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PAN-EUROPEAN INSTITUTE

Valtteri Kaartemo, Nikita Lisitsyn & Kaisa-Kerttu Peltola

Innovation infrastructure in St. Petersburg – Attractiveness from the Finnish managerial perspective

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Contents

1 Introduction

Traditionally, innovation activities have been considered to be the task of advanced countries. The production of high-tech goods has already moved away from these countries, and the shift has been well acknowledged. However, emerging economies have not been willing to remain only as manufacturing basis of these goods but have also started to develop their own innovation infrastructure. The innovation potential of these countries has remained largely unnoticed, although there has been number of publications and reports indicating the future changes in the world economy.

In the league of innovation-hungry economies, Russia is no exception. Being tired of raw material and energy-dependency, President Medvedev has made his famous statements on the future of Russian economy where innovation stands for one of the four I's – together with institutions, infrastructure and investments. Following these Federal-level work principles, regional administrations have started to develop innovation systems all around the country.

One of the first Russian regions with ambitious plans for innovation capacity building can be found in St. Petersburg. The St. Petersburg regional administration has set a strategy which is supposed to formalise an international level innovation centre in the city. The innovation system development in St. Petersburg is in their Strategy for the Future Innovation (2008) considered to be based on the following factors:

- innovation infrastructure[1] and group of innovative companies
- scientific, research and educational centres and accumulated intellectual potential
- competitive industries and clusters; IT industry global leaders
- beneficial geopolitical location

In order to be successful, St. Petersburg needs the ability to attract innovative foreign companies to the city, as foreign companies boost international networking, bring new ideas and technologies, and increase cluster formation. Only by real international collaboration, St. Petersburg can benefit from its strategically preferable location. So far, a bulk of foreign direct investments has been targeted in energy and raw material-

[1] The innovation infrastructure has been defined in St. Petersburg Innovation Strategy as "a system of innovation business subjects (scientific research institutions, higher education institutions, innovation technology centers, business incubators, science towns, industrial parks, IT parks, special economic zones, venture investment funds, shared use centers and other specialised organisations".

related sectors of the economy. This has left the city, as well as rest of the country, to ponder how to attract foreign companies in other fields of industry, too.

In this report, the main emphasis is on studying the attractiveness of innovation infrastructure in St. Petersburg from foreign managerial perspective. The purpose of the study is to indicate the solid building blocks for a functioning St. Petersburg innovation infrastructure, and the key challenges which concern or hold back foreign companies. Consequently, this report is not providing general description of the innovation infrastructure in St. Petersburg[2] but focuses on the things which are important to foreign companies.

Thus, the study aims at:

- analysing the important factors of Finnish managers in location decision-making
- analysing the image of Finnish managers on St. Petersburg
- analysing St. Petersburg innovation infrastructure from the perspective of the factors important to Finnish managers

The analysis starts with a description of innovation system in Russia (Chapter 2) with a particular look at St. Petersburg (Chapter 3). In Chapter 4, the report represents the survey results from Finnish companies on their location-decision factors and image of St. Petersburg. The conclusions are provided in Chapter 5.

[2] For a general description of St. Petersburg innovation system see Panfilo et al. (2007)

2 Russian innovation system

2.1 Historical development of the innovation system in Russia

Nowadays in Russia there is a new term related to the modern innovation system, namely National Innovation System (NIS). This new term appeared only about 10 years ago. Of course, there were similar concepts to NIS, but they were called like sphere of R&D, or Scientific and technological progress (S&P). It is important to monitor the history of development of Russian Innovation System since Soviet times till present, because all preconditions of the modern Innovation System had been created in the Soviet past.

SOVIET TIMES

It is worth to say that the strongest branch in the Soviet R&D was fundamental investigation. In the Soviet era there were special R&D institutes for this purpose. But the worst and one of the major principles during this period was to separate these investigations from the real sector of economy (mainly from the civil sector). This shortcoming of separated business and research activities is still visible.

There were lots of so-called construction bureaus and special laboratories at the large factories. Thus, it should be mentioned that the structure of Soviet science involved academic, institute-based and factory science. But it was even impossible to imagine cooperation between these branches due to the high bureaucracy methods of administration. It should also be mentioned that the Soviet “innovation system” was highly diversified and had regional peculiarities, which was natural taking into account the huge size and geographical diversity of the country.

USSR managed to achieve great progress in such fields as aerospace, nuclear science, biotechnology and so on. But we can also see that the time of 1970-1980 had become a period of growing gap in research and development between Soviet economy and that of developed countries.

During the existence of the Soviet Union, authorities tried to introduce some analogue of West-based technoparks in the USSR. These were so-called “science towns” or *naukograd*y. They started to grow since 1940s. These “science towns” had many resemblances with technoparks in North America and Europe. At least the idea of

concentrating innovative activities and transferring knowledge from researchers to producers looks like much the same. However, they differed much from what today is called a technopark. The differences were both in their functions and operation environment. So, “science town” was focused on co-operation with big enterprises of military-industrial complex or development of single high-priority project (in military or space fields). On the contrary, technopark is assisting the growth of numerous small and medium-scale companies, various multi-dimensional research projects and initiatives. An example of ‘science town‘ of this kind was Dubna, located near Moscow. It was focused primarily on nuclear physics and related investigations. Many of the “science towns” operated in a secret or half-secret environment due to their strong linkage to the military-related researches.

Nevertheless, these “science towns” might have become sort of ground for creation and development of modern technology parks. The most known “science towns” were created in Moscow area (in Dubna, Zelenograd) and near Novosibirsk. The latter (often called Akademgorodok) started this transformation already in the 1990s, despite a general crisis in R&D sector of the Russian economy. The transformation of Akademgorodok near Novosibirsk to a more modern innovation structure to large extent depended on establishing tight links with technoparks and hi-tech companies in developed countries, especially in the United States.

REFORM PERIOD OF THE 1990s

The economic reforms and political transformations in the 1990s practically destroyed command-planned economy. The disintegration of the USSR, the abolition of the industrial ministry, sudden reduction in financing the R&D sphere led to decrease in innovation activity. Undoubtedly necessary reforms, nevertheless, produced uncertainty and hyperinflation. In the 1990s, figuratively speaking, Russian economy was struggling for survival.

We can see sharp changes in the structure of costs for the development of science and technology at that time, the dramatic changes in the structure of employment, the demand for innovations from the native enterprises.

With the “opening” of Russian economy many R&D centres, institutes got freedom to join world economy, to compete with western enterprises, to create new technologies.

But it was practically impossible because of the lack of financing, competitive advantages in the foreign market, and lack of experience.

The basic reason for a dramatic decline in science and research in the 1990s seemed to be the deep economic crisis which came along with the transformation of Russia's economy. The crisis, despite its deep impact, was a temporary phenomenon and was followed by the economic growth of 2000s.

GROWTH PERIOD OF THE 2000s

Despite all the difficulties of 1990s, market economy (with national peculiarities, of course) was established in Russia and the transformation processes decelerated. Economy became more stable. The financial crisis of August 1998 was followed by rise of GDP since 2001 and of industrial sector already since the end of 1998. Replacement of imports by domestic production fuelled economic growth. Prices on exported raw materials, after their historical minimums of 1998, went up since March 1999. Nevertheless, this growth might be called restoration, as the pre-crisis level of Russian federation's GDP (that of 1990) was reached in 2006 only. Mostly, the new economic boom since 2000 till 2008 resulted just in overcoming the fall of the 1990s rather than creating a basis for further development. Furthermore, the economic boom was largely resulting from the global hike of energy and raw material prices. Therefore, there were no significant changes in the Innovation System of Russia. After a decade of rapid growth, the economic crisis hit the country in 2008 and the demands for changes in innovation system were repeated. However, the impact of economic crisis on innovation policy is not studied here but later in a separate forthcoming publication by Dezhina and Kaartemo (2009).

Russia's innovation potential is probably greater than that of many other countries as the country benefits from a substantial science base and a well developed education system in science and technology. By international standards, Russia has a highly educated population, but despite the high level of inputs, Russia still lags well behind OECD and other large middle-income countries in R&D outputs. (World Bank, 2006.)

There still seems to be a clear imbalance between the public resources devoted to knowledge creation and the observed outputs in terms of innovation as well as stimulating greater private-sector involvement in R&D, which remains limited. These issues constitute some of the major challenges for Russian innovation policy. One of the positive characteristics is the large potential market and resources for innovative

activities provided by Russia. On the other hand the country's innovation system is still in the phase of transition resulting in problems such as the lack of cooperation and coordination of different organisations in the innovation system and almost nonexistent intermediary system which have had a negative effect for instance on commercialisation of innovations. Supporting cooperation on national and international levels should therefore also be emphasised in the innovation policies.

2.2 SWOT-analysis of the Russian innovation system

The following Table 1 provides a SWOT-analysis of Russian innovation system as perceived by the authors. It is further elaborated in the following pages of the report. The description here concentrates more on the innovation system in particular instead of indicating the challenges in the general business environment such as corruption, bureaucracy, customs and their indirect impact on the functionality of Russian innovation system.

Historically, Russia, as part of the former Soviet Union, has been characterised by a well developed system of public R&D institutes. In 2005, Russia's research sector comprised 3656 R&D organisations, employing some 813.207 employees of which 48 % were researchers. During the transitional period, however, this part of the R&D system has experienced severe problems including low level of financial support from the state budget and industry, low salaries for scientists and engineers and stagnation of R&D activity. (European Commission, 2007.)

Total R&D spending in Russia amounted to approximately 1% of GDP in 2006, which is far below the OECD average. R&D intensity has, however, increased in recent years, recovering from a post-Soviet rate of just over 0.7% of GDP. In any case, part of the gap between Russia and the OECD average reflects the country's industrial structure and position in the world economy. R&D activity tends to be lower in resourced-based economies, while countries with a large share of production in sectors like pharmaceuticals and telecommunications tend to have higher R&D spending. In contrast to OECD countries, most Russian R&D (roughly two thirds) is financed by the state. (OECD, 2008.)

Table 1 SWOT-analysis of Russian innovation system

Strengths: science base, developed education system in science and technology, innovation activity in metallurgy and machinery and chemical industry, emerging state-level innovation policy, innovation governance system	**Weaknesses**: limited private sector involvement, lack of co-operation and coordination, non-existent intermediary system, low level of financial support (state and industry), most R&D financed by the state, gap between R&D and market demand, low level of innovation activity, underdeveloped SME sector, ineffective technological infrastructure, absence of small innovation companies, narrow strategic focus, innovation infrastructure, absence of state support, research-centered ideology, absence of large high tech companies, absence of intersectoral knowledge and technology diffusion, low level of linkages among actors in innovation system, business environment
Opportunities: market potential, potential resources, latest technology and managerial and marketing experience from foreign partnership, growing attention to forecasting and foresighting, support of innovation infrastructure and indirect measures to stimulate innovation, partnerships with foreign companies, contracts with foreign research organisations, contracts with foreign companies, integration in international markets, foreign investments, imports of modern capital and managerial skills and corporate practices, linkages with domestic companies, worker training, increasing competition on domestic markets, pro-active innovation policy	**Threats**: status quo or negative policy shifts, more rapid development of competing emerging (BRIC) economies in developing their innovation systems

As many studies have noted, there is a wide gap between Russian R&D and the demands of the market. The majority of R&D in Russia is financed by government and at the same time, investment in R&D by the private sector as a share of sales is actually quite low compared to other BRIC countries (World Bank, 2006). Radosevic (2003) points out that due to its Cold War origin Russian science and technology policy shares has inherited a strong defence character and has a strong focus on the R&D and lack of diffusion of innovations. The policy also tends to focus on supply orientation and neglect demand.

Innovation performance indexes demonstrate a rather low level of innovation activity amongst Russian companies. For a long time it did not exceed 10% of the total number of enterprises statistically surveyed by Rosstat. The share of stable innovative enterprises is rather low as well. In metallurgy, machinery, and chemical industry, the share of innovation enterprises tends to be higher than in other industries. No less problematic is the state of small innovation companies in the country as a whole. Their share does not exceed even 1% of the total number of small enterprises in Russia. Another factor of concern for science and innovation of the country is the huge dependence of S&T sector of the economy on government R&D expenditures. The share of budgetary funds in the structure of the gross domestic expenditures on R&D in recent years has grown steadily. (European Commission, 2007.)

Knowledge creation in the business sector is also suffering from limited interaction with the public R&D sector and the lack of engagement between the science sector and business contributes to relatively poor performance with respect to innovation outputs. One indicator of this weakness is the relatively small number of patents held abroad. (OECD, 2006.) The resources of Russian enterprises to produce radical innovations have also been reported to be limited as lack of finance, narrow strategic focus, weakness for external innovation infrastructure and absence of state support (Gurkov, 2004).

Technological transfer through world market integration has played an important role in the modernisation of the Russian economy. Still, according to World Bank (2006) several factors have limited the degree to which Russia has been able to profit from technological transfer. Although trade volume in Russia as a share of GDP is similar to many other countries, trade volume in manufactured goods is relatively low, particular in the critical parts and components industries where much technology transfer and

learning by doing is thought to take place. Furthermore, a large part of both imports and exports in parts and components can be associated with the CIS, where Russia likely receives minimal benefits from technology transfer. Foreign direct investment has also been relatively low in Russia compared to other dynamic emerging market economies. While FDI rates have picked up majority of investments has been directed to metals and oil processing.

The importance of foreign companies and their impact on the host country is well-acknowledged (cf. Zashev 2007). Russian companies have entered into partnerships with foreign companies in various ways (such as joint ventures, research contracts, and cooperative research projects) in order to get access to the latest technology as well as managerial and marketing experience. At the same time, Russian research organisations have been very active in mobilising foreign support and research contracts. In addition to American and European governmental and non-governmental programs supporting non-commercial R&D activities in Russia, there is also a growing number of Western companies that contract out research of a commercial nature to Russian research institutes. Foreign funding makes up for nearly 10% of all R&D expenditures in the Russian Federation. Primary sources of foreign funding are: the EU, the USA, and some Asian countries such as China, Japan, and South Korea. (European Commission, 2007.)

Despite the challenges of the Russian innovation system, it must be remembered that the Russian Federation has made a lot of progress in the formulation of innovation policy and the creation of an innovation governance system. Important policy priority directions initiated by the government are for instance growing attention to forecasts and foresights, support of innovation infrastructure and further development of indirect measures to stimulate innovation. Although Russia has made progress in the development of innovation policy, policies are still largely based on a research-centered ideology resulting in weaknesses such as absence of large high tech companies, intersectoral knowledge and technology diffusion, lack of intermediary organisations, low participation of business in financing R&D, underdeveloped SME sector, ineffective technological infrastructure for innovations and low level of linkages among actors of the innovation system. (European Commission, 2007.)

Budgetary expenditures on R&D have been growing but at the same time the structure of allocations on R&D continues to be conservative especially considering the allocation of funds amongst government agencies.

Integration in international markets and attracting more foreign direct investment in technology intensive sectors should be emphasised in the innovation policy in order to promote technology transfer and accelerate technical progress. Attraction of foreign investment and foreign presence is important as it can contribute to technical progress through the direct importation of modern capital, managerial skills, and corporate practices, as well as indirectly through linkages with domestic firms, worker training, and increasing competition on domestic markets. Although Russian companies have already entered into partnerships with foreign companies in various ways in order to get access to the latest technology as well as managerial and marketing experience and Russian research organisations have been active in mobilising foreign support and research contracts. (European Commission, 2007.)

Russia has a lot of potential in certain leading research and innovation industries. However, the efficient use of vast natural resources on the international market is possibly one of the main challenges posed for Russia's technology intensive industries and its ability to commercialise research findings into marketable products. The governance system faces serious problems in bridging the gap between political visions and ambitions on the one hand and the implementation of the visions.

One of the important challenges of the Russian innovation policy is to induce a stronger participation by the Russian business sector in the whole innovation process, including that of conducting research as the lack of commitment by the business sector is one of the major weaknesses of the Russian innovation system. A healthy business environment may be considered a precondition for boosting innovative activities and should be developed by relevant policies. Russian innovation policy is still largely based on a research-centered ideology. Important measures to develop the policy include creating successful innovation climate throughout society, supplementing state support for R&D, industrial enterprises and infrastructure through stimulating measures. In order to improve the overall functioning of the Russian innovation system, the Russian government should adopt a more pro-active innovation policy. (European Commission, 2007.)

There are many programmes aimed at the foundation of the innovation sector in Russia. The long-term programme of the government of Russian Federation is aimed at creating National Innovation System. It includes the creation of the innovation infrastructure, special venture funds and government support.

During the last few years innovation sector was considered to be a really important component of Russian economy. Nowadays there is a real opportunity to develop innovation sector, as demand for new technologies and high-tech products is growing. The government is eager to finance innovative enterprises, to invest money into creating innovation infrastructure. Such tendencies as the development of Russian banking sector, creating special investment funds and banks are also visible. In addition, more and more companies want to increase added value of their products. This process requires “long money” and Russian economy still has some of its stabilisation funds left for this use.

Even today there is no developed innovation infrastructure in Russian Federation. Of course, the government is trying to create the National Innovation System, but Russia still has no modern technoparks, innovation centres and business incubators. National economy is still dominated by export oriented enterprises and the fuel sector.

Currently, there are only a small number of technology parks which operate according to international standards. These technology parks were originally formed for government subsidies instead of demand from the market. Therefore, the technology parks operate differently in Russia. Instead of providing innovation-enhancing services and networking among residents and local universities, they provide mainly comfortable facilities and security. (Dezhina & Peltola 2008.) President Medvedev is even more critical by stating that technology parks, Russian venture companies and special economic zones exist only on paper (Moscow Times 2009).

3 St. Petersburg innovation system

3.1 Historical development of the innovation system in St. Petersburg

In Soviet times the city of Leningrad was very often regarded as an educational and scientific "capital" of the country. Indeed, long traditions of higher education, many educational establishments (the world-known Leningrad State University / LGU and a large number of institutes), a substantial layer of scientists and researchers in the city's social structure proved such a title. On the other hand, construction bureaus, R&D-focused enterprises of military-industrial complex and research institutes located in the city all had a huge demand for highly qualified personnel. However, the only *naukograd* in the region was in Petrodvorets (also known as Petergof). But it had functions different from that of typical "science town". The Petrodvorets project aimed at creating in Leningrad an analogue of Western university campus and taking certain faculties of LGU out of the city centre to the suburbs.

In 1990s the structure of St. Petersburg's economy changed dramatically. Education, science sector, the City's military-industrial complex and R&D-focused industries of civil economy (like machine building) lost their previous significance. The leadership shifted from knowledge-intensive industries to food production and trade. The major part of the students was choosing non-technical education (even the still prevailing technical institutes and universities introduced non-technical faculties and specialties). After graduation, many technical specialists emigrated to the West. Economic reforms encouraged fast creation of small businesses, but the vast majority of those related to trade sector. Many experienced scientists already working at research institutes and construction bureaus left their jobs either due to mass retirement or because of low salaries. Most of those moved to other sectors of regional economy and lost their technical knowledge. A sharp decrease of state orders in early 1990s had a deeply negative impact on formerly "privileged" military-industrial complex of St. Petersburg. During this decade the City's research potential diminished substantially, both at supply (scientists and researchers) and demand (research institutes and knowledge-intensive industries) sides.

From the very start of economic reforms the Government of Saint Petersburg tried to utilise the educational and research potential of the City in new economic environment. There were several directives concerning the development of innovation sector in the

city: in 1993 by the City's Major Alexandr Sobchak and in 1996 by the First Vice-Major Vladimir Putin. St. Petersburg Centre of Russian Academy of Science, State Optical Institute, Radium Institute, and other research institutions supported these initiatives concerning creation a technopark structure in St. Petersburg. However, despite the declared willingness to create modern innovative structures in Saint Petersburg, the results of the initiatives were rather modest and the plans did not come into practice in 1990s. There were such problems as lack of substantial financial assistance from state or regional authorities, no substantial budgetary or other resources for implementing this project and, no wide demand for innovative research.

The demand for innovations in Saint Petersburg economy which appeared in 2000s was strongly stimulated by research community (research institutes and centres, emerging small innovative companies); companies from knowledge-intensive industries (both Russian and foreign); educational establishments (universities, institutes, Russian Academy of Science and its subsidiary in Saint Petersburg); local and federal authorities. Moreover, improvement of regional and federal budget indicators and creating state owned Stabilisation Fund (SF) enabled the authorities to support innovative structures in the region.

Speaking about St. Petersburg and its region, it should be mentioned that, in the beginning of the new millennium economic development in the region included not only overall growth and restructuring of the City's economy, especially after 2005. In these new conditions knowledge-intensive industries started to regain their importance. Huge investment boom led to re-equipment of many enterprises and modernisation of the regional economy in general.

In 2000s a certain revival in the City's military-industrial complex may be observed as well. Formerly important state orders were substituted by large export contracts with countries like China and India, modernising their armed forces. Contracts in shipbuilding and other military-linked exports in 2000s constituted a bulk of regional foreign trade. Due to these military exports such EU countries like Germany and the Netherlands, which took the leading positions among St. Petersburg export partners in the 1990s, were replaced in the 2000s by China and India buying ships built at the City's shipyards. Only shifting of Gazpromneft's headquarters to St. Petersburg in 2006 changed the export structure again towards the EU. One should mention, however, that

oil and gas exported by this company are produced in Siberia and have nothing in common with St. Petersburg economy.

During the 2000s another knowledge-intensive industry of St. Petersburg economy, namely communication, developed extremely fast. For example, during the peak year of 2004 the subscriber base of mobile operators in the city grew by a factor of 60. In 2007, the number of mobile subscribers in St. Petersburg area totalled 8 million. Internet access still has lower penetration, but has grown at a similar rate (the obvious reason is that PCs are more expensive and thus less affordable than cellular phones).

Another tendency of regional development in the 2000s was the investment boom observed in St. Petersburg, which was ranked by a well-known Russian economic magazine Expert as number one region in Russia by investment risk (meaning the City has the lowest integral investment risk among all 87 regions of the country). This investment boom created considerable spillover effects on the regional economy, especially in a SME sector.

The growth wave of 2000s changed the priorities for the City's science and research sector: from preserving the Soviet heritage towards further development on a new basis. But it is very important to emphasize that the link between fundamental science and higher education on one side and knowledge-intensive production on the other, namely applied and experimental research and innovation, is still rather weak compared to developed countries.

St. Petersburg City Government declares its willingness to continue creating modern innovation infrastructure. According to the resolution of St. Petersburg Government, the Committee for Economic Development, Industrial Policy & Trade is appointed to coordinate this sphere. Vice-governor of Saint Petersburg Oseevskiy M.E. became responsible for promotion and controls functions in this field. The overall budget for financing innovation activities in 2008–2011 is a massive 9.6 billion roubles, equivalent of US$ 350 million.

This Innovation Policy of the city is aimed at:

- Development of the innovation infrastructure in St. Petersburg
- Raising competitiveness of the main players in the innovation sphere
- Increasing output of innovative products

- Concentration and diversification of the players in the innovation sphere
- Creating the mechanism of the innovation development in St. Petersburg
- Image placement of the city as an International Innovation Centre

The key tasks for achieving these goals are:

- Education and retraining specialists for the innovation sector
- Development of the innovation infrastructure in St. Petersburg
- Improvement of the governmental legislation in the innovation sphere to stimulate its development
- Improvement of the financing system in innovation sector
- Assistance in the implementation of innovation federal target programmes and projects
- Creating effective tools of regulation and coordination of the innovation policy
- Developing cooperation between Russian, foreign and international innovation and science organizations

So, it is obvious that Saint Petersburg authorities are aimed at extending innovation policy in the city. The city has a huge potential to become an innovation centre at least on national level. According to the Government Resolution №881 the city administration has clear aims and priority projects and programmes in the innovation sphere. The need for innovative sector is thus well-acknowledged but it remains unclear whether these plans ever become reality. The following Table 2 provides a SWOT-analysis of the St. Petersburg innovative sector in 2007 but after two years it has remained valid.

Table 2 SWOT-analysis of innovative sector of St. Petersburg

Strengths: Solid educational basis, Highly-qualified labour, Labour costs still much lower than in developed countries, Growth of knowledge-intensive industries of regional economy, creating demand for innovation, Substantial state support of regional innovative projects, Planned investment into infrastructure development	**Weaknesses**: Absence of practical experience of implementing innovative projects, Absence of required infrastructure, Most of new innovative projects are at zerostage of development, Dominance of state financing in innovative projects' budgets, Limited amount of certain key types of specialists, High rise in labour costs during last few years
Opportunities: Utilising rich educational and scientific heritage of Soviet system, Attracting qualified technical specialists and educated researchers by relatively low salaries, Generated knowledge could be utilised in regional economy, consumers are just nearby, State support diminishes expenditures and allows significant tax relief, Newly built infrastructure may become a benefit itself as it might be more up-to-date than developed countries have	**Threats**: Low experience may lead project to many practical failures, Building infrastructure in Russia often requires much time and may pass very slowly, Dominating role of state financing may lead to huge corruption, Simultaneous start of several innovative projects may lead to qualified labour shortages, If high inflation in Russia and corresponding rise in labour costs persists, low salaries may become excessively high

Source: Lisitsyn (2007)

3.2 Innovation infrastructure in St. Petersburg

Innovation infrastructure is a part of the larger innovation system representing the key innovation organisations. It would be reasonable to divide the innovation infrastructure of Saint Petersburg into several groups. First group consists of technology parks, which are established either by the state or created by private companies (Technopolis Plc.). Second group includes Innovation Technological Centres (ITC) based at universities of the city. The last group consists of other Innovation Technological Centres and Funds.

STATE TECHNOLOGY PARKS

Special Economic Zones (SEZ)

The main dimension of the state-supported innovation policy was creation of Special Economic Zones (SEZ)[3]. SEZs offer fiscal and regulatory incentives to its residents aiming at providing competitive environment for innovative companies. St. Petersburg got an opportunity to create technological-innovative SEZ. The SEZ have a definite specialization. The basic activities of the technopark will be the following:

- software production;
- production of communication equipment and consumer electronic devices;
- constructing equipment for automated production;
- production of medical appliances;
- production of military and civil avionics
- precision engineering.

Under the agreement with the Government of Russian Federation the TI SEZ are located on two territories: one in Strelna, south-west from the City (on a territory called "Neudorf"), other in the northern part of Saint Petersburg, near Novo-Orlovsky Park. Altogether, there are 30 companies which have signed an agreement of operating in one of the St. Petersburg SEZs.

Besides creating the infrastructure the Government gives substantial tax relieves to the residents of SEZ. The preferences include custom duties relief as well.

Companies are also partly forced by the state to start operations in the special economic zones. State financing is sometimes limited only to companies which agree to take their innovative projects into SEZs.

The technological-innovative SEZ in Saint Petersburg is aimed at creation of technological and innovative activities. According to the plan of attracting residents published on the official web site of the TI SEZ in Saint Petersburg, it supposed to increase the number of the residents from 4 in 2007 to 70 by 2010. The future development of SEZ could also be of big social importance, creating about 9 thousand jobs by 2010.

[3] For more detailed information about Russian SEZs see Männistö (2007), Tuominen & Lamminen (2008) and Liuhto (2009).

Table 3 Main tax reliefs in special economic zones (SEZs)

Taxes	General conditions	SEZ area	Period
Unified Social Tax	26%	14%	During all the time
Land-tax (% from cadastral cost)	Max. 1,5%	0%	During the first 5-year period
Property tax	Depend on property	0%	During the first 5-year period
Transport tax	Max. 200 rubles	0 rubles	During the first 5-year period
Income tax	24%	20%	During all the time

In addition to tax benefits, also investors are expecting lower investment and operating costs. Companies are also attracted by image benefits for operating in state-led technopark. SEZs have certain limitations for the companies which can operate in the area. Therefore it gives a privileged status for companies who are able to pass the "stress test". However, the problem of the SEZs seems to be that it is only allowed to have R&D operations within the zone. This means that all the mass production has to take place outside the zone.

SEZ "Neudorf"

First of the two locations of the technological-innovative is in Strelna near Petergof. This area amounts to 18.9 hectares. In 2004-2005 there was done some engineering preparations such as water and gas supply, roads and illumination. All this project procedures were financed from the budget of the city. This SEZ is located near Petergof what should be attractive for investors especially.

The town of Petergof (located in the suburbs of Saint Petersburg) was a "science town" or *naukograd* even in Soviet period. Since 1970 several research and educational institutions have been based here: three faculties of Saint Petersburg State University/SPbGU (namely Faculties of Applied Mathematics; Mathematics and Mechanics; Physics), State Marine Academy named after S. O. Makarov, Naval Radio and Electronics Institute named after A. S. Popov, North-western Technical University, Lomonosov Educational Complex, Laser Physics Centre, Telecommunication Centre. Petergof, with its 11,000 students and 10,000 lecturers and researchers living in the campus may contribute to the development of SEZ "Neudorf", at least by supplying educated and qualified personnel.

Novo-Orlovskaya SEZ

Another SEZ is located near Novo-Orlovsky Park. One of the basic reasons to choose this location for technopark was its closeness to Primorsky District, one of the most dynamically developing districts of Saint Petersburg with relatively young population. The territory area amounts to 112 hectares. The planning project for this SEZ was developed by the Committee for Economic Development, Industrial Policy & Trade in 2006. It is also possible to enlarge this area by including territories of the Russian Academy of Science.

It is planned to start placement and registration of the residents on this territory during 2008-2009, after creating necessary infrastructure. It is also published on the web site of the city administration that 11 new residents have signed the agreement about operating on the SEZ “Novo-Orlovskaya” in 2010. But the activities of the residents will not start until 2009-2010, as there is no infrastructure in the region. The branch “Novo-Orlovsky” is needed such engineering preparations as water and gas supply, water disposal. Currently, only power supply network is available.

St. Petersburg Technology park in Nevsky District

Another technopark project is created in one of the most populated residential areas of Saint Petersburg namely Nevsky District (eastern part of the City, not far from the centre). That is cluster-focused specialised Information Technology Park or IT-Park. This technopark is built in the framework of state programme “Creating high-technology sector technoparks in Russian Federation”. This project is the first one under this programme. The IT-Park would be based on Saint Petersburg State Telecommunication University (GUT) named after M.A. Bonch-Bruevich and located nearby. It however remains unclear whether the University will be a part of the technopark as they have not yet signed exact legal forms on cooperation.

The future park presently has no infrastructure except the GUT building. It would be located in relatively densely populated area which does not allow large infrastructure projects; however, that may not become a big problem for IT-related companies. The project is led by the Federal Ministry for Information Technologies and Communication and its chief Leonid Reiman.

The Agreement on creating the IT-Park was signed between the Ministry for IT and Communication and Saint Petersburg Administration in April 2006. The Park should be built until 2012 and create 14 thousand jobs. It will include:

- an office centre; computer centre; research centre; library; technopark (the total of 60,000 m^2);
- administrative and service buildings (the total of 6,000 m^2);
- objects of IT companies which are the Park residents (the total of 40,000 m^2);
- infrastructural objects (living facilities; kindergarten; school; supermarket; parking places);
- university campus (the total of 30,000 m^2)

So the project is aimed at creating a technopark which would correspond to the internationally successful analogues. It integrates educational and scientific institutions with applied research and innovation producers, supporting this process with living facilities and infrastructure. But it definitely lacks any starting basis, being a sort of "green-field" investment.

PRIVATE TECHNOLOGY PARKS

Technopolis

Speaking about private companies operating in Saint Petersburg we can point to Finnish company Technopolis Plc. This company is aimed at creation a network of 3 technology parks in Saint Petersburg. The company acts as a technopark operator, providing its clients with premises, sector-specific expertise, strong links with information providers, and other forms of assistance. The business concept of Technopolis consists of three areas, namely premises, business services and development services. Technopolis technology centres provide their customer companies with premises that can be designed for the needs of each company. Business services are produced by Technopolis together with its partners. The services are aiming at improving companies´ cost-efficiency and increasing the flexibility of their operations. The services include for example legal, accounting, patenting, translation and communications services. Development services, on the other hand, are designed to help customer companies to build their competitiveness and resources to succeed in international markets. They are developed for start-up companies or companies on the verge of strong growth, but also for those that are already established in international

markets. In addition, Technopolis offers its customers regional attractiveness programs and incubator services. Technopolis also provides consulting services, as well as related planning and training services. Potential customers in St. Petersburg are the Russian and international high-tech companies from the ICT-sector.

In October 2006, Technopolis took a decision to create their first technopark without any contribution of the Russian state or regional authorities. It purchased a territory in the southern part of St. Petersburg in the immediate vicinity of the Pulkovo International airport. Close proximity to the airport is a strategic and logistically sensible solution for international companies or those that aim to become international. It also perfectly solves the traffic challenges of Russia's second largest city, providing easy connections both to the city centre, the metro and the ring road. The company plans to create a technopark with 80,000 m^2 of premises. The first stage is scheduled for completion in April 2010, comprising over 23,800 m^2 of premises customised to suit both small and medium-sized companies as well as head offices employing hundreds of people. The construction project is expected to finish in 2016.

The creation of the first Technopolis technology park in St. Petersburg is intented to boost the community's business and innovation dynamics, provide a foothold for new knowledge-based companies to grow and help to transform St. Petersburg into a world class business and innovation hub. Pulkovo Technology Park will be designed as a platform for Finnish and international companies interested in starting or expanding their operations in St. Petersburg and also for Russian companies internationalising. This technology park is being designed as a hub for international business activities providing customer companies with flexible, tailor-made premises, business services and development services.

Technopolis has also plans to construct a technology park at the territory of Novo-orlovskaya park. Technopolis plans to contribute to IT-park about EUR 120–150 million. The company also has negotiated with "St. Petersburg Technopark" of constructing premises and providing services in Nevsky district.

Other private technoparks

Another attempt to launch a private technopark was introduced by St. Petersburg's largest software producer, namely Russoft. However, the company eventually failed to attract necessary resources for its proclaimed technopark project.

UNIVERSITY INNOVATION TECHNOLOGICAL CENTRES (ITC)

Other possible actors in creating innovation infrastructure of Saint Petersburg are universities. Universities experienced dramatic decline of financing during the reforms. Nevertheless, using their scarce financial resources and production facilities (premises, laboratories, equipment, databases) inherited from Soviet times, several Universities of the City (first of all Saint Petersburg State University and State Technical University / former "Politech") started creating research centres on their own basis. These innovative structures required fewer resources and thus were more affordable for universities. They also helped many young scientists to conduct their researches and thus decreased the "brain drain". Today these centres may make their contribution to planned technopark projects in the city.

However, the university innovation technological centres remain mainly sites for individual people or very small businesses, which means that the residents are not necessarily even registered as companies. People develop their ideas in the premises of universities and when they get funding for their ideas they often move out from the centres.

- **Technology Park of Saint Petersburg Electrotechnical University "LETI"**

In 1991 on the basis of the University the first Technology park was founded in St. Petersburg. The main aim of the foundation was to establish favourable conditions of operating for small innovative enterprises and young researches and scientists, to create competitive products and technologies. The basic activities are telecommunications, IT, medical instrument industry, radio- and microelectronics.

- **Innovation Technological Centre of Saint Petersburg State University of Information Technologies, Mechanics and Optics**

This centre consists of educational institutions, research structures and small innovation companies. The main functions of the centre are: creation of innovation infrastructure, supporting innovation and educational activity, consulting (law services, recruiting), development of international cooperation.

It is one of the biggest university Innovation Technological centres in the city. Nowadays there are about 30 small innovative enterprises. These firms are specializing in creating software products, laser techniques and optoelectronics.

- **Scientific and Technical Centre of Saint Petersburg State Polytechnic University**

The main activities of this centre are: instrument industry, biotech, software products and computer engineering. This centre provides different business services such as advertising, monitoring, consulting, transfer of technologies, publishing, equipment providing, training programmes and business plans development. The centre is aimed at promoting science intensive technologies created by the researches of the University, supporting students in the innovation sector, foundation of new innovation projects, coordination between innovative enterprises and scientists, researches, development of international scientific and technological connections, import and export of innovation technologies.

- **Laser Technologies Institute of Baltic State Technological University**

Laser Technology Institute was founded in 1998 on the bases of the Department of Laser Technic of Baltic State Technological University. This Institute continues and develops the best traditions of the University - broad training in the engineering field, according training in mathematics and physics, mechanics, gas dynamics and heat exchange, engineering graphics and design, technology and also human sciences. It is possible for students to participate in international innovation projects organizing by foreign universities and science centres. Laser Institute maintains contacts with leading laser centres of Saint Petersburg, Moscow and other Russian cities.

- **Research and Education Canter o Saint Petersburg State Mining Institute (REC-015)**

Research and Educational Centre REC-015 was established on the basis of long-term research activities of the leading scientific schools of the oldest Higher Technical Institution in Russia – the St. Petersburg State Mining Institute (Technical University). Its foundation was the result of application of exclusive technologies to research activities as well as integration into the world's research and educational system. The REC-015 was set up with the support from the U.S. Civilian Research and Development Foundation (CRDF) (grant ST-015-02 from October 1st, 2002), MacArthur Foundation and the Ministry of Education of the Russian Federation.

The Centre carries out research activities in the following fields: indicator minerals of petrogenesis and oregenesis, rock transformation in areas of intensive technogenesis, and geochemical and geoecological studies of rocks and mineral waste in technogenic zones

The main objectives of the Centre are development of theoretical grounds for compositional and property analysis of indicator minerals and aggregates to solve tasks of petrogenesis and ore genesis as well as rational use of mineral resources and environmental protection; development of genetic-geological models of large and unique deposits based on isotope geochemical analyses; simulation of structural formation processes in aggregates, rocks and ores, soils and waste; studies of distribution and migration of toxic elements in mining areas; and engineering-geological and geo-ecological grounding of engineering construction stability in megalopolises. The Centre applies the whole range of modern research techniques: electron microscopy and x-ray microanalysis with the JXA8600S scanning electron microscope and microanalyser.

- **Innovation Technological Centre "Technopark" of Saint Petersburg Forest Academy**

This Centre was founded in 1994 with the main aim of supporting and creation material and technical basis of the Academy, approbation and application of the new technologies to timber industry.

- **Innovation Technological Centre of Saint Petersburg State University of Technology and Design**

In 1994 on the basis of Saint Petersburg State University of Technology and Design the Innovation and Technology Centre was established. Its aim was promoting innovation infrastructure and commercialization scientific and technical achievements. The main activities are in the sphere of ecology, pharmacy, design of textile and light industry. The centre consists of 5 departments: transfer of technologies, protection of intellectual property, innovation projects support, education and analytical department.

OTHER INNOVATION AND TECHNOLOGY CENTRES

- **Technopolis**

Apart from technology parks, Finnish Technopolis has also created innovation centres. The innovation centres have been established to serve Finnish and other international companies in need of support in establishing their operations in St. Petersburg.

The Pulkovo Innovation Center was launched at the beginning of 2007 as the nucleus for the future technology park in the area. It provides an environment to host Finnish and international ICT and knowledge-based companies in St. Petersburg. Easy office, an excellent location for a growing company and a comprehensive business service package are considered to make it suitable for start-ups, satellite offices and Russian branches. The opportunity to move to the future technology park in the same area once it is constructed is an additional advantage for the customers.

In collaboration with the City of Lappeenranta, Finpro and Finnish Ministry of Employment and Economy, Technopolis opened Finnish-Russian Innovation Centre in February 2008. The Centre aims to strengthen relationships between Russian and Finnish innovation-driven companies and public institutions and develop new communication platform for all players in the cross-border innovation process. Each of the collaboration parties behind the innovation centre plays its own special role. Finpro is responsible for the innovation centre’s national mission and its linking to innovation policy. Technopolis' role is to support the growth development of tenant companies by offering them premises, services and networks. The City of Lappeenranta (through Lappeenrannan Kaupunkiyhtiöt) provides the centre with practical innovation services and university collaboration.

- **Innovation Technological Centre of Saint Petersburg Regional Foundation for Scientific and Technological Development (RFSTD)**

Innovation Technological Centre (ITC) was created on the basis of Saint Petersburg Regional Foundation for Scientific and Technological Development (RFSTD) according to special determination of the Saint Petersburg Government and the Ministry of Science of Russian Federation as one of practical steps towards realization of the agreement “On the cooperation in the field of forming and realizing innovation, science and technology policies” of July 04, 1995.

There are more than 30 small innovative enterprises within the Innovation Technological Centre (ITC) currently working in the areas of opto- and microelectronics, microwave engineering, chemistry and new materials, metal-working, and software.

The ITC mission is rendering infrastructure support to the high-tech SMEs innovative activity. The essential features of ITC activities are its non-profit character warranted by RFSTD, profit on operations of which is directed to ITC material resources' development. In contrast to technoparks of Saint Petersburg, ITC RFSTD doesn't have a linkage to any university (though having strong connections with their innovative structures), and it is oriented toward interacting with the science intensive industry of the North-West region on the whole. It is also different in terms of effective interaction with "Svetlana" PLC with the aim of serial developing of high-tech production created by ITC.

A total of 65 companies have been the ITC's residents since 1995, and 30 of them outgrew the scales of ITC and changed their disposition to other industry grounds, including mutual structures organized together with: "Svetlana" PLC, "Svetlana-Optoelectronics" JSC, "Virial" LLC, "Impulse Technologies" LLC, "Construction Company "Diamond Technologies" LLC, "Svetlana-Growth" JSC.

- **Innovation Technological Centre (ITC) of Fund "TVN"**

It was established in 1997 according to the programme of assistance to small innovative enterprises. This ITC carries out functions of business incubator providing commercialisation of technologies.

- **Innovation Technological Centre (ITC) "Innovations of Leningrad Institutes and Enterprises"**

This centre was established in 1989 and provides support to small and medium innovative enterprises. It is established on the basis of Saint Petersburg Electrotechnical University "LETI". Nowadays there are 21 innovative enterprises operating there. The centre provides such services as supporting the market entry, support of innovations of existing industrial enterprises. It also takes an active part in the development of innovation infrastructure in Saint Petersburg.

- **Innovation Technological Centre (ITC) "Centre of innovation supporting" of Ioffe Physics and Technical Institute**

This ITC is focused on outsourcing of scientific and technical innovations and commercialization of technology, products and services. The main sphere of ITC's activity is nanotechnology, opto- and microelectronics, medical- and biotechnologies, power engineering.

4 Finnish managerial perspective

A survey was sent to companies located in technology and business parks[4] in Finland. The survey was sent in order to find out their perspective on the attractiveness of St. Petersburg. Firstly, the survey took a look at the most important factors in location decision-making for Finnish companies. Secondly, the survey concentrated on the image of St. Petersburg among Finnish companies. Altogether 841 companies[5] were identified with valid email addresses. Out of these companies, top managers from 159 companies responded during March 26th–April 21st, 2009. Thus, the response rate was 18.9%.

The survey was designed and analysed in collaboration with selected experts in order to find out what Finnish top managers view important in innovation infrastructure, and how they perceive the current situation in St. Petersburg. Out of the respondents, 25% had business experience from Russia and 11% of the respondents had experience from St. Petersburg[6]. Thus, the results indicate to some extent real experiences from the field, and partially they reflect the image of the city in the eyes of Finnish managers. This provides a fruitful basis to analyse the presumptions of St. Petersburg innovation infrastructure against the reality as it has been experienced by Finnish top managers. The characteristics of the companies and the top managers who participated in the survey can be seen in detail in Table 4.

For further analysis, the survey results were also sent to the top managers of the seven companies who currently have business operations in St. Petersburg. The survey results were reflected in order to know whether the image of St. Petersburg differed

[4] The names of the companies were derived from the registers of the following business and technology parks: Helsinki Business and Science Park, Innopark, Joensuun tiedepuisto, Kajaanin Teknologiakeskus, Ketek, Lahden yritys- ja tiedepuisto, Mikkelin teknologiakeskus, Seinäjoen teknologiakeskus, Snowpolis, Steelpolis, Technopolis, Technopolis Ventures, Techvilla, Teknologiakeskus Pripoli and Turku Science Park. The contact information of the companies was searched by the authors from the internet.

[5] The following operators were excluded from the survey: technology park companies, regional development companies, companies providing only personal services, unions, centers of expertise, branches of ministries, foundations and universities.

[6] Due to a programming error of the web-based survey, the respondents were not asked if they had personal experience of Russia or St. Petersburg when their company had operations in Russia. The question was asked separately from the people whose company did not have business operations in Russia. As the respondents were mainly CEOs or other top managers, the data was modified so that they were interpreted to have individual experience from Russia and/or St. Petersburg if their company had operations or premises, respectively.

remarkably from the reality. The companies were asked to describe their main motives for investment in the city, and to tell about the main challenges and positive surprises they had encountered. The survey results thus provide a snapshot of Finnish managerial perspective which may be utilised for the development of innovation infrastructure in St. Petersburg.

Table 4 Characteristics of the companies and the respondents who participated in the survey

Company's size (by turnover)		number of companies
large	> € 50 million	6 (4%)
medium-sized	≤ € 50 million	5 (3%)
small	≤ € 10 million	15 (9%)
micro	≤ € 2 million	75 (47%)
not available		58 (37%)
Technology company		number of companies
yes		92 (58%)
no		64 (40%)
not available		3 (2%)
Company provides services to other companies in the business/technology park		number of companies
yes		72 (45%)
no		85 (54%)
not available		2 (1%)
Company has international business operations		number of companies
yes		87 (55%)
no		72 (45%)
not available		0 (0%)
Company has business operations in Russia		number of companies
yes		14 (9%)
no		145 (91%)
not available		0 (0%)
Company has premises in St. Petersburg		number of companies
yes		7 (4%)
no		152 (96%)
not available		0 (0%)
Respondent has personal business experience from Russia		number of companies
yes		40 (25%)
no		119 (75%)
not available		0 (0%)
Respondent has personal business experience from St. Petersburg		number of companies
yes		18 (11%)
no		134 (84%)
not available		7 (4%)

The main empirical findings of the survey are represented in the following:

1) **Firms which are located in technology and business parks in Finland consider that functioning IT-infrastructure is the most important location decision-factor.**

The companies were first asked to rank factors affecting their location decision-making on a scale from 1 (not at all important) to 5 (very important).

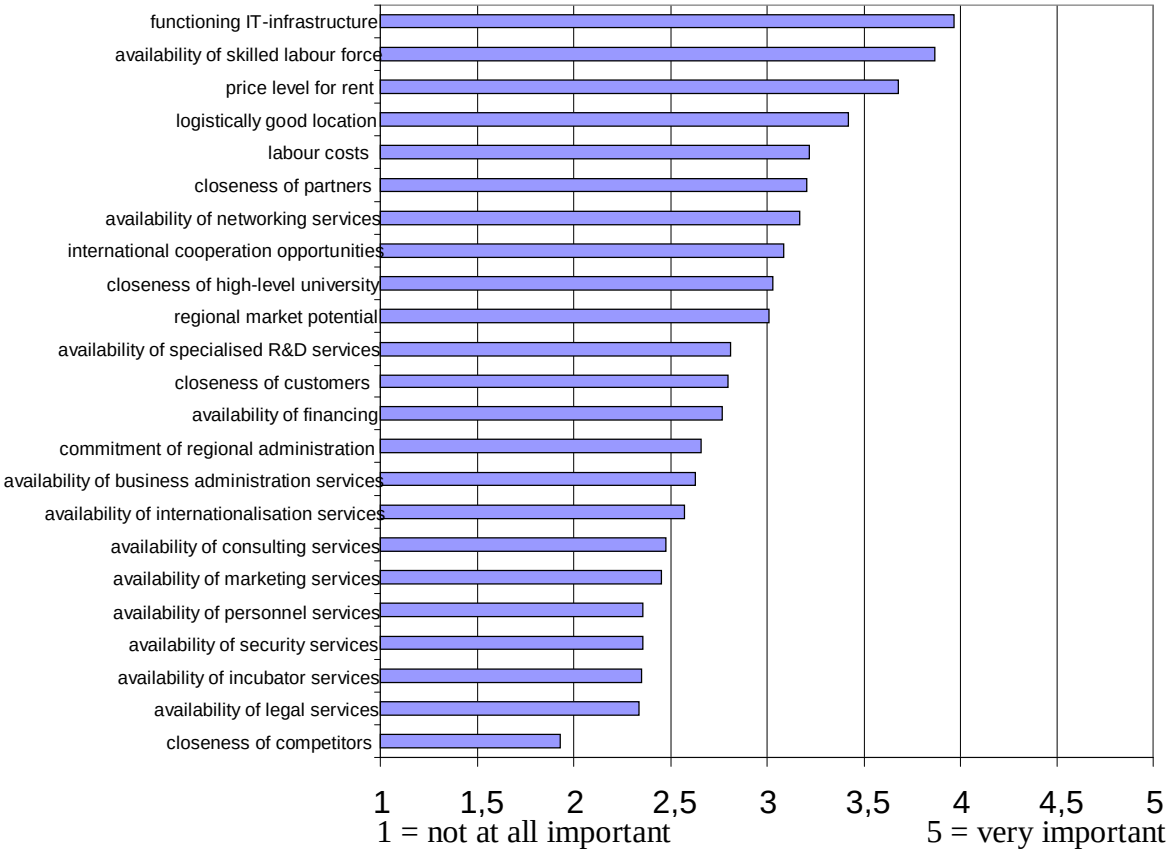
In addition to functioning IT-infrastructure (3.97), companies consider availability of skilled labour force (3.87), price level for rent (3.68), logistically preferable location (3.42) and labour costs (3.22) important in their location decision-making. This indicates that companies are very much cost-driven while choosing location for their business operations – as long as they are able to have functioning resources.

Only when companies have access to resources at a reasonable price they look for local collaboration. It is interesting that closeness to partners (3.21), availability of networking services (3.17), international cooperation opportunities (3.09) and closeness to high-level university (3.03) are more important than closeness to existing customer base (2.80) or even regional market potential (3.01).

It seems like the services provided in the technology park are not so important for the companies, and the factors influencing location decision-making are more general by nature. This raises the questions on general business environment with challenges of, for instance, corruption and customs and their impact on the attractiveness of St. Petersburg. The survey results can not be interpreted in a way that the variables related to the availability of services are not important at all but it seems that companies are more interested in the general business environment than in the services offered within technology parks. This is a bit surprising as the respondents were expected to value the availability of services higher as they had chosen a technology park as a premise for business operations in Finland.

It is also interesting to notice that companies do not generally view closeness of competitors (1.93) important in their location decision-making. This is an interesting view in the era emphasising co-opetition– the combination of competition and cooperation.

Figure 1 Importance of factors in location decision-making



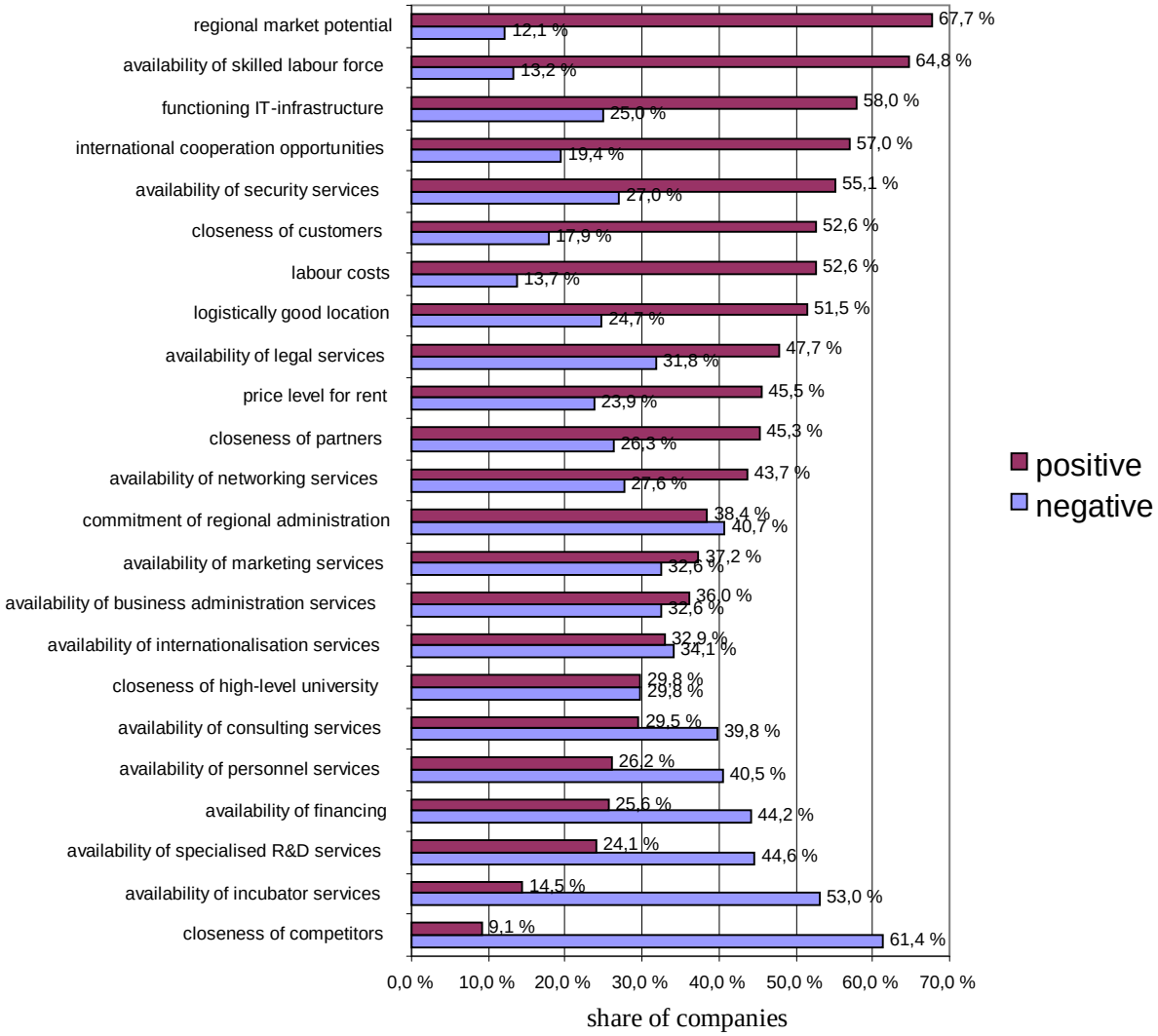
It must be however remembered that location choices are very company-specific and it was interesting to note that all the factors in the survey had data in the range from 1="not at all important" to 5="very important". This also indicates the need for various services and personalised offering for companies in technology and business parks.

2) Finnish companies are attracted by St. Petersburg's regional market potential and availability of skilled labour force.

The companies were also asked to rank the attractiveness of St. Petersburg in terms of the factors related to location decision-making. The companies were asked how the factors affect the attractiveness of St. Petersburg as a location for their business operations on a scale from 1 (very negative impact) to 5 (very positive impact). In Figure 2, the values are combined to indicate which factors were considered to affect the attractiveness of St. Petersburg negatively (values 1–2) or positively (values 4–5)[7]. The figure indicates the share of companies who perceived the factor having a positive or negative impact on the way they perceive St. Petersburg.

[7] Value 3 was referred as neutral impact and it was counted in total number of cases and together with negative and positive it sums up to 100%.

Figure 2 Impact of factors affecting the attractiveness of St. Petersburg as a location for business operations



The survey results indicate that Finnish companies are attracted by St. Petersburg's customer base (52.6%) and market potential (67.7%) together with the provision of skilled (64.8%), ans affordable (52.6%) labour force. More than half of the respondents were also attracted by functioning IT-infrastructure (58.0%), international cooperation opportunities (57.0%), availability of security services (55.1%), and logistically preferable location (51.5%).

More than half of the respondents are distracted by closeness (or lack[8]) of competitors (61.4%) and availability (or most likely – lack) of incubator services (53.0%) in St. Petersburg. In general, companies are distracted by the lack of business services.

[8] The survey was partially poorly designed and therefore leaves room for speculation in the analysis.

Moreover, every 4 out of 10 respondents (40.7%) considered that the commitment of regional administration on developing the business environment has negative impact on the attractiveness of St. Petersburg as a location of business operations. Moreover, none of the companies with premises in St. Petersburg consider the efforts of the regional administration having positive impact on the attractiveness of the city (Figure 3).

3) **Finnish companies with premises in St. Petersburg are pleased with the availability of skilled and low cost labour force but disappointed with the lack of business services in the city.**

Companies with premises in St. Petersburg are particularly happy with the availability of skilled labour force (4.33), price level for rent (3.71), international cooperation opportunities (3.71), functioning IT-infrastructure (3.67), and the level of labour costs (3.57). The differences between the companies which have premises in St. Petersburg and those who do not have premises in the city are shown in Figure 3. The figure shows firstly the share of companies which are located in St. Petersburg and which perceive the factors affecting the attractiveness of St. Petersburg positively or negatively, secondly it indicates companies which do not have premises in St. Petersburg and how do they perceive the factors affecting the attractiveness of St. Petersburg as a location for business operations.

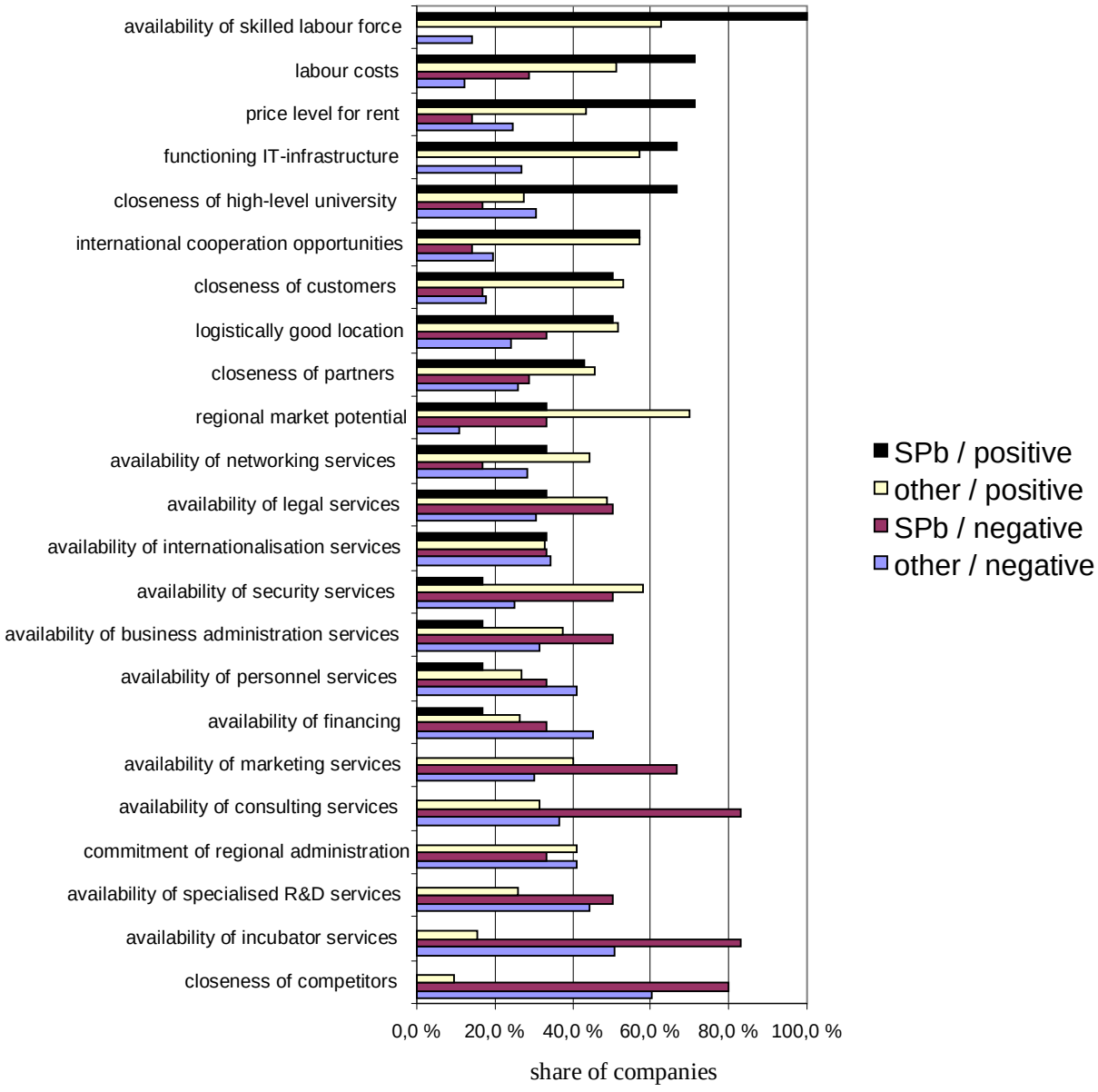
The interviews with the companies with operations in St. Petersburg highlighted how surprised they were of seeing how hard-working Russians are. The Russians are ready to work long hours and despite some problems in productivity, the interviewed companies perceived that Russians get a lot done with less money than what is demanded in Finland.

Although the survey reveals positive impressions of St. Petersburg's IT-infrastructure, the expert interviews indicated that the level of IT-infrastructure is not sufficient for all companies. The major problems stem from power shortages and voltage changes, which require large-scale investments in back-up plans to provide energy and cooling to their servers.

None of the companies with premises in St. Petersburg considered availability of marketing, consulting, specialized R&D or incubator services having positive impact on

the attractiveness of St. Petersburg as a location for business operations. The Finnish companies which have premises in St. Petersburg complain particularly about the lack of consulting (1.83) and incubator services (1.83). There is a clear difference on the attractiveness of St. Petersburg in terms of availability of consulting services when the results of companies with premises in the city are compared to the companies without presence in the city (2.87). The difference is statistically significant (sig.<0.05). The lack of business services may stem from lack of demand from Russian side, as they do not realise the need for external expertise, they consider it expensive and they are suspicious about outsiders.

Figure 3 Differences between companies with premises in St. Petersburg and other companies assessing the attractiveness of St. Petersburg as a location for business operations

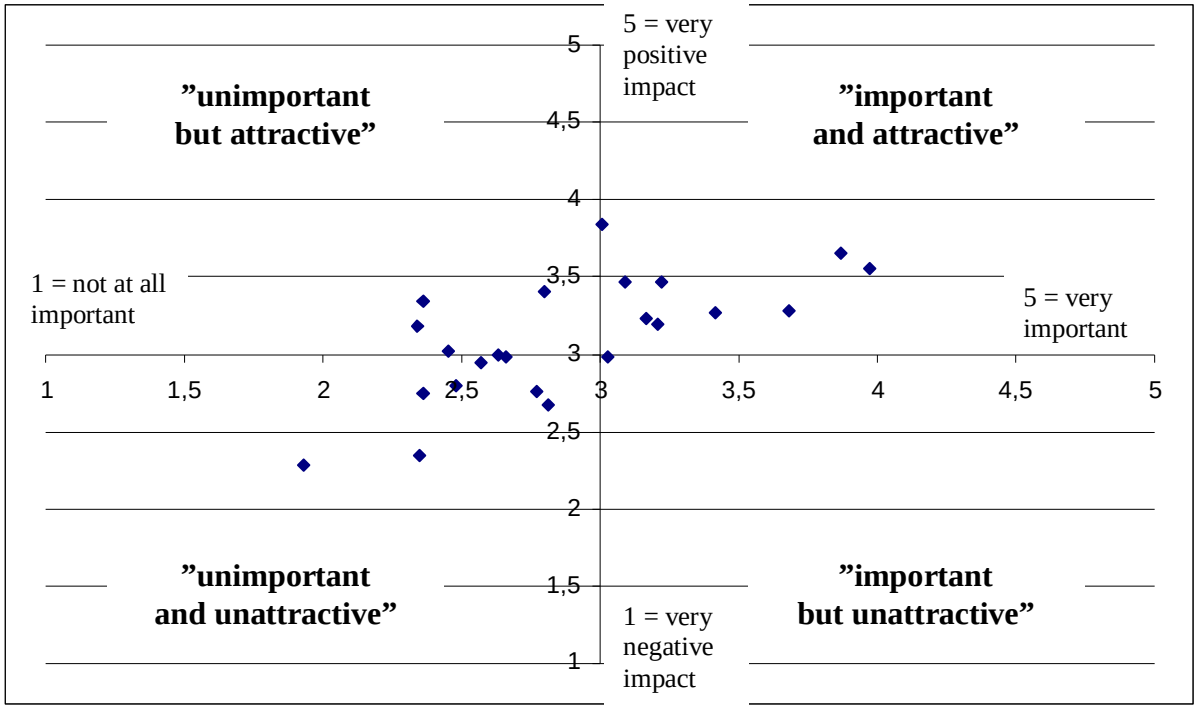


Also Finnish innovation operators in St. Petersburg received negative feedback from the interviewed companies. People considered that they had failed in achieving concrete results.

4) **St. Petersburg is mostly attractive in terms of the factors which are important to Finnish companies.**

As it can be noticed on earlier pages of the report, St. Petersburg scores relatively well in the location decision factors which are important to Finnish companies. The weak correlation between the important variables and attractiveness of St. Petersburg is visible in the following Figure 4.

Figure 4 Correlation matrix of the factors influencing location decision-making

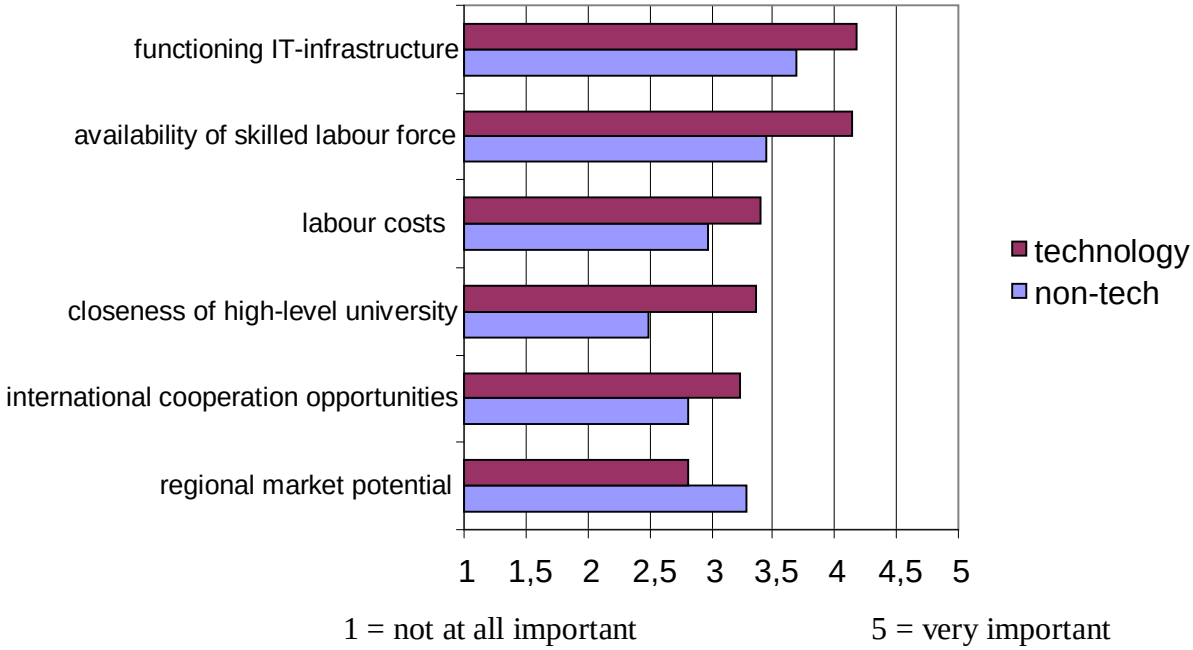


In the correlation matrix there are a number of factors in the quadrant of “important and unattractive” which is very good news to St. Petersburg. Moreover, only commitment of regional administration to the development of business environment falls slightly to the quadrant “important but unattractive”. Otherwise the factors in which St. Petersburg is perceived unattractive are also relatively unimportant to Finnish companies. This however only applies to the questions asked and it may be that there are other factors which fall into the category “important but unattractive”.

5) Technology companies differ significantly from other companies in location decision-making.

Technology parks are often considered as havens for technology companies but in reality there are also many other companies located in them. Therefore, companies were asked if they categorised themselves as a technology company. These responses were used to analyse how technology companies differ from the companies which do not classify themselves as such. The research findings indicate that the most important factors are mostly even more important to technology companies. They value functioning IT infrastructure (4.18), availability of skilled labour force (4.14), labour costs (3.40), closeness to high-level university (3.37) and international cooperation opportunities (3.24) more important than other companies. On the other hand, regional market potential (2.81) is less important to technology companies than for the others. The differences are statistically significant (sig.<0.05).

Figure 5 Differences on the importance of location decision-factors between technology and non-technology companies



These results provide interesting insight on the difference in the needs of technology and non-technology companies. This also helps to target the investment promotion towards the companies which are wanted in the region. For instance, St. Petersburg ranks well in regional market potential but it is not so important to technology companies. In investment promotion more emphasis should instead be put on the

availability of functioning IT-infrastructure and skilled labour force, as they are very important to technology companies.

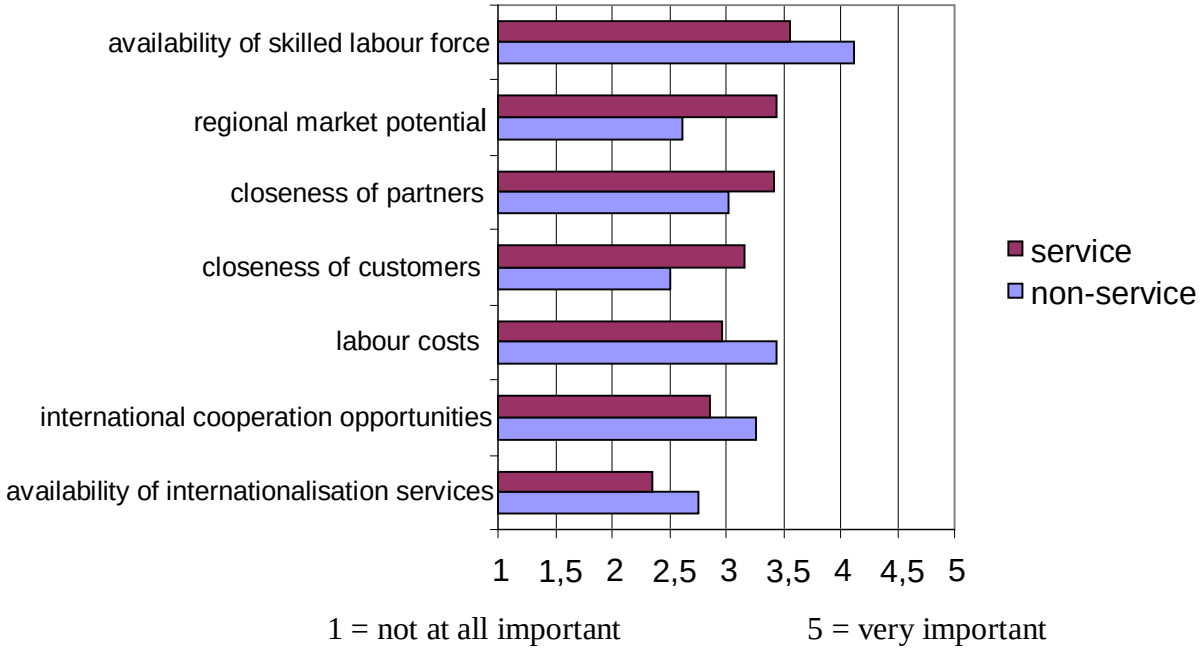
Despite these differences in relative importance of location decision-factors, there were no significant differences between technology companies and others in the way which they perceived the attractiveness of St. Petersburg.

6) **Companies who provide services to other companies within technology or business parks differ significantly from other companies both in location decision-factors and in the way they perceive the image of St. Petersburg.**

As service companies are also relevant for functioning technology park, it was analysed how companies which provide services to other companies within technology park differ from the rest of the sample.

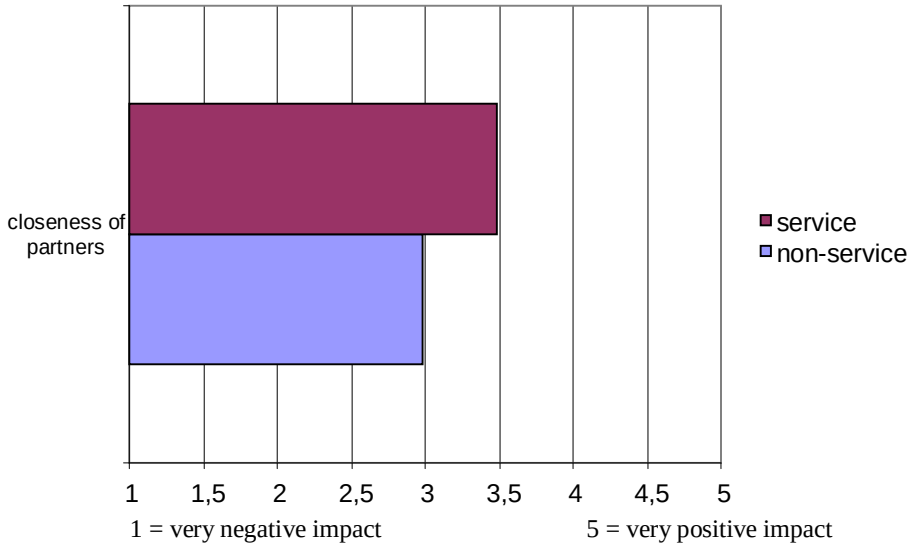
It was found out that companies who provide services to other companies within technology parks are very much interested in the local customer base and less interested in labour skills and costs, and international opportunities. The differences represented in Figure 6 are statistically significant (sig. <0.05).

Figure 6 Differences in relative importance of location decision-factors between companies which provide services to other companies in technology parks and those who do not provide services to others



Companies who provide services to other companies within technology parks view St. Petersburg more attractive in terms of closeness of partners (3.49) compared to other companies (2.98). The difference is statistically significant (sig.<0.05). This is good news to St. Petersburg as closeness of partners was more important to service companies, as indicated in Figure 67.

Figure 7 The difference between companies which provide services in techno/business parks and other companies assessing the attractiveness of St. Petersburg in terms of closeness of partners



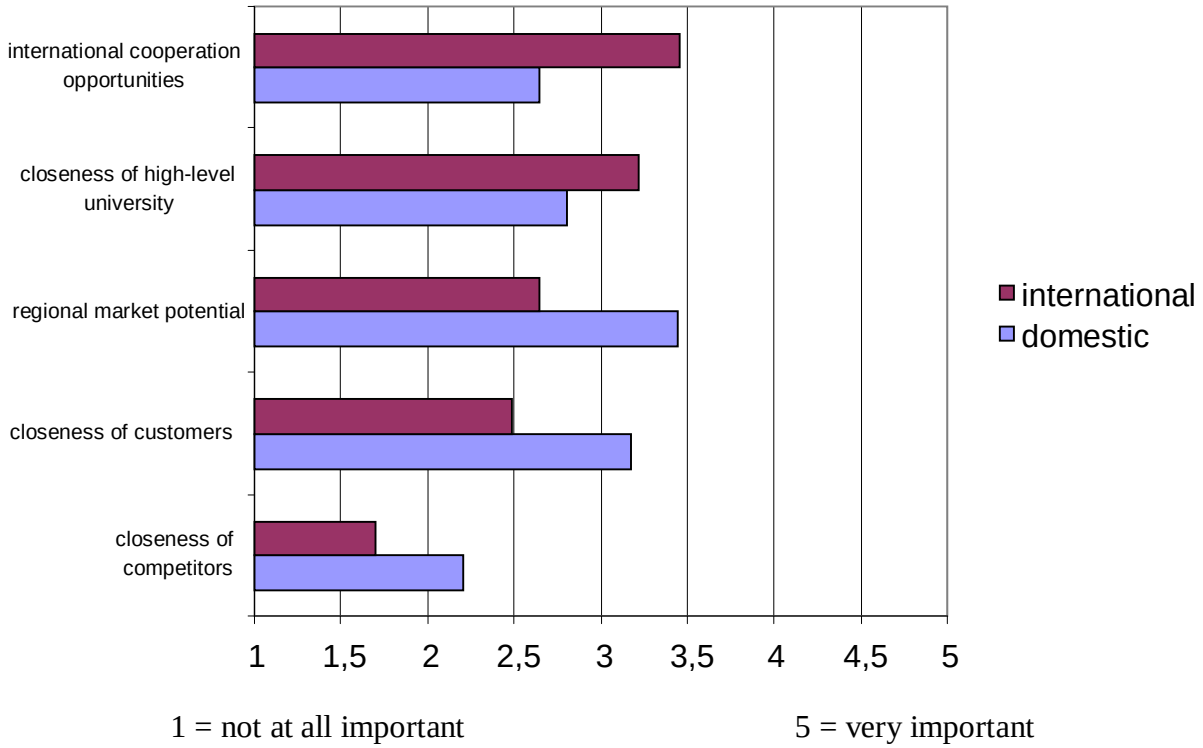
7) Firms with international operations differ in location decision-making and image of St. Petersburg from companies operating solely in Finland.

As one of the aims of this report is to provide information for the policymakers and other innovation promotion operators in St. Petersburg, it was necessary to analyse the differences between companies with international operations and those who operate solely domestically. Companies with international operations may be more likely to establish an office in St. Petersburg and on the other hand their responses indicate the reasons why they have established offices elsewhere.

Firms with international operations value less the importance of closeness of customers (2.49), regional market potential (2.65) and closeness of competitors (1.70) in location decision-making than companies operating solely in home market. Instead they perceive closeness of high-level universities (3.22) and international cooperation

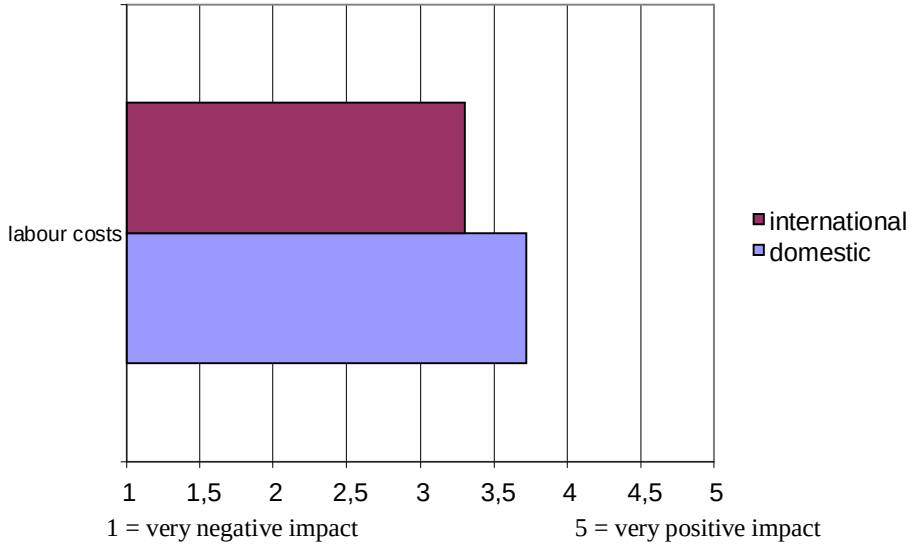
possibilities (3.46) relatively more important than rest of the companies. The differences are statistically significant (sig.<0.05).

Figure 8 Differences in the relative importance of location decision-factors between companies which have international operations and those who operate solely in domestic market



Surprisingly, there was only one statistically significant difference between the companies with international and domestic operations in the way they perceived the attractiveness of St. Petersburg. Labour cost level of St. Petersburg was considered more attractive by companies which operated solely in Finland (3.72) than companies with international operations (3.30). This may stem from the better knowledge of companies with international operations on the growth of labour costs in St. Petersburg during the past few years.

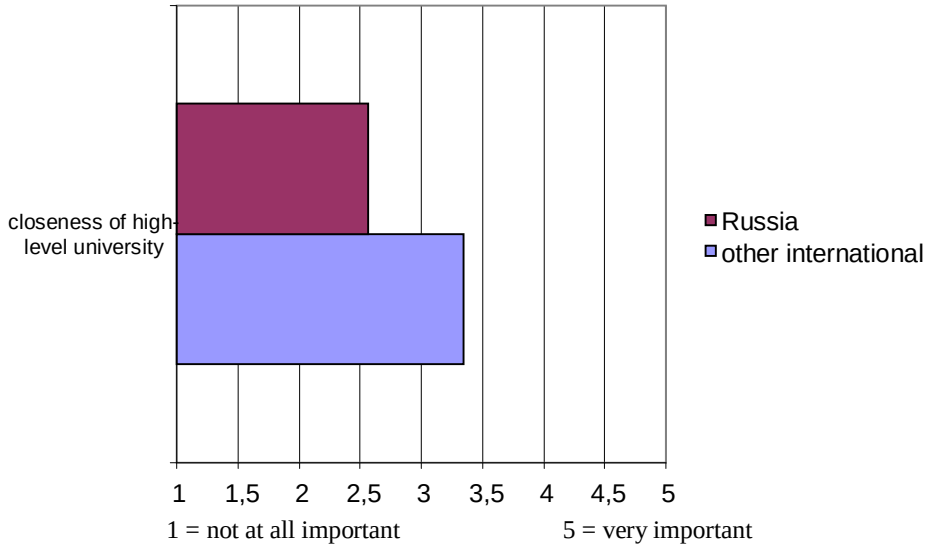
Figure 9 The difference between companies which operate internationally and those who operate solely domestically in assessing the attractiveness of St. Petersburg in terms of labour costs



8) Companies with operations in Russia do not consider location close to the university as important as other internationally operating companies.

Companies with business operation in Russia value less the importance of location's closeness to high-level university (2.57) compared to companies with international operations elsewhere (3.35). The difference is statistically significant (sig.<0,05). This result may indicate that companies are elsewhere more actively collaborating with local universities. The difference may stem from the education-oriented nature of Russian universities.

Figure 10 The difference in the relative importance of location decision-factors between companies which have operations in Russia and those which have international operations elsewhere in terms of closeness of high-level university



9) The size of the responding company or the respondents individual experience did neither affect statistically significantly the location decision-factors nor the way they perceived the attractiveness of St. Petersburg.

It was slightly surprising that there were no statistically significant differences in the location decision-factors and image of St. Petersburg when companies were arranged according to their size and the international experience of top managers.

5 CONCLUDING DISCUSSION

The challenges of St. Petersburg innovation infrastructure seem to be similar to those of Russia in general. One might say that there is no innovation infrastructure in St. Petersburg. Although there are plans for development of the infrastructure, they may never become true.

In particular, St. Petersburg fails in providing business services, as there is a constant lack of functioning intermediary operators in the city. Although there are university innovation centres and alike, they are mostly working as premises for university staff before they get funding for their ideas. When the funding is granted and companies established, the entrepreneurs are soon looking for better premises for business operations.

The situation resembles the heritage of the Soviet era with separated business and research activities. Still today, research is conducted in Russia for the sake of science and the R&D inputs do not follow the market demand. This has resulted in mixed policies in Russia. Top-down innovation policy is providing tools for the bureaucrats instead of reflecting the needs of small business entrepreneurs. As companies are attracted to Special Economic Zones mainly because of the terms of the financing agreements, it indicates that these Zones are not really providing innovation-promoting infrastructure.

Despite all these shortcomings it must be emphasised that the correlation matrix in Figure 4 indicates that St. Petersburg is rather well positioned in attracting companies from Finland. The factors which are well-respected by Finnish companies are also positively affecting the attractiveness of St. Petersburg as a location for business operations. Recently, as an impact of financial crisis also the cost level on labour and rent has improved, particularly in Euro terms.

However, the deeds tell it better than words and survey responses. As only a small portion of Finnish companies have invested in St. Petersburg, it indicates that St. Petersburg has to develop its business environment and/or the image of the city in the eyes of foreign investors.

It also must be reminded that St. Petersburg and Russia have huge innovation potential. The economic crisis has made President Medvedev to recognise the need for a renewal of the economy. As a result, presidential commissions have been formed to stimulate innovations in Russia. The recognition of the need for renewed innovation policy will most probably lead to improvement of the innovation infrastructure in mid-term at the latest. Although in the short-run the reforms would remain visible only on the paper, in the mid- and long-term the recognition of the problem areas promises good news to innovation-dependent businesses. In the long-run Russia needs also to attract innovation-oriented foreign companies. Therefore, the survey results of this report may become valuable on the way turning the innovation potential of Russia into the innovation reality.

The findings from the survey indicate that Finnish companies are very much cost-driven in their location decision-making. But there is much more than costs which determine their location. Investments take place only when the location provides them with such resources that they are able to run their business operations. It explains why a significant share of the companies has stayed in Finland, and only a small part of the companies have premises in St. Petersburg despite higher cost level at home. It also became evident from the survey that closeness to partners is more important than market-related factors in location decisions. This links to the question of the availability of resources, as often partners are needed to run profitable business operations. Although emerging economies may have tempting local markets with huge growth potential, the lack of high-level partners may hold back significant amount of investments, as market-related factors in location decision-making were found to be of less importance.

It was also interesting to note how the needs of the companies vary among different companies. For instance, technology companies value the availability of skilled labour force far more than non-technology companies. Moreover, similar differences were seen with companies who already had international operations against companies which operate solely in domestic markets.

Policy recommendations:

President Medevedev has included innovations in his famous list of four ”I”s. This indicates the importance of innovations to Russia. However, even at the Federal level there seems to be a misconception that R&D equals to innovation. R&D inputs are just

waist of money without market-appealing outputs or productivity-enhancing processes. The value of innovations is measured at the markets and therefore bureaucratic-oriented top-down approaches are not efficient in building up innovation infrastructure. Instead, there should be resources and services which companies actually need in their innovative activities. The availability of business services is one of the most essential ingredients for innovations. The Russian government and the St. Petersburg regional administration should consider means how it might help in provision of these services without just increasing further bureaucracy.

It is wished that the report would lead into actions with more effort firstly to the issues which are important to companies and secondly into the factors in which St. Petersburg scores low. This means that the innovation infrastructure should be developed bearing in mind the needs of the companies instead of seeing it as a purely bureaucratic task.

The survey results may also provide help in investment promotion efforts. Investment promotion has a lot to do with the perceptions of the investment target instead of pure reality. For instance, promotion has a lot to do for the perception on the availability of services. Thus policy-makers might benefit from providing help in marketing of business services, as business representatives may think that there are no business services because they are difficult to find.

Managerial implications:

The report shows that St. Petersburg may provide an interesting location for business operations for some companies. However, companies vary a lot in their needs and a separate company-specific assessment is always needed. The investment decisions should be based on facts instead of image of location This report has indicated some of these differences by analysing the views of companies and respondents with experience in the host market with others. For instance, the availability of skilled labour seems to be better in reality than image in St. Petersburg, and the city might be an interesting location for nearshoring among numerous Finnish companies.

Suggestions for future studies:

The report remains with many limitations. Despite the emphasis put on the survey design, it had many short comings which need to be analysed further in the future. For instance, the number of location-decision factors could be even larger, although this may diminish the number of respondents. As it was impossible to ask all these issues

in the survey the report encourages future studies to tackle these issues and combine the importance of innovation infrastructure and other location-decision factors. This all would give a better knowledge of location decision-making among companies and would lead into interesting policy recommendations and managerial implications.

It would also be interesting to have a comparison of St. Petersburg with another location, which would more clearly show how St. Petersburg is positioned in the global competition of foreign direct investments.

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