstars, whose team also worked with Qualcomm and Barclays, was involved." (CBI)*

– *"Last year, we held a hackathon for a company. The goal was to find a solution with the help of young teams that could increase the company's competitiveness*

*not only in Russia, but also in the global market. The event went well – in a few days, it was possible to develop high-quality and promising solutions with minimal costs. But then the question arose: "How to integrate this solution into the current business?" It turned out that the vision of the developers did not quite coincide with the requirements and goals of the customer corporation. It was not possible to find common ground, and as a result, the hackathon did not bring any results." (UBI)*

Indeed, in developed countries, the models of interaction between corporations and business incubators and startups are established much better. The project team can be hired, a share can be acquired in the project, or, conversely, a startup can be set free, but with the status of a partner (a contract is concluded as a supplier of a product / service, an agreement on the implementation of joint projects, on joint promotion).

For example, Microsoft provides partner startup projects and graduates of its acceleration programs with their own products, based on which startups develop their solutions, as well as access to participation in a variety of events hosted by Microsoft partners, free insurance (individual and for business) and vacancies from all organizations interacting with alumni. Thus, the company not only stays in touch with startup projects, but also increases the pool of its own clients.

At the same time, even Yandex, the largest player in the Russian IT market, mainly uses only two models of interaction with startups: either hires project teams, strengthening its own staff, or simply buys them (for example, the media service dedicated to movies and series Kinopoisk).

Speaking about relationships maintained by business incubators with other SME support infrastructure of their region, respondents named only technoparks, business accelerators and coworking spaces (just 1 university-based incubator). The cooperation between business incubators and technoparks is especially important as technoparks can act as the next stage in terms of scaling and growth for startup companies which finish BI program. At the same time technoparks can use business incubators to strengthen the influx of different projects and in the end attract more sustainable clients to the technopark – that is why the biggest technoparks such as STROGINO (Moscow) tend to establish their own business incubators which are in great demand from entrepreneurs.

Nevertheless, not all classical BIs (54%) and very few university BIs (25%) have established cooperation with technoparks which is seen by the author as a missed opportunity. Situation with business accelerators is even worse (although again they could act as the next step for some startup projects after the BI program making the latter a 'filter' and additional source for accelerators and at the same time creating more value for those projects who apply to business incubator) while other support facilities and organizations even were not mentioned at all.

Probably the biggest pain for business incubators in Russia is the work with venture funds and especially business angels. Respondent claim that the main reasons for that are the specifics of the Russian venture market where investors (as well as business angels) are not willing to take risks and are seeking for the most reliable startup projects which already have an existing product and market sales:

– *"Any conversation with representatives of venture funds begins with the fact that they are ready to listen to the pitches of our residents and invest in the best projects right today, but it all ends with the fact that no one gives money – even to those projects with high potential. The truth is that our venture market is in fact not so venture – investors are afraid to take risks and offer money at later stages (essentially for scaling an already operating business), but at the same time they set the conditions as if they are investing at the pre-seed stage." (UBI)*

– *"Domestic venture funds have showed themselves not in the best way, we observe 2 trends. Firstly, they often invest in foreign startups because they cannot choose worthy candidates among ours. Secondly, our strongest startups more often go to foreign venture investors, because there are better conditions and further development prospects. It turns out that cooperation does not add up, and we, as an incubator, can do nothing about it." (CBI)*

– *"Venture funds themselves are not as interesting as acceleration programs, because the latter have it all: finance, expertise, and a focus on a specific result in a specific industry. Due to the fact that the financing and development of projects is carried out by the same organization, its attractiveness for startups is higher (saving*

*time), and the effectiveness is also higher compared to that of the incubator-venture fund linkage." (CBI)*

Overall, BI representatives evaluate the level of access of SMEs and startup projects to financing and venture investments as low as the concept of venture financing in Russia is not quite right, the banks are willing to lend money only to the standard businesses therefore not stimulating the most innovative projects, the culture of crowdfunding is not as developed in Russia as in the US and Europe while corporations are more likely to acquire startup business rather than support it by affordable investment or contracts. What is more, even in cases when business incubators have established long-term cooperation with venture funds and investors, not a single respondent approved that their residents had any priority or privileges in that instance.

The cooperation with local authorities was strengthening and emerging in the last years in the case of classical BIs as their financing was gradually shifting from federal budget to regional. Those incubators which survived that change do their best to maintain their links with officials as they highly depend on their support. The drawback for startups in the form of high bureaucracy when applying for grants and tenders is partly solved by the incubators themselves as they deal with the matter as an additional service for startups.

Still, it turns out that there is some contradiction here also as authorities tend to think that there is little to no difference between incubators and legal service centers for entrepreneurs. That explains why with the shift of financing of BIs and the decline in interest in incubators from the state, some local authorities transformed business incubators into those centers which makes no sense as legal services have nothing to do with business incubation.

University BIs are of course less dependent on the support from local authorities – that cooperation is indirect as it comes through their university. They try to participate in various grants which are aimed at fostering entrepreneurship and suggest their facilities as a platform for various projects run by the government. Interestingly, the COVID-19 pandemic did not change the intensity of that cooperation as it was already at a very high level and the only thing that changed was the vector.

Thus, the overall results of the in-depth interviews leave us with a thought that business incubators in Russia occupy a rather isolated position, which can partly be explained by the lack of system and inconsistency of state support for the ecosystem as a whole. This level of isolation is so high that most BIs pay very low attention to relatively new and very popular actors of EE like intra-corporate business accelerators which could potentially make business incubators more sustainable and attractive for startups in the case of close cooperation, but in the context of ‘isolation’ act rather as a competitor.

# CONCLUSION AND RESEARCH RECOMMENDATIONS

This part of the thesis provides an overview of the research with an overview of the most critical insights and summary developed in each Chapter.

In Chapter 1, the theoretical background of the "entrepreneurial ecosystem" phenomenon was studied. In modern literature, an entrepreneurial ecosystem is described as a set of actors that interact and exchange resources in a network under an institutional regime and an infrastructure[366]. Entrepreneurial ecosystem also has a number of allied concepts such as national innovation system (NIS), regional innovation system (RIS), cluster theory, etc. which were also discussed. An important principle on which ecosystem is based is the close connection and interaction between all its components and key actors. The EE components (sometimes also called factors or attributes) vary across literature from six to twelve elements divided in recent studies into systemic and framework conditions[367].

Although the very concept of entrepreneurial ecosystem implies that it should be all-sufficient and independent from external support, nevertheless most researchers put government as an integral part of the ecosystem and agree that EE is not likely to become efficient without creation of necessary initial circumstances. As a result of the analysis made in the Chapter 1, a set of research questions were formulated, including the following: (1) What are the specific features of EE and BI models in emerging economies such as China and India compared to developed ones (US, Europe)? (2) What are the characteristics of BIs in Russia, how did they change during the last decade and how do they stand up to the world average? What challenges do Russian BIs currently face, why and how can they be solved?

Chapter 2 contains a detailed comparative analysis of the American, European, Indian and Chinese models of business incubators in the context of EEs as well as the

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[367] Stam E. Entrepreneurial ecosystems and regional policy: a sympathetic critique // European Planning Studies. 2015. Vol. 23. No. 9. P. 1759–1769.

main specifics of government policy in the field of entrepreneurship support and innovative infrastructure development. Comparing business incubators in the US, Europe, China and India, business incubator models can be generalized into two types. The first type is an inclusive model that involves maximizing the effectiveness of government measures through the development of innovative technologies and the sustainable economic development of regions through active initiatives from local communities and entrepreneurship (USA, Europe). The second type is the exclusive model, which is the incubator development program in China and India: this model implies that federal governments administratively integrate incubators into the local community to reform the research sector. This concept is often regarded as successful, although it relies largely on foreign funding and assistance. Economies following this approach often use foreign assistance to hasten the emergence of strong entrepreneurial institutions.

In general, it can be concluded that, thanks to consistent state policies in the field of innovative development and support for entrepreneurship, China and India are rapidly catching up with developed countries in many important indicators, including the number of business incubators, startups, unicorn companies, etc. However, given the parameters of business incubators in emerging economies, there are still shortcomings, including the higher mortality rates of startup projects and the predominance of simple typical businesses among resident companies. The author thinks that these features are interconnected, as for many entrepreneurs with those simple businesses who turn to business incubators (due to the fact that the entrepreneurial ecosystem, unlike in the US or Europe, does not yet provide conditions favorable enough for their independent launch), greenhouse conditions are artificially created inside those BIs. So, as soon as these businesses exit the business incubator, they immediately face an aggressive market environment and have a smaller chance to survive.

In Chapter 3, the current state of Russian business incubation was studied in detail, covering the generalized background in the form of EE key elements and features, overall state of SME, as well as support legislation drawbacks and challenges. The latter do not allow SMEs, on the one hand, to receive a tangible incentive for development,

and on the other hand, to become the main driver of economic innovative development. It is evident that the Russian legislation in the area of business regulation lacks specificity: it provides a very simplistic classification of SMEs and does not consider the changing needs of businesses based on their age, status, and innovative activity, focusing frequently on types of support that are not the most crucial. These issues need a more adaptable grouping of small and medium-sized enterprises by kind of economic activity. It is practical to complement the current "basic" standards with more sophisticated criteria that would limit the spectrum of businesses eligible to receive various types of public support. Thus, SMEs, depending on the specifics, nature and duration of their activities, can count on different sets of support measures and benefits, which are more adapted to their needs. Another problem is low awareness of entrepreneurs about the existing support measures which did not improve even during the pandemic.

The data on dynamics in SME number and employment points to an unhealthy trend of small businesses being “washed out” from the Russian economy, associated with the growing mortality of small enterprises and the consolidation of medium-sized businesses.

The development specifics and trends of business incubation in Russian Federation for about a decade were revealed through the analysis of consecutive surveys conducted from 2012 to 2020. The study shows that during the period in question business incubators in Russia have undergone a number of external positive changes, including increased square space, staff quantity, average annual number of residents, annual budget, etc. At the same time, the total number of business incubators also significantly dropped which means that all of the above positive changes do not reflect the growth of the business incubation market and the scaling of the most effective structures, but on the contrary, its optimization. Growth of Russian business incubation in 2004-2005 rather quickly changed to a stage of maturity, at which the main problem areas became aggravated: low activity and interest of entrepreneurs in BI services (largely due to the emergence of alternative opportunities), difficulty in obtaining startup capital at the preseeding stage, lack of professional staff, low entrepreneurial culture.

In Russia, the main source of BI income is still budget financing (and this dependence only increased during the studied period), while on average business incubators in the world provide themselves by 60% through rental payments from client companies and additional paid services. Also, almost half of the funds in Russian BIs go to staff salaries, while in the world the main item of expenditure is the incubation programs development, scaling, and modernization. All this shows that business incubators in our country are a weak element of entrepreneurial ecosystem and the focus which was made on them in mid 2000s had no practical results without the complex EE development.

As a result of the analysis conducted in Chapter 3, a number of additional questions were formulated for in-depth interviews with selected BI representatives, so Chapter 4 is dedicated to the detailed explanation of in-depth interview methodology, data collection process and results discussion. Answers to all of those question help better understand the challenges business incubators currently face in Russia, reasons to their recent consolidation as well as possible ways out.

First, the influence of the COVID-19 pandemic on the state of Russian BIs was studied, and the results were quite contradictory. On the one hand, new realities forced business incubators to partially restructure internal processes, revise training programs and modernize infrastructure, but this did not lead to the mass emergence of virtual business incubation programs, which are becoming a new standard in many developed countries (“third generation incubators”). This can be explained by the inconsistency of state policy in the field of supporting SMEs and the implementation of anti-COVID measures in general, bureaucratic complexities and high dependence of business incubators on state funding.

Second, the phenomenon of intra-corporate accelerators was studied in the context of entrepreneurial ecosystem and their interaction with business incubators. The corporate business accelerator industry in Russia is currently experiencing a boom that has gone through the pandemic and continues to gain momentum. An unexpected result of the study was that representatives of many business incubators in Russia do not consider this element of the entrepreneurial ecosystem interesting for interaction, often

misunderstanding the peculiarities of the work of accelerators within corporations. At the same time, many business incubator representatives claim that in Russia there is lack of experienced managers who could run an acceleration program effectively and as a result there is often a problem with integration of the projects and products created in the process of acceleration into the business.

The cooperation between BIs and corporate accelerators ultimately strengthens the ties of incubators with big business, which is very important for increasing the financial stability of incubators against the backdrop of market instability and a gradual optimization and decrease in funding from the state budget, as well as the overall efficiency of the entrepreneurial ecosystem. If incubators consider corporate accelerators as their indirect competitor or alternative, they will inevitably lose because they are inferior to accelerators in many ways, including the amount of funding, the quality of services, and the attractiveness of the program for client companies.

Third, the level of interaction of BIs with other key actors of entrepreneurial ecosystem (universities, technoparks and accelerators, venture funds and investors, local authorities, etc.) was studied. The study shows that business incubators occupy a rather isolated position, which can partly be explained by the lack of system and inconsistency of state support for the ecosystem as a whole. This relative disunity of EE participants in Russia seems to be one of its specific features; in particular, business incubators occupy a rather isolated position, which can partly be explained by the lack of system and inconsistency of state support for the ecosystem as a whole. This level of isolation is so high that most BIs pay very low attention to relatively new and very popular actors of EE like intra-corporate business accelerators which could potentially make business incubators more sustainable and attractive for startups in the case of close cooperation, but in the context of ‘isolation’ act as a competitor.

While in the world practice the level of development of business incubation directly depends on the degree of development of the entrepreneurial ecosystem, in Russia, as a result of the study, it was revealed that with the development of the entrepreneurial ecosystem in terms of the number and diversity of participants, business incubators on

the contrary lose their uniqueness and are forced to look for new ways of development for increasing attractiveness for startups.

In terms of theoretical studies, the main contributions of the thesis can be formulated in several points:

(1) In the context of Russia, the concept of an entrepreneurial ecosystem has features that, on the one hand, characterize it as an exclusive model (as in the case of other developing countries), but at the same time, in some aspects, significantly distinguish it from the ecosystems of emerging economies like China and India. In particular, a weak system of internal connections and communications between EE players leads to the fact that they can compete, duplicating each other's functions (for example, business incubators, accelerators and intra-corporate BIs). This feature, which is not discussed in the literature, requires more attention and testing in other emerging markets with under-developed entrepreneurial ecosystem.

(2) The approach of analysing classical BIs and university-based BIs separately used in the paper proves to be correct for emerging countries as these two types of incubators may differ very much both in key parameters of activity (the number of residents, the focus of projects, the area, the amount of funding, etc.), and in terms of the level of integration into the entrepreneurial ecosystem of the region. The in-depth interviews conducted by the author also show that major difference. Although the nature of this difference is yet to be conceptualized, the future studies (e.g., in other developing economies) may like to consider and test that approach when trying to understand their EE.

In terms of practical implication of the study, the findings from the phenomenon analyzed have brought the following developments that can be accepted as recommendations to practice and policy:

1. Given that the intra-corporate accelerator phenomena will continue to develop, business incubators need to rethink their approach and significantly expand their contacts with these structures, otherwise there can be even bigger decline in the amount of BIs in the future.

2. Federal authorities should be more consistent with the policy for entrepreneurship support and pay equal attention to all actors of EE, as the shift in focus of that policy (e.g., from business incubators to legal service centers for entrepreneurs “My Business”) ruins most of the achieved results and what is even worse, disorients startup entrepreneurs and makes them unsure of the effectiveness of support tools.

3. Local authorities should focus more on establishing intense and constant connections between all EE actors, this cooperation is so important in terms of EE development that it should be set among KPIs of incubators, technoparks, etc. Although this cooperation is not possible to maintain artificially, the very need to communicate with other actors will definitely increase the number of links inside EE and enable it to reach more of its potential.

4. The specific regulation of intra-corporate business accelerators should be implemented which would stimulate companies to incorporate business incubators and their infrastructural and intellectual resources into the acceleration programs (e.g., by compensating some of the expenses on that). Without stimulating those connections business incubators will inevitably reduce the scale of their activities, so decades of work and huge resources spent on the development of this industry will be lost.

5. It is necessary to develop legislation in the field of regulation of virtual business incubators, including reporting rules and funding procedures that would take into account the provision of services to entrepreneurs throughout the country. This initiative would significantly expand the ability of business incubators to independently attract financial resources and develop a business incubation program, giving them the opportunity to approach third-generation business incubators.

# LIST OF ABBREVIATIONS

| | |
|---|---|
| AI | Artificial Intelligence |
| AR | Augmented Reality |
| BA | Business Accelerator |
| BI | Business Incubator |
| CBI | Classical Business Incubator |
| EE | Entrepreneurial Ecosystem |
| IS | Innovation System |
| IT | Information Technology |
| MFC | Multifunctional Centers (for the provision of state and municipal services in Russia) |
| MR | Mixed Reality |
| NGS | National Guarantee System |
| NIS | National Innovation System |
| RIS | Regional Innovation System |
| SME | Small and Medium-sized Enterprises |
| STEE | Small Town Entrepreneurial Ecosystem |
| TNC | Transnational Company |
| TP | Technopark |
| UBI | University-based Business Incubator |
| VBI | Virtual Business Incubator |
| VC | Venture Capitalist |
| VR | Virtual Reality |

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# APPENDIXES

## Appendix A

In-depth interview questions (2021–2022)

**1. How has the COVID-19 pandemic situation affected the BI activities?**

– Has the COVID-19 pandemic affected the number of business incubator residents, and if so, in what direction and how much?

– How did the consequences of COVID-19 affect the level of occupancy of the space allocated for the resident companies?

– Has the composition of resident companies and anchor tenants changed in terms of business fields, type of ownership, size, etc.?

– How and to what extent did the shift to online activities take place? Has the business incubator implemented trainings, admissions, mentoring, pitching, etc. in an online format?

– Has the business incubator launched an online business incubation program and, if so, how is it organized?

– How has the COVID-19 pandemic affected internal organizational structure and processes?

– Have current residents switched to online strategies and how BI helps?

– Has the government supported residents during the COVID-19 pandemic?

**2. The funding of BIs has shifted from federal to regional budgets recently. What impact does it have on your BI?**

– What changed does this shift bring to funding mechanics, amounts of financing, annual goal for BI and/or ways of reporting?

– What efficiency metrics are used when BI gets funding from the federal or regional budget?

– Is funding from federal or regional budget is linked in any way to BI yearly outcomes of BI to its staff?

– Does the shift of BI funding from federal to regional level grant you and your team any freedom in implementing additional ways of monetization (commercial services, etc.)?

**3. Could the trend of intra-corporate business incubators and business accelerators creation become a new driver of the BI industry in Russia? Has the level of interaction between your BI and corporate sector risen and in what directions (open innovation, etc.)?**

– Could you share the best cases of cooperation with corporate sector and their intra-corporate SME development infrastructure?

– Can those intra-corporate business incubators and accelerators be considered as competitors as they attract regular incubators' potential clients and residents?

– Has the focus in the business incubation industry changed in any direction because of the activities of intra-corporate incubators and accelerators? Are there more specialized BIs (particularly industry focused) now?

**4. With which entrepreneurial ecosystem (EE) actors have you established sustainable long-term relations? How does these relations help you to achieve your goals?**

– Have you managed to establish sustainable long-term relations with universities in your region? Are there any joint programs or projects? Are there university business incubators in universities of your region and do you cooperate?

– Do you maintain relationship with other SME support infrastructure of your region – technoparks, business accelerators, coworking spaces, hubs, etc.?

– Do you communicate with corporations in any way – e.g., making open innovation projects for companies or cooperating with intra-corporate business accelerators? Do your residents often act as subcontractors for the corporations or participate in their tenders?

– Do you work with venture funds or private angel investors on federal or regional basis? How can you evaluate the level of access of SMEs and startup projects to

financing and venture investments? Do your residents have any priority or privileges in that instance?

– Are there any expert communities in your region and do you have any relations with them – e.g., inviting their representatives as mentors, speakers or Advisory Board members?

– Do you cooperate with local authorities? Do you do that more actively due to the influence of COVID-19? In what kind of grants, tenders, support programs do you participate?

## Appendix B

Table B1 — Respondents of the in-depth interviews (2021–2022)[368].

| # | BI Name | Contacts | Respondent (BI manager or director) |
|---|---|---|---|
| 1 | Municipal Autonomous Institution "Agency for Economic Development", managing company of the Togliatti Business Incubator | +7 (8482) 31-00-06<br>mail@biznes-63.ru<br>biznes-63.ru | Shaikhutdinov Nazir Faritovich |
| 2 | Business incubator of the Institute of Economics and Management, Pyatigorsk | +7 (8793) 97-44-65<br>info@ineu.ru<br>ineu.ru | Vazagova Fatima Viktorovna |
| 3 | Business Incubator of Sochi State University, Sochi | +7 (918) 400-86-34<br>o.v.bergen@yandex.ru<br>https://sochi-startup.ru/ | Bergen Olga Vladimirovna |
| 4 | Business incubator of Academpark, Novosibirsk | (383) 344-93-13<br>incubator@academpark.com<br>http://incubator.academpark.com/ | Golubev Alexey Olegovich |
| 5 | Center for startup entrepreneurship "MGIMO University Business Incubator", Moscow | +7 (495) 234-58-26<br>bimgimo@gmail.com<br>https://mgimo.business | Khotyasheva Olga Mikhailovna |
| 6 | Student business incubator OREH of the North-Eastern Federal University, Yakutsk | +7 (914) 222-28-55<br>sbioreh@gmail.com<br>s-vfu.ru | Lazareva Anisiya Kuzminichna |
| 7 | Municipal State Institution "Perm Business Center", Perm | 20-185-00<br>incubatorperm@gmail.com<br>http://incubatorperm.ru/ | Khabibullin Ruslan Raisovich |
| 8 | Municipal Budgetary Institution "Biysk Business Incubator", Biysk | (3854) 30-70-01<br>meneger.biit@mail.ru<br>http://www.incubator22.ru | Korobshchikova Tatyana Sergeevna |
| 9 | Sectoral agrarian business incubator RGAU-MSHA named after K.A. Timiryazev, Moscow | +7 (499) 977-14-33<br>sabi@rgau-msha.ru<br>sabi.timacad.ru | Zykov Sergey Anatolievich |
| 10 | Business incubator of Technopark "STROGINO", Moscow | +7 (495) 248-00-88<br>info@tpstrogino.ru<br>http://www.tpstrogino.ru/ | Teplov Sergey Vladimirovich |
| 11 | Business Incubator of Plekhanov University, Moscow | +7 (495) 800-12-00<br>extensions 1779, 1827<br>bi@rea.ru<br>https://www.rea.ru/ru/org/managements/Pages/Biznes-inkubator.aspx | Brewer Vyacheslav Borisovich |

[368] Source: author's own.

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|---|---|---|---|
| 12 | Budgetary institution of the Omsk region "Omsk regional business incubator", Omsk | +7 (3812) 90-46-44<br>info@omrbi.ru<br>www.omrbi.ru | Sobolev Viktor Yurievich |
| 13 | State Institution "Nizhny Novgorod Innovative Business Incubator", Nizhny Novgorod | +7 (831) 275-80-20<br>info@bi-clever.ru<br>bi-clever.ru, itpark-nn.com | Radaev Timur Viktorovich |
| 14 | Business incubator "Ingria" (JSC "Technopark of St. Petersburg"), St. Petersburg | +7 (812) 670-10-85<br>startup@ingria-park.ru<br>https://ingria-startup.ru | Urosova Elizaveta Andreevna |
| 15 | Autonomous non-profit organization "Business Incubator of the Republic of Mari El", Yoshkar-Ola | +7 (8362) 21-02-20<br>info@bink12.ru<br>http://bink12.ru | Porokhnya Alexander Alexandrovich |
| 16 | Murmansk Regional Innovation Business Incubator, Murmansk | +7 (8152) 43-29-49<br>info@mribi.ru<br>www.mribi.ru | Skryganov Denis Alexandrovich |
| 17 | Business Incubator "Impulse", Penza region, Zarechny | +7 (8412) 60-00-26<br>in.impulse@gmail.com<br>http://www.bi-impulse.ru/ | Klimanov Denis Evgenievich |
| 18 | Higher School of Economics Business Incubator, Moscow | +7 (495) 772-95-90<br>extension 23461<br>hse.inc@gmail.com<br>hseinc.ru | Erman Mikhail Anatolievich |
| 19 | Non-profit Partnership "Innovative Technology Center MATI", Moscow | +7 (985) 789-23-32<br>lab@itcmati.ru<br>www.itcmati.ru | Sergey Borisovich Sharenkov |