DOI: 10.29141/2218-5003-2021-12-5-6 **JEL Classification:** M13, L26, L25

Serial entrepreneurs' strategies for innovative business: A typology and assessment

Pavel L. Glukhikh¹, Alla N. Golovina²

¹ Institute of Economics of the Ural Branch of the RAS, Ekaterinburg, Russia

Abstract. In the context of uncertainty, the problem of insufficient economic involvement of the Russian population is becoming increasingly acute, and it should be resolved to stimulate the country's technological development. At the same time, the state administration ignores the significant potential of serial entrepreneurs in setting up new companies. The paper assesses the strategies followed by serial entrepreneurs when creating innovative business and develops their typology. The theories of entrepreneurship and strategic management, as well as the concept of serial entrepreneurship constitute the methodological basis of the study. Among the research methods are retrospective, case and indicative analysis. The information base includes the data retrieved from the SPARK database on the activities of Russian technology entrepreneurs included in the TechUspekh-2019 ranking. The article provides a comprehensive definition of serial technology entrepreneurship embracing its two varieties – sequential and parallel entrepreneurship. Based on retrospective analysis, the authors formulate their own typology of strategies for setting up innovative companies by serial entrepreneurs: cross-sectoral non-technological and sectoral technological diversification, sectoral and cross-sectoral search (accumulation). We highlight the importance of establishing subsequent businesses and propose a set of methods for assessing the effectiveness of the strategies. The research results indicate that the strategy "From technological services to production" proves to be the most effective and beneficial in term of cumulative performance. The study empirically tests the assumption about high performance of serial technology entrepreneurs and provides the outcomes achieved by public authorities when introducing the developed recommendations to stimulate positive serial entrepreneurial behaviour.

Keywords: serial entrepreneurship; innovative business; effectiveness; company strategy; a firm start; serial entrepreneurial behaviour; technology entrepreneurship.

Funding: The paper was funded by the grant of the Russian Science Foundation, project no. 20-78-00063.

Paper submitted: June 11, 2021

For citation: Glukhikh P.L., Golovina A.N. (2021). Serial entrepreneurs' strategies for innovative business: A typology and assessment. *Upraylenets – The Manager*, vol. 12, no. 5, pp. 84–95. DOI: 10.29141/2218-5003-2021-12-5-6.

Стратегии серийных предпринимателей при создании инновационного бизнеса: типология и оценка

П.Л. Глухих 1 , А.Н. Головина 2

Аннотация. В условиях неопределенности обостряется проблема недостаточной экономической активности населения, которая требует решения для обеспечения технологического развития России. Вместе с тем в российском государственном управлении не учитывается потенциал серийных предпринимателей в создании новых компаний. Статья посвящена разработке типологии и оценке стратегий создания серийными предпринимателями инновационного бизнеса. Методологию исследования составили теории предпринимательства и стратегического управления и концепция серийного предпринимательства. Методами работы выступили ретроспективный анализ, анализ кейсов и индикативный анализ. Информационной основой послужили сведения базы данных «СПАРК» о деятельности российских технологических предпринимателей, в 2019 г. вошедших в рейтинг «ТехУспех». Разработано комплексное определение серийного технологического предпринимательства, учитывающее две его разновидности – последовательное и параллельное предпринимательство. На основе ретроспективного анализа по признакам технологичности и очередности создания бизнеса сформирована авторская типология стратегий создания предпринимателями инновационных компаний: межотраслевая нетехнологическая и отраслевая технологическая диверсификация, отраслевой и межотраслевой поиск (накопление). Установлена востребованность открытия последующих бизнесов. Разработан авторский методический инструментарий оценки результативности стратегий. Его апробация подтвердила, что самой выгодной по совокупной результативности является стратегия «От услуг в технологической сфере к производству». Теоретическая и практическая значимость исследования состоит в эмпирической проверке предположения о высокой результативности серийных технологических предпринимателей и внедрении разработанных рекомендаций органами власти для активизации положительного серийного поведения.

Ключевые слова: серийное предпринимательство; инновационный бизнес; результативность; стратегии компании; создание бизнеса; серийное поведение; технологическое предпринимательство.

² Ural State University of Economics, Ekaterinburg, Russia

¹ Институт экономики УрО РАН, г. Екатеринбург, РФ

² Уральский государственный экономический университет, г. Екатеринбург, РФ

Финансирование: Исследование выполнено за счет гранта Российского научного фонда (проект № 20-78-00063).

Дата поступления статьи: 11 июня 2021 г.

Ссылка для цитирования: Glukhikh P.L., Golovina A.N. (2021). Serial entrepreneurs' strategies for innovative business: A typology and assessment // Управленец. Т. 12, № 5. С. 84–95. DOI: 10.29141/2218-5003-2021-12-5-6.

INTRODUCTION

In the context of economic turmoil, it is of strategic importance to address the issue of poor entrepreneurial activity of the Russian population to ensure the sufficient technological development of the country. This problem is due to the following factors.

- 1. The level of technological innovation in Russia is low. According to the Federal State Statistics Service (Rosstat), only 20.8 % of Russian companies were involved in technological innovation in 2017; in 2018, this share reduced to 19.8 %; and only in 2019, a moderate growth to 21.6 % was recorded¹. One of the numerous reasons behind this situation is a lack of business entities introducing innovation.
- 2. A failure to completely implement the state priority of increasing the number of business entities as a source of economic growth. Through the development of entrepreneurship, the country's leaders expect to resolve social problems, such as growing unemployment and poverty rates. In view of this, it is necessary to reach the target of the national project "Small and Medium-Sized Enterprises and Support for Individual Entrepreneurial Initiatives": "by 2024, the number of workers employed in small and medium-sized businesses, including sole entrepreneurs, will be at least 25 million people" (in 2020, this number was 22.9 million²). According to the Global Entrepreneurship Monitor data, in 2019, Russia was ranked the 13th of 23 countries of Europe and North America by the total early-stage entrepreneurial activity [Verkhovskaya et al., 2020, p. 38].
- 3. This is not the general population in Russia but active entrepreneurs wishing to start another company (the so-called "serial entrepreneurs") who demonstrate the greatest potential in setting up innovative business, especially a technological one. For instance, in 2019, 60 % of entrepreneurial initiatives were launched by the acting businesspeople [Verkhovskaya et al., 2019, p. 27]. A considerable practical and research interest in the phenom-

¹ The share of organizations that carried out technological innovations in the reporting year, in the total number of surveyed

organizations. Rosstat. https://www.gks.ru/folder/14477.

enon of serial entrepreneurs is due to foreign academic publications emphasizing their increased performance (in comparison with non-serial entrepreneurs) because of operating not a single, but several companies.

The study aims to develop and test the theoretical provisions on the strategies adopted by serial entrepreneurs to establish innovative business in Russia. To achieve the stated purpose, the following objectives were attained:

- 1) to generalize the theoretical and methodological approach and clarify the definition of the term "serial technology entrepreneurship";
- 2) to identify the strategies followed by successful serial technology entrepreneurs when starting new (including innovative) businesses and propose their typology;
- 3) to develop and test a new methodological toolkit for evaluating the effectiveness of serial technology entrepreneurs' strategies and formulating practical recommendations for government authorities.

The novelty of the research lies in the empirical verification of the assumption about the significant performance demonstrated by Russian serial technology entrepreneurs.

SERIAL TECHNOLOGY ENTREPRENEURS AS A DISTINCT SOURCE OF BUSINESS

The existing studies discuss various aspects of both the functioning of serial entrepreneurs and their effectiveness in creating a new business. However, the array of the research has a number of special features.

Firstly, the methodological foundations of the concept of serial entrepreneurship are highlighted. Storey [1989] became one of the first researchers to address the phenomenon of serial entrepreneurship. He found that many owners of fast-growing small firms had a percentage ownership in one or more other businesses. Moreover, the behavioural pattern of multiple ownership is quite stable. For example, Hyytinen and Ilmakunnas [2007] conducted a longitudinal survey of employees and found that those with entrepreneurial experience were more likely to aspire to again become entrepreneurs. Subsequently, the researchers analyzed in more detail the role of the entrepreneur in this process: whether they created a new business themselves or invested in someone else's firms.

Analysis of the definitions of the term "serial entrepreneurship" allows us to conclude that scholars adhere to several theoretical approaches to interpreting its content (Table 1).

² Maxim Reshetnikov: in 2020, the number of people employed in SMEs increased to 23 million people. Official website of the Ministry of Economic Development of the Russian Federation. https://www.economy.gov.ru/material/news/maksim_reshetni-kov_v_2020_godu_chislennost_zanyatyh_v_msp_vyrosla_do_23_mln_chelovek.html#:~:text=Общее%20количество%20занятых%20в%20МСП,в%202019-м%22%2С%20-%20подчер-кнул%20он.

Table 1 – Theoretical approaches to the essence of the term "serial entrepreneurship" Таблица 1 – Теоретические подходы к сущности термина «серийное предпринимательство»

Authors	Definition					
No type of serial entrepreneurial behaviour distinguished						
Holmes and Schmitz [1990]	Serial entrepreneurs are those individuals who decide to sell (or close) their business if they find that someone else has a better ability to develop it					
Sequential serial entrepreneurial behaviour						
Stam, Audretsch and Meijaard [2006]	Renascent entrepreneurs are those who are more likely to have successfully sold their prior business before a new firm start					
Landier and Thesmar [2008]	Serial entrepreneur is a businessperson who has started at least one business before this one					
Baptista, Karaöz and Mendonça [2014]	Serial entrepreneurs are those individuals who start a business subsequent to selling or closing					
Vaillant and Lafuente [2019]	Serial entrepreneurs are individuals who consistently move from the development of one enterprise to another					
Parallel serial entrepreneurial behaviour						
Amaral, Baptista and Lima [2008]	Serial entrepreneurs are individuals who own several businesses simultaneously, i.e. have stakes in two or more independent ventures					

The literature analysis shows that since the 2000s researchers have distinguished between two types of serial entrepreneurial behaviour: sequential and parallel entrepreneurship.

Sequential entrepreneurship refers to the activity of entrepreneurs who have already had a prior business [Landier, Thesmar, 2008] and started a new one [Stam, Audretsch, Meijaard, 2006; Baptista, Karaöz, Mendonça, 2014]. At that, their previous business was either successfully sold [Stam, Audretsch, Meijaard, 2006; Baptista, Karaöz, Mendonça, 2014] or closed [Baptista, Karaöz, Mendonça, 2014]. Eggers and Lin [2014] found that serial entrepreneurs whose previous business failed were more likely to set up their new business in a different industry.

Parallel entrepreneurship is the activity of an individual (entrepreneur) who aspires to expand their business by establishing several ventures [Amaral, Baptista, Lima, 2008]. In Russia, the concept of parallel entrepreneurship was first used in the international project "Global Entrepreneurship Monitor". The phenomenon of parallel entrepreneurship is regarded by researchers as a strategy for reducing the risk and losses of the existing business by giving it an umbrella structure [Filatova, 2010]. In this case, the term "strategy" is utilized in its broad sense. The Economic Dictionary defines strategy as a plan of actions in the context of uncertainty¹. Since the described approaches characterize different behavioural patterns of entrepreneurs, it is of importance to explore both sequential and parallel entrepreneurship.

A number of studies (see, for example, [Amaral, Baptista, Lima, 2008]) interpret serial entrepreneurship as the activity of an individual aimed at expanding their business, among other things, through partial or full ownership of another business. The main disadvantage of this approach

is that serial entrepreneurship is partially substituted with cross-investment or redistribution of property by considering the entrepreneur's participation in the capital of the existing companies, but not in creating a business. We believe that it is necessary to determine the existence of serial entrepreneurship based the entrepreneur identifying characteristics, such as risk-related activities [Sombart, 1994, p. 57]; profit generating activities [Smith, 2009]; combination of factors of production [Say, 2000]; initiative and innovation [Schumpeter, 2007]; special economic thinking and behaviour [Chepurenko, 2012], etc.

Secondly, some research studies investigate the increased performance of serial entrepreneurs in creating new business. The correlation between companies' fast growth and serial entrepreneurial behaviour, first revealed by Storey [1989], was attributed to a positive relationship between the growth of several businesses in which this entrepreneur was involved. Wright, Robbie and Ennew [1997] undertook one of the first attempts to compare the performance of serial and non-serial entrepreneurs using the sample of businesspeople from the UK. The data obtained did not demonstrate a significant difference between the performance of serial and earlystage entrepreneurs. Later, venture capitalists were added to the group for analysis. While comparing entrepreneurs from Scotland, Westhead, Ucbasaran, Wright and Binks [2004] find that venture capitalists are more productive due to having access to more diverse resources. The fact that the researchers do not view venture capitalists as serial entrepreneurs supports the position stating that the entrepreneur's dominant role in initiating a second or subsequent company is one of the signs of serial entrepreneurial behaviour. Later, the great performance of serial entrepreneurs was repeatedly confirmed by researchers from different countries (see, for example, [Chen, 2013]). Shaw and Sørensen [2017] prove that companies owned

¹ Strategy. The Economic Dictionary. https://dic.academic.ru/dic.nsf/econ_dict/19736.

by serial entrepreneurs in Denmark have higher sales (67% higher than non-serial entrepreneurs) and better capital and labor productivity (39% higher). One of the central reasons behind such indicators is that entrepreneurs gain their own useful experience, i.e. learning by doing [Simmons et al., 2016; Birley, Westhead, 1993].

The concept of serial entrepreneurship in advanced economics is seen as the reason for the increased performance of companies. However, this concept was not properly worked out in Russia. There are only a scarce number of empirical studies by Russian scholars on the topic, therefore, it is impossible to determine the significance of serial behaviour and the expedience of stimulating serial entrepreneurship in Russia.

Based on the analysis of the scientific approaches to the concept of technology entrepreneurship [Andreeva et al., 2016; Glukhikh, Krasnykh, Osintsev, 2019, p. 18] and the concept of serial entrepreneurship, the authors formulate their own generalizing definition. Serial technology entrepreneurship refers to simultaneous (or sequential) activities of an individual or a group of individuals that includes: 1) owning the existing business or establishing a new one after selling/closing the prior firm; 2) initiating, creating and developing a second (subsequent) fully functioning business that produces innovative goods, works, and services with greater value added based on advanced scientific achievements and technologies.

This expanded definition covers both types of serial entrepreneurial behaviour – parallel and sequential. A mandatory feature of serial technology entrepreneurship is the creation of a second or subsequent business entity producing innovative goods and/or services. The scientific significance of the proposed term lies in the possibility to empirically verify the assumption about the significant performance of Russian serial technology entrepreneurs. In today's situation, increased performance can partially compensate for the insufficient entrepreneurial activity of the population.

The existing methodological toolkit does not allow assessing the strategies of serial entrepreneurs. Therefore, the authors made an attempt to identify, propose a typology and evaluate the strategies adopted by Russian serial entrepreneurs when setting up innovative business.

RESEARCH METHODS AND MATERIALS

To uncover the strategies, we applied a retrospective analysis of entrepreneurial activity focused on creating new economic entities, including those engaged in the production of innovative products. The actual performance of serial entrepreneurs was evaluated using the method of case analysis, and the efficiency of entrepreneurial activity – through methods of mathematical and statistical analysis, such as indicative analysis to compare the effectiveness of the strategies under study.

The extensive array of empirical data about the economic activities of Russian small and medium-sized com-

panies established by technology entrepreneurs was retrieved from the SPARK-Interfax database. At the moment, considerable experience in using this database in the field of empirical studies has been accumulated. In particular, its application makes it possible to overcome the limitedness of statistical information for such dynamic entities as technology companies [Kravchenko, Yusupova, 2019; Khalimova, Yusupova, 2019]. In addition, this database is of use when examining entrepreneurial activity and analyzing cases of typical groups of entrepreneurs [Antsygina, Zhukov, Sypchenko, 2017].

The SPARK-Interfax database includes official information on the main stages of the companies' functioning (dates of establishment, reorganization and liquidation of the business). Shares in the authorized capital, displayed chronologically, allow identifying founders (entrepreneurs) and co-founders of the firms, as well as to track changes in their roles over time. Interconnections existing within the database makes it simple to measure the number of companies established by a particular entrepreneur, identify the sectors they operate in and obtain their major performance indicators.

Since the research concentrates on serial technology entrepreneurs, the basis for the analysis is the authoritative TechUspekh ranking1, annually compiled by the Russian Venture Company with the involvement of a wide range of industry experts and academic researchers. In view of the purpose stated, it was required to select successful, but not typical (average), Russian serial technology entrepreneurs, which is consistent with the approaches of other authors [Agamirova, Dzagurova, 2018].

In fact, to obtain the primary sample of companies, the method of expert assessment used in the TechUspekh ranking was applied. Based on the expert selection, we explored all 60 successful technological small enterprises included in the 2019 ranking in the "Small innovative companies" category. To compare the effectiveness of the strategies, we used data from the SPARK database on the most important economic and financial indicators of these companies. The search was carried out by a company's name. Due to the lack of information on some firms, the final sample included 55 tech entrepreneurs corresponding to the aforementioned characteristics of serial entrepreneurship. Moreover, due to the ambiguity of the entrepreneur's role, a university-based technology company was excluded from the sample. The significance of the entrepreneurs' role is confirmed by the fact that in the sample there are no small innovative enterprises created by corporations. The rest of small innovative enterprises were established directly by entrepreneurs. The main production and financial indicators of the companies included by the study sample are given in Table 2.

¹ The TechUspekh ranking. The national ranking of Russian fast-growing technological companies. http://ratingtechup.ru/rate/?SIZE=3&BY=INNOVATION.

Table 2 – Summarized production and financial indicators of the companies included in the study sample Таблица 2 – Обобщенные производственные и финансовые результаты исследуемых компаний

Industry	Number	Number of employees	Net profit, thousand rubles	Amount of taxes and insurance premiums paid, thousand rubles			
	of companies	Company's average median value by industry					
Engineering	5	57	60.416	37.791			
Information technology	17	68	9.671	15.936			
Chemicals	4	123	12.624	48.143			
Mechanic engineering	4	69	9.320	28.799			
Medical equipment	2	117	109.842	25.077			
Industrial equipment	7	65	21.082	37.141			
Electronics and instrumentation	11	59	14.568	24.498			
Energy	3	49	14.086	18.839			
	•	Company's actual value					
Biotechnology	1	110	21.951	24.863			
Common consumption goods	1	50	115.271	24.228			
Average median value	4	66	17.825	24.970			
Total	55	766	388.830	285.314			

Note: calculated using the data from the SPARK database.

The largest group of the sample is comprised of 17 companies operating in the information technology industry. For the convenience of comparing different industries, the data in Table 2 are given per one mediumsized company (taking into account the large scatter of values and the specifics of the sample, the use of the average median value of all companies in the same industry is justified). The chemical industry provides the highest average employment of 123 workers per company, while the average employment in the sample is only 66 people, and the minimum level is 49 people working for the energy industry. The largest net profit of 115 million rubles is generated by the only consumer goods company in the sample (growing oilseeds) and a medium-sized company functioning in the medical equipment industry (109 million rubles). In 2019, the average amount of taxes and insurance premiums paid by the companies from the sample equaled a little less than 25 million rubles (including income tax or simplified tax regime, insurance premiums and other paid taxes, such as transport, VAT, property tax). Considering the number of employees, the highest labour productivity is also observed in the consumer goods company (2.3 million rubles per person) and in the field of engineering (1.1 million rubles per person).

For each of the 55 companies, the search procedure was carried out to find and identify the entrepreneur(s) who initiated these ventures through analyzing the data on the founders (their initial and current shares in the capital) and comparing the company's beneficiary (if specified) and its head in the SPARK database.

Individuals who were the original founders of the company (both solely and jointly with other co-founders) were primarily regarded as entrepreneurs. Priority was

given to the original founders with a larger stake in the established company. Rarely, if an entrepreneur went out of the business they created and did not set up other companies, another major founder of this company was analyzed instead, including the one who acquired a share in its capital later. Next, it was determined whether each identified entrepreneur was the founder of other companies1. To assess the prevalence of such a type of serial entrepreneurial behaviour as sequential entrepreneurship (a new business is launched after the previous one is sold or liquidated), we analyzed currently owned companies, as well as previously closed business entities.

In order to exclude inactive and dummy companies (for example, those created to avoid taxes), we omitted the legal entities lacking the following signs of fullfledged economic activity:

- reporting zero accounting;
- regular gain.

As a result of the search procedure, we managed to find all the companies established by each of the 55 entrepreneurs. Having systematized and analyzed the data, we obtained a total number of over 230 companies, and most of them were Russian technology firms from various regions of the country, operating in the period of 1992–2020.

SERIAL TECHNOLOGY ENTREPRENEURS' STRATEGIES TO LAUNCH INNOVATIVE BUSINESS

A detailed analysis of a large array of data on the companies made it possible to establish the following methodological typologies of serial technology entrepreneurship in Russia based on the grouping of the

¹ The section "Activities in companies" in the card of an individual within the SPARK database.

entrepreneurs from the sample according to the serial business characteristics.

1. Non-serial entrepreneurs. The establishment (including through controlled entities) of the second and subsequent companies performing economic activity in the same industry was not treated as a feature of serial entrepreneurship if the first company maintained the status of a small enterprise (the economic entity has almost reached the maximum values in terms of one or several criteria, for example, revenue). At the same time, another criterion for the second company to refer to the status of a small enterprise, such as the number of employees, demonstrated extremely low values. Oftentimes, the names of such companies are consonant (for example, the name of the second company is formed by adding the word "service" to the first company's name, etc.).

Only 2 out of 55 technology entrepreneurs (or 3.6 % of the sample) were found to be non-serial ones. Unexpectedly, the serial behaviour of successful technology entrepreneurs turned out to be massively widespread in the Russian practice.

2. Serial entrepreneurs. For each entrepreneur from the sample, we determined the number of companies created with the entrepreneur's greatest initiative and contribution in comparison with the other co-founders. If there is more than one such company (including the liquidated ones), then the individual was considered as having the characteristics of a serial entrepreneur. A clear sign of a sole entrepreneur is the absence of other beneficiaries (co-founders) and companies set up by them. Virtually all technology entrepreneurs (96.4 % of the sample) turned out to be serial ones, that is, they started more than one company. In 2019, each company launched by a serial technology entrepreneur employed an average of 34 workers.

In the next step, serial entrepreneurs were identified by two types of serial behaviour: sequential or parallel entrepreneurship.

2.1. Sequential entrepreneurship. To establish the fact of sequential entrepreneurship, the date of the previous company's liquidation was juxtaposed with the date on which the same entrepreneur started a new firm. An example of the sequential type of entrepreneurship, including repeated one, is the entrepreneur M. G. Konovalov from the Udmurt Republic, Russia. In 1999, he and his partners created the PROMTO company engaged in non-specialized wholesale trade (Konovalov's share of the authorized capital was 66.67 %). In March 2006, the entrepreneur solely registered the research and production company OTK-S, and 3 months later he sold the initial, not very successful PROMTO company (the net profit over the last few years varied from -41 to 46 thousand rubles). The new owner sold the company 5 years later. The newly established OTK-S company developed more successfully (after two years of functioning, its net profit amounted to 1.2 million rubles). However, it was also sold at the beginning of 2010 (2 years later, it was liquidated by the new owner). 11 months later, M. G. Konovalov and his partner (50/50 partnership) established a research and production company "EURODETAL" specializing in the mechanical processing of metal products; and since 2013 he has become its sole owner. In 2019, the expert council of the TechUspekh ranking recognized this company as innovatively successful in its segment. In particular, it employed 75 workers, its annual net profit was 117,000 rubles, and in 2019 the firm paid 12.4 million rubles in various taxes and insurance premiums.

However, this strategy is rarely popular among technology entrepreneurs (2 out of 55 companies in the sample). Highly likely, this was due to two reasons. Firstly, owing to the risky nature of the technology business, it is quite difficult to liquidate the first company serving as a source of investment while the financial state of the new enterprise is unstable. Secondly, the chances of a business to survive decrease after being sold by the entrepreneur due to complex specific competencies he/she possesses (the technological part is also dependent on the entrepreneur).

2.2. Parallel entrepreneurship. Long-term 6 months) simultaneous functioning of two or more companies launched by the same entrepreneur was interpreted as a sign of parallel entrepreneurship. Due to the abovementioned reasons behind poor popularity of sequential entrepreneurship, the parallel type of serial entrepreneurial behaviour has become widespread among technology entrepreneurs. For example, 51 out of 55 technology entrepreneurs (or 92.7 % of the sample) followed the strategy of parallel entrepreneurship and owned two or more companies simultaneously. Most of the technology entrepreneurs from the innovative segment of the TechUspekh-2019 ranking in the category "Small Companies" established an average of 4 companies, including those producing innovative products. The most successful serial entrepreneurial behaviour is exemplified by two tech entrepreneurs, who has created 10 active businesses each.

Having performed a retrospective analysis of the activity of 55 tech entrepreneurs in 1992–2020, we are now able to propose our own classification of the strategies most often adopted by serial technology entrepreneurs when starting a company (Fig. 1).

The strategies followed by serial entrepreneurs were differentiated using the following attributes:

- the order of establishment of a technological enterprise (company included in the ranking): was it the first one started or was its establishment preceded by another business of the entrepreneur (which can be considered both a source of capital and a source of experience)?;
- the technological level of other companies set up by the entrepreneur (industry similarity): for example, a nontechnological company was the first one created, and then the innovative enterprise was organized, or vice versa.

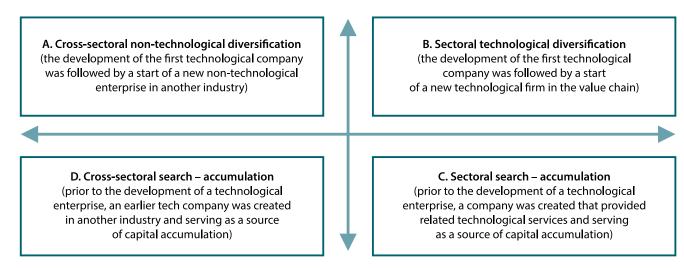


Fig. 1. Serial technology entrepreneurs' strategies for launching business Рис. 1. Стратегии создания бизнесов серийными технологическими предпринимателями

Based on these two attributes, the companies under study were categorized into four groups according to the strategies implemented by serial entrepreneurs when establishing businesses (Fig. 2), including technological ones (indicated in the order of their popularity among Russian successful serial technology entrepreneurs).

Let us look at each group more closely.

Group A. Strategies of cross-sectoral non-technological diversification (Technological enterprise + non-technological company(-ies)). Once a first technological enterprise achieves a certain level of development, a second (or subsequent) company is started in other industries (real estate, construction, research, etc.) in order to utilize the owners' entrepreneurial abilities and diversify the business.

The strategy appeared to be the least widespread: it was used by only 4 out of 52 entrepreneurs (or 7.7 % of the sample). This is attributed, firstly, to the difficulty of choosing a profitable field, and secondly, to the need for subsequent "diffusion" of attention (a partial transition from a profitable industry to new one). The specifics of the strategy in comparison with the subsequent ones is

that it is not a strategy of serial technology entrepreneurs in its narrow sense, since the entrepreneur started the next company in the non-technological sphere. Due to the transition of the technology entrepreneur to the non-technological sphere, this group of strategies is of interest for comparing its effectiveness with other, more innovative strategies.

Group B. Strategies of sectoral technological diversification (Technological enterprise + company(-ies) in the value chain). Following the development of a technological enterprise, one or several new technological companies were established in a related industry. The sustainable functioning of the enterprise stimulated the entrepreneur to set up a parallel company in a related sector of economy that could be built into the value chain (related production, selling own-produced goods, scientific research, medical, educational and consulting services, etc.). For example, along with the production enterprise (ZAO DIGITAL DESIGN engaged in the software development), the entrepreneur created a number of companies in the following areas: trade in own-produced goods (OOO AVRORAID); scientific research in the same

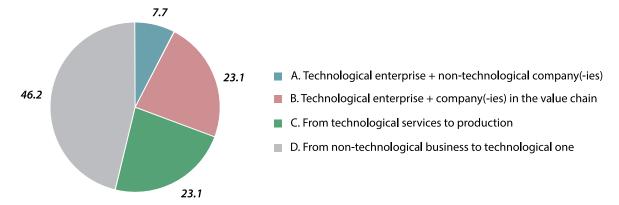


Fig. 2. Prevalence of strategies for starting new businesses by successful serial technology entrepreneurs, % of the sample¹
Рис. 2. Распространенность стратегий создания новых бизнесов
успешными серийными технологическими предпринимателями, % от выборки

¹ Note: calculated using the data from the SPARK database.

area as production or the one similar to it (OOO RAIDIX); and educational services associated with the products manufactured (Private Educational Institution of Additional Vocational Education "DIGITAL DESIGN" Training Center). The distinguishing features of the strategy are, on the one hand, its potential attractiveness due to the prospects for the successful development of vertical integration, and, on the other hand, greater organizational complexity and capital intensity. The latter reduces its relevance in the Russian practice: it was applied by 12 out of 52 entrepreneurs (or 23.1 % of the sample). The entrepreneurs of this group have also followed the territorial diversification strategy. For instance, sometimes they registered individual companies to cover various regions of the country (for example, OOO "ALKOR BIO YUG"). Thus, within the same group, it is possible to distinguish between several types of strategies.

Group C. Strategies of sectoral search (accumulation) (From technological services to production). Prior to the development of a technological enterprise, a company providing related technological services was launched, including the one serving as a source of capital accumulation. This strategy was equally popular as the those from Group B: it was employed by 12 out of 52 companies (23.1 %). A typical strategy of this group is the one called "From technological services to production in the same industry". This refers to progressive intra-industry development (first, services are provided in a certain industry, and then production in the same sector is organized). For example, the entrepreneur first created a company (OOO "ITSumma"), which provided consulting services and carried out work in the field of computer technology. Later, within the framework of the other enterprise (OOO "IT-Summa Development"), the entrepreneurs started designing their own computer software.

Group D. Strategies of cross-sectoral search (accumulation) (From the non-technological business to the technological one). Before developing a technological enterprise, an earlier non-technological company was established in another industry, including the one serving as a source of capital accumulation. This group of strategies turned out to be the most popular: nearly half of the entrepreneurs have already had a previous entrepreneurial experience when entering the technological business (24 out of 52 entrepreneurs, or 46.2 % of the sample). The most typical strategy of this group is the one called "From trade in non-technological products to technological production", i.e. the first business of the individual was started in the sphere of trade and was not linked with the industry in which the technological company was later organized. The most common example of this approach is the strategy "From real estate to technological production". In this case, the primary activity in real estate helped the entrepreneur to form the initial capital for starting the more expensive technological production.

The proposed typology is not strict: there are mixed strategies that embrace elements of not one, but several strategies described above.

2.3. Mixed sequential and parallel entrepreneurship. In practice, it is a rare situation where sequential entrepreneurship is replaced with parallel one. The single case in the sample is characterized by the following steps: 1) a first company with good performance indicators was established in the real estate industry; 2) then it was sold and the entrepreneur set up a business in the tourism sector (it was later liquidated because of poor performance); 3) next, a software development company was launched (the entrepreneur's first attempt to switch to this technology specialization was made in 2011); 4) later, in parallel with this company, the entrepreneur founded a not very successful firm in the field of finance; 5) then, he started a profitable research organization; 6) set up a consulting firm (not successful); 7) after exiting the unprofitable companies, the entrepreneur turned back to software development in 2017 and was more successful this time. Another example of the mixed strategy is the liquidation of first unsuccessful businesses after several years of their functioning in parallel with new companies created in the same industry.

It is worth noting that the examples of some strategies leave the impression that the entrepreneurs' actions are chaotic and there is no strategy in their behaviour. On the other hand, the distinctive features of the strategies inherent in the entrepreneurs' actions indicate that each of the four strategies has unique characteristics. We believe that the chaotic behaviour typical of some entrepreneurs does not exclude the strategic demeanor of the others. The degree to which the strategic behaviour is prevalent among serial entrepreneurs remains unexplored. This issue is planned to be examined at the next stage of the study as part of the planned interviews with serial entrepreneurs.

ASSESSING THE EFFECTIVENESS OF THE STRATEGIES FOLLOWED BY RUSSIAN SUCCESSFUL SERIAL TECH ENTREPRENEURS WHEN STARTING NEW BUSINESS

To assess the effectiveness of the aforementioned strategies and formulate practical recommendations for serial technology entrepreneurs and government authorities, we have developed our own methodological toolkit for evaluating the strategies based on indicative analysis. The basis for the assessment includes the traditional indicators of business performance characterizing profit, employment and the amount of tax revenues going to the budget [Glukhikh, Shkurin, Voronina, 2019, pp. 129-131]. Each indicator was calculated as the mean of all operating companies owned by a serial entrepreneur at the time of the research. Due to the lack of certain data in the SPARK database, 44 technology entrepreneurs were included in the sample. Like many other characteristics with a limited number of observations, the selected indicators rarely have normal distribution, therefore, it is more expedient

to use a more accurate version of the mean, such as the weighted average. To determine the actual contribution of a serial entrepreneur, their share in the authorized capital of each company he/she started are used as weights:

$$\chi = \frac{\sum_{\iota=1}^{\eta} \omega_{\iota} \times \chi_{\iota}}{\sum_{\iota=1}^{\eta} \omega_{\iota}},$$

where χ denotes the weighted average of serial entrepreneurship performance; χ_i is the value of the company's performance indicator ι ; η denotes the number of operating companies established by the entrepreneur; ω_i is the share of the entrepreneur's capital in the authorized capital of the company ι .

Experimental calculations of the production and financial outcomes of business strategies applied by successful serial technology entrepreneurs in 2019 using the given formula are presented in Table 3.

It is natural that if the first strategy is employed, which also embraces the results of non-technological businesses set up later (therefore, initially benefitting from a more developed environment), the number of employees is significantly higher: an average of 139 people in the company versus 34 on average in the sample. The most successful ventures also follow this least popular strategy: the net profit per one technological and non-technological company was 67.7 million rubles. Therefore, this strategy is the most profitable for entrepreneurs, but at the same time the least common. The most widespread strategies from the fourth group are, on the contrary, the least effective for entrepreneurs generating only 5.5 million rubles in profit per one firm.

Considering the high prevalence of the third group of strategies "From technological services to production" and at the same time its high values (the average profit of one company is 39.7 million rubles), it was the most profitable in terms of total economic performance (12 companies taken together produced the maximum of 476.4 million rubles in net profit) and quite attractive for the entrepreneurs themselves (ranked first in the aggregate ranking). The second group of strategies "Technological enterprise + company(-ies) in the value chain" are the least effective, since it demonstrated the lowest cumulative performance.

CONCLUSION

The analysis of the Russian and foreign studies conducted in the given research indicates that the field of serial technology entrepreneurship is not sufficiently developed. The limiting factor behind that is the underestimation of the real contribution of serial tech entrepreneurs to the establishment of new companies. Dealing with the serial entrepreneurial behaviour as a special source of innovative business allows expanding the theoretical-methodological approach to serial technology entrepreneurship.

Based on a retrospective analysis, we have produced our own classification of the strategies that are most popular among serial technology entrepreneurs when starting a new business and divided them into 4 groups. Having analyzed an extensive array of empirical data, we have developed a number of practical recommendations for government authorities to adhere to when implementing policies on active small businesses stimulating entrepreneurs to open new companies, including innovative ones:

1) the strategies from Group B "From technological services to production" are recommended for use to simulta-

Table 3 – Comparison of production and financial results of the strategies employed by Russian successful serial technology entrepreneurs Таблица 3 – Сравнение производственных и финансовых результатов стратегий российских успешных серийных технологических предпринимателей

		Average number of employees		Net profit, million rubles		Amount of taxes and insurance premiums, million rubles		Performance ranking	
Group of strategies		One average company	All companies	One average company	AII companies	One average company	AII companies	One average company	All companies
A. Technological enterprise + non-technological company(-ies)	4	139	556	67.7	270.8	64.1	256.4	1	2
B. Technological enterprise + company(-ies) in the value chain	12	22	264	25.6	307.2	10.5	126.0	4	4
C. From technological services to production	12	29	348	39.7	476.4	16.0	192.0	2	1
D. From non-technological business to technological one	16	39	624	5.5	88.0	11.6	185.6	3	3
Average median value	12	34	452	32.6	289.0	13.8	188.8	-	-
Total	44	229	1792	138.5	1142.4	102.1	760.0	-	-

Note: calculated using the data from the SPARK database.

neously maximize employment, tax revenues and, in the first place, overall profit of the business. That is, it is necessary to stimulate the current technology entrepreneurs to found new companies producing their own innovative products. The only insignificant limitation of this group is its lower (the 2nd place) profitability for the entrepreneur;

- 2) Group A "Technological enterprise + non-technological company(-ies)" is recommended for generating the highest amounts of tax revenues but it is slightly less effective in simultaneous maximization of the other indicators. This strategy is one of the most successful for the socio-economic system, and at the same time it is the most profitable for the entrepreneur (maximum profit per company) and the least rarely used. Therefore, establishing a non-innovative company is optimal in terms of efficiency, but the complexity of its implementation will require great efforts from the authorities to stimulate it;
- 3) the strategies from Group D "From non-technological business to technological one" are recommended for use to maximize employment since they, if implemented, create a larger number of jobs. The fact that they are the most widespread and can be easily implemented results in an increased number of new companies emerging. Thus, government incentives for non-technology entrepreneurs to set up new innovative ventures are most effective for generating employment, but less effective for enhancing the total volume of profit and taxation;
- 4) the strategies from Group B "Technological enterprise + company(-ies) in the value chain" are not recommended for use to maximize the cumulative performance (they are characterized by the smallest total contribution to employment and tax revenues, but earn second largest

amount of profit). However, this strategy assuming that technology entrepreneurs found new companies as part of vertical integration, as well as enterprises with the closest interrelations, is rather beneficial for a particular entrepreneur: the implementation of the strategy requires the lowest number of employees and taxes and generates the third largest profit.

The research results contribute to resolving the complex strategic problem of insufficient entrepreneurial activity of the Russian population necessary to ensure the adequate level of the country's technological development, among other things, through stimulating serial entrepreneurs to establish new business entities. The growing number of new entrepreneurs can lead to a qualitative result, i.e. the transformation of some technology entrepreneurs into future global leaders. It grounds the importance of the present research for society and business. Having investigated a variety of case studies from Russia, we have obtained fundamentally new knowledge about the strategies adopted by serial technology entrepreneurs when establishing innovative companies. In our further research, we aim to conduct in-depth interviews with serial technology entrepreneurs in order to test the relevance of the strategies under discussion, to establish the ratio of the strategic and chaotic behaviour, and to identify the role and hierarchy of the socio-psychological predictors behind serial behaviour that are necessary for stimulating entrepreneurial initiative at the system level and implementing government plans to increase the number of companies, including those involved in technological innovations.

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Information about the authors

Pavel L. Glukhikh

Cand. Sc. (Econ.), Senior Researcher of the Center for Regional Comparative Studies. **Institute of Economics of the Ural Branch of the RAS** (29 Moskovskaya St., Ekaterinburg, 620014, Russia). E-mail: gluchih_p_l@mail.ru.

Alla N. Golovina

Dr. Sc. (Econ.), Director of Higher School of Corporate Education, Acting Head of Enterprises Economics Dept. **Ural State University of Economics** (62/45 8 Marta/Narodnoy Voli St., Ekaterinburg, 620144, Russia). E-mail: vshko@inbox.ru.

Информация об авторах

Глухих Павел Леонидович

Кандидат экономических наук, доцент, старший научный сотрудник центра региональных компаративных исследований. **Институт экономики УрО РАН** (620014, РФ, г. Екатеринбург, ул. Московская, 29). E-mail: Gluchih P L@mail.ru.

Головина Алла Николаевна

Доктор экономических наук, профессор, директор Высшей школы корпоративного образования, исполняющий обязанности заведующего кафедрой экономики предприятий. **Уральский государственный экономический университет** (620144, РФ, г. Екатеринбург, ул. 8 Марта/Народной Воли, 62/45). E-mail: vshko@inbox.ru.