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How corporate decisions force innovations: factors and choices to act

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Abstract

This theoretical paper identifies the main corporate innovative activities and public innovation support systems characterizing factors and their assessment rates by providing factor groups and measured indicators. Presented complex of various innovation measurement indexes can help corporative decision makers to focus on the areas to be developed as wee as for the trends to be fostered during the estimated strategical corporative decisions making period. Paper presents vertical and horizontal decision making features focused on innovation as most competitive factor as well as the main features and criteria of innovation measurement in corporative decisions, accepted and well-used by main innovations measurement institutions.

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Keywords: Corporate decisions; innovations; indicators; factors; indexes

1. Introduction

The scientific literature emphasizes that innovation level measurement indices must be prepared and indicator weights determined according to the research based on an applied science model, which cannot be excluded from corporative decisions.

Companies can engage in innovation for a number of commercial and other reasons. Their objectives may involve efficiency, quality, products, services, markets or the ability to learn and to implement changes. Identifying corporative motives for innovating and their importance is of help in examining the forces that drive innovation

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activities, such as competition, productivity and opportunities for entering new markets.

Individual companies with separated innovations management systems are increasingly having a decisive impact on the future business decisions and economic success. Corporative decisions are upcoming management force for emerging economic benefits, but still the overall functioning of synergistic benefits and opportunities to work together lacks the factors to be described and deliver solutions how to operate in most effective way.

Purpose of research - exclude corporate decisions in innovative activities and the factors which characterize the significant innovative indicators.

Methods: systemic and comparative analysis and synthesis of scientific literature, strategic documents and legislation; statistical analysis of secondary data.

Innovation activities in corporative decisions can be hampered by a number of factors. There may be serious reasons for not developing innovation activities or there may be factors that slow such activities or affect them negatively. These include economic factors, such as high costs or lack of demand, factors specific to an enterprise, such as lack of skilled personnel or knowledge, and legal factors, such as regulations or tax rules.

Innovation reasons may vary up to corporate activities and strategical orientations. In this research the main features of innovations incorporative decision-making process are extracted, open innovation process components are presented, vertical and horizontal decision making processes have been analyzed and the main innovation factors as well as assessment rates are presented.

2. Features and criteria of innovations in corporative decisions

Various agglomerated structures such as clusters, play an important role not only in creating opportunities for the emergence of innovation, but also creates conditions for organizations to do so expeditiously. In most cases this leads to a close working relationship between the supplier and the user (Jucevicius, 2009). Corporative decision operating partners are usually involved in the innovation process, and that is providing better customer satisfaction (Porter, 1998). As it is mentioned in Oslo Manual (2005), innovation activities include all scientific, technological, organisational, financial and commercial steps which actually lead, or are intended to lead, to the implementation of innovations. Some of these activities may be innovative in their own right, while others are not novel but are necessary to implementation.

Innovation and knowledge creation is directly related to the different areas of business activity cooperation (the buyer - seller; science - business and so on). Innovation processes in corporative decisions can be identified by four main features (Solvell, 2009):

1. Innovation is influenced by technical and economic uncertainties progressive decline (Freeman, 1982; 1991), where the new technology is helping to improve business models. New technologies and skills are constantly developed.
2. Innovation is influenced by continuous cooperation between the parties, through direct communication methods using specialized language. This cooperation is being developed on the basis of direct meetings. Communication between buyers and sellers of frequency importance was rated in Hippel (1998) and Lundvall (1993) scientific work.
3. Certain innovations are technology transfer and university research activity process.
4. The level of innovation is higher in an environment where different resources can be achieved at low cost by using staff mobility, venture capital in the computerized system.

Organizations corporative decision has favorable conditions for the experiment at low prices and may incur substantial liabilities until they are satisfied that an innovative project will be a success. Corporative decisions characterized by the fact that in addition to its ongoing formal and informal supplier-user interaction, there are other Innovation and Technology *know-how* idea generation, transmission channels. In most cases it is an informal exchange of ideas, even among the corporative decision of competing organizations professionals. This is due to the fact that professionals, sharing their ideas with other corporative decision organizations, employees, expect to repay these same (Jucevicius, 2009). One of the favorable conditions of communication in the corporative decision is the geographical proximity of organizations (Bekar and Lipsey, 2002, p. 4). Mostly corporative decisions generated innovation is the creation of new products or improvement of existing products. This is not restricted to research-oriented, but also many traditional corporative decisions. At the same time no less importance corporative decisions acquire organizational and marketing innovations. These innovations have become particularly important in the development and introduction of new products on the market.

The ability of enterprises to appropriate the gains from their innovation activities also affects innovation. If, for example, enterprises are unable to protect their innovations from imitation by competitors, they will have less incentive to innovate (Oslo Manual, 2005). On the other hand, if an industry functions well without formal protection, promoting such protection can slow the flow of knowledge and technology and lead to higher prices for goods and services.

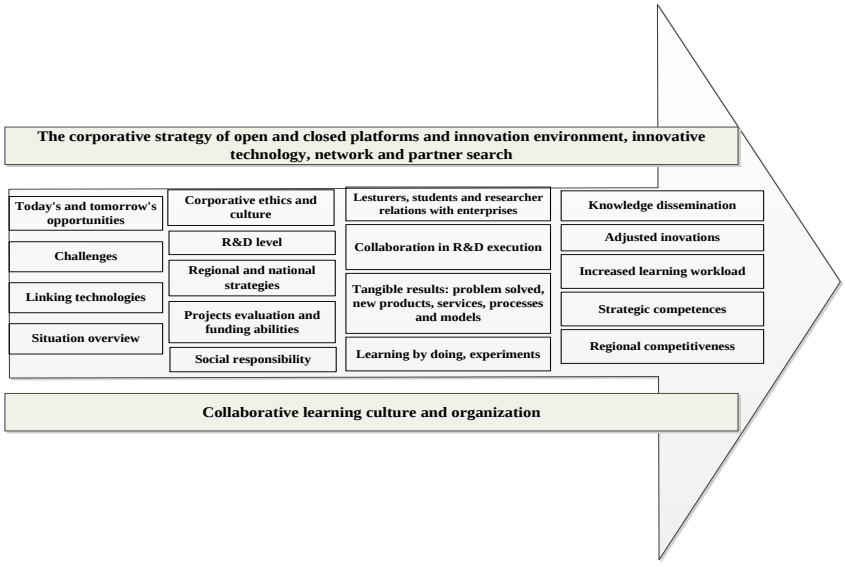

Fig. 1. Open Innovation process as factor of cooperation between science and business institutions

News agency Bloomberg in 2013 collected data on more than 200 countries and autonomous regions to identify their innovation factor. To collect and systematize available data evaluation, countries and autonomous regions had fallen to 96 and Bloomberg accounted for 50 of the most innovative countries in the rankings. Innovation was determined according to the following seven criteria:

1. Scientific progress and intensity - is determined by its share of GDP.
2. Productivity - measured by GDP per employee per hour.
3. High-tech distribution - measured by certain organizations (aviation and defense, biotechnology, software, system software, semiconductor, Internet services, and renewable energy), the percentage of all organizations in the country-wide.
4. Scientists' concentration - calculated according to how much they have in 1 million population.
5. Production volumes - calculated according to the value added to GDP.
6. Educational level - means of educated workers in the country.
7. Patent issuance activity - is determined by the number of patents 1 million and the population of 1 million dollars spent on research and development in the field.

The European Union is not a single organization that provides a measurement of the level of innovation services. (1) The Austrian Chamber of Commerce funded a group of organizations TIP (Technologies and Innovation Partners) measures the following factors determining the level of innovation: management, market orientation (customers), innovation orientation (employees), the use of technology, business processes, and finances. (2) International to promote innovation in Europe INNOVA network organizations have developed a tool for measuring the level of innovation INNOV`CHECK. Extended conducted SWOT analysis, analyzing the action plan provides a summary of the organization, technology, strategy and environmental verification organizations various activities (investment in personnel, ideas, management, rapid response to changes in the strategic approach, consumer orientation, etc.) assessment. (3) The organization IMP3rove (INNOVA State member) has developed a tool IMP3rove. This tool influence the company's innovation indicators are defined according to four aspects: the analysis of the organization, the processes, strategy and business environment. IMP3rove for proposed self-assessment analyzed five studies of innovation in business efficiency determining aspects: innovation strategy,

innovation organization and culture, innovation life cycle processes, factors that provide opportunities for innovation and application of innovation performance.

3. Vertical and horizontal decision making and choices to act

Tidd et al. (1997) provided important insights on how innovation reaches certain industries. Scientists divided the industries according to their technological trajectories and technological information for absorption techniques. Typical vertical corporative decision centers are large economies of scale in industries such as machinery industry, which twisted through manufacturing engineering, the learning curve effect and changes in the design of their specialized suppliers. Changes are adapted to complex engineering systems gradually. The supply-oriented industries, such as the classic production and agro-businesses that are using their knowledge of the supplier, exploit learning, which can also be of vital importance. Research and development are distributed and shared with those suppliers.

Typical horizontal corporative decision is based on the company's expertise, such as electronics, technology and natural sciences. They directly transform inventions and products often combine various disciplines (Weizman, 1996). Highly specialized companies, such as measurement equipment manufacturing industry or the software industry, is also important because of its decentralized structure they are able to very efficiently track customer needs. Basic skills are protected by the integration of research and development results in the company. To some extent, information-based industries can be horizontal part of the corporative decision, as long as they are based on knowledge of specialized suppliers. Here is the breakdown of two-way, because they are determined by the costs of transaction and possession of the same information becomes a competitive factor.

Research areas in these corporative decisions are different, especially when public funds are included (Blum et al., 2008): horizontal corporative decisions mainly focus on research covering the fundamental, but also similar to other industries problems. Public research institutes are often the basis for horizontal clustering analysis. This is the clustering activities that create a specific level of scientific, technological and entrepreneurial surplus (Karlsson and Manduchi, 2001) and relates to the new growth theory (Romer, 1990). Vertical corporative decisions for their diversity does not set out a common research infrastructure and high level of dependency on vertically oriented research aimed at the needs of the market. Non-clustered industry often benefits from the direct research applications markets. They have exclusive benefits, making them independent from the benefits of corporative decisions of excess.

Porter (1998) noted that corporative decisions play an important role not only in creating opportunities for the emergence of innovation, but also create conditions for organizations to do it expeditiously. In most cases the causes close link *supplier-customer*. Corporative decision operating partners can be and usually are involved in the innovation process, while providing better customer satisfaction. Corporative decision organizations have favorable conditions to facilitate the experiment at low prices and may incur substantial liabilities, while not enough belief that innovative project will be a success. Some organizations working with "distant" suppliers have more difficulties to deal with the award of contracts, maintenance and other issues (*Klasteriu kurimo Lietuvoje* ..., 2002, p.16).

Bekar and Lipsey (2002) points out those corporative decisions are also characterized by the fact that in addition to its ongoing *supplier-customer* interaction (formal or informal), there are other ideas (or innovations) generation and transmission channels. In most cases it is an informal exchange of ideas, even between competing companies in the corporative decision professionals. This is due to the fact that professionals, sharing their ideas with other corporative decision organizations, employees, hope that these will repay the same. And one of the most favorable conditions for such communication in the corporative decision is the geographical proximity of organizations (*Klasteriu kurimo Lietuvoje*..., 2002, p.17).

Corporative decisions mostly generated innovation is the creation of new products or improvement of existing products. This is not restricted to research-oriented, but also many traditional corporative decisions. At the same time no less importance corporative decisions and acquire organizational and market innovation. These innovations have become particularly important in the development and introduction of new products to market. Bekar and Lipsey (2002) notes that, as shown by various studies, significantly more new organizations are specifically attributable to other corporative decisions or agglomerated structures. Corporative decisions influence the emergence of new businesses for many reasons. For example, employees working in corporative decision organizations have a greater ability to identify vacant niches resulting from the production or service processes, and

to establish its own business. In addition, entry barriers are lower here than elsewhere. Agglomerated structures allow organizations to use existing emerging technology companies in early and allows for the exchange of innovative knowledge. Porter (1998) stated that the corporative decision covers resources, suppliers, employees and all this can be easily accessed by establishing new organizations.

4. Innovations factors and assessment rates

Innovative activity and its determinants assessment is necessary in order to deliberately create disseminate and develop public innovation support systems. Only the current assessment of the scope, nature and characteristics you can decide whether or not they meet stakeholders' expectations, and if you do not meet, public policy and administration tools for targeted support and encourage the development of innovative activities in the creation and development of public innovation support infrastructure. Public support system of knowledge innovation index (Melnikas et al., 2011; Gecas et al., 2011):

1. Technological breakthroughs index
2. Industrial and technological progress Index
3. Strengthening the innovation capacity index
4. The EU's Summary Innovation Index
5. Innovative Capacity Index
6. General Competitiveness Index
7. Knowledge Economy Index

According Melnikas et al. (2011), Gecas et al. (2011) innovation activity - is a statistical weighting of certain innovative activities characterizing parameter set rating, simplifying the investigated state of constant change in terms of perception.

Table 1 sets out the key national innovation activities characterizing factors and their assessment rates (Melnikas et al., 2011; Gecas et al., 2011). The indices show how objectively reflect the ongoing innovation processes in the private and public sector resources allocated to innovation activity and its effectiveness. However, these indexes do not include public innovation support the scale and nature of the indicators reflecting, so they can be used only to describe the most exposed to public innovation support system of innovation.

Table 1. The country's innovation activities characterizing factors and their assessment rates

Index	Factor groups	Measured indicators
1. Technological breakthroughs index (applied by the UN)	1. Technology Building	Number of registered patents, per capita Electricity consumption for each, per capita
	2. New Innovations diffusion	Internet stores, per capita The total export share of high and medium technology
	3.Old innovations diffusion	Telephone (wireline and mobile) Electricity consumption for each
	4.People skills	The average education level of the year Natural sciences, mathematics and engineering science students compared with all students
2. industrial and technology progress index (applied by the UN The Industrial Development Organization)	1.Industrial progress	The added value of the manufacturing sector, per capita Manufacturing sector exports, per capita
	2.Technological advances	Medium and high-tech activity in the manufacturing sector value added Production export share of medium and high-technology-based products
3. Capacity for innovation index (applied by the UN Conference on Trade and Development)	1.Human Capital Index	Population literacy rate percentage The number of high school students as a percentage of the relevant age group Tertiary education as a percentage of the number of people in that age group
	2.Technological activity index	R&D staff per million population Granted US patents per million of population Scientific publications per million population

Technological breakthroughs index assess the technological capacity utilization of the whole economy (measured between old and new technology diffusion). Industrial and technology progress index assess the technological level of capacity utilization (in terms of the competitiveness of the manufacturing sector). Capacity for innovation index assesses current technology, research capacity (in terms of costs - education and R&D activities).

Listed (Table 2) structure and indexes ((Porter et al., 2001; Lopez-Claros et al., 2009; Gecas et al., 2011; Melnikas et al., 2011) are well reflected in the ongoing innovation processes, ongoing business innovation activities, resource allocation, but only partially describes the current state of public innovation support system. Some of the statistical indices simultaneously describe not only the resources devoted to innovation activities, those activities results, but also public support impact.

Table 2. Innovative activities and public innovation support systems characterizing factors and their assessment rates

Index	Factor groups	Measured indicators
4. EU Summary Innovation Index	1.Innovation triggering factors	Innovation factors (11 set of indicators)
	2.Enterprise activity	Business productivity and management results (14 set of indicators)
	3.Innovative operational effectiveness	SME operational effectiveness measurement indicators (12 set of indicators)
5. Innovative capacity index (Lopez-Claros, A. et al., 2009)	1.The institutional environment	State Administration Quality (7 indicators set). State policies quality (8 set of indicators)
	2.Education, social exclusion, human	Education (4 indicators set). Social exclusion and inequality (4 set of indicators)
	3.Regulatory environment	Business creation and development regulation (9 set of indicators)
	4.R&D	R & D infrastructure (6 set of indicators). Patents and trademarks (4 set of indicators)
	5.Information technology application	Fixed-line technology dissemination (6 set of indicators). Mobile communications technology (4 indicators set). Internet, interactive television technology dissemination (5 set of indicators). Dissemination of information technology in the public sector. The quality of infrastructure (3 set of indicators)
6. General Competitiveness Index (World Economic Forum)	1.The most important determinants of competitiveness	Investment-friendly infrastructure. Macro-economic environment. Health care and primary education
	2.Efficiency increase factors	Higher education. Product and services market efficiency. The labor market performance. Financial market development. Technical-technological readiness.
	3.Factors contributing to innovation	Entrepreneurship (business experience). the number of patents
	Institutional treatment	Economic incentive and institutional regime. Tariff and non-tariff barriers. Regulatory quality. Legal management
7. Knowledge Economy Index and the knowledge index (World Bank)	1.Education and human resources	Adult literacy rate. The number of those seeking to secondary education. The number of aspirants to higher education
	2.Innovations system	Scientists count 1 million. pop. patent applications registered with the US Patent and Trademark Office (USPTO), the number 1 million. pop. scientific and technical journal articles number per 1 million population
	3.Informational structure	Telephone (fixed and mobile) subscribers per 1000 inhabitants. Computers per 1000 inhabitants. Internet users per 1000 inhabitants.

In the scientific literature (Porter and Stern, 2001; Lopez-Claros and Yasmina, 2009, Mia and Lopez-Claros, 2006; *OECD, European Community Joint Research Centre* 2008; Saeed et al., 2003, Melnikas et al., 2011, Gecas and et al., 2011) pointed out that innovation level measurement indices will be prepared and indicator weights determined according to the research based on a theoretical model. Summarizing the authors of these techniques, it can be underlined that these complex innovation indexes use is the advantage, because of:

1. *More rational decision-making.* Based on the indices or the constituent indicators, to better assess the decision determining factors and their changes.

2. *Measurability*. In the present phenomenon of the changes can be seen over time and with each other to compare the various systems in which this phenomenon acts.
3. *Comparability*. Complex index can clearly assess the impact of the decisions taken, as well as in terms of time to investigate and compare the functional and operating system for characterizing indices correlative relationships.

In particular, corporative decisions are powerful innovation and rapid deployment instrument, and innovation is one of the essential conditions for success. It is at the level of corporative decisions and the creation of conditions that support innovation. Second, corporative decision organizations operating in a good position to learn from each other, work together to find ways of joint or related issues. For faster and easier dissemination of information between producers and the market creates a large potential for improving products and services.

In today's economy, ability to supply the market innovative products and services using the most advanced methods becomes the dominant factor in competitive advantage. Growing interest in corporative decisions in large part is due to the fact that corporative decisions are the driving force that can stimulate innovative activity of corporative decision companies and improving their competitiveness.

5. Conclusions

Corporate decisions have favorable conditions for the experiment at low prices and may incur substantial liabilities until they are satisfied that an innovative project will be a success.

Corporate decisions characterized by the fact that in addition to its ongoing formal and informal *supplier-user* interaction, there are other Innovation and Technology *know-how* idea generation, transmission channels. In most cases it is an informal exchange of ideas, even among the corporate decisions of competing organizations professionals.

Growing interest in corporate decisions is partly due to the fact that corporate decisions are the driving force that can stimulate innovative activity of associated organizations and increase their competitiveness.

Corporate decisions play an important role not only in creating opportunities for the emergence of innovation, but also create conditions for organizations to do so expeditiously. In most cases this leads to a close working relationship between the supplier and the consumer. Corporate decisions operating partners are usually involved in the innovation process, and that is providing better customer satisfaction.

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