

## Survey of Improving the Management of Science and Technology Parks

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*Experience in science and technology progress, acceleration of social and economic development, gained on international basis, shows that significantly effective and promising organizational form for development of science and technology progress, is science and technology parks.*

*Science and technology parks are one of organizational forms intended for development of innovations, scientific research, studies for coordination of technologies' development and implementation work, to initiate new businesses: apart from science and technology parks, among organizational forms of such purpose, business incubators, centres of innovations, industrial parks, and other may be noted, however science and technology parks especially as organizational forms features by significant effectiveness and prospects of development.*

*Necessity of science and technology parks as well as their networks is determined by new challenges and problems arising in the circumstances of globalisation, expansion of the European Union, development of knowledge and informational society. Thus it is very urgent to study and evaluate an effect of establishment and expansion of science and technology parks, their networks, and analogous organizations to economy growth considering international experience.*

Keywords: *science and technology parks, survey, abyssal interview, Lithuania.*

### Introduction

A necessity to constantly guaranty Science and Technology Parks and their development management adequacy to the modern requirements let us assume that an inadequacy of management models, applied in real practice of Science and Technology Parks and their development management, to the modern challenges and requirements of science and technology progress and social economic development, which is caused by up-to-date globalization, the European Union expansion, new forms of competition in international markets, formation of knowledge and informational society is considered to be a very important problem of social sciences, and especially management and administration.

The scientific problem indicated is very important because of several reasons:

First, the scientific solution of this problem is oriented to the acceleration of Science and Technology Parks progress in general, because the purpose of Science and Technology Parks is to assure integration of science research and their results practical application and propagation, singleness of science research and more strict orientation to

the increasing requirements of practical application; also more efficient application of intellectual and other resources to be involved into science research and creation of new technologies.

Second, Science and Technology Parks are complex organizations, supposed to be very innovative, capable to generate creatively not only new ideas, but also be able to spread these ideas and to apply them in practice. Management of such organizations requires exclusively innovative and highly individualized management models, which preparation and application is reasoned by unconventional and unique decisions.

Third, Science and Technology Parks are considered to be a very important thread of new quality human recourses training. It should be integrated into the whole science and "study and improve all life long" system. This requires harmonizing Science and Technology Parks management with considerably wider field of human resources management.

Fourth, the formation of Science and Technology Parks networks under the conditions of globalization and market internationalization is inevitable in both countries/regions and internationally. It means that management designed for Science and Technology Parks and their development, inevitably has to be expanded to large networks (including international) and their development management field.

The problems of Science and Technology Parks management have not been analyzed in such or some other aspects or, it was done insufficiently, according to the newest circumstances, influenced by the processes, typical for the European Union expansion, and situation in particular countries or different economic sectors.

Regardless of the development of science and technology parks in nowadays theory and practice is very often evaluated as an important factor of economy growth, so far the effect of establishment and activities of science and technology parks, their networks, and analogous organizations to economy growth was not being assessed on complex basis in the practice of international survey. Lack of such evaluations and methodology can be treated as urgent problem, formulated as the absence or deficiency of quantitative evaluations for effect of establishment, expansion, and activities of science and technology parks, their networks, and analogous organizations to economy growth.

The first who published that science and technology parks should appear in structures of science and technology development, and the part of science and technology parks should be integrate interests of science and business: J.Rees, W.Cohen, H.Stafford, J. H.Dunning, A.R.Markusen, P.Hall,

P.David, A.Glasmeier, Ch.Minshall, J.Lowe, J.Friedman, D.K.Daukeev, J.Lubchenco, O.B.Aigistova, B.L.Gorbunov, M.M.Qurashi, P.B.Milius.

The role of science and technology parks as inspirer of innovations analyzed: R.Alasdair, G. Junne, M.J.Baker, T.Forester, J.Heebol, W.B.Stohr, M.D.Thomas, A.R.Markusen, P.Hall, A.Glasmeier, B.Melnikas, A.Jakubavičius, R.Strazdas, I.E.Rudakova. B.Witholt, P. Yang, B.Lay, J.Stensholt. F.Solé-Parellada, J.Coll-Bertran, T. Navarro-Hernández

### Management improvement of science and technology parks, and analogous organizations

Questionnaires and topics of abyssal interview for survey of prospects' determination for management improvement of science and technology parks, and analogous organizations were formed considering data of Lithuanian Statistics Department, European Committee statements (COM (2003) 226, 2003; COM (2003), 2003; COM(2004) 353, 2004; COM (2003) 58, 2003), official studies carried out by World Bank and other global organizations, as well as different legislation effective in Lithuania, and other official information.

Survey **object** – situation of science and technology parks and incentive methods for their establishment in Lithuania, and comparison to methods applied in EU countries.

Survey **purpose** – to choose the rates indicating activities of science and technology parks, and considering them to assess situation of these institutions, potential in Lithuania, and incentive methods, comparing to EU countries, to analyse the structure of science and technology parks' system in Lithuania, juridical and financial state of their activities, also to summarise assumptions and methods for possible establishment of parks' network..

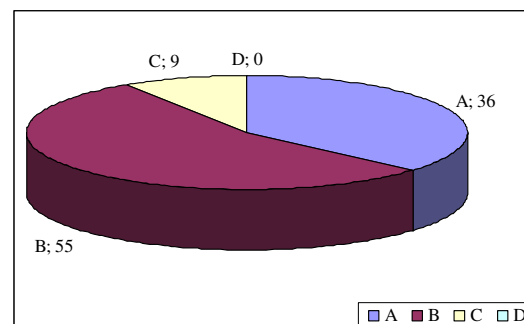
80 questionnaires were distributed among science and technology parks, business incubators, economic entities operating there, governmental and self-government institutions and among current and future businessmen; 57 were answered, answers to the questions submitted amount to 71%. The respondents had the option of one answer, the most suitable, from all answers submitted, with a purpose to obtain as precise data as possible, describing existing situation of science and technology parks in Lithuania as well as the optimal direction of their expansion. Spread of the answers obtained is rather wide, however the initial analysis highlights the tendency, that in evaluation of current situation, answers of objective group directly representing science and technology parks, and business incubators, and answers of economic entities and representatives of administration made one group, and the answers of governmental and self-governmental institutions – separate group, however the tendencies for future prospects remain similar, irrespective of respondents' interaction to science and technology parks.

The greatest interest in survey and answers was shown by, and the most actively expressed opinion was by the representatives of science and technology parks, and business incubators' management, who understanding the problems of economic entities of parks the best, proposed how to solve them. With the most indolence the questionnaires

were filled out by “Economic entities performing innovative activities” of objective groups, and “High school graduates, carrying out or having in plans to carry out commerce activities in the field of high technologies or innovations”. According to interaction to science and technology park, all respondents may be classified as follows:

- entities regulating activities of science and technology parks;
- entities administrating activities of science and technology parks;
- economic entities directly or indirectly participating in the activities of science and technology parks, or having intention to immerse in activities of these structures.

All, who have answered the questions of questionnaire and abyssal interview, were aware of priorities and functions of science and technology parks' activities in Lithuania, this allows to make an assumption, that respondents are familiar to existing situation, and their answers will give an actual view of current situation, usefulness of activities, and prospects.



**Figure 1.** Key functions of science and technology parks in Lithuania, %:

- A – contribute to strengthening of economic entities creating significant surplus value;
- B – assist to science institutions in commercialisation of products developed by them;
- C – inactive structures created by initiative of government (municipalities);
- D – their activities do not have any prospects in Lithuania. (A.Miliūtė, 2004)

91% of respondents (see figure 1) of questionnaire and abyssal interview agreed, that science and technology parks in Lithuania are promising, and functions of these organizations correspond to the functions, which are provided for in the concept of their expansion approved by the Government of the Republic of Lithuania in 2003. The biggest part (55%) of respondents think, that the main function of science and technology parks is to accelerate the commercialisation processes of fundamental research results, and 36% of respondents are confident, that a key function of the parks is to help strengthening economic entities developing a significant surplus value. However answers 9% of respondents, who agreed to answer, were negative.

Answers to this question (whether priorities and functions of activities of existing science and technology parks met the needs of objective groups) clearly split in two groups: opinions of respondents of governmental and self-

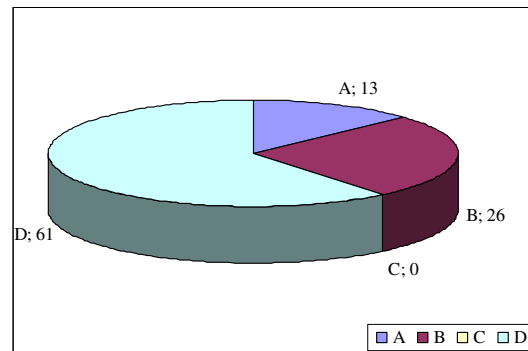
governmental institutions, and of economic entities, operating in science and technology parks, or performing innovative activities not in these structures were cardinally different. 59% of employees of governmental or self-governmental institutions working in the field of business expansion answered, that science and technology parks in Lithuania completely fulfil needs of objective groups. 41% of representatives of this group answered, that these needs are fulfilled just partly. However 68% of economic subjects operating or having intentions to operate in the field of commercialisation of innovations and scientific research, stated, that parks only partly fulfil their needs, and 32% of economic entities answered, that functions and priorities of these structures do not meet their needs.

Economic conditions for the establishment of science and technology parks, and their networks were named as perfect by none of the respondents. 33% of respondents, who answered to questions of the questionnaire and abyssal interview, think, that economic situation is good, but mostly (85%) such answers were of representatives of governmental and self-governmental institutions, and less part of such answers were from representatives of science and technology parks' management (29%). More than a half of economic entities, which have responded (52%), representatives of government and self-government (15%) and a major part of representatives of parks' management (71%) think, that economic situation for development of science and technology parks are moderate, 48% of economic entities economical conditions consider worse than moderate, 30% of them think, that economic situation is bad, and 18% consider them hopeless. Although the growth of gross domestic product is noticed in Lithuania for several years running, and nearly a half of representatives of economic entities questioned think, that economical conditions are worse than moderate, it is possible to assume, that these respondents are prone to hedge against possible risks, therefore the they assess the environment more carefully, expect less growth of their business, or just do not show any incentive, and expect it from governmental institutions. Lithuanian nation features by a pessimistic assessment of many thing, therefore an assessment of economical, social environment is more temperate.

47% of respondents state, that organisational conditions for the establishment of science and technology parks, and their networks are better than moderate, 12% of them employees of government and self-government institutions working in the field of business expansion, and representatives of science and technology parks' administration very approvingly answered about organisational conditions, 13% of economic entities, and 47% of representatives of government and self-government as well as 76% of representatives from administration of analysed structures think, that organisational conditions are good. 86% of responded representatives of economic entities the organisational situation consider moderate or bad, insufficient qualification, more precisely – ability of combination of engineering and fundamental knowledge with managerial knowledge, of representatives of science and technology parks' management pointing out as the main reason.

Juridical situation for the establishment and expansion of science and technology parks, and their networks in Lithuania, as non-impeding business, named 86% of all re-

sponded. More highly juridical conditions were evaluated by the representatives of government and self-government (95%), and representatives of science and technology parks' management (52%). Major part of economic entities (43%), performing or having intentions to carry out innovative activities, and operating in science and technology parks, or outside them, the juridical situation named as moderate. 57% of economic entities, performing activity not in the parks of science and technology, consider these conditions hopeless, thus we may presume, that these economic entities have a sceptical view of a very idea of science and technology parks, or are insufficiently familiar to the principles of their activities. Mentioned respondents could not comment the reasons for indicating juridical situation as hopeless.



**Figure 2.** Orientation of specialization and activity's character of science and technology parks, %

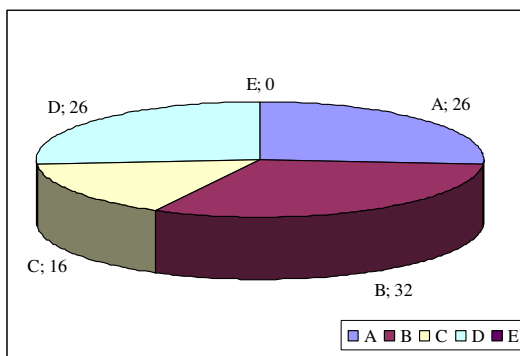
- A – towards the product of single-purpose;
- B – towards group of products;
- C – towards unspecified products;
- D – towards interaction of elements of science, study, industry, and infrastructure (A.Miliūtė, 2004).

Distinct groups among responded to this question cannot be marked. Even 61% of respondents (see figure 2. ) have answered, that the most important orientation and priority is an interaction of scientific, study, industrial, and infrastructure elements, without exclusion of science and technology parks according to the products being developed, or the types of fundamental research being performed. Parks of narrow specialisation in Lithuania have future, mostly such activity supported administration of business incubator of Ignalina AE (Atomic Energy Plant) region, and economic entities performing their activities there. Science and technology parks oriented towards the product group would have future in Lithuania – this is an opinion of 26% of respondents. In the commentation of their choice, respondents mentioned, that it is purposive in activity of science and technology parks to join cognate subdivisions of different higher educational institutions, this would allow to increase science potential, and to use more effectively, and optimise available resources of science and prototype production, thus transfer processes of science and technologies would become more active.

Participants of survey think, that it is purposive to develop science and technology parks in Lithuania. Separate structural items, without coordination of their activities, according to respondents, are toothless. Parks have to be organised into a network, which would have an aim to coordinate, expand, optimize the handover of science and

technologies to industry. Opinions to what type of network is the most purposeful to associate divided almost equally. According to interaction to science and technology parks it is hard to distinguish certain groups, most of responded represent general opinion. In comments of combination scenarios, opinions divided: 83% of respondents think, that national network of Lithuania has to join EU or similar global structures, and remained part (17%) suggest, that separate science and technology parks have to seek independently for membership in international networks.

Most of the respondents – 47% have answered, that it is purposive to associate these structures into common national network, without dividing them according to fields of research, or regional subordination. According to responded, both Lithuanian territory, and science potential, after division into smaller segments, will not be used optimally and will not be attractive to foreign partners. 32% of respondents stated, that it is advisable to associate parks into networks according to their research specialisation, this would allow to connect and optimize research of particular field, and would help to make a lodgement in EU and worldwide market as well. Specialization of informational technologies, lasers, biotechnology was mentioned. Key idea of this proposal was to turn competitors into the partners and thus to obtain as big as possible synergetic effect. For regional specialization were 21% of respondents, the centres of attraction pointing out the major higher educational institutions of Lithuania. According to respondents 3 centres are enough: in Vilnius, Kaunas and Klaipeda, since to narrow separation will not give expected effect. Major part of respondents, who were for regional specialization, stated, that it would be purposeful to establish science and technology parks on the basis of historical orientation, e.g.: Vilnius – fundamental sciences, biotechnologies, construction, aviation and alike, Kaunas – materials science, informational technologies and alike, Klaipeda – marine science.



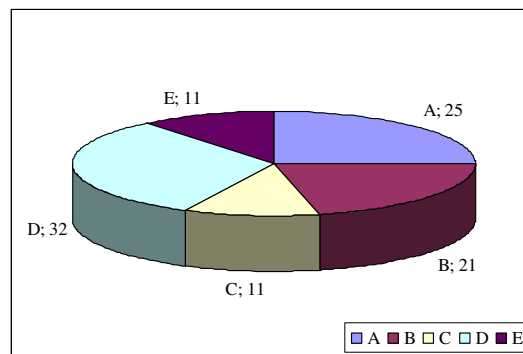
**Figure 3.** Methods of internationalisation, which are purposive in activities of science and technology parks' networks, %:

- A – cooperation in the field of research;
- B – attraction of foreign partners (foreign investors);
- C – spread of activity results abroad;
- D – participation of park in international organizations, networks, programmes;
- E – other (A.Miliūtė, 2004).

It was difficult to choose one answer to this question (see figure 3), according to respondents, all named activities are necessary for stimulation of internationalisation of science and technology parks. Respondents cued, that most of

these activities correlate among each other, result of one activity is an impulse to start another. However the most important was attraction of foreign investors to activities of science and technology parks, that would be primary and the strongest impulse for making internationalisation of technologies' transfer more active.

All who answered think, that support of structural funds to progress of science and technologies is necessary. Even 71% of respondents declared, that additionally attracted and private finances will let to stimulate better passing of technologies, coming of private capital will stimulate to perform economically useful projects, to optimize the application of time, industrial, and human resources. If investments paid dividends, side of business would be concerned with commercialisation of results of fundamental research. Finances of structural funds and attraction of private capital would be kind of base to finance innovative projects.



**Figure 4.** Factors able to increase effectiveness of science and technology parks' activities, %:

- A – participation of risk capital funds, in their activity;
- B – increase of governmental financing of scientific research;
- C – making fundamental scientific research more active;
- D – it is necessary to reorganise radically the activity of science and technology parks;
- E – other (A.Miliūtė, 2004).

Coming of risk capital fund – structure, which does not exist in Lithuania yet – to the system of science and technology parks would increase effectiveness of these structures' activities, this is an opinion of 25% of respondents (see figure 4). Most of the respondents such choice commented so, that coming of private capital through risk capital funds, should move strongly fundamental research, which are in process under the period analysed, the research, which give particular result suitable for commercialisation, would be stimulated. Some part of respondents (21%) expect support from the state, it can be emphasized, that this answer was selected by scientists, who wish to commercialise research results, but did not transfer this activity to science and technology park or business incubator.

The largest group of respondents (31%) answer, that it is necessary to reorganise radically the activities of science and technology parks. Most frequently this answer was mentioned by representatives of science and technology parks' management, and economic entities operating in these structures. As basic reproach to current system was the fact, that science and technology parks in the period under analysis execute only the functions of business incu-

bators, consultants, and organizers of exhibitions, but not the key function of technologies' passing agency. Thus it is proposed to carry out accreditation of all science and technology parks, and business incubators in Lithuania, and after determining areas and functions of activities, to reconfirm programmes of activities of institutions.

As possible other ways of affectivity stimulation of science and technology parks' activities 11% of respondents have mentioned:

- tax exemptions for economic entities of these structures;
- creation of united systems of innovations' support infrastructure (science and technology parks, centres of innovations, business advice centres, offices of licences and alike), based on examples of good practice;
- qualification improvement of management staff of science and technology parks.

## Conclusions

In Lithuania, where economy is rapidly developing, science and technology parks should become a significant catalyser of economical growth. Thorough scientific research, analysing activities of these structures, were not carried out up to now. Science and technology parks are promising in Lithuania, and functions carried out by these organizations correspond to the functions provided for in the concept of their development (LRV, 2003) approved by the Government of Lithuanian Republic in 2003 (this conclusion is motivated by 91 % of respondents, who have participated in abyssal interview).

On the basis of abyssal interview carried out it was determined, that different assessment of current activities of science and technology parks exists, subject to interaction of respondents to science and technology parks. Entities regulating activity of science and technology parks, think, that current situation of science and technology parks' activities fully meets the priorities of both science, and economic entities, developing activities oriented towards technology. While economic entities administrating activities of science and technology parks, and directly or indirectly participating in parks' activity, or having intentions to start activities of these structures, think, that science and technology parks only partly meet their needs, and it is necessary to reorganise their activity.

Although the last several years running the growth of gross domestic product in Lithuania was noticed, however nearly a half of representatives of economic entities questioned, economical situation for establishment and development of science and technology parks, and their networks in Lithuania consider worse than moderate. Thus an assumption arises, that respondents are prone to pessimistic valuation of environment, expect lower growth of their business, or just do not show any incentive, and expect it from governmental institutions.

Organisational conditions for the development of science and technology parks are assessed as poorly or moderate even by 86% of representatives of economic entities, the main reason of this indicating inadequate qualification of representatives of science and technology parks' management, to be more precisely – inability to combine engineering and fundamental knowledge with managerial

knowledge.

## References

1. Aernoudt, R. Executive Forum: Early Stage Finance and Corporate Venture – Two Worlds Apart?/ R.Aernoudt, A.San José// *Venture Capital*, No4(5), 2003, 277-286p.
2. Alasdair, R. Towards the 3% Target in Belgium-or Not?// *Outlook on Science Policy*, No 3(26), 2004, 28p.
3. Aversano, L. Business Process Reengineering and Workflow Automation: A Technology Transfer Experience/ L.Aversano, G.Canfora, A.De Lucia, P.Gallucci// *Journal of Systems and Software*, No1(63), 2002, 29-44p.
4. Bakouros, Y.L.Science park, a High Tech Fantasy? An Analysis of the Science Parks of Greece/ Y.L. Bakouros, D.C.Mardas, N.C.Varsakelis// *Technovation*, No 2(22), 2002, 123-128p.
5. Baršauskas, P. Smulkaus ir vidutinio verslo politika Europos Sąjungoje ir Lietuvoje, 2003, Kaunas:Technologija. 132p.
6. Bekar, C. Clusters and Economic Policy/C.Bekar, R.G.Lipsej// *ISUMA*, No 1(3), 2002, 12-19p.
7. Chen, C.J. A Multiple Criteria Evaluation of High-tech Industries for the Science-based Industrial Park in Taiwan/ C.J. Chen, C.C.Huang// *Information and Management*, No 7(41), 2004, 839-851p.
8. Collinson, S.Knowledge Networks for New Technology-based Firms: An International Comparison of Local Entrepreneurship Promotion/S.Collinson, G.Gregson// *R&D Management*, No 2(33), 2003, 189-208p.
9. Commission of the European communities. Investing in research: an action plan for Europe, COM (2003) 226, 2003.
10. Commission of the European communities. Researchers in the European Research Area, one profession, multiple careers, COM (2003), 2003.
11. Commission of the European communities. Science and technology, the key to Europe's future – Guidelines for future European Union policy to support research, Brussels, COM(2004) 353, 2004.
12. Commission of the European communities. The role of the universities in the Europe of knowledge, COM (2003) 58, 2003.
13. Höyssa, M. The Co-evolution of Social and Physical Infrastructure for Biotechnology Innovation in Turku, Finland/M.Höyssa, H.Bruun, J.Hukkinen// *Research Policy*, No 5(33), 2004, 769-785p.
14. Hsu, P.H. Exploring the Interaction Between Incubators and Industrial Clusters: The Case of the ITRI Incubator in Taiwan/P.H.Hsu, J.Z.Shyu, H.C.Yu, C.C. Yuo, T.H.Lo// *R&D Management*, No 1(33), 2003, 79-90p.
15. Huisman, K.J.M. Strategic Technology Adoption Taking into Account Future Technological Improvements: A Real Options Approach / K.J.M.Huisman, P.M.Kort//*European Journal of Operational Research*, No 3(159), 2004, 705-728p.
16. Kao, L. High-Tech Concentration// *Taiwan Review*, No 3(54), 2004, 12-17p.
17. Lehrer M., Asakawa K. Managing Intersecting R&D Social Communities: A Comparative Study of European "Knowledge Incubators" in Japanese and American Firms, *Organization Studies*/M.Lehrer, K.Asakawa// *European Group for Organizational Studies*, No 5(24), 2003, 771-792p.
18. Lietuvos Respublikos Vyriausybė (LRV), 2003. Mokslo ir technologijų parkų plėtos koncepcija// *Valstybės žinios* Nr. 73-3397, 2003, 48p.
19. Lithuanian common programming document 2004–2006.
20. Miliūtė, A. Development of science and technology parks: modules of management: Doctor's dissertation. Vilnius, 2004, 160p.
21. Roy, S. Innovation Generation in Supply Chain Relationships: A Conceptual Model and Research Propositions/S.Roy, K.Sivakumar, I.F.Wilkinson// *Journal of the Academy of Marketing Science*, No 1(32), 2004, 61-79 p.
22. Smith, B.L. Innovation and Intellectual Property Protection in the Software Industry: An Emerging Role for Patents?/ B.L.Smith, S.O.Mann// *University of Chicago Law Review*, No 1(71), 2004, 241-264 p.
23. Webster, A., Health Technology Assessment: A sociological Commentary on Reflexive Innovation// *International Journal of Technology Assessment in Health Care*, No 1(20), 2004, 61-66p.
24. Wright, T.A. The Incubator – Positive organizational behavior: An idea whose time has truly come// *Journal of Behavior*, No 4(24),

2003, 437-442p.

25. Yang, P. Applying Ecosystem Concepts to the Planning of Industrial Areas: a Case Study of Singapore's Jurong Island/P.Yang, B.Lay// Journal of Cleaner Production, No 8-10(12), 2004, 1011-1025p.

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## Mokslo ir technologijų parkų vadybos tobulinimo galimybių tyrimas

Santrauka

Tarptautiniu mastu sukaupta mokslo ir technologijų pažangos, socialinės ir ekonominės plėtros spartinimo patirtis rodo, jog labai efektyvi ir perspektyvi organizacinė forma, skirta plėtoti mokslo ir technologijų pažangai, yra *mokslo ir technologijų parkai*.

Mokslo ir technologijų parkai yra viena iš organizacinių formų, skirtų inovacijoms plėtoti, mokslo tyrimams, studijoms technologijų kūrimo ir įgyvendinimo darbams koordinuoti, naujiems verslams iniciuoti: be mokslo ir technologijų parkų tarpe tokios paskirties organizacinių formų gali būti pažymėti verslo inkubatoriai, inovacijų centrai, industriniai parkai ir kitokios, tačiau būtent mokslo ir technologijų parkai kaip organizacinės formos pasižymi dideliu efektyvumu ir plėtros perspektyvomis.

Mokslo ir technologijų parkų bei jų tinklų plėtros būtinybę lemia nauji iššūkiai ir problemos, kylančios globalizacijos, Europos Sąjungos plėtros, žinių ir informacinės visuomenės raidos sąlygomis. Dėl šios priežasties labai *aktuali* ištirti ir įvertinti mokslo ir technologijų parkų ir jų tinklų, taip pat analogiškų organizacijų kūrimo ir plėtojimo poveikį ekonomikos augimui, atsižvelgiant į tarptautiniu mastu sukaupią patirtį.

Nepaisant to, kad mokslo ir technologijų parkų plėtra šiuolaikinėje teorijoje ir praktikoje labai dažnai vertinama kaip svarbus ekonomikos augimo veiksnys, tarptautinėje tyrimų praktikoje iki šiol nebuvo *kompleksiškai vertinamas mokslo ir technologijų parkų ar kitų analogiškų organizacijų bei jų tinklų kūrimo ir veiklos poveikis ekonomikos augimui*. Tokių įvertinimų bei jų metodikos stoka gali būti traktuojama kaip *aktuali problema*, formuluotina kaip *mokslo ir technologijų parkų, kitų analogiškų organizacijų bei jų tinklų kūrimo, plėtros ir veiklos poveikio ekonomikos augimui kiekybinių įvertinimų nebuvimas arba nepakankamumas*.

Mokslo ir technologijų parkų bei analogiškų organizacijų valdymo tobulinimo perspektyvų nustatymo tyrimui skirtas anketos ir giluminio interviu klausimynas buvo sudaromas remiantis Lietuvos statistikos departamento duomenimis, Europos Komisijos ataskaitomis, Pasaulio banko ir kitų pasaulinių organizacijų atliktų tyrimų oficialiomis studijomis, taip pat įvairiais Lietuvoje galiojančiais teisės aktais bei kita oficialia informacija.

**Tyrimo objektas** – mokslo ir technologijų parkų padėtis ir jų steigimo skatinimo būdai Lietuvoje bei palyginimas su ES šalyse taikomais metodais.

**Tyrimo tikslas** – parinkti mokslo ir technologijų parkų veiklą apibūdinančius rodiklius ir jais remiantis įvertinti šių institucijų padėtį, potencialą Lietuvoje bei skatinimo būdus, palyginti su ES šalimis, išanalizuoti mokslo ir technologijų parkų sistemos struktūrą Lietuvoje, jų veiklos teisinę ir finansinę padėtį bei apibendrinti prielaidas ir būdus galimam parkų tinklo kūrimui.

Mokslo ir technologijų parkuose, verslo inkubatoriuose, čia veikiančiuose ūkio subjektuose, valdžios bei savivaldos institucijose ir tarp esamų ir būsimų verslininkų buvo išplatinta 80 anketų, gauta atsakytų – 57, atsakymai į pateiktus klausimus siekia 71%. Iš pateiktų atsakymų respondentams buvo galima pasirinkti vieną, tinkamiausią, norėtą gauti kuo tikslesnius duomenis, apibūdinančius esamą mokslo ir technologijų parkų padėtį Lietuvoje bei optimalią jų plėtros kryptį. Gautų atsakymų sklaida yra gana plati, tačiau iš pirminės analizės ryškėja tendencija, jog vertinant esamą padėtį mokslo ir technologijų parkams bei verslo inkubatoriams tiesiogiai atstovaujančios tikslinės grupės, ūkio subjektų bei administracijos atstovų atsakymai sudarydavo vieną grupę, o valdžios ir savivaldos institucijų atsakymai – atskirą grupę, tačiau ateities perspektyvų tendencijos išlieka panašios nepriklausomai nuo respondentų sąveikos su mokslo ir technologijų parkais.

Labiausiai tyrimu ir atsakymais susidomėjo ir aktyviausiai nuomone reiskė mokslo ir technologijų parkų bei verslo inkubatorių administracijos atstovai; geriausiai suvokdami parkuose veikiančių ūkio subjektų problemas, jie teikė pasiūlymų, kaip spręsti problemas. Vangiausiai anketas pildė tikslinių grupių „Ūkio subjektai, vykdančys inovatyvią veiklą“ bei

„Aukštosios mokyklos absolventai, vykdančys ar planuojantys vykdyti komercinę veiklą aukštųjų technologijų arba inovacijų srityje“. Pagal sąveiką su mokslo ir technologijų parku visus respondentus galima skirstyti į tris grupes:

- mokslo ir technologijų parkų veiklą reglamentuojantys subjektai;
- mokslo ir technologijų parkų veiklą administruojantys subjektai;
- mokslo ir technologijų parkų veikloje tiesiogiai ir netiesiogiai dalyvaujantys arba ketinantys įsitraukti į šių struktūrų veiklą ūkio subjektai.

Apklausoje dalyviai mano, jog Lietuvoje tikslinga plėtoti mokslo ir technologijų parkus. Atskiri struktūriniai vienetai, nekoordinuojantys savo veiklos, anot respondentų, yra neveiksnūs. Parkai turi būti suburti į tinklą, kurio tikslas koordinuoti, plėsti, optimizuoti mokslo ir technologijų perdavimą į pramonę. Nuomonės, į kurį tinklą jungtis tikslingiausia, pasidalijo beveik po lygiai. Pagal sąveiką su mokslo ir technologijų parkais sunku išskirti tam tikras grupes, dauguma atsakiusiųjų reprezentuoja bendrą nuomonę. Komentuojant jungimosi scenarijus, nuomonės skyrėsi: 83% respondentų mano, jog Lietuvos nacionalinis tinklas turi įsiliesti į ES ar panašias pasaulines struktūras, o likusi dalis (17%) siūlo, jog atskiri mokslo ir technologijų parkai turi savarankiškai siekti narystės tarptautiniuose tinkluose.

Daugelis respondentų – 47% atsakė, jog tikslinga šias struktūras jungti į bendrą nacionalinį tinklą, neskaidant pagal tyrimų sritis ar regioninę priklausomybę. Anot atsakiusiųjų, Lietuvos tiek teritorija, tiek mokslo potencialas, suskaldžius į smulkesnes dalis, nebūs optimaliai naudojamas ir patrauklus užsienio partneriams. 32% respondentų, teigė, jog parkus tikslinga jungti į tinklus pagal jų tyrimų specializaciją, tai leistų sujungti ir optimizuoti konkrečios srities tyrimus ir padėtų geriau įsitvirtinti ES ir pasaulinėje rinkoje. Buvo minima informacinių technologijų, lazerių, biotechnologijos srities specializacija. Pagrindinė šio siūlymo idėja – paversti konkurentus partneriais ir taip gauti kuo didesnę sinerginį efektą. Už regioninę specializaciją pasisakė 21% respondentų, traukos centrais įvardydami stambiausias Lietuvos aukštojo mokslo institucijas. Respondentų nuomone, užtenka 3 centrų – Vilniaus, Kauno ir Klaipėdos, nes per smulkus suskaidymas neduos norimo efekto. Dauguma pasisakiusių už regioninį specializavimą teigė, jog būtų tikslinga steigti mokslo ir technologijų parkus pagal istoriškai susiklosčiusią orientaciją, pvz.: Vilnius – fundamentiniai mokslai, biotechnologijos, statyba, aviacija ir pan., Kaunas – medžiagotyra, informacinės technologijos ir pan., Klaipėda – marinistika.

Lietuvoje, ekonomikai sparčiai vystantis, mokslo ir technologijų parkai turėtų tapti svarbiu ekonominio augimo proveržio katalizatoriumi. Iki šiol išsamūs mokslo tyrimai, nagrinėjantys šių struktūrų veiklą, nebuvo atliktami. Mokslo ir technologijų parkai Lietuvoje yra perspektyvūs, ir šių organizacijų atliekamos funkcijos atitinka funkcijas, numatytas 2003 m. Lietuvos Respublikos Vyriausybės patvirtintoje jų plėtros koncepcijoje (LRV, 2003) (šią išvadą pagrindžia 91 % respondentų, dalyvavusių giluminiame interviu).

Remiantis atliktu giluminiu interviu, nustatyta, jog esama skirtingo dabartinės mokslo ir technologijų parkų veiklos vertinimo, priklausomai nuo respondentų sąveikos su mokslo ir technologijų parkais. Mokslo ir technologijų parkų veiklą reglamentuojantys subjektai mano, jog dabartinė mokslo ir technologijų parkų veiklos situacija visiškai tenkina tiek mokslo, tiek ūkio subjektų, vistančių technologiškai orientuotą veiklą, prioritetus. Tuo tarpu mokslo ir technologijų parkų veiklą administruojantys bei parkų veikloje tiesiogiai ir netiesiogiai dalyvaujantys ūkio subjektai arba ketinantys įsitraukti į šių struktūrų veiklą ūkio subjektai mano, jog mokslo ir technologijų parkai tik iš dalies atitinka jų poreikius, ir yra būtina pertvarkyti jų veiklą.

Nors Lietuvoje kelerius pastaruosius metus iš eilės fiksuojamas bendrojo vidaus produkto augimas, tačiau beveik pusė apklaustųjų ūkio subjektų atstovų ekonomines sąlygas mokslo ir technologijų parkams bei jų tinklams kurti ir plėtoti Lietuvoje įvardija kaip blogesnes už vidutines. Taigi darytina prielaida, kad apklaustieji linkę aplinką vertinti pesimistiškai, tikisi mažesnio savo verslo augimo arba tiesiog nerodo iniciatyvos, o laukia jos iš valdžios institucijų.

Mokslo ir technologijų parkų plėtrai sudarytas organizacinės sąlygas vidutiniškai arba blogai vertina net 86% atsakiusių ūkio subjektų, kaip pagrindinę to priežastį nurodydami nepakankamą mokslo ir technologijų parkų administracijos atstovų kvalifikaciją, konkrečiau – nesugebėjimą inžinerines ar fundamentines žinias *sujungti su vadybos žiniomis*.

Raktažodžiai: *mokslo ir technologijų parkai, tyrimas, gimulinis interviu, Lietuva.*

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