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DEVELOPMENT OF TECHNOLOGY ENTREPRENEURSHIP IN A TRANSITION ECONOMY: AN EXAMPLE OF THE RUSSIAN REGION WITH HIGH SCIENTIFIC POTENTIAL

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Abstract

The transition to a market economy in Russia not only was accompanied by general economy crisis, but also provided wide opportunities for entrepreneurship, including technology sphere. But still, there is a void on peculiarities of technology entrepreneurship development in Russia. That is why the aim of this paper is to consider in dynamics some features of technology enterprises development in the changing context on the example of region that has favorable conditions for technology entrepreneurship. Due to exploratory character of the research, main results are based on 10 case-studies of technology enterprises established in 1990s and 2000s in the region. As a result of the study, some typical features for technology entrepreneurship in the region were found: the most important resources are people and intellectual property; inviolable principle is to minimize external financing; company development strategy is niche and based, focusing on core competencies and outsourcing non-core activities.

Keywords: technology entrepreneurship, transition economy, Russia

1. INTRODUCTION

Importance of technology entrepreneurship cannot be underestimated for growth, differentiation and acquisition of competitive advantage both at company level and at the level of the region and country. New technology entrepreneurial projects are the main source for renovation and stable growth of an economy (Bailetti, 2012; Bruton & Rubanik, 1997; Li, Yong, & Ho, 2006; Venkataraman, 2004).

Despite there are a lot of papers, devoted to different aspects of technology entrepreneurship development, most of them consider this phenomenon in the context of stable developed economies, and the specifics of technology entrepreneurship in transitional economies is still under-represented (Bruton & Rubanik, 1997, 2002; Etzkowitz, 2000; Lau & Bruton, 2011; Tchalakov, Mitev, & Petrov, 2010).

The transition to a market economy in Russia was accompanied not only with general economy crisis, but also provided wide opportunities for entrepreneurship, including technology sphere. Some basics for systematic investigation of technology entrepreneurship in Russia can be found in papers by Bruton and Rubanik (1997) and Medovnikov (2013). But still, there is a void on peculiarities of technology entrepreneurship development in Russia. Also, there is a need to update knowledge on the phenomenon due to some changes in the Russian economic context and topoint out some specific traits of different generations of technology entrepreneurs.

That is why the aim of this paper is to consider in dynamics some features of technology enterprises development in the changing context of transitional economy on the example of Nizhny Novgorod region, which is justified to have favorable conditions for the development of technology entrepreneurship (Gokhberg, 2014). Due to exploratory character of the research, main results are based on 10 case-studies of technology enterprises established in 1990s and 2000s in the region. Despite the fact, that a Russian region is in the focus of the provided research, the findings and propositions developed, can also be useful for investigations in other regions with similar conditions.

2. LITERATURE REVIEW

2.1. Technology entrepreneurship

Definition of technology entrepreneurship is still unsettled. There are two main approaches to defining the phenomenon. The first is the quantitative one, with the main criterion being a share of budget spending on R&D-activities. The second approach is qualitative in its nature and bases itself on assessment of some enterprise characteristics and the degree of complexity of technology used. Basing on the content analysis of literature, devoted to technology entrepreneurship, conducted by Bailetti (2012) we can figure out four approaches to definition of technology entrepreneurship.

The first approach considers technology entrepreneurship as a process of establishment and running a technology based business (Byers, Dorf, & Nelson, 2011; Jones-Evans, 1995; Nichols & Armstrong, 2003). It focuses on organizational aspects of a business and some characteristics of an entrepreneur (propensity to take risk, commitment, passion and relentless desire to be successful).

The second approach develops a Schumpeterian view on the entrepreneurship and understand technology entrepreneurship as an activity, connected with resources recruitment (organizational resources, technical systems and strategies) in order to exploit emerging technology opportunities (Liu, Chen, & Tsai, 2005).

The other group of researches (Garud & Karnøe, 2003; Jelinek, 1996) consider technology entrepreneurship as an interactive process, executed by different actors, each of which contributes to the technology creation and transformation.

The fourth approach emphasizes the necessity of solutions in search of problems (Venkataraman & Sarasvathy, 2001). I.e. a technology entrepreneur should find either an application for existing technology, or a solution for unsolved problem.

For the purposes of this paper under technology entrepreneurship we understand an activity connected with launching a new ventures, introducing a new application, or exploiting opportunities that rely on scientific and technical knowledge (Bailetti, 2012).

2.2. Conditions for technology entrepreneurship in transition economy

Different frameworks of factors, affecting technology entrepreneurship, can be found in the literature, however most of them are developed for economies with stable conditions, such as the USA or Canada (Bruton & Rubanik, 1997; Kuemmerle, 2005). These frameworks state venture capital to be the main factor, accompanied by a set of supporting factors. Feldman (2001) complements venture capital with supportive social capital, research universities and entrepreneurial expertise. Another view on factors for technology entrepreneurship is represented in the work by Venkataraman (2004). The author suggests, that venture capital can provoke technology entrepreneurship development only of it is accompanied by novel ideas, role models, informal forums, region-specific opportunities, safety nets, executive leadership, and access to large markets (Venkataraman, 2004).

Since these frameworks are developed on the cases with stable economy environment, they should be adopted for transitional economies, as the last ones has a different set of institutions and very volatile conditions (He, 2009). Otherwise, it is possible to use universal frameworks, such as Entrepreneurial Framework Conditions (EFCs) by Global Entrepreneurship monitor (Global

Entrepreneurship Monitor). This framework suggests to evaluate with Likert-scale the following conditions: finance, government policies, government programs, entrepreneurial education and training, r&d transfer, commercial and professional infrastructure, internal market openness, physical infrastructure and services, cultural and social norms. Another universal framework for analysis of entrepreneurial conditions worldwide was offered in 2005 by Walter Kuemmerle (2005). It consists of five dimensions:

- strong property rights;
- acceptance of success and well-intended failure;
- availability of risk capital;
- high quality of human capital and technological innovation;
- favorable market structures.

The framework offers to compare existing economic environment with an ideal archetype of an entrepreneurial society. The nearer the economy under consideration to the archetype, the more favorable conditions for entrepreneurship to flourish. However, the author of the framework suggests, that even in context, deviant from ideal one, entrepreneurship can develop, provided it uses special strategies (Kuemmerle, 2005).

That is why it is needed to understand, how the context of a transitional economy differs from an archetypical one. He (2009) points out, that the most important distinction of a transitional economy is not well established private property laws and rights. Moreover, ownership and resources take on a different meaning, as initially the government owns every resource, and it is needed to maximize social resources and leverage constrained ownership to engage in entrepreneurial activities. On contrast with material and financial resource constraints, development of human capital in transitional (mostly post socialism) economies was relatively high (Manev & Manolova, 2010).

Also it is worth mentioning, that transitional economies undergo a total institutional reforms, which lead to opposite consequences. On the one hand, institutional reforms have made entrepreneurial endeavors possible. On the other hand, an institutional hiatus has severely constrained the entry and growth of new and small firms (Manev & Manolova, 2010). All these peculiarities cannot but influence the development of technology entrepreneurship in the context of transition.

2.3. Characteristics of technology enterprises and factors of success

The success and development of technology entrepreneurship in such adverse and turbulent conditions depends on several factors.

The research (Bruton & Rubanik, 1997) on the success factors of technology startups in Russia analyses applicability of three broad subject areas, usually used for stable economic environment:

(1) Founder characteristics;

(2) Firm characteristics;

(3) Startup strategy.

Basing on a case-study Bruton and Rubanik (1997) suggest the following:

- Technology startups founded by multiple member teams outperform those startups founded by single individuals in a transitional economy.
- The firm's ability to adapt to, or change, its environment is the most critical aspect of firm success in a transitional economy, rather than industry in which a firm competes.
- High technology firms with breakthrough technology will be more successful than those with demand driven technology in a transitional economy.
- High technology startup firms that pursue an international strategy from their initiation experience greater success in a transitional economy.
- Higher levels of unrelated diversification by high technology startup firms in a transitional economy leads to lower levels of profitability.

In a recent research by Medovnikov et al. (2013) some features and characteristics of contemporary technology entrepreneurship were revield. Accordingly to the research technology entrepreneurs are motivated not only with an opportunity to earn, but also by an opportunity to launch an innovative product or solve social problem. The strategy of such companies focuses on the market development, entrance to the foreign markets and propensity to partnership. Such entrepreneurs rely on a governmental support, and are not ready to sell their business or to share it with investors, what leads to small sizes and low growth rates. Also, contemporary technology entreprises suffer from the lack of qualified personnel.

3. METHODOLOGY

According to the purpose of the research, we studied technology entrepreneurial companies, established from 1990s to 2000s in Nizhny Novgorod. Issues for studying concern distinctive features such as prerequisites and principles of company establishment, the resourcing, business strategies, ways to success.

Social and cultural peculiarities of technology entrepreneurs, prerequisites, principles of company establishment and its development are highly determined by belonging to a particular generation. We can destinguish two waves of technology entrepreneurs, which are determined according to the time of establishing business rather than to the age of the founder (Medovnikov, 2013).

Entrepreneurs who start at different periods of time have a difference in quality of their entrepreneurial experience, and in their social characteristics (Barsukova, 2000). Founders of the first wave are people who start their business

at the turn of the 1990s. The second generation of technology entrepreneurs - those who have become involved in entrepreneurship based on high technology in the period of contemporary economic modernization 2000s.

Choice of the Nizhny Novgorod region as the research object is justified by high levels of social, economic and innovation development in the region. The city had a closed status during the Soviet period, due to high concentration of scientific and industrial companies and research facilities. During the transition to a market economy the city was opened and it led to the redistribution of these resources. It stimulated the growth of technology entrepreneurship in the region. In 2012 this region occupied the fourth place in the Russian Regions Innovation Ranking (Gokhberg, 2014). In our days there are 39 scientific institutions, 21 design bureaus, 14 Universities 9including subsidiaries) and 16 industrial research and development centers (Nizhegorodstat, 2013). Also, the region has developed a net of business-incubators, technoparks, financial institutions such as business-angels network and venture fund. So, as a result we can see a lot of technological companies that were established over the last several decades in this region..

Due to the aim of the research the most appropriate method of data collection and analysis is the case method (Yin, 2009). To determine the distinguishing characteristics of two generations of technology entrepreneurial companies we studied the cases of representatives of each generation. For best results we identified some criteria for selecting companies to participate in the study:

- the company was established only within the allocated waves;
- the company is a resident of the Nizhny Novgorod region, not a branch;
- the company is still operating or was sold to a strategic investor;
- the company uses in its operations technologically new or significantly improved products or processes, or both products and processes during the study period (OECD, 2005);
- the sources for innovation should be the following: Research Institute of Russian Academy of Sciences; universities; large enterprises or experimental design bureau; private ideas.

After analysis of technology companies based on selected criteria, 10 cases of small successful technology companies in the region were chosen (see Table 1). The data was collected for each case from open sources (local business media materials and Internet resources). We analyzed their history and then conducted personal semiformalized interviews with the representatives of their founders or directors. Every conversation was recorded and covered not more than 50 minutes. We emphasized not only on the external factors affected the business, but also on the ways and strategies that entrepreneurs used to solve problems. Conversation is aimed at clarifying the personal characteristics of entrepreneurs, the definition of the context and characteristics of entrepreneurial projects.

Table 1

Companies Charachteristics

Company Name	year of foundation	Source for innovation	Product/technology
Binar Co	1989	private ideas/research institute	New materials, new equipment
Prima-NN	1990	private ideas/research institute	Radio communication equipment
Meduza	1992	Research Institute	Medical ultrasound equipment
Gycom	1994	Research Institute	gyrotron complexes
Neolith	1999	private ideas	artificial stone
Mega-NN	2001	private ideas	ICT
Centre for sciense and technical development	2007	Research Institute	lasers
Intellectual technologies	2009	private ideas	Mobile applications
Lesnoy Dozor	2010	private ideas/university	IT

Source: interview with entrepreneurs

The main question for the research is "How does an entrepreneur create and develop a technology business in changing environment?". In order to answer this question, questions for the interviews were developed, basing on guides of similar foreign studies. In the case analysis the block of questions for interview with experts from the GEM methodology was used in order to understand the external environment and business climate for entrepreneurship in the country and region. Questions for the interview were divided into two main blocks concerning life cycle of the company: the period of start of the business, and the period of development and growth. All questions cover external and internal factors that have been identified by other authors. Internal parameters consist of: the motivation to the entrepreneurial activity in the technological sphere, sources of ideas and innovations, knowledge and competence, resourcing, business development strategy, a high risk of this business. External factors were divided into following groups of factors:

- Economic factors (access to market information, export-import policy, access to finance, the overall economic situation in the country, the possibilities and conditions for co-operation, demand for innovations, the level of the shadow economy)
- Political and legal factors (the legal framework for business, legislation for the intellectual property protection, the procedures of companies registration, tax policy)
- Technological factors (level of science, research and development; access to new technologies, the activity of scientific organizations, innovation climate in the country)
- Social factors (education system, the availability of qualified person-

nel; socio-cultural norms, living standards and working conditions in the country).

The collected data was qualitatively analyzed, and as a result we identified drivers and constraints for development of two generations of technological entrepreneurship, trends in the evolution of this type of business in the region.

4. TRENDS AND FEATURES OF THE TECHNOLOGY ENTREPRENEURSHIP EVOLUTION PROCESS IN THE NIZHNY NOVGOROD REGION

The research results are divided into two logical parts. The first part concerns the stage of companies' formation and covers such questions as motivation, resources, source of idea, background and experience, partners, circumstances of this process and other. The second part is devoted to the stage of business development and raises such topics as favorable environment and conditions for development, problems and barriers, society attitude to the technological entrepreneurs and other aspects.

The main motivation to start technology business in the cases under consideration is to earn more money, to be independent in decision-making process, and to commercialize their scientific results. Entrepreneurs in all cases had a stable job, but they were dissatisfied with some opportunities to realize their own project. We can say that both generations (1990s and 2000s) are improvement driven opportunity entrepreneurs. However, we should note that technology entrepreneurs of the second generation are more ambitious, self-confident, and are trying to increase their income.

In order to start a business it is necessary to collect some resources. For the technology based company the intellectual property and people play a key role. In our research we consider such resources as people, intellectual property, finance, and partners (connections).

There were a lot of freed up resources from scientific organizations during the economic restructuring in 1990s. These resources were utilized in different ways, and there was a real opportunity for entrepreneurs to attract some needed resources. Many technology entrepreneurs took advantage from this opportunity and bought out some production facilities (sometimes even with equipment) at low prices. Many highly qualified specialists from scientific institutions were fired, and they were invited to join a team of technological entrepreneurs. In the new generation we can see a shortage of highly qualified personnel that show the current situation in Russia – a degradation of personnel for high-technology companies.

Weak legislation in the field of intellectual property protection enabled technology entrepreneurs to carry knowledge and technologies away from research institutions. They kept all knowledge in their heads during their work

that is why there was no formal technology transfer. Businesses of entrepreneurs from first generation were based on these technologies and knowledge. In contrast, the majority of representatives from the second generation of technology entrepreneurs have their private ideas without strong connections with scientific institutions. We can note the tendency of a decrease of scientific base from Soviet Union period.

If we look at the tendency in intellectual property protection, we will see an increase of interest to patenting in the new generation. Companies get patents in case of entering the foreign market, applying to some grant programs, collaborating with venture funds, or having mechanisms to search violations of the rights. Both generations do not believe in the rights protection when they patent their intellectual property. But they are sure that intellectual property is a key competitive advantage for the business, and they protect it as know-how.

In all considered cases we have found the team and technologies as key factors for the technology business success. The majority of teams from the first generation cases consisted of people who worked together a long period of time in the scientific institutions.

We should note the strong partnership between technology entrepreneurs from 1990s and scientific institutions that they left. It was a significant factor to survive and succeed. However we can see not only positive relationship between new company and scientific organization. We have an example of strong competition between them with use of noncompetitive ways of combat. Cases from the new generation show some changes, their partnership with scientific organizations weaker and more formal.

When we analyze competencies and skills of entrepreneurs in the beginning of their activity, we will see the common situation for both generations with absence of any business knowledge, skills and experience. They have all felt this shortage. The first generation relied on their own experience, and on common sense. The second generation tried to receive additional education, or get consultations from other entrepreneurs, or find a partner with skills and experience.

The government support usually plays a significant role in the technology business development. In 1990s there was a period of a transition when many structural changes occurred in the economy. At the time the government provided technology businesses with a small amount of support programs. But entrepreneurs preferred to keep a distance with government and for many considered cases it was very important that the government did not interfere with activities of their business. In 2000s we can see a lot of emergent government support programs for the technological entrepreneurs (different financial tools, a lot of grants, business-incubators, consulting services and so on) that were available for entrepreneurs. All this mechanisms strongly affected the technology entrepreneurship activity. The majority of considered cases from the second generation was based on such support, and actively uses it for development.

Considering technology entrepreneurial companies from the first generation we should stress on their closed links with scientific organizations. They are as prototypes of spin-off companies, because they use knowledge and technologies accumulated during their work on these organizations. To the beginning of the 21st century the scientific potential of scientific institutions was reduced. That is why in the second generation we can mark independent private ideas for technology business, but they are less innovative and complicated in comparison with the first generation.

Looking at the problems that were mentioned by entrepreneurs in their experience of technological companies' development, we can observe trends of the economic changes and shift of a business environment. The process of transition brings a lot of problems for technological business development.

First of all it concerns the total degradation of manufacturing industries that led to the shortage of the high quality raw materials and supplies for high technology companies. It provokes the need of foreign suppliers, but there were difficulties in the process of importing to Russia.

Secondly, we should stress the other main trend – the degradation of highly qualified personnel that is essential for the technology business. In the first generation there were no problems with staff because of the unemployment in the economy. But in 2000s it is a huge difficulty to find highly qualified engineers who make up the bulk of the staff of technology companies.

High risks and unfavorable business environment make technology business unattractive and unstable for new entrepreneurs who usually choose traditional and simple types of business. Both considered generations have this attitude.

One of the main problems for the development of technology entrepreneurship is the lack of demand for innovations and high technologies. This obstacle was mentioned by all respondents from both generations. It makes entrepreneurs discover new market niches at domestic market for their unique products or enter a foreign market, which was a complicated process especially for the first generation of technology entrepreneurs in Russia.

After obstacles and barriers we analyzed strategies and secrets that allowed companies to survive and grow. All our cases choose the quality of the product or technology as a priority strategy for the company development. Their customers are very sensitive to quality of a product that is why entrepreneurs pay more attention to it. Additionally all companies try to adapt their product to the customer need and focus on the individual approach to every client. In order to be effective all companies focus on their key processes and they prefer outsource other business-processes like manufacturing, distribution and so on. The main competitive advantages of all our cases are intellectual property and a team of high qualified personnel. Exactly these resources make company produce the best product at the market.

The other part of questions concerns the environment for technology business development. We cover such topics as legislative environment, public attitude to the entrepreneurial activity, availability of the qualified personnel and venture capital, and favorable market structure.

In the 1990s there was a start of a transition to the market economy. That is why the legislative framework for business was quite weak and it did not provide adequate control over the situation in the country. The tools for intellectual property rights protection started to form. In our days we should note a good legislative framework for the business development, but our respondents hardly believe in the protection of their rights on intellectual property in case of patenting.

In such a difficult period for the country in 1990s the attitude of society to the entrepreneurs in general was extremely negative. Typical association with entrepreneurship was larceny and fraud. But society gave a respect to technological entrepreneurs, due to the manufacturing, real production and new complex technologies. In the new century public attitudes towards entrepreneurship began to change for the better. Now, the creation of new business is associated with new product and new jobs, but attitude of society to the technological entrepreneurship grew cold.

One of the strongest factors affecting the development of the technological entrepreneurship is a quality of a human capital. In 1990s there was no problem with high quality personnel. It is connected with strong Soviet Union system of science, and accumulated experience of the staff in the narrow fields of knowledge. In our days the degradation of human capital occurs, the amount of high qualified personnel is decreasing for different reasons. Currently it causes a lack of qualified personnel for the majority of technology entrepreneurs.

Many technology companies in 1990s faced a shortage of financial resources for the business development. On the one hand there was no venture capital, on the other hand entrepreneurs wanted to manage the company by their own. Both generations prefer autonomy, that is why they financed their businesses by their own means, and attracted investments only in the necessity to expand quickly. The first generation used some creative mechanisms to solve financial problems, such as prepayment or barter. In the early 2000s Russian government started providing technological entrepreneurs with different financial tools and programs, the venture capital market was formed. It strongly affected the emergence and growth of technology businesses, because many entrepreneurs started a business based on that support. Government support, such as grant programs, is now more preferred for entrepreneurs because it saves the autonomy and share of the business.

Without a favorable market structure is quite difficult to develop business at any time. Low market entry barriers and unsaturated markets without competitors in 1990s gave a great opportunity for new entrepreneurs. But on the other side lack of domestic demand and weak legislative framework

made technological entrepreneurs choose a specific niche on the domestic market or find partners on the foreign ones. Some of the cases from the first generation show the success stories by working only on the international market. Favorable relationships with partners also have a positive impact on the development of entrepreneurship. In order to survive companies from the first generation had established strong collaboration with partners. Lack of information about the market and about the rules of the game in the foreign market, as well as the language barrier became for many entrepreneurs a reason for not entering the international market. If we look at the market structure in 2000s we will find more information about rules, competitors, technologies and customers. But there is low demand on the innovations and new technologies yet. There are some reasons for not entering an international market, such as specific product, which is not suitable for foreign consumers, complex procedure for receiving permits and necessity to protect their intellectual property rights. Reluctance to disclose their technology leads to the fact that companies operate on the Russian market.

5. CONCLUSIONS

Summarizing up the work done, it should be noted that the different approaches to the definition of technological entrepreneurship have been analyzed; the peculiarities of transition economies were studied with definition of the role of technological entrepreneurship. Particular attention was paid to the development of technological entrepreneurship in transition economies during the literature analysis. The Russian context of the transition phase analysis was conducted and the peculiarities of Russian reality were marked.

The case method was selected to study the evolution of technological entrepreneurship in the Nizhny Novgorod region. We studied 10 cases of companies founded in the 1990s and 2000s in the Nizhny Novgorod region to determine the distinguishing characteristics of two generations of technology entrepreneurship. Special selection of cases was performed for better results. For each case there were: public sources information collection; company history study; personal semiformalized interview with CEO or founders.

The qualitative analysis was performed which allowed us to define drivers and constrains for two waves of technology entrepreneurship development. The evolution trends regarding this type of business in the region were identified.

As a result of conducted study, it is possible to draw general conclusions on the main issues discussed. There were some tendencies to preserve the principles of creating and maintaining the technology business through different generations, but there have been some evolutionary changes.

Having considered the question of motivation for starting a business in the high-tech field, we found that most of it is related to the implementation of scientific results and getting additional income, rather than forced motivation. It is typical for both generations and has not changed. Thus, we can conclude that this motivation is typical for high-tech businesses in the area.

In the study, we found that the main most important resources for technology companies of all generations are people and intellectual property in the form of knowledge and experience of these people. Nowadays, entrepreneurs are gradually becoming aware of the need to formally protect their intellectual property, but they still do not trust the legal system and prefer to protect it as know-how. With regard to human capital, the quality and availability of highly qualified personnel for high-tech business has declined substantially over time. This shows the degradation of human capital in the country.

Also inviolable principle of doing technology business in Russia is to minimize external financing. This is manifested in both generations, all the studied companies prefer self-financing or grant programs, which allows to limit an external interference to the management of the company. However, in the second generation, one can see a greater willingness to investor's entry, as owners of the companies realize that without them the development will be too slow. That is, despite the emergence of available venture capital in the 2000s, technological entrepreneurs are reluctant to use it.

If we consider the cases in terms of relationships with partners, one can find close links with scientific organizations which were the source for the first generation entrepreneurs. In the second generation this type of links is not observed, instead of it there are formal relationships defined by written contracts.

Certain knowledge and skills are required to start a business. In this regard, it should be noted that there were lack of necessary skills and knowledge in both generations, as founders often had scientific or technological background. To obtain the missing skills and knowledge entrepreneurs of both generations sought to learn and relied on their experience or someone else's. However, first generation entrepreneurs had fewer opportunities for training and fewer experienced people in the environment.

The attitude to government support is more discreet in the first generation. Second generation entrepreneurs are more loyal to government support as the number of support programs had increased drastically. Some of second wave entrepreneurs have their business started precisely because of government support.

Among the problems that were mentioned by both generations representatives there were: lack of demand for innovative products in the country, the degradation of the industry, the high risks of this type of activity, resulting in low business activity in this area. A distinctive feature of the second generation of technology entrepreneurs is the sharp shortage of qualified engineering personnel.

Speaking about the company development strategy, both generations talk about niche strategy chose quality leadership strategy and adhere to a strong client orientation, focus on their core competencies and prefer to make outsourcing non-core activities.

Considering the external conditions for the development of technological entrepreneurship in the country, it is worth noting that the legal framework was formed, private property became better defended, the institutional environment

has become more favorable and orderly. Despite this, entrepreneurs still do not thrust the intellectual property protection system.

Public attitudes towards entrepreneurship eventually became more tolerant, and attitude toward technology entrepreneurship transferred from a positive to indifferent.

The market environment has become more favorable, but the market is gradually saturated and entry barriers are growing. The role of market methods of dealing with competitors has increased; one can observe the development of the business culture of market relations.

As a result of this exploratory study trends in the evolution of technological entrepreneurship in the region are revealed. The peculiarities of technology entrepreneurship development in the region with high scientific potential were formulated. In addition, the obtained results can be used for further studies of technology entrepreneurship in other regions.

Identified factors of technology entrepreneurship in the Nizhny Novgorod region will serve as the basis for local authorities to create programs for further development of technology entrepreneurship in the region.

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