



Paper to be presented at the DRUID 2011

on

INNOVATION, STRATEGY, and STRUCTURE -
Organizations, Institutions, Systems and Regions

at

Copenhagen Business School, Denmark, June 15-17, 2011

Institutional vs Sectoral Subjection of Firms: What Counts More for Their Innovation S

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Abstract

In light of the controversial dispute about the role of national institutional environment in shaping innovation strategies of firms, and in light of the lack of explicitness of the notion of innovation strategy within the dispute, this paper aims at ascertaining if national institutional environment is fateful in determining the shape of innovation strategy of a firm originating in that particular national institutional environment. The institutionalist approach towards innovation strategy was intersected with the organizational one by analyzing four sample companies which together represented two distinct sets of national institutions - Lithuanian vs Swiss, and two distinct sectors - laser industry vs contact centers. Special warm-house conditions were ensured to eliminate other potentially disruptive factors. A conceptual framework of innovation strategy was refined and used to gather information, alongside structured interviews and online surveys. A variety of methods were used to analyze the data: exploratory case study, mapping, correlation analysis, test of difference, cluster analysis, and cross tabulation. The sectoral subjection appeared to be more influential in shaping the innovation strategies, thus, the role of national institutional environment was not fateful. Additionally, the survey highlighted the most important, with regard to national and sectoral disparities, characteristics of innovation strategy.

National Institutional vs Sectoral Subjection of Firms: What Counts More for Their Innovation Strategies?

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Keywords: Innovation strategy, National institutional environment, Sectoral environment, Laser industry, Contact Center, Lithuania, Switzerland.

Introduction

It might be true that, in countries which have experienced relatively recent large-scale changes, despite initial eagerness to adopt new institutional frameworks and ways of management, the potential for an adverse reaction is strong. For example, the former regime in Eastern Europe served to reduce uncertainty; however, this experience, according to Schneider and Barsoux (2003, p. 37), “created a sense of learned helplessness, a sense of being unable to make an impact, as well as a strong fear of making mistakes”. If so, national

institutions in Eastern Europe can easily become scapegoats on which low rates of innovativeness (Pro Inno Europe, 2010) and poor ability of facilitating competitive innovation strategies are blamed.

There are a number of indirect scientific arguments and evidence both for and against the idea that national institutional environment (NIE) is a decisive factor determining the character of innovation strategy (IS) of a firm originating and operating (largely) in that particular NIE. For instance, the key assumption of the varieties of capitalism approach (Hall, Soskice, 2001) is the comparative institutional advantage (CIA). It implies that firms focus on ISs that are supported by the dominant national institutional framework (Casper, 2009). A clear example of that are Whitley's (2000) five different innovation strategies which are most likely to appear in certain market economies.

The approach of national systems of innovation (Lundvall, 1992; Nelson, 1993) confirms the idea of CIA, though it is more specialized in respect of industrial sectors (Amable, 2000). The notions of regional innovation systems (Doloreux, 2002; Cook, Memedovic, 2003) and other geographies of production, such as industrial districts (Pyke, Sengenberger, 1992), innovative milieus (Camagni, 1991), new industrial spaces (Scott, 1988) and clusters (Porter, 2000; Bathelt, Malmberg, Maskell, 2002), are allied to those of varieties of capitalism and national systems of innovation because they not only emphasize that the core of production is still heavily concentrated in particular regions and that globalization does not necessarily lead to deterritorialization, but support the assumption that local capabilities are, to some extent, always dependent on national opportunities (Bathelt, 2003; Fromhold-Eisebith, 2007).

Other scholars support the paradigm of CIA by stressing its importance to factors which are closely related to IS. For instance, Hall and Sobel (2005) suggest that differences in institutional quality help to explain differences in entrepreneurship across states. Koen's (2005) international comparative analysis proves the significance of NIE to competitiveness and innovativeness. Boyer and Hollingsworth (1997) state that competitiveness is partly

determined by NIE: many firms (e.g. German or Scandinavian) and regions (e.g. Italian) have proved being enduringly competitive without import of foreign principles because of the generous NIEs. According to the institutionalization theory (Lewin, Volberda, 2005), environments with dominating technical and economic demands favor effectiveness, novelty: thus, revolutionary or at least radical innovations (Freeman, Soete, 1997) are welcome. And contrarily, environments with dominating social demands favor organizations for an endorsement of values, rules, trust: here, evolutionary innovations are more suitable. Analogously, if economic environment is benevolent, an organization can afford concentrating on expensive technological innovations (Edquist, Hommen, McKelvey, 2001). Otherwise, organizations often confine themselves to value innovations, though precisely the latter were considered to be an essence of any innovation by P. Drucker (2007). In general, admittance of the idea of CIA leads to a conclusion that innovation strategy is “path dependent, locally embedded and institutionally shaped” (Köhler, 2008, p. 74).

In the other camp, the concept of CIA is seriously questioned. Both Deeg and Jackson (2007) and Lange (2009) state that institutional heterogeneity (Allen, 2004; Schneiberg, 2007) and transnationalization (Ahrweiler, Gilbert, Pyka, 2006) are two pivotal challenges to the notion of varieties of capitalism. Market economies are characterized by institutional heterogeneity and relative openness, which means that firms can make their ISs competitive by relying on inputs provided by alternative institutions, be they domestic or part of foreign business systems (Lange, 2009). For instance, Fuller (2009) demonstrates that openness brings new possibilities of institutional configurations along with the influx of technology and capital: allowing foreign firms to play a large role in China’s technological upgrading has, according to the scholar, proven an effective strategy given the current institutional shortcomings in China’s economy. Analogously, Javidan, Stahl, Brodbeck and Wilderom (2005) assert that the rise of a distant cross-border business necessitates an effective transfer of knowledge across geographic and cultural borders.

Lane (2008), in view of global production and innovation networks, argues that, under the impact of global markets, the notions of national institutional reproduction and CIA need to be re-conceptualized to reflect the complexity of global effects. Similarly, Amable (2000) suggests that the approach of social systems of innovation is preferable due to its indifference to the question of a territory over which the gamut of inter-organizational and inter-institutional networks operates. Furthermore, Herrmann (2008) illustrates that firms do not inevitably get mileage out of CIAs: they can also bypass institutional constraints. It might even be purposive for firms to circumvent institutional restraints because governments, under certain circumstances, can block innovation and suppress growth (Chaudhry, Garner, 2007). By analogy, Xie and Zedtwitz (2010) do not point out NIE as a critical factor hinging the success of followers from catching-up countries to launch world-first products. Hence, one might conclude that the assumption about firms' ISS' reflexiveness to the national institutions, which they are supposed to be embedded within, can be regarded as a dangerously widespread fallacy.

However, the problem addressed in this paper arises from not solely the debate over the significance of NIE to firms and their ISSs. Today, it is increasingly difficult to clearly distinguish the concept of innovation strategy because the existing variety of attitudes towards both innovation and strategy has unfortunately led to a lack of scrutiny in using the term (Stankevicius, Jucevicius, 2010). Accordingly, the debate introduced above over-interrelates the impact of NIE on IS with its impact on, for example, general management strategy (Herrmann, 2008), or competitiveness and success (Casper, 2009), or innovativeness (Fromhold-Eisebith, 2007), or processes by which organizations gather and interpret information about strategic issues (Schneider, 1994), etc., thus making the comprehension of the interaction between NIE and corresponding firms' ISSs even more vague and fragile.

In light of the controversy of the debate about the role of national institutional environment in shaping firms' innovation strategies, and in light of the lack of explicitness of the

notion of innovation strategy within the debate, this paper aims at ascertaining if national institutional environment is the most decisive factor determining the character of innovation strategy of a firm originating in that particular national institutional environment. In addition to literature review regarding the delineation of the concepts of NIE and IS, the research methodology rests on the application of the refined integrated theoretical framework of innovation strategy to an exploratory research of four companies. The companies represent an intersection of two distinct sectors and two distinct sets of national institutions. Special warm-house conditions were ensured in order to highlight results of this intersection. Both qualitative and quantitative methods were used to analyze the data. Finally, conclusions are drawn.

National Institutional Environment: Brief Delineation

There are a plethora of definitions of institutions in scholarly literature, and the most popular is probably that of North (1990), according to which institutions are an inner element of a country's economic growth. However, an institution is a term of too wide comprehension to be embraced by a sole definition.

Zeghni and Fabry (2008) argue that two kinds of institutions should be distinguished: first, formal institutions at the economic, legal and political level; second, informal institutions, ingrained in the social and cultural area and, for those reasons, more complex to capture. Rodrik and Subramanian (2003) proposed a functional typology of formal institutions of market-oriented economies: market creating institutions represent the rule of law; and market regulating, market stabilizing and market legitimizing institutions contribute to the emergence of a social consensus about the sharing of both burden and wealth. Differently, informal institutions rely on a less tangible basement: culture, trust, norms, conventions, religion, etc. (Zeghni, Fabry, 2008). Likewise, Wiggins and Davis (2006) propose that institutions comprise norms, regulations and laws that establish the "rules of the game"

through both formal rules that include laws and contracts, and informal means such as social norms and conventions. Though this comprehension of institution is quite different to that where it is used as synonymous with organization, it does not imply the criticized incompatibility (Hage, 2003; Coriat, Weinstein, 2002; Kleiner, 2009) of institutional and organizational approaches to IS.

Despite the relative agreement on the types of institutions, there is no explicit agreement on which institutions are more important than others for factors related to IS (e.g. prosperity, growth, entrepreneurship), or even on which institutions do or do not belong to national systems of innovation (Hollingsworth, 2000). Though some scholars (Acemoglu, Johnson, Robinson, 2005; Acemoglu, Robinson, 2010) insist that the main determinants of differences in prosperity across countries are differences in economic institutions, they admit that economic institutions of a society depend heavily on the nature of political institutions and the distribution of political power in society (Acemoglu, Robinson, 2010); nor deny they the influence of cultural factors (Acemoglu, Johnson, Robinson, 2005). Similarly, Taylor (2002) stresses the importance of political institutions to long-run technological progress.

Differently from the views above, Knowles and Weatherston (2006) notice that informal institutions are fundamental in explaining development and income differences across countries. Similarly, Rolfstam (2009) invites to seriously take informal institutions into account in order to understand better the institutional set-up enabling public procurement of innovations, and Rauf (2009) emphasizes the importance of social networks to innovations. Finally, Redding (2005) argues that social and cultural dimensions within the institutionalist literature have long been neglected or even ignored, and advocates a multidisciplinary approach towards institutional environment surrounding innovations and ISs.

Hence, the arguments and findings mentioned above make this paper confined to an all-embracing understanding of institutional environment, which encompasses both political, legal, economic, social and cultural dimensions, regardless of their level of (in-)formality.

Refined Conceptual Framework of Innovation Strategy

Innovation-related literature, according to Hage (2003), has largely remained conceptually frozen around the ideas of *radical vs incremental* and *product vs process*. Obviously, these dichotomies are not sufficient enough to be referred to as innovation strategies. Unfortunately, they often are (Stankevice, Jucevicius, 2010). Therefore, this paper relies on an integrated conceptual framework of IS, developed by Stankevice and Jucevicius (2010). Reasoning behind the framework is simple but firm: *radical vs incremental, product vs process, open vs secretive, novelty vs imitation*, etc. are not a strategy; to be a strategy, these types of innovation and characteristics of innovation need to be structurally and purposively interconnected.

The methodology for the composition of the model rests on the application of the conceptual model of strategy, developed by Hambrick and Fredrickson (2005) within the area of general strategic management, to relevant studies on innovation. The model is comprised of five elements: four of them represent the varieties of possibilities about what to innovate, how to enable innovation, the speed and the scope of innovations, and how to bring innovations to target customers; the fifth element represents the general logic of IS and ensures the viability of the link between all the elements, between the objectives and the content of the IS, and between the IS and the respective general strategy.

However, the model (Stankevice, Jucevicius, 2010) has been refined in this article as shown in Figure 1.

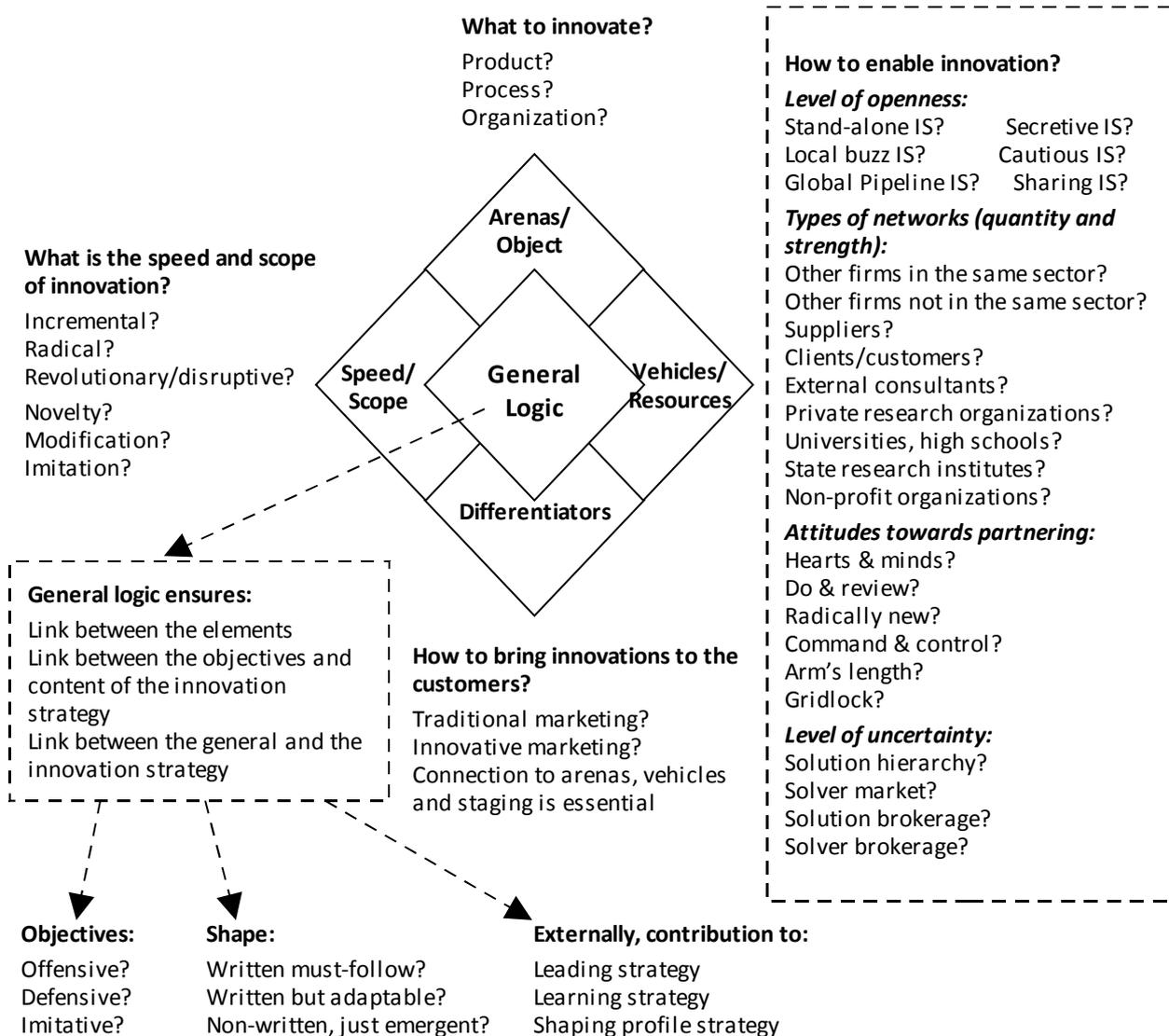


Figure 1. The Conceptual Model of Innovation Strategy (adapted from Stankevicius and Jucevicius, 2010, p. 27)

First of all, the element of general logic has been supplemented with Markard’s and Truffer’s (2006) distinction between leading, learning and shaping profile innovation strategies. A strategy’s attribution to one of the types is assessed by evaluating the extent to which the strategy contributes to creation and diffusion of new knowledge, guidance of the direction of search, supply of resources, creation of positive external economies (e.g. innovation networks) and formation of markets. The element of general logic has also been enriched by definition of a form of IS: if it is written and must be strictly followed, if it is

written but might be adapted to a certain situation, or if it is non-written and just emerges during innovation-related activities.

In consideration of the importance of networks to innovations (Fagerberg, Mowery, Verspagen, 2009; Lipnack, Stamps, 1996; Amin, Thrift, 1992), the element of vehicles/resources has also been refined. Types of possible networking partners have been drawn from Kriaucioniene and Jucevicius (2000) and Kersys (2008). They are as following: firms in the same sector; firms not in the same sector; suppliers; clients/customers; external consultants; private research organizations; universities, high schools, etc.; state research institutes; and non-profit organizations. Moreover, the element has further been developed by addressing typical behaviors with partners in a way proposed by Fowles and Clark (2005). The scholars identify six types of mutual collaboration which depend upon whether a firm is oriented towards the promotion of positive aspects of its relationships with partners or reduction of their negative aspects, and whether the firm is inclined to avoid differences with other actors of the network, tolerate the differences, or value them.

Methodology

Preparatory Stage: Two Dimensions of the Sample

In order to verify the hypothesis if *national institutional environment is the most decisive factor determining the character of innovation strategy of a firm originating in that particular national institutional environment*, it is necessary to intersect the institutionalist approach towards innovations with the organizational one, in accordance with the distinction highlighted by Hage (2003) and Coriat and Weinstein (2002). Among the notions supporting the organizational approach, the strongest is that of sectoral systems (Malerba, 2002). Despite the recognition of the significance of national institutions, the proponents of the institutionalist approach admit that there are important differences among industries in the operation of innovation-related processes (Fagerberg, Mowery, Verspagen, 2009). For

instance, in pharmaceuticals collaboration with universities, codified knowledge and formal tools for protection of intellectual property are extremely important, while in such fields as, for example, construction these factors are less important than interaction with customers and suppliers, learning and confidentiality. According to Fagerberg, Mowery and Verspagen (2009), the sectoral composition of a given national economy influences the motion and structure of its national innovation system, even though the national innovation system affects the operation of its constituent sectoral systems. „Hence, the relationship between sectoral and national innovation systems is a coevolutionary one [...]“ (Fagerberg, Mowery, Verspagen, 2009, p. 432). Thus, the sample stands for two different sectors: two service firms (contact centers) and two high-tech firms (laser producers).

The sample represents two different market economies as well - Swiss and Lithuanian. The reasoning for the choice of the countries resides in both their conformity and difference. In addition to that both countries are European, market economies and democratic republics, they both are relatively small and surrounded by a number of neighbors, among which one would find vastly influential ones. However, the countries contrast sharply with each other due to the dramatically unlike historical paths, as well as different national institutional settings. After 1990, the transition process in Lithuania has generated an institutional vacuum, and, in order to support a market-oriented economy, new institutions needed to be introduced (Bobirca, Miclaus, 2007). Therefore, the presumption, that the level of incompatibility between formal and informal institutions (Zeghni, Fabry, 2008) is high in Lithuania, is sound. On the contrary, Switzerland is the oldest democratic republic in Europe which has distinguished for its stability and political neutrality (SFSO, 2010). Therefore, incompatibility between formal and informal institutions in Switzerland is presumably small or absent. Given the topic of the article, one more distinction is essential: according to Summary Innovation Index 2009, innovation performance was the best in Switzerland, whereas Lithuania was the seventh from the end (Pro Inno Europe, 2010).

Methodology for Comparing the NIEs

Although one could look for an indefinite number of similarities and differences between the two countries, Institutional Profiles Database allows for a much more structured and professional comparison. The Institutional Profiles Database 2009 (Crombrugghe *et al.*, 2009) covers 123 countries, including Lithuania and Switzerland, and contains 368 indicators for a wide range of institutional characteristics. These are broken down into nine institutional functions: 1) Political institutions; 2) Safety, Law and order, Control of violence; 3) Functioning of public administrations; 4) Free operation of markets; 5) Coordination of actors, Strategic vision, Innovation; 6) Security of transactions and contracts; 7) Market regulations, Social dialogue; 8) Openness to the outside world and 9) Social cohesion and mobility. The nine institutional functions are then crossed with four sectors: A) Public institutions and civil society; B) Market for goods and services; C) Capital market; D) Labor market and social relations. The Institutional Profiles Database 2009 relies on a broad definition of institutions, both formal and informal, and a non-normative approach (Crombrugghe *et al.*, 2009). This is also the case of this paper.

The data provided by the Database was divided into four sections in accordance with the sectors of the database (Crombrugghe *et al.*, 2009), and analyzed with *PASW Statistics 17.0*. To measure correlations between the variables in four groups, resulting from the intersection of the four sectors with the nine institutional functions, and representing Lithuania and Switzerland, correlation analyses were performed. Kendall's tau_b coefficient was used to measure potential correlations because the data were ordinal (Crombrugghe *et al.*, 2009). However, the indicators involved in the database, regardless of their amplitude, could not represent the wholes of Lithuanian and Swiss national institutions, therefore difference-between-samples tests were carried out as well, as a confirmatory tool.

Nevertheless, as can be seen from the introduction to the database (see above), it lacks a cultural dimension of institutions. An in-depth interview has been carried out with a non-local

professor who, nonetheless, has been working in Switzerland for many years and specializing in cross-cultural management. The interview's major target was to allocate Swiss culture in consonance with 16 dimensions derived from Schneider's and Barsoux's (2003) investigation of cultural dimensions which are most commonly used by management scholars. Based on the works of Schein, Trompenaars, Hall, Hofstede, Adler, Kluckhohn and Strodbeck (Schneider, Barsoux, 2003), the cultural dimensions are: 1) Control over nature vs Fatalism; 2) Tolerate uncertainty vs Avoid uncertainty; 3) Doing vs Being; 4) Achievement vs Ascription; 5) Truth in numbers vs Truth in feelings; 6) Reality is material vs Reality is spiritual; 7) Human nature is basically good vs Human nature is basically bad; 8) Orientation on tasks vs Orientation on relationship; 9) Competition, achievement vs Social welfare; 10) Work relationships are egalitarian vs Work relationships are hierarchic; 11) Individualism vs Collectivism; 12) Public space vs Private space; 13) Low context language vs High context language; 14) Communication is neutral vs Communication is emotional; 15) Time is monochronic vs Time is polychronic; 16) Orientation on Future vs Orientation on present vs Orientation on Past.

For the Lithuanian case, three Lithuanian scholars were sent questionnaires by e-mail. One of them (Prof.) was specializing in intercultural communication within the area of management; the second (Dr., consultant-expert) one was specializing in the psychological factors within management; finally, the third one (Prof.) had always been among the most notable researchers of Lithuanian culture. The questionnaire's scale for evaluating the cultural dimensions was based on Semantic Differential Method and included five ranks represented by five circles. Each dimension was briefly described. The data were generalized by calculating mean values for each of the dimensions. Because the total number of the dimensions (N=16) was insufficient for a statistical comparison, a cultural map was created in order to evaluate the in-/compatibility of Lithuanian and Swiss cultures.

Methodology for Comparing the Sample Companies and Their ISs

In order to analyze the intersection of NIE with sectoral environment in a most advantageous way, one needs to create a kind of warm-house, where an impact of other potentially disruptive factors is reduced to a minimum. Therefore, the two high-tech companies, as well as the two service companies, resembled each other in terms of formal characteristics, such as the year of establishment, number of employees, global presence, average annual percentage of turnover invested in innovation-related activities, etc. The more detailed information is provided in Table 1.

Table 1. Warm-house characteristics of the sample firms

	CH high-tech	LT high-tech	CH service	LT service
Founded in	1998	1994	2005	2003
Business entity	Joint stock company, university spin-off	Closed joint stock company, university spin-off	Joint stock company	Closed joint stock company
Total number of employees	11 (+first- and second-order acquisitions: n/a)	~70	~350	~400
Global presence (nr of countries)	All, precise nr n/a	40	4	5 (might reach 13 depending on a project)
Average annual turnover	~2 mln. Eur.	~6 mln. Eur.	n/a	n/a
Average turnover invested in innovation-related activities	10%	10%	0	0
Global market share in selling specific innovative products	85%	80%	0	0

Three of the companies filled in questionnaires which they had previously got by-email. The problem of missing information and answers which needed clarifications was solved by

either a structured interview by telephone (primary source), or e-mail, or Skype. One of the four companies preferred a structured face-to-face interview to other means of contribution to the research.

The research instrument involved 36 questions in total, regarding: 1) innovation strategy (in consonance with the model illustrated by Figure 1: this part included networking-related questions as well); 2) factors influencing the shape of innovation strategy; 3) general information and performance. For the majority of the questions, representatives of the sample companies had to provide relative percentages from 0 % = "Not true at all" to 100 % = "Completely true" in integral numbers only; for some questions, they had to choose an answer which was later assigned 100 %, whereas the alternatives were assigned 0 %; for the remaining questions, the representatives had to provide their own answers in numbers and/or words. For the distant filling-in, the respondents were given a possibility to provide their own alternative answer and, if, necessary, rather assign a percentage to that answer. It has proved to be effective and did not cause over-complexity in codifying and analyzing the data because the representatives seized the opportunity in a few cases only. This fact illustrates the appropriate level of particularity of the questionnaire.

After the data had been codified, the 36 questions were converted into 334 cases (N=334: N=285 – innovation strategy, N=44 – factors influencing innovation strategy, N=5 – performance), while the sample companies stood for four variables. The bottom-up way of typing the data in enabled to perform necessary quantitative analyses and tests. However, it is important to note that in this case all the quantitative generalizations still apply to the corresponding sample companies.

To measure correlations between the ISs, correlation analyses were performed. Both Pearson's, Kendall's and Spearman's correlation coefficients were used to measure potential correlations: though the data was presented in percentages (interval variables), the answers were ordinal in their essence. In addition, difference-between-samples tests were carried out

as a confirmatory method to highlight similarities and differences between the four innovation strategies. The companies' representatives' attitudes towards factors influencing the companies' ISs were compared by exactly the same means of analysis; however, the results were supplemented by a qualitative analysis of answers. Performance of the companies was not compelled to analysis because of the warm-house conditions which guaranteed the necessary similarities *a priori*.

Finally, to highlight the most important information provided by the companies, the questions (cases) were analyzed through hierarchical cluster analysis with four final cluster-solutions. The number of four solutions was chosen because the sample incorporated four companies. Since the percents which served to codify the data represent interval variables, Ward's method was employed, and Squared Euclidian Distance was used to measure the differences. Further on, the variable of questions and the variable of the saved clusters became subject to a cross tabulation. Independence hypothesis of the variables could not be verified because 91.7 % of the cells counted less than 5, and it was not possible to combine the questions into groups. However, Cramer V coefficient was used to measure the relationship between the variables. The observed counts let to indicate the decisive questions – those which had a bigger count in one specific cluster than in the other ones. Thus, the four ISs were qualitatively compared along these questions.

Findings

Comparing Swiss and Lithuanian NIEs: Results

The foremost analysis to implement was to assure of the existence of significant difference between Swiss and Lithuanian national institutional environments (NIEs). The normality of distribution of the variables (Switzerland=CH and Lithuania=LT) within each of the four data groups – 1) Public institutions and civil society; 2) Market for goods and services; 3) Capital market; 4) Labor market and social relations - was verified by histograms,

normal P-P plots and Kolmogorov-Smirnov tests ($p = [0.000; 0.010] < \alpha=0.05$), and appeared to be inconsistent with normal distribution. Table 2 illustrates the results of the tests.

Table 2. Results of Kolmogorov-Smirnov tests

		Public institutions and civic society (N=191)	Market for goods and services (N=81)	Capital market (N=45)	Labor market and social relations (N=51)
Switzerland (CH)	K-S Z	5.607	2.031	2.222	2.447
	p	0.000	0.001	0.000	0.000
Lithuania (LT)	K-S Z	3.230	2.031	1.624	1.634
	p	0.000	0.001	0.010	0.010

Because the distributions were not compatible with normal ones, Wilcoxon signed-rank tests were performed instead of paired Student's t-tests. The Wilcoxon tests confirmed that Swiss and Lithuanian NIEs could not be assumed as statistically indifferent despite existing statistically significant correlations (Table 3) within the samples.

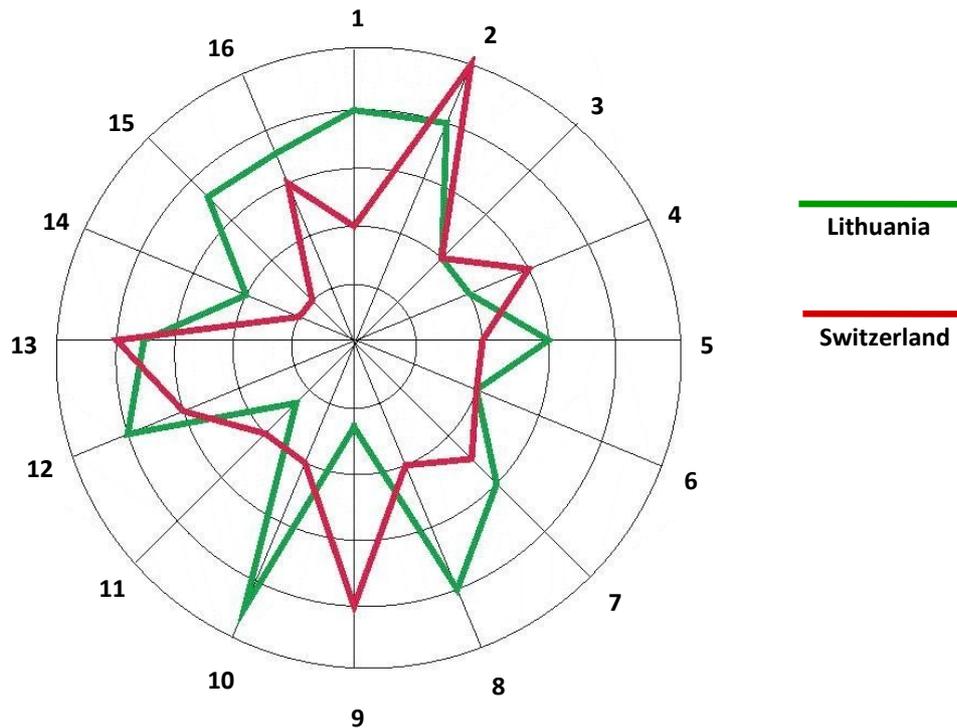
Table 3. Correlation analyses and Wilcoxon tests: Comparison of Swiss and Lithuanian NIEs

	Public institutions and civic society (N=191)	Market for goods and services (N=81)	Capital market (N=45)	Labor market and social relations (N=51)
Wilcoxon Z	6.958	2.600	3.252	2.822
Wilcoxon p	0.000	0.009	0.001	0.005
Kendall's $r_{\tau_{a,b}}$	0.403**	0.534**	0.751**	0.312*

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

To evaluate if Swiss and Lithuanian cultural institutional environments were different, a comparative integrated cultural map had been created as shown in Figure 3.



	Cultural features (inward - outward)		Cultural features (inward - outward)
1.	Control over nature – Fatalism	9.	Competition, achievement – Social welfare
2.	Tolerate uncertainty – Avoid uncertainty	10.	Work relationships Egalitarian – Hierarchic
3.	Doing – Being	11.	Individualism - Collectivism
4.	Achievement – Ascription	12.	Public space – Private space
5.	Truth in numbers – Truth in feelings	13.	Low context language – High context language
6.	Reality is material – Reality is spiritual	14.	Communication is neutral –Communication is emotional
7.	Human nature is basically Good – Bad	15.	Time is monochronic – Time is polychronic
8.	Orientation on Tasks – on Relationship	16.	Orientation on Future – Present – Past

Figure 3. Comparative integrated cultural map

As follows from Figure 3, Lithuanian and Swiss cultures have only two conterminous dimensions (Schneider, Barsoux, 2003):

- ✓ Both the Swiss and Lithuanians value being active and decisive, are willing to take risks and make mistakes and believe that it is better to make a wrong decision than no decision at all, in contrast to putting more value on thinking than doing and a belief that it is better to do nothing than to disappoint (3rd dimension);

- ✓ Both “believe it if they see it”, in contrast to seeing something if believing it (6th dimension).

There are more contrasting (difference = 2 ranks at least) dimensions than the conterminous ones:

- ✓ The Swiss are likely to believe that nothing is predetermined and that one can change things or make them happen; whereas Lithuanians give the forces of destiny more humility, they are likely to think that events cannot be controlled and that there is less insistence on imposing one’s own will on a situation (1st dimension);
- ✓ The Swiss think that people should be hired on merit and not on “connections”, Swiss managers avoid doing business with friends and family, as these relationships are considered to interfere with sound judgement; contrary to Lithuanians, who take for granted that in order to get anything done one has to go through relationships, and Lithuanian managers prefer to do business with people they know (8th dimension);
- ✓ The Swiss prefer taking care of people primarily to taking care of business and are concerned for quality of relationships and of work life, nurturing, social well-being, extensive social welfare programs; Lithuanians, by contrast, place importance on assertiveness, competitiveness, and materialism in the form of earnings and advancement, promotions, and big bonuses: for the company profit counts above all, and the shareholder takes precedence over employee or customer interests (9th dimension);
- ✓ From the Swiss point of view, the boss is seen as more directly involved with the workers, and hierarchy, power and status are downplayed; in Lithuania status is clearly realized, difference in status is marked, the distance between the boss and others is often encouraged (10th dimension);

- ✓ In Switzerland, time is clearly regarded as a finite resource which is spent, it is seen as structured in a sequential and linear fashion, and managers are acutely concerned with starting meetings on time and on spending time productively; in Lithuania, time is more often experienced as unlimited and simultaneous: people typically believe that time expands to accommodate activities, and that several activities can happen concurrently, business meetings, though, are not likely to be more fragmented (15th dimension, though only slightly externalized in the Lithuanian case).

In total, there are two conterminous and five contrasting dimensions, in addition to nine dimensions which indicate marginal differences. The corollary conclusion is that Lithuanian and Swiss cultural institutional environments are more different than similar, just as the previously analyzed institutional settings.

Comparing the Sample Innovation Strategies: NIE vs Sector

In this section, the foremost analysis to implement was to assure of the existence of significant difference between the innovation strategies and the respective representatives' attitudes towards the factors influencing these strategies.

The normality of distribution of the variables (CH_Laser, LT_Laser, CH_Service and LT_Service) was verified by histograms, normal P-P plots and Kolmogorov-Smirnov tests ($p=0.000 < \alpha=0.05$), and appeared to be inconsistent with normal distribution. Table 4 illustrates the results of Kolmogorov-Smirnov tests (N=285).

Table 4. Kolmogorov-Smirnov test results for the sample companies

	CH_Laser	LT_Laser	CH_Service	LT_Service
K-S Z	3.475	2.408	8.147	5.537
K-S p	0.000	0.000	0.000	0.000

Because the distributions were not compatible with normal ones, Wilcoxon signed-rank tests were performed instead of paired Student's t-tests. The Wilcoxon tests confirmed that the innovation strategies could not be assumed as statistically indifferent despite existing statistically significant correlations (Table 5) within the samples.

Table 5. Correlation analyses and Wilcoxon tests: Comparison of the ISs

	LT_Service CH_Service	CH_Laser LT_Laser	CH_Laser CH_Service	LT_Laser LT_Service	LT_Laser CH_Service	CH_Laser LT_Service
W Z	5.420	4.805	7.719	7.126	10.404	2.917
W p	0.000	0.000	0.000	0.000	0.000	0.004
r	0.527**	0.327**	0.283**	0.190**	0.177**	0.120*
r _{tau_b}	0.483**	0.370**	0.222**	0.151**	0.143**	0.078
r _s	0.525**	0.375**	0.260**	0.185**	0.171**	0.096

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

However, it is necessary to amplify that the correlations between the Swiss and Lithuanian service companies' ISs and between the Swiss and Lithuanian laser companies' ISs are bigger than the correlations between the ISs of the Swiss companies from the different sectors or between the ISs of the Lithuanian companies from the different sectors. This finding can be treated as follows: *the national institutional environments are not fateful factors determining the characters of innovation strategies of the investigated firms; rather, the more decisive factors are the sectoral subjections.*

Attitudes towards Factors Which Most Influence the Sample ISs

Considering the firms' representatives' attitudes towards factors which most influence the firms' ISs (N=44), only a correlation between the Swiss laser company and the Swiss contact center was statistically significant ($r=r_{\text{tau}_b}=r_s=0.482$, $\alpha=0.01$). The other correlations

were both weak and insignificant statistically. Because the distributions were not compatible with normal ones (Kolmogorov-Smirnov $p=0.000 < \alpha=0.05$ in each of the four cases), Wilcoxon signed-rank tests were performed instead of paired Student's t-tests. The Wilcoxon tests confirmed that only the opinions of the two Swiss representatives could not be regarded as different: $|Z|=1.890$, $p=0.059$, otherwise $|Z| = [3.464; 6.385]$, $p = [0.001; 0.050]$.

However, the similarity of the Swiss opinions can be explained by the respective representatives' reserved manner of giving evaluations: in both cases, the bigger part of answers was codified as zeros because only the most important factors were pointed out. Hence, a conclusion can be made that each of the representatives had a unique view of what influenced the respective innovation strategy. For example, the representative of the Swiss contact center indicated networking with clients and Swiss regional innovation system as the most important factors. This is due to the Swiss tradition of establishing sectoral and related associations which help to gain knowledge and get into fruitful partnerships.

The representative of the Swiss laser company referred to Swiss political-institutional environment, and Swiss national and regional innovation systems as to positive forces, and to poor access to venture capital as to a negative factor. This is true because of the existence of National Center of Competence in Research Quantum Photonics (NCCR QP). Acting as a network within Switzerland, the Center's mission is to carry out fundamental research in areas of strategic relevance to science and society, to foster education and training in the field of photonics and to contribute to technology transfer towards industrial partners (NCCR QP, 2011). The Swiss laser company would have hardly survived without the help of NCCR QP with regard to funding, research infrastructure and provision of links to human capital and potential customers. For example, the Center is under the directorship of a university research institution which allows research groups based at the home institution to network with other teams working throughout Switzerland. The further development of the Swiss

laser company was fostered by an acquisition of a foreign European company which, in turn, acquired one more company – a Swiss one.

The Lithuanian laser company's representative indicated national system of innovation and the company's name and reputation as two factors which have a clearly expressed influence on the shape of the firm's innovation strategy. The Lithuanian company's situation is similar to that of the Swiss laser company: it is also a university's spin-off, thus, the university provides the company with the research infrastructure and human capital. With the development of national system of innovation and the inflow of European structural funds, the company has also got a better access to funding resources. However, the Lithuanian specifics are that there was no institution like the Swiss NCCR QP. Therefore, the company's (and its leaders') name and reputation were also of a great importance when establishing industrial networks and commercializing the very first products.

Finally, the representative of the Lithuanian contact center noted the importance of the company's inner resources (financial, material, human and leadership) and openness of business systems globally. The company serves mainly foreign customers, thus, the openness of global systems is essential to its activities in general. However, almost like in the case of the Lithuanian laser company, the service-oriented firm could not rely on external help in finding customers. The effort was taken by the owner and CEO in order to pull in foreign capital: hence, the success originated from the extensive network of their personal contacts. However, the major obstacle in the company's innovative activities remains the lack of proper external local recourses: for example, the representative pointed out that poor performance of a network of local suppliers (e.g. software) has a negative impact on the company's innovation strategy.

The Most Decisive Characteristics and a Comparison of the Sample ISs along Them

The relationship between clusters by answers and questions was rather weak (Cramer V = 0.368) but statistically significant ($p=0.000 < \alpha=0.05$). This can be explained by an insight that, not by a long shot, all the questions were important in clustering the given answers. The observed counts showed there were 15 questions of a decisive importance. The innovation strategies, as well as the attitudes towards factors influencing them and general information about the companies, were analyzed in consonance with the 15 questions (Table 6, per 2 pages).

Table 6. The sample ISs along their characteristics which make most of difference

Cluster	Characteristics	CH Laser	LT Laser	CH Service	LT Service
1: Networking (sectoral dimension)	Major networks in innovation-related activities (strength and quantity)	<ul style="list-style-type: none"> ✓ Universities ✓ Private research organizations ✓ Firms from other sectors ✓ Clients ✓ Non-profit organizations 	<ul style="list-style-type: none"> ✓ Universities ✓ State funded research institutes ✓ Firms from other sectors ✓ Firms from the same sector 	<ul style="list-style-type: none"> ✓ Customers ✓ Suppliers ✓ External consultants 	<ul style="list-style-type: none"> ✓ Customers ✓ Suppliers ✓ Firms from the same sector ✓ External consultants
	Dominating information-sharing structure in networking	Processes and mechanisms favor solution seekers in sourcing intellectual property from external parties	Processes and mechanisms favor solution seekers in sourcing intellectual property from external parties	Varied, can favor either seekers, solvers, or both, depending on the business model implemented	Varied, can favor either seekers, solvers, or both, depending on the business model implemented
	Who specifies a problem when looking for a solution	Seeker specifies problems	Intermediary helps solution seekers specify the problem	Seeker specifies problems	Seeker specifies problems
	Strength of relationship between seeker and solver	Strong, usually a medium to long-term relationship	Weak or strong, varies based on the processes of the intermediary involved	Varies from solver to solver	Varies from solver to solver
	Firm's performance	Successful	Very successful	Very successful	Very successful

2: Elements of innovation strategy (sectoral dimension)	Aim of innovation strategy	Meet clients' needs and maintain existing positions by intensively offering new products and slightly modifying existing ones	Maintain existing positions by intensively offering new products and slightly modifying existing ones	Maintain existing positions by mostly modifying existing products	Maintain existing positions by both offering new products / services and modifying existing ones
	What is innovated	Mainly products and organization of work	Mainly products and processes	Organization of work and processes	Organization of work and processes
	Level of novelty in innovations	Completely new products; some modifications	Predominantly new products, some modifications	Modifications and imitations	Modifications and imitations, some novelty
	Ways of bringing products / services to markets	Predominantly based on existing external local networks	Based on existing external networks and personal contacts of leaders	Predominantly based on personal contacts of leaders, some traditional marketing	Predominantly based on existing external local networks, some traditional marketing
	Collaborative arrangements	Mainly multilateral collaboration along the value chain	Mainly multilateral collaboration along the value chain	Mixed (single relationship + multilateral collaboration along the value chain + global partnerships)	Mixed (single relationship + global partnerships)
	Type of value chain	Disintegrated value chain (multilateral collaboration in the process of value creation)	Mostly disintegrated value chain (multilateral collaboration in the process of value creation)	Mix of integrated value chain throughout the whole process of value creation and convergent within the respective industry	Mix of integrated value chain throughout the whole process of value creation and convergent within the respective industry
3: Institutional environment	Approach towards R&D	Partnership and outsourcing	Mainly control, build and develop	Partnership and outsourcing	Mainly control, build and develop
	Where knowledge for innovation strategy comes from	Mostly external local sources of knowledge	Internal sources of knowledge and multiple globally external sources	Mostly external local sources of knowledge	Internal sources of knowledge and multiple globally external sources
	Contribution to external innovativeness beyond company's boundaries	Leading in contribution to formation of new markets (9% of workforce), creation and diffusion of new knowledge, supply of resources	Leading, esp. in guidance of the direction of search, supply of resources, creation of positive external economies	Shaping profile innovation strategy	Learning innovation strategy
4: Uniqueness	Attitudes towards innovation-related partnerships	Reduce negative, avoid difference*	Promote positive, tolerate difference*	Promote positive, avoid difference*	Promote positive, tolerate difference*
		*See Figure 4			

- Similarities between the two laser companies
- Similarities between the two service companies
- Neither nationally or sectorally structured similarities
- Similarities between the two Swiss companies
- Similarities between the two Lithuanian companies

As can be seen from Table 6, the difference-making questions, which are assigned to cluster 1, describe mostly networking patterns and reveal predominantly sectoral contrasts. Interestingly, company's performance is also included in this cluster. This can probably be explained by an insight that performance can only be grouped in comparison – therefore, networks stand for a space which enables evaluation.

Characteristics of cluster 2 embrace a number of the elements of IS and, again, exhibit predominantly sectoral differences. It is worth noting that the cluster is clearly associated with products and/or services: what they are, how they are produced, how they get into markets, etc. In addition, the aim of IS, which is one of its binding elements and which navigates it, is also included in this cluster.

Unlike the two already discussed clusters, cluster 3 displays national specifics. Cultural informal institutions could account for the different approaches towards R&D. The Swiss assume that people are basically good, whereas Lithuanians have doubts about the essence of human nature; the Swiss are more publicly-oriented and more collectivist than Lithuanians (Figure 3). Hence, it is logical that Lithuanians are more reserved and prefer to rely on themselves. On the other hand, as unveiled in the previous section, Lithuania cannot brag for its extensive network of intermediate institutions, such as Swiss NCCR QP, or Swiss sectoral associations and numerous non-profit organizations. Therefore, it is understandable that external local sources of knowledge serve for the Swiss companies, whereas the Lithuanian ones rely, again, on themselves and take pleasure in using advantages of globally increasing openness of business systems.

Considering the companies' attitudes towards innovation-related partnerships, only the Lithuanian companies demonstrate correspondence (cluster 4). However, it is inaccurate to homologically attribute the companies to certain types of attitudes without taking into account variances within the attitudes: each of the companies appeared to have mixed relationships, if to measure them in accordance with Fowles' and Clark's (2005) distinction of

behaviors of partners. For example, a company can both focus on learning and continuous improvement, and rely on clear communication and confirmed understanding. Thus, the mean positions of the companies in respect of reasons for partnering and view of difference (Fowles, Clark, 2005), are illustrated by Figure 6 (LTL = the Lithuanian laser company, LTS = the Lithuanian service company, CHS – the Swiss service company, CHL – the Swiss laser company).

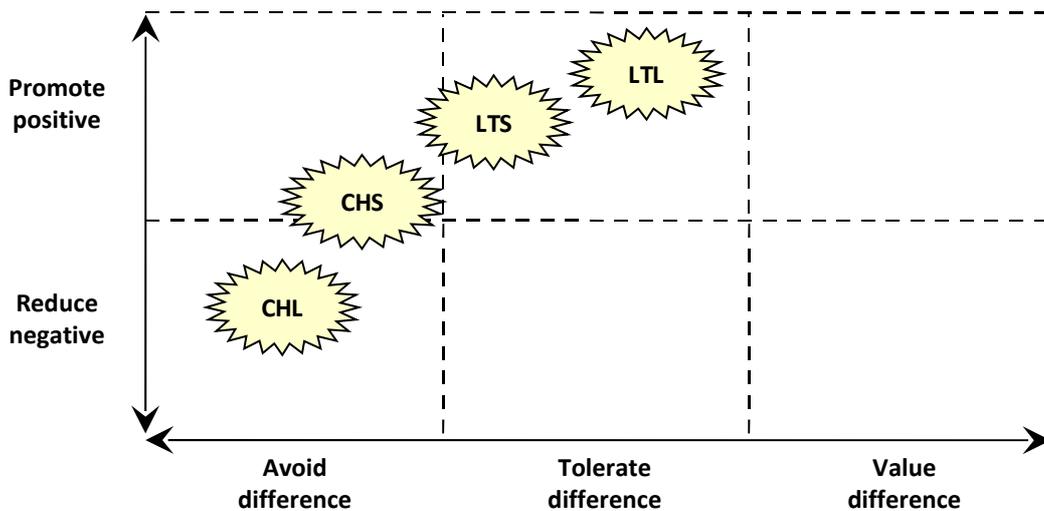


Figure 4. The companies' attitudes towards innovation-related partnerships

As can be seen from the figure above, it is difficult to generalize the attitudes in consonance with either national or sectoral subjection. *Inter alia*, this is not surprising: since a firm's attitude towards networking partners depends, to some extent, on its both national and sectoral subjection, the investigated companies act as a spectrum of the four possible results originating from the two-by-two intersection (two sets of institutions by two industrial sectors). Hence, cluster 4 is credibly based on the uniqueness of each of the companies.

Concluding remarks

The debate about the role of national institutional environment in shaping the corresponding firms' innovation strategies is highly controversial. Both the proponents of the notion of comparative institutional advantage and their challengers have provided solid argument and evidence to make out their cases. Moreover, the concept of innovation strategy has remained conceptually under-structured within the debate, thus making the comprehension of the interaction between national institutional environment and firms' innovation strategies even more vague and fragile.

In this paper, the significance of national institutional environment to innovation strategy has not been denied. On the contrary, the results show that the lack of an extensive network of intermediate institutions between a firm- and national level conditions that firms, in their search for innovation-related knowledge, rely on their internal sources and multiple globally external sources, whereas companies, which have access to more generous, in this regard, national institutional environments, can advantage from using external local sources of knowledge. Furthermore, national cultural institutions influence a way in which research and development is managed. When a surrounding culture of a company is more publicly-oriented, more collectivist and more positive about others, it is likely that the mode of research and development is based on outsourcing and partnerships; otherwise, a company prefers to control, build and develop the activities itself.

However, the role of national institutional environment in shaping the respective firms' innovation strategies is not the most decisive: a company's sectoral subjection has proved to be more influential *hoc sensu*. The latter governs a type of a firm's networks in its innovation-related activities: for high-tech companies, collaboration with universities and different research institutions is essential, whereas service companies concentrate on clients, suppliers and external consultants. Then, in laser industry, processes and mechanisms predominantly favor solution seekers in sourcing intellectual property from external parties, whereas within

the area of activity of contact centers these processes and mechanisms depend heavily on the business model implemented. Finally, the sectoral subjection is firmly associated with a number of elements of innovation strategy. Thus, high-tech companies mostly create new products or modify the existing ones in an innovative way, whereas service companies' innovations take place when refining organization of work or processes. The ways in which innovative products are produced or innovative services are infused differ as well. While high-tech companies rely on multilateral collaboration in the process of value creation, service companies bucket the inspiration from either their inner sources or convergence of value chain within the respective industry in case of an imitative innovation.

Notwithstanding, there is a serious limitation in the conclusions provided above – they are based on the survey of four companies and four innovation strategies, respectively. The sample represents a limited number of both national institutional environments and sectors, therefore it is hazardous to transpose the results on other countries than Lithuania and Switzerland, and on other sectors than laser industry and contact centers. Moreover, it might even be unhealthy to transpose the results on other companies within the same sectors and the same countries due to the small sample size. Hence, the question of the interaction of national institutional and sectoral environments with firms' innovation strategies remains open for further refinement. However, in doing so, a proper comprehension of innovation strategy, as well as institutional and sectoral environments, is particularly desirable. Neither can innovation strategy be limited to a couple of its elements, nor can the environments be squeezed into a couple of formal indicators.

References

1. Acemoglu, D., Robinson, J. 2010. The role of institutions in growth and development. *Review of Economics and Institutions*, 1(2), DOI: 10.5202/rei.v1i2.1.
2. Acemoglu, D., Johnson, S., Robinson, J. 2005. Institutions as a fundamental cause of long-run growth. In Aghion, Ph. and Durlauf, S., eds. *Handbook of Economic Growth*. Cambridge: MIT Press.
3. Ahrweiler, P., Gilbert, N., Pyka, A. 2006. Institutions Matter but... – Organisational alignment in knowledge-based industries. *Science, Technology and Innovation Studies*, 2(1), 39-58.
4. Allen, M. 2004. The varieties-of-capitalism paradigm: Not enough variety? *Socio-Economic Review*, 2(1), 87-108.
5. Amable, B. 2000. Institutional complementarity and diversity of social systems of innovation and production. *Review of International Political Economy*, 7(4), 645-687.
6. Amin, A., Thrift, N. 1992. Neo-Marshallian nodes in global networks. *International Journal of Urban and Regional Research*, 16(4), 571-587.
7. Bathelt, H. 2003. Geographies of production: growth regimes in spatial perspective 1 – innovation, institutions and social systems. *Progress in Human Geography*, 27(6), 763-778.
8. Bathelt, H., Malmberg, A., Maskell, P. 2002. Clusters and knowledge: Local buzz, global pipelines and the process of knowledge creation. *DRUID working paper*. Aalborg.
9. Bobirca, A., Miclaus, P.G. 2007. Role of multilateral and regional disciplines in services trade liberalization: the case of Romania's banking services. *Romanian Economic Journal*, 10(26), 61-80.
10. Boyer, R., Hollingsworth, J.R. 1997. From national embeddedness to spatial and institutional nestedness. In Boyer, R. and Hollingsworth, J.R., eds. *Contemporary capitalism: The embeddedness of institutions*. New York: Cambridge University Press, 433-484.
11. Camagni, R. 1991. Local "milieu", uncertainty and innovation networks: Towards a new dynamic theory of economic space. In Camagni, R., ed. *Innovation networks: Spatial perspectives*, London, New York: Belhaven Stress, 121-144.

12. Casper, S. 2009. Can new technology firms succeed in coordinated market economies? A response to Herrmann and Lange. *Socio-Economic Review*, 7(2), 209-215.
13. Chaudhry, A., Garner, Ph. 2007. Do governments suppress growth? Institutions, rent-seeking, and innovation blocking in a model of Schumpeterian growth. *Economics & Politics*, 19(1), 35-52.
14. Cook, Ph., Memedovic, O. 2003. *Strategies for regional innovation systems: Learning transfer and applications*. Vienna: UNIDO.
15. Coriat, B., Weinstein, O. 2002. Organizations, firms and institutions in the generation of innovation. *Research Policy*, 31(2), 273-290.
16. Crombughe, D. de, Farla, K., Meisel, N., Neubourg, Ch., Aoudia, J. Ou., Szirmai, A. 2009. *Institutional Profiles Database III*. Paris: DGTPE.
17. Deeg, R., Jackson, G. 2007. Towards a more dynamic theory of capitalist diversity. *Socio-Economic Review*, 5(1), 149-179.
18. Doloreux, D. 2002. What we should know about regional systems of innovation. *Technology in Society*, 24(3), 243-263.
19. Drucker, P.F. 2007. *Innovation and entrepreneurship: Practice and principles*. Oxford: Butterworth-Heinemann.
20. Edquist, Ch., Hommen, L., McKelvey, M. 2001. *Innovation and employment: Process versus product innovation*. Cheltenham: Edward Elgar Publishing.
21. Fagerberg, J., Mowery, D.C., Verspagen, B. 2009. The evolution of Norway's national innovation system. *Science and Public Policy*, 36(6), 431-444.
22. Fowles, F., Clark, W. 2005. Innovation networks: good ideas from everywhere in the world. *Strategy & Leadership*, 33(4), 46-50.
23. Freeman, Ch., Soete, L. 1997. *The economics of industrial innovation*. 3rd ed. Great Britain: MIT Press edition.
24. Fromhold-Eisebith, M. 2007. Bridging scales in innovation policies: How to link regional, national and international innovation systems. *European Planning Studies*, 15(2), 217-233.

25. Fuller, D.B. 2009. China's national system of innovation and uneven technological trajectory
The case of China's integrated circuit design industry. *Chinese Management Studies*, 3(1),
58-74.
26. Hage, J. 2003. A contingency theory of innovation regime and appropriate institutional concept
(unpublished). In *International Conference INNOVERSITY*, Berlin: The Technical University of
Berlin.
27. Hall, J.C., Sobel, R.S. 2008. Institutions, entrepreneurship, and regional differences in economic
growth. *Southern Journal of Entrepreneurship*, 1(1), 69-96.
28. Hall, P., Soskice, D. 2001. An introduction to varieties of capitalism. In P. Hall and D. Soskice,
eds. *Varieties of capitalism: The institutional foundations of comparative advantage*, Oxford:
Oxford University Press, 1-68.
29. Hambrick, D.C., Fredrickson, J.W. 2005. Are you sure you have a strategy? *Academy of
Management Executive*, 19(4), 51-62.
30. Herrmann, A.M. 2008. *One political economy, one competitive strategy? Comparing
pharmaceutical firms in Germany, Italy, and the UK*. Oxford: Oxford University Press.
31. Hollingsworth, J.R. 2000. Doing institutional analysis: implications for the study of innovations.
Review of International Political Economy, 7(4), 595-644.
32. Javidan, M., Stahl, G.K., Biodbeck, F., Wilderom, C.P.M. 2005. Cross-border transfer of
knowledge: Cultural lessons from Project GLOBE. *Academy of Management Executive*, 19(2),
59-76.
33. Kersys M. 2008. *Ekonominiu veiksmu itaka inovacijoms versle: Lietuvos atvejis*. Ph. D. Vytautas
Magnus University.
34. Kleiner, G.B. *A new theory of economic systems and its application to economic policy studies*.
RRC working paper series No. 13.
35. Knowles, S., Weatherston, C. 2006. *Informal Institutions and Cross-country Income Differences*.
CREDIT Research Paper No. 06/06, University of Nottingham.
36. Koen, C.I. 2005. *Comparative international management*. Berkshire: McGraw-Hill Education.

37. Köhler, H.-D. 2008. Profit and innovation strategies in low-tech firms. *Estudios de Economía Aplicada*, 26(3), 73-87.
38. Kriaucioniene, M., Jucevicius, R. 2000. The concept of national innovation system. *Social Sciences*, 5(26), 16-24.
39. Lane, Ch. 2008. National capitalisms and global production networks: an analysis of their interaction in two global industries. *Socio-Economic Review*, 6(2), 227-260.
40. Lange, K. 2009. Institutional embeddedness and the strategic leeway of actors: the case of the German therapeutical biotech industry. *Socio-Economic Review*, 7(2), 181-207.
41. Lewin, A.Y., Volberda, H.W. 2005. The future of organization studies: Beyond the selection-adaptation debate. In Tsoukas, H. and Knudsen, Ch., eds. *Oxford handbook of organization theory: Meta-theoretical perspectives*. New York: Oxford University Press, 568-595.
42. Lipnack, J., Stamps, J. 1996. *The age of the network: Organizing principles for the 21st century*. John Wiley & Sons.
43. Lundvall, B. 1992. *National systems of innovation: Towards a theory of innovation and interactive learning*. London: Pinter.
44. Malerba, F. 2002. Sectoral systems of innovation and production. *Research Policy*, 31(2), 247-264.
45. Markard, J., Truffer, B. 2006. Actor oriented analysis of innovation systems: findings from a case study on stationary fuel cells. In *DRUID Summer Conference*, Copenhagen: DRUID.
46. National Center of Competence in Research Quantum Photonics. 2011. *About us*. [Online] Available at: <<http://nccr-qp.epfl.ch/page20202.html>> [Accessed 17 January 2011].
47. Nelson, R.R. 1993. *National innovation systems: A comparative study*. Oxford: Oxford University Press.
48. North, D.C. 1990. *Institutions, institutional change and economic performance*. New York: Cambridge University Press.
49. Porter, M.E. 2000. Location, competition and economic development: Local clusters in a global economy. *Economic Development Quarterly*, 14(1), 15-34.

50. Pro Inno Europe, 2010. *European innovation scoreboard (EIS) 2009*. [Online]
Available at: <<http://www.proinno-europe.eu/page/european-innovation-scoreboard-2009>>
[Accessed 17 October 2010].
51. Pyke, F. and Sengenberger, W. 1992. *Industrial districts and local regeneration*. Geneva: International Institute for Labour Studies.
52. Rauf, M. 2009. Innovation and informal institutions: an institutionalist approach to the role of social capital for innovation. *Journal of Academic Research in Economics*, 1(1), 25-33.
53. Redding, G. 2005. The thick description and comparison of societal systems of capitalism. *Journal of International Business Studies*, 36(2), 123-155.
54. Rolfstam, M. 2009. Public procurement as an innovation policy tool: the role of institutions. *Science and Public Policy*, 36(5), 349-360.
55. Rordrik, D., Subramanian, A. 2003. The primacy of institutions. *Finance and Development*, 40(2), 31-34.
56. Schneiberg, M. 2007. What's on the path? Path dependence, organizational diversity and the problem of institutional change in the US economy, 1900-1950. *Socio-Economic Review*, 5(1), 47-80.
57. Schneider, S.C., Barsoux, J.-L. 2003. *Managing across cultures*. 2nd ed. Prentice Hall, Financial Times.
58. Scott, A.J. 1988. *New industrial spaces: Flexible production organization and regional development in North America and Western Europe*. London: Pion.
59. Stankevici, I., Jucevicius, G. 2010. Innovation Strategy: an Integrated.theoretical framework. *Social Sciences*, 3(69), 24-31.
60. Swiss Federal Statistical Office, 2010. [Online]
Available at: < <http://www.bfs.admin.ch/bfs/portal/en/index.html> >
[Accessed 17 October 2010].
61. Taylor M.Z. 2002. *A study of the comparative political economy of innovation: how political institutions affect long-run technological progress*. Research note at the 98th annual meeting of the American Political Science Association: Boston.

62. Whitley, R. 2000. The Institutional Structuring of Innovation Strategies: Business Systems, Firm Types and Patterns of Technical Change in Different Market Economies. *Organization Studies*, 21(5), 855-886.
63. Wiggins, S., Davis, J. 2006. *Economic institutions*. IPPG briefing paper No. 3.
64. Xie, W., Zedtwitz, M. von. 2010. Main characteristics of world-first innovation in catching-up countries. *Journal of Technology Management in China*, 5(2), 108-121.
65. Zeghni, S., Fabry, N. 2008. *Building institutions for growth and human development: an economic perspective applied to transitional countries of Europe and CIS*. MPRA Paper No. 9235.

Acknowledgements

This paper draws on my research stay at the University of Geneva, implemented in accordance with the project "Promotion of Students' Scientific Activities", sponsored by the European Union Structural Funds and executed by the Research Council of Lithuania (a part of "The Researchers Career Programme (2007-2013)", initiated by the Ministry of Education and Science, VP1-3.1-ŠMM-01). The financial support from the Research Council of Lithuania is gratefully acknowledged. I would like to express my deepest gratitude to Prof. Michel Oris for guidance and support, as well as Prof. Lucio Baccaro, Prof. Susan Schneider and Prof. Luc Gauthier. I would also like to thank my colleagues at the Interfaculty Center of Gerontology of the University of Geneva for the warm welcome and friendly tone. The support of the Department of Strategic Management of Kaunas University of Technology and Prof. G. Jucevicius is highly appreciated as well.