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In search of harmony in socio-economic development: the lessons of interaction between science and business organisations in Lithuania

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Summary

Partnership between science and business sectors: tools to identify needs and manage the process.

The paper offers both the theoretical and practical approaches to the important problem-development of cooperation between science and business sectors, focusing on its specific features of the link in the context of management of science.

The authors have applied procedural operational attitude to business and science institutions management of enhancing their interaction. Special emphasis is placed on creating new, original and effective scenarios of promoting partnership.

On the basis of two-side analysis of science and business sectors transformations, carried out by the authors, challenges of the partnership have been defined. The authors have described managerial causes of demand and offer in the area of cooperation between science and business sectors, and have identified factors, which have negative effect on this process. The paper introduces principles and challenges of creating the above - mentioned scenarios.

Introduction

In 2000, the European Union Science policy communiqué was initiated and shortly began the construction of unified scientific research space. The enhancement of science and business cohesion is especially emphasized within the boundaries of this space. Exceptional attention is given to the compatibility and coordination of the actions of East and West European communities, companies and individual researchers, as well as to the search for new management instruments and the improvement of the operative ones, in order to achieve the higher quality changes of innovative processes and their management, and more effective implementation of cluster-making processes. [European Commission, 2000]

Another important benchmark of this policy induces the improvement of financing mechanisms, with the main part of assets taken from the business sector and not from the state budget. Of the three per cent of the E U GDP to be allotted to science financing only one should come from the budget, while the other two - from the business sector. One per cent of the state GDP is considered to be the poverty line of science financing. The proportion of scientific research and experimental development expenses and the GDP is growing rather slowly in Lithuania (2001 - 0,67% , 2004 - 0,76 % , only 0,16 % of them came from the business sector). Therefore, the argument, most often emphasized in the public space, for low communication of organizations representing business and science sectors is mutually experienced lack of assets, necessary for the consolidation of this cohesion. Still such attitude is simplex and faulty in respect to identification and application of possible progress mechanisms. Thus, it is exceptionally **relevant** to see the existing practice as the researcher would, to evaluate global tendencies and peculiarities of the local space, to eliminate the attempts to straightforwardly implement the respective experience of the states with highly developed economy, as the application of analogies imposes new conditions, limited by the existing specific environment and opportunities. The urgency of the issue is also stressed by the fact that the articles in Lithuanian scientific press that are based exclusively on foreign authors are growing in number (Vilūnas, 2006).

The **aim** of this paper is to disclose the preconditions for the identification of the need in partnership between state science institutions and business organizations, as well as to discuss the peculiarities of management of the sectors' linkage enhancement process, with the accent on the case of Lithuania.

The implementation of this aim is also significant in the scientific respect, as the management aspects of science and business interaction are not sufficiently analysed. The problem raised could be treated as interdisciplinary, because its solution is based not only on management, but also on economics, sociology and communication science instrumentation. By highlighting management, the authors have chosen not the traditional systemic-functional attitude, which is widely discussed and used by a number of management researchers, but the procedural (sociocultural) one. The general provisions of procedural operational attitude have been formulated in the works of G. ir P. Ščedrovickij [1993,1995] and J. Kvedaravičius [2000, 2002, 2006], but its adaptation for the management of science and business partnership enhancement is new. Socio-managerial aspects of science and business interrelationship have been analysed in the works of W. Meske [1993, 2004], Etzkowitz [1998], I. Dągė [1995, 2003, 2004] J. Kristapsons[2003], H. Martinson[2003]. Still the application of the structural analysis results in the context of procedural attitude to science management acquires another **dimension of scientific novelty** and polarizes, on theoretical basis, towards the creation of new, original and effective science and business partnership scenarios.

Indeed, it is important to answer the integrated set of questions: what are the tendencies demonstrated by the two-sided analysis of the sector transformations in the context of science and management interaction enhancement? What are the main challenges posed by this partnership/interaction? Which factors are the most significant in lowering the effectiveness of intercommunication? What are the managerial preconditions of science and business cooperation supply and demand? Which principles should be applied in creation of possible scenarios for the improvement of linkage between state science institutions and business organizations? What are the ways of development for science and business linkage processes?

The essence and benefit of the procedural attitude to organizations

Science, business, their content and elements could be recognized and conceived in two ways. Firstly, it could be done by looking at what is really going on in the practical activity of a specific organization. Secondly, it could be done by looking at how real actions, processes, results could be seen and recognized in an organization from the theoretical point of view of business (business management) and science (science management), by using procedures and rules of the chosen attitude.

Everything that was, is and will be in the procedural (non-object, immaterial) picture of the world is only the run of natural and artificial processes. Natural and artificial processes are, first of all, distinguished with respect to the influence and activity of people (a person). Natural processes are started and go on without the activity of people (a person); artificial processes depend on the efforts of people. That is the absolute difference between the two processes. On the other hand, processes could be classified according to specific people. When specific people do not determine these processes, they are natural in their regard; when the processes run with the efforts of specific people, they are artificial in their regard. **The fundamental means able to change, support or shift the artificial process is the activity of people (a person) (the activity of thought and realization activity or just activity).**

Most of the processes in the socio-cultural systems (i.e. in all organizations) are artificial. For these processes to appear and run, certain human activity or sets of activities are necessary.

Products and services are created through basic processes in organizations as the results of their functioning (activity). Other processes (which means other activities, as well) are necessary for the functioning of the organization to continue, to be effective and productive. Management processes that are at the basis these other processes are started and created by managerial activities. The organization needs management as much as it ensures the continuity, productivity and effectiveness of the organization.

Still some organization subject to their specificity and external environment **may need more than just management.** For example, some business organizations at certain time may objectively **need science.**

In respect to organization functioning, management and science are artificial-activity phenomena, ensuring their normal functioning and survival. In order to create management and science phenomena - processes, activities and results, the knowledge, motives, experience, means and actions of certain people are necessary. Management and science form and ensure the demand of the result outside and its concordance with this demand. Thus, the present situation of the organization, as well as its future, depend on them.

On the other hand, management is also science, which deals with management decisions, activity organization, employee motivation and not with technology.

Austrian economist Joseph Schumpeter [1982] has distinguished 5 main positions necessary to start the functioning of an economic unit (business organization): inventor (scientist), owner (capital holder), businessman (the bearer of the entrepreneurship trait), executive - manager (management "maker"), employee (worker). For the organization to function effectively, the representatives of all positions are necessary. They are teamed up in the organization by a person with sufficient organizational skills, able to start all activities and receive the required results. According to J. Schumpeter's positions, ideas (innovations), capital, entrepreneurship, management and work are necessary. If capital and entrepreneurship are innovations, management and work are usually bought. At this point, based on the analysis of a broad range of business organization insolvencies, it could be stated with confidence that **firms collapse because of the lack of innovations (science results) and management.**

Management and science buyers in Lithuania

Only organizations - big, medium and small; simple and complex; old and new - can be real buyers of management and science.

The objective need of management and science is formed (or not formed) in organizations; subjectively and specifically the need is formed in the thoughts and visions of their owners/managers. They make decisions about "buying" science and management on the basis of their understanding of management and science need, its amount and price.

The main problems of modern Lithuanian management and science buyers could be named as follows:

- The inability of organization owners and/or managers to form optimal management structure that would correspond with the real situation;
- the unwillingness and/or inability of organization owners and/or managers to start the strategic planning process in the organization;
- their unwillingness and/or inability to authorize and motivate hired managers and scientists to form the required amount of management and science in the organization;
- their inability to realise that the attitude advocating saving of science and management costs is like a delayed-action bomb;

- the inability to expand management, finance, human resource, research and development functions in the organization, as well as misjudgement of their significance for the present day and the future of the organization, restricting oneself to the routine;
- the unwillingness and/or inability of organization owners and/or managers of the older generation to properly use the professional potential of the younger generation managers and scientists.

It is characteristic that the mentioned problems are fewer in more mature organizations, having better prepared owners and/or managers. The owners and/or managers of organizations that experience difficulties or collapse most often claim the reason of their failures to be the lack of assets (short-term property), absence of luck, the inappropriate behaviour of competitors or debtors. They never mention the insufficiency of management and its inadequacy with the actual situation. They often do not realise that employing more management (not necessarily more managers) could, in many cases, transform even exceptionally negative situation of the organization into positive.

On the other hand, the present-day management buyers do not have experience, knowledge and decision-making criteria - when, how much, where, what and whose managerial services should be bought from the external management providers, i.e. business management, marketing, finance and other consultants. There are exceptions, of course. Following the well known American saying it could be metaphorically stated that firms mature, when their owners and managers take up management and mature themselves.

The typical business situation in the present-day Lithuania from the management point of view could be defined with the help of the specific thesis by Brinton, a businessman from Great Britain. They were published ten years ago in Lithuanian public space [Papievis, 1997]. Brinton grounded his ideas with his personal experience in business. We would like to present these ideas once again, in order to prove the level of their applicability in the present day:

1. the main business problem in Lithuania is the inability to plan the activity and to communicate;
2. a team is formed on the basis of family relationship;
3. a partner is hiding information from other partners, news can be learned from the salesperson and not from the colleague owner;
4. we would come to agreements, but they would be ignored;
5. logical arguments in support of investments would not convince anybody, as investments would reduce dividends...;
6. graduate managers come to companies with new ideas, but no one needs them here.

It could be stated that the external expert has seen the long-term tendencies of our business and noticed the main natural characteristics of our business management buyers.

Science and management carriers (sellers) in Lithuania

It would be logical to assume that management service carriers in the organization should be people having management or conterminous professions (marketing, finance, administration and the like). Still the situation in Lithuania is different, as managers here are:

1. the specialists of the mentioned conterminous professions;
2. the representatives of professions that are not in any way connected with management;
3. “managers-practitioners” with no education.

The representatives of the first group demonstrate managerial thinking, the ability to see the situation as a whole, and the effectiveness of their managerial activity is growing in proportion to the experience gained in the process of decision-making. The representatives of the second group, having no managerial basics, no conceptual understanding of management, as well as of management as activity, content and technology, and having no managerial lexicon, can, at best, act on the basis of the inherent organizational skills. Some of them succeed in becoming quite good managers at tactical and operational levels, but the level of strategic management usually remains beyond their abilities. The representatives of the third group do not have the theoretical understanding of management; they lack the experience in changing the field of learning, as well as theoretical basics. Some of them succeed in performing certain managerial functions, but their services at best correspond to the supervisor’s position. It is very seldom that strategists are born. A manager should not make mistakes in the space of thought (decision-making), as well as in the sphere of activity realization.

Science carriers and sellers not always coincide. The pre-post-modernistic model is prevailing - scientists “make” science, without caring much about how to sell it. The ones that care are either the administration (beginning with the department) of the scientific institution, or special internal and external services, functioning over the last decade. One of the most urgent tasks of science (human resource) management is to develop a scientist-businessman. The strife of an impertinent too self-confident persona to steamroll the quasi-valuable research results at any cost through all possible financial channels should not be mistaken for the sales opportunities and challenges of an objectively valuable result, the author of which may lack entrepreneurial skills and experience. It should be acknowledged as a positive fact that economic conditions, international communication, in-service training seminars, with a number of scientists taking part in, the themes of management, marketing, public relations integrated in the curricula increase, though slowly, the number of scientists aware of science selling procedures. The new generation of scientists is moving fast in this direction.

The supply of science and management

The supply of science and management may come from the inside of the organization, as well as from the outside. Internal managers are subjects able to “make” management on the basis of the labour contract or the agreement. Internal management supply depends on the number of the subjects in the organization, their competencies and skills, motivation, the amount of payment and other factors. The supply also depends on the expression of management demand. The owner and/or manager has to demonstrate subtly and in detail what he wants and what he needs, and has to activate his management makers.

On the other hand, the external management supply should be taken into consideration. It would mean the employment of a new manager or managers for a longer or shorter period according to the management supply and its concordance with management demand. The search of such managers maybe twofold - either in the labour market, or in special organizations. External management supply may also come from science and management consultancy organizations that may offer a rather broad supply of managerial potential for the required period.

Let us have a look at science supply. Some organizations have functional positions for scientists that are occupied by scientists of different capacity. They can form high level and medium level teams with respectful effectiveness as well. In order to preserve the teams (especially strong ones), it is necessary to have strong and complete management in the company, as well as experience and a successful leader.

Science supply can be provided by individual scientists or small groups of scientists working in universities, science institutes or carrying out special projects for science receptive organizations on the basis of temporary hire agreements. This group of science service providers has a tendency to grow.

Foreign scientists or scientific organizations can provide science supply for business organizations, but this way is the most expensive.

Management quality and science quality in business organizations

The quality of management is ensured by properly selected content and managerial activity of high quality, based on orderly procedures and correct subtle relationship with time. It is known that right but overdue management decisions are ineffective, thus not of high quality. The performed research demonstrated the following most frequent reasons for poor management in the organization:

- no management system;
- the incomplete management content;
- managers do not perceive the situation well enough;
- managers implement wrong decisions of the organization owner (owners);
- the communication in the organization is ineffective, there is no feedback;
- overdue management decisions;

- hypertrophied management;
- no management control;
- management objectives are not set;
- all necessary processes are out of control;
- inappropriate motivation of managers;
- inadequate people
- “management makers”;
- performers do not understand the tasks;
- bad psychological climate;
- oppressed subordinates;
- IT not activated.

It should be noted that not only business organizations, but science organizations as well need high quality management. The comparative analysis of transformations in business and science organizations carried out by the authors shows that **science management consequences are more complicated than business counterparts.**

The **quality of science** in a business organization is defined by the level of timely and possibly broad implementation of innovations. The absence of connection between scientists and business people, too intensive striving for exceptionally high results or, on the contrary, the inability to reach the stage of implementation show poor science quality in the organization.

Managerial and non-managerial factors, diminishing the effectiveness of science and business cooperation - the object of rating

The following factors diminishing the effectiveness of cooperation have been identified: ineffective organization of the flow of ideas and their possible solutions; the differences between scientists and business people competencies, technologies of thinking and rhetoric in formulation of tasks; the incongruity between the challenges of social translators - managers and the real situation; the shortage of flexible financing mechanisms; gaps in legal acts; the elements of science and business cooperation policy (not only strategic, but especially tactical) that are not sufficiently proportioned and thus allow space for opposition and miscommunication.

Clusters as one of the most progressive instruments for science and business linkage

The essential components of cluster success:

- a well-developed innovation infrastructure;
- the system of appropriate level for study and science research;

- sufficient resources of capital (especially venture capital);
- entrepreneurial knowledge, knowledge, skills and traditions (Snitka, 2003)

The present scheme allows to generally see the challenges of the increase of Lithuanian innovative competitiveness, rejecting traditional distribution into strong and weak sides of the existing situation. Their comparison often acquires controversial character - strengths develop into weaknesses or intertwine in a complex way, which should be disclosed by the text and examples under discussion.

Various structures are rather successfully created in Lithuania, in the field of innovations as well.

The structure of Lithuanian innovative system, presented in the chart, shows that all main structural links are created - Lithuanian Science Council consults the Parliament and the government on the issues of science and studies, the scientific technical experimental development and the formation of science and innovation. Science and technology commission works for the government and the Department of Innovation and Technologies functions in the Ministry of Economy (in the department of industry and business). The Lithuanian State fund of science and studies is getting stronger. The International agency of science and technology development is active, as well as other subdivisions in this sphere. The Lithuanian innovation centre, celebrating its tenth anniversary, can boast of numerous international and local projects. Science and technology parks, business incubators and information centres abound.

It is important that the development of innovation and business support infrastructure gradually covers all regions of Lithuania.

Still, the problem is that the created structures acquire acceleration of desired activity not fast enough. It is determined by a few causes:

- a) the formed staff lacks creative and useful initiative or experience, or both;
- b) insufficient correlation between separate state administration institutions when striving for the integration of studies, scientific research, experimental development and innovation management
- c) (this process should be improved more with the help of professional managers, not the practitioners - it is necessary to change the long-lived traditions);
- d) though Lithuania can be proud of legal acts, passed at the beginning of the science reform, which formed the necessary preconditions for the implementation of progressive strategies (e.g. the Law of science and studies, 1991), some gaps in the legal mechanism, that are becoming more prominent these days, are blocking the development of the integrated system. For example, a setback that may seem insignificant, such as the absence of clearly defined and legally consolidated

definition of science service not only causes confusion in the work of state control institutions, but also inhibits the application of tax exemptions.

Lithuania has developed sectors of higher education and state research.

The country with the population of 3 million has about 20 higher schools of university level, tens of colleges, 29 state science institutes (up to 2002), some of which were integrated in universities and continue their activity - quite an impressive network. 5900 researchers with scientific degrees and titles (2007) are working there, but only a few percent are working in business. Still the incongruence of university undergraduates and graduates with the challenges generated by industry and business causes many problems.

There is not enough capital, especially venture capital. In 1995-2005 the total venture capital in Lithuania was 1,4 billion Lt, 166 investment projects were implemented. In the transition period (up to 2000) the venture capital was mostly allotted for the strategies of natural company development (market penetration, modification, diversification, innovations of goods).

Beginning with the year 2000 the tendency of development acquisitions by way of merging became prominent, comprising 7 out of 10 projects financed by venture capital.

It has to be admitted that Lithuania lacks the support mechanisms for financial innovations. Innovations are not effectively and inventively propagated - modern opportunities of public relations are not used, innovations are not positioned in business-science sector and in common society context as well. There are no independent science research institutions; state institutions keep all monitoring systems in hand. It distracts them from decision-making - their main task. The knowledge of entrepreneurship is poor and skills are not well developed.

The principles of science and business partnership enhancement

The authors have identified the following main principles: Mutual interest and trust, The Public spirit, Variety and competitiveness of supply and demand, Managerial competence, Process superiority against structures, Orientation towards the objectively useful result, Equal opportunities.

The solution of science and business interaction inertness problem has to progress according to purposeful, scientifically grounded and expedient scenarios.

Conclusions

1. With respect to organization functioning, science, as well as management, is an artificial- activity phenomenon, ensuring their normal functioning and survival. In order to create management and science phenomena - processes, activities,

results - it is necessary to have appropriate people, their knowledge, motives, experience, means and actions. The application of procedural operational method in this paper allowed the identification of the important characteristics of science, management and business supply-demand carriers, deciding the present and future of the science - business linkage.

2. The identified managerial and non-managerial factors, diminishing the effectiveness of business and science cooperation is an important precondition for the optimization of science and business sector interrelationship and a challenge for the researchers in the field to take up their rating and search for solutions.
3. The increase of science and business linkage effectiveness has to be based on science and business theoretical background, therefore the paper presents the draft of the field of activity principles. This draft has to be referred to in the process of managerial scenarios creation.
4. One of the most effective instruments for business and management linkage enhancement - creation of clusters - has to overcome difficulties in its way not because of the lack of structural - functional decisions, but because of the poor management of the present structures' procedural operational content.
5. The formation of managerial scenarios can frame and facilitate the creation of future (programming, projecting, planning, etc.), therefore, it is significant to properly exploit this instrument to enhance organizational linkage of science and business.

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