

## ENVIRONMENTAL CHALLENGES FOR ENTREPRENEURSHIP AND INNOVATIONS DEVELOPMENT

Gražina Jatuliavičienė, Marija Kučinskienė, Rimantas Garuckas

*The increasingly changing global business environment, which is characterized by rapid technological changes and growing interdependence, has forced many firms to be innovative in all areas of business activity. Responses to global environment challenges require to implement into activity of enterprises such features as entrepreneurship and innovations and to strive to achieve synergy among them. The research of innovation activities of Lithuanian enterprises highlights their importance striving to gain creation successful complete position and is becoming necessity for economic growth and development.*

**Key words:** global environment challenges, entrepreneurship, innovations, economic development.

### Introduction

Responses to the global environment challenges direct attention of researchers that is necessary to define concepts, which could be, as well as to identify favourable opportunities and possible threats for successful business development based on new competences. The theoretical and empirical aspect of current business development highlights the importance of entrepreneurship and innovations as one of the most important key drivers of change. There is no particular answer for suitable responses of the global environment, but those enterprises with greater entrepreneurship and innovation capacity will achieve a better response from the environment, by creating capabilities needed to improve their competitive position.

The most important trend in the context of globalisation challenges is possibility to use network approach for cooperation innovation activities not only in the internal value chain but also with outside support organizations by creating inter-organizational network that facilitates enterprise-level adaptation to environmental change. Therefore, an innovative and entrepreneurial organization needs a range of new managerial and entrepreneurial capacities and skills to handle a problem of strategic decisions making by fostering adaptation to the global environment challenges.

The slowness of the whole process of innovation activities in Lithuanian enterprises is consequence of incremental adaptations to changing firm and environmental conditions rather than the result of a deliberate strategy. An innovative and entrepreneurial environment is one where new ideas are encouraged and explored. During current economic integration Lithuanian enterprises are no longer unable longer to compete on basis of low costs; therefore they must strive to build a new source of competitive advantage based on knowledge and expertise, provided by entrepreneurship and innovations.

**The aim of the article:** to define the concepts of entrepreneurship and innovation and to highlight their interrelatedness; to analyse business environment and necessary conditions for the fostering innovation activities of Lithuanian enterprises.

**Object:** innovative activities of Lithuanian enterprises

**The methods of the research:** system analysis, comparison, and interpretation.

### Global environment dynamics and perspectives for long-term competitiveness

Globalisation has altered the economic frameworks of both advanced and developing nations in ways that are difficult to fully comprehend. The increasingly changing global business environment is characterized by integration, rapid technological changes and growing competition and has forced enterprises to find new ways of competing effectively. Discussing the peculiarities of the global economy it is useful to evaluate it opens new markets provides extensive choice of the human and other resources, activates the process of partnership and creates competitive pressure (M. Kučinskienė, G Jatuliavičienė, 2002). According to L. Clarke (1994), environmental changes define the radicalism required in new products in order to stay competitive. Organizations distinguished by having created the conditions for sustained growth need have a general in-depth knowledge of their environment, which constitutes the main source of opportunities and threats for business development.

Globalisation is a process, by which nations, businesses and people are becoming more connected and interdependent across the globe through increased economic integration and communication exchange, cultural diffusion and travel (G. Jatuliavičienė, M. Kučinskienė, 2006). The process of

analysis of the global environment dynamics is related to global perspectives for long-term competitiveness. Need to be competitive forces firms to be innovative in all areas of business activity. The intensification of competition, brought on by globalisation and the creation of a more global economy, is driving small businesses to become more innovative. A paradigm encompassing globalisation and innovation, far more than in earlier decades, appears to explain the events of the past years better than other conceptual constructs.

Entrepreneurship and innovation go together and provide the fuel for the engine of the modern economy. Describing the concept of entrepreneurship P. F. Drucker (1985) defines it as “creation of innovations and includes the usage of resources and the usage of new possibilities of valuation”. According to Ireland *et al.*, (2001), entrepreneurship involves creating new resources or combining existing resources in new ways in order to develop and commercialise new products, move into new markets, and/or service new customers. “Entrepreneurship, in its narrowest sense, involves capturing ideas, converting them into products and, or services and then building a venture to take the product to market” (D. Johnson 2001, p. 138). Innovation is the specific tool of entrepreneurship by which entrepreneurs exploit change as an opportunity for a different business or service. There is considerable overlap between entrepreneurship and innovation (R. N. Kanungo 1999, J. Sundbo 1998). Zhao interprets innovation similarly, pointing out that innovation has to address market needs, and requires entrepreneurship if it is to achieve commercial success (F. Zhao 2001).

Entrepreneurs seek opportunities and innovations often provide the instrument for them to succeed. R. F. Hurley and G.T Hult (1998) point out that those organizations with greater innovation will achieve a better response from the environment, obtaining more easily the capabilities needed to increase organizational performance and consolidate a sustainable competitive advantage.

Entrepreneurship encompasses a variety of factors. According to P. F Drucker (1994) systematic innovation requires the capturing and monitoring of seven sources of opportunity: the unexpected; incongruities; process need; industry and market structures; demographics; changes in perception; and new knowledge. Clearly, an innovative and entrepreneurial organization needs a range of managerial and entrepreneurial capacities and skills to handle innovation.

Based on the studies of J. Shumpeter (1934), P. F. Drucker (1994), D. Johnson 2001, F. Zhao (2001, 2005) and others, new development concept embracing capacities of innovative and entrepreneurial organizations could be defined as follows:

- an ability to search for and identify innovative opportunities that foster economic growth;
- an ability to create a technological environment that fosters innovation and entrepreneurship;
- the ability to develop effective plans and support systems to implement innovation and commercialisation procedures;
- the ability to integrate research, design, and market information to convert new ideas and inventions into commercially viable innovations; and
- the ability to develop effective and realistic procedures for the evaluation of R&D projects in terms of innovation, quality, and commercial value.

Therefore, a perspective for long-term competitiveness in the modern globalisation environment calls for innovation management. In new global business market will not only survive but also prosper only enterprises that will to upgrade their products, use technology skilfully and will cooperate with national consulting, and training institutions, research institutes.

### **Aspects of innovation activities in the Lithuanian economy**

Current tendencies of Lithuanian economy striving to enter into the new global environment could be analysed by defining core peculiarities of its economic development. In respect to the economic environment, economic growth and development is the essential guarantee for the fostering integration processes resulting from globalisation. Over the period of 2001-2006 Lithuania has been experiencing rapid economic growth, especially in comparison with average growth of EU countries. The percentage change in real GDP for the 2001-2006 year is presented in Figure 1. In terms of GDP growth Lithuania managed to maintain its position among the leading EU member states, with average GDP growth over 7 per cent. In 2006 Lithuania's GDP increased by 7.7%, and experts forecast the speediest development of Lithuania among the Baltic States in 2008 – 6.5%.

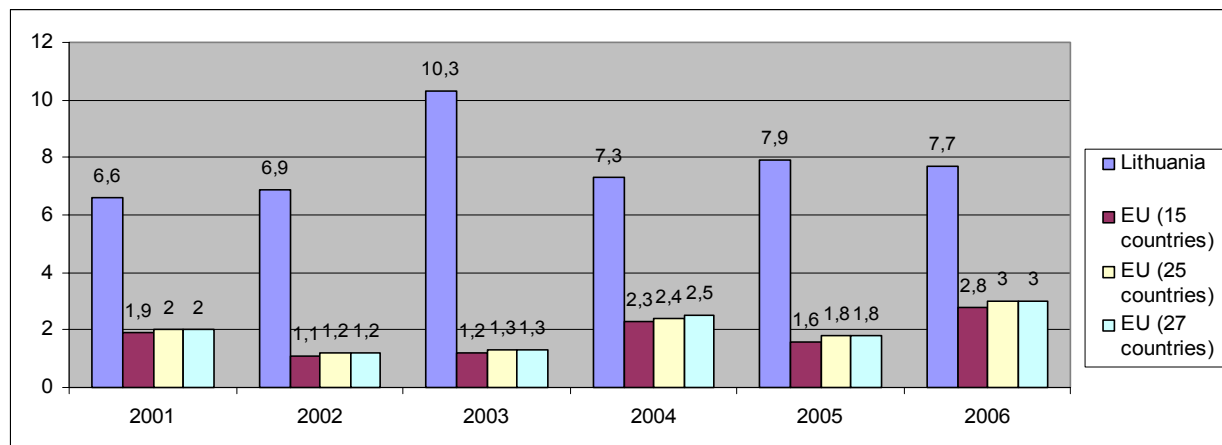


Fig. 1. Real GDP growth rate (percentage change on previous year) during 2001-2006 in Lithuania and European Union (Real GDP, 2007)

The very successful growth of the economy of Lithuania has been very much determined by the value added created in the economic activities of agriculture, construction, wholesale and retail trade, real estate, transport, warehousing and communication as well as manufacturing.

Now, for the growth of GDP per capita in the last decade, we refer to Figure 2. The real GDP per capita of an economy is often used as an indicator of the average standard of living of individuals in that country. In 2001 Lithuanian GDP per capita made only 41,6% of EU 27 level and increased to 56,3% in 2006. In Latvia it was 43,7% of EU 27 level and it was one of the smallest in all European Union. In 2006 in Estonia GDP per capita was the highest from all Baltic countries and reached was 68,5% of EU 27 level.

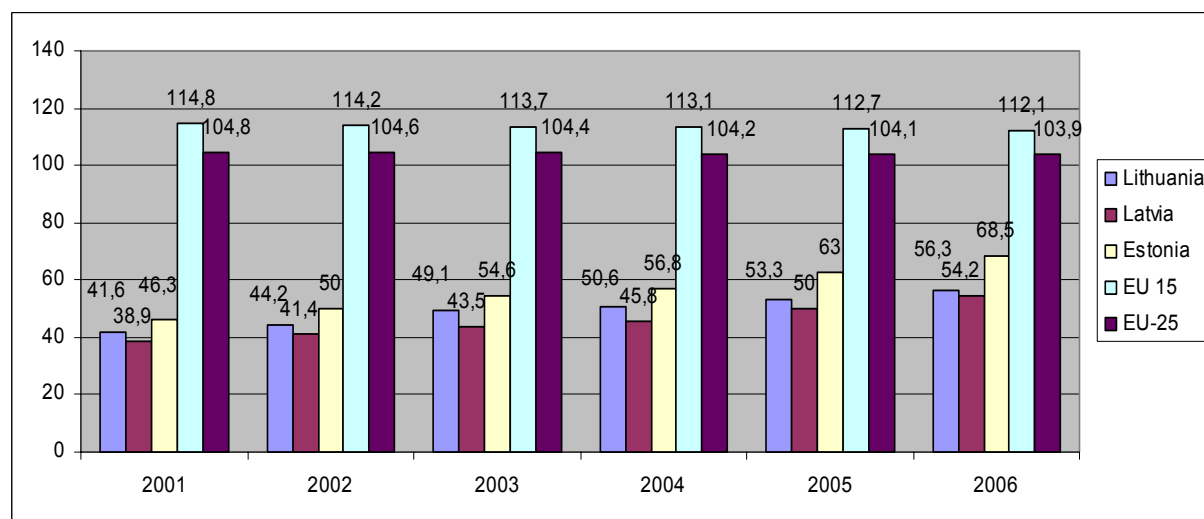


Fig. 2. GDP per capita in PPS (EU 27=100) GDP per capita in PPS during 2001-2006 (GDP per capita..., 2007)

The primary goal of Lithuania's long-term strategy of development of Lithuanian economy till 2015 is to develop and effectively exploit the factors, providing rapid and stable growth of national economy thus narrowing the gap between Lithuania and the average of EU member states (Long term..., 2002). If GDP growth continues to exceed that of other EU countries, this will continue to improve Lithuania's relative position in GDP per capita terms thus enhancing social welfare.

There is a strong connection between a nation's wealth and its innovative capacity. Increasing global competition, together with increasing speed in the development of new technologies, have led to the higher innovation intensity and more emphasis on R&D, recognizing new opportunities and exploiting them quickly with successful timing

In 2001 Lithuania spent 326.8 mill. Litas on Research & Development (R&D) and in 2006 expenses totalled 657.8 mill. Litas (Science..., 2007). As it is possible to see from the Table 1, R&D intensity (i.e. expenditure as a percentage of GDP) remained significantly lower than in the EU countries during 2001-2006, R&D expenditure increasing from 0,67 in 2001 till 0,8 percent in 2006 (provisional data) In comparison with Baltic countries Lithuania took lower position than Estonia and outstripped Latvia.

**Table 1. Expenditure on R&D as a percentage of gross domestic product (GDP) in Lithuania, Latvia, Estonia and EU countries (Gross domestic..., 2007)**

Countries/Years	2001	2002	2003	2004	2005	2006
<b>Lithuania</b>	0.67	0.66	0.67	0.76	0.76	0.80*
<b>Latvia</b>	0.40	0.42	0.38	0.42	0.56	0.69
<b>Estonia</b>	0.71	0.72	0.77	0.86	0.93	1.14*
<b>EU 27</b>	1.87**	1.88**	1.87	1.83	1.84	1.84**
<b>EU 25</b>	1.88**	1.89**	1.88	1.84	1.85	1.85**
<b>EU 15</b>	1.93**	1.94**	1.93	1.90	1.91	1.91**

\*Provisional data

\*\*Eurostat estimate

However, R&D levels in the Baltic countries are still considerably below EU levels. It should be noted that the EU goals in Research and Development, as set by the Lisbon Summit Strategy, are to achieve by 2010 a R&D intensity of at least 3% for the EU as a whole and to have two thirds of R&D expenditure financed by the business sector.

When one evaluates dynamism, changes of opportunities and dangers of global environment because future environment is being created in Lithuania, preference should be made for revealing opportunities, new products and services in new unknown markets and one should use those opportunities for new promising risky business where special attention is paid to searching and organization, thinking and acting, desired results and outcomes.

An innovative and entrepreneurial environment is one where new ideas are encouraged and explored. Unable longer to compete on basis of low costs, Lithuanian enterprises must strive to build a new source of competitive advantage based on knowledge and expertise. Despite the importance of innovative activities for successful development of new advantages it should be noted that, according to data presented in Table 2 by Lithuanian Department of Statistics, only 18.4 percent of Lithuanian enterprises are engaged into innovation activities. Half of enterprises with innovation activities are those from financial intermediation also taking leading role in relation with share of turnover and employees with innovation activities.

**Table 2. Enterprises with innovation activity, their turnover and employees, 2004–2006 (Per cent of all enterprises) (Innovation activities..., 2007)**

	Enterprises with innovation activity, 2004–2006	Share of turnover of enterprises with innovation activity		Share of employees of enterprises with innovation activity	
		2004	2006	2004	2006
<b>Total</b>	18.4	52.8	52.3	38.3	37.9
<b>Mining and quarrying</b>	17.8	30.2	30.8	26.7	26.5
<b>Manufacturing</b>	26.7	70.4	71.4	48.4	48.5
<b>Electricity, gas and water supply</b>	31.2	37.4	34.6	34.9	35.5
<b>Construction</b>	20.9	31.6	34.2	26.7	27.0
<b>Wholesale and retail trade</b>	7.7	36.3	34.4	16.7	18.8
<b>Transport, storage and communications</b>	16.6	56.7	50.0	49.9	47.4
<b>Financial intermediation</b>	50.0	89.8	91.4	88.1	85.6
<b>Other business activities</b>	29.9	34.2	40.5	32.8	32.2

The slowness of the whole process of innovation activities in Lithuanian enterprises is a consequence of incremental adaptations to changing firm and environmental conditions rather than the result of a deliberate strategy. Two types of innovators, presented in the Table 3 are respectively termed product and process innovators.

Table 3. **Product and process innovators, 2004–2006** (Per cent of all enterprises) (Innovation activities..., 2007)

	Product innovators	Process innovators	Product and process innovators	Ongoing and/or abandoned innovation activities
<b>Total</b>	3.6	5.8	7.3	1.7
<b>Mining and quarrying</b>	2.2	11.1	2.2	2.2
<b>Manufacturing</b>	6.8	6.7	11.5	1.7
<b>Electricity, gas and water supply</b>	2.9	18.1	5.8	4.3
<b>Construction</b>	0.2	6.8	8.1	5.8
<b>Wholesale and retail trade</b>	2.6	2.8	2.3	0.1
<b>Transport, storage and communications</b>	1.3	10.2	3.8	1.3
<b>Financial intermediation</b>	11.3	3.2	33.9	3.2
<b>Other business activities</b>	5.7	4.7	18.9	0.6

With regard to the spheres of innovations, which can occur upstream with suppliers and downstream with clients, it is possible to see from the Table 3 that innovators of Lithuanian companies are mostly concentrated in the product and process innovations, and process innovations. Product innovators are less active, except of financial intermediation innovators.

Cooperation is seen as an important requirement of the innovation system for a number of reasons. It can result in lower costs and lower innovation risks, as well as the sharing of scientific or technical knowledge. Table 4 shows the differences in means across the seven kinds of cooperation of Lithuanian companies. Cooperation of Lithuanian enterprises seeking access to the knowledge necessary for their innovations is expressed not only by cooperation among upstream and downstream participants of value chain network. Noticeably that in downstream activities suppliers is the most important partners in innovative activity.

Table 4. **Co-operation arrangements on innovation activities, 2004–2006** (Per cent of enterprises with innovation activity) (Innovation activities..., 2007)

	Any type of co-operation	Co-operation with						
		partners	suppliers	clients or customers	other enterprises	Consultants	higher education institutions	research institutions
<b>Total</b>	43.0	21.2	34.1	27.7	17.8	21.3	18.4	10.3
<b>Mining and quarrying</b>	25.0	12.5	25.0	25.0	12.5	12.5	12.5	25.0
<b>Manufacturing</b>	40.8	14.5	36.6	26.0	20.6	19.8	13.6	10.6
<b>Electricity, gas and water supply</b>	60.5	14.0	58.1	32.6	27.9	27.9	23.3	18.6
<b>Construction</b>	23.1	10.8	23.1	21.4	21.7	20.8	20.3	19.7
<b>Wholesale and retail trade</b>	69.8	66.0	36.8	34.4	0.7	34.7	33.7	0.3
<b>Transport, storage and communications</b>	47.2	7.1	40.6	32.1	21.2	14.6	11.8	9.4
<b>Financial intermediation</b>	80.6	58.1	58.1	32.3	22.6	29.0	3.2	-
<b>Other business activities</b>	33.0	11.0	27.3	26.8	17.7	10.5	18.7	7.2

The size of the supply network, both upstream and downstream, is likely to influence the necessity of environmental monitoring and potential for collaboration. Network research has examined how inter-organizational network structure facilitates firm-level adaptation to environmental change. Moreover, innovations management in the value chain system is increasingly based on a network view. The impact of consultants and higher education institutions is twice as much than of research institutions. As a consequence it leads not for the radical but to the incremental innovations. This notwithstanding, enterprises and research institutions can seek links to commercialise their research and obtain funding; and the government can look to alliances that ensure that the economy benefits from private and public research.

Private sector investment in R&D is crucial to innovation as it can generate significant benefits for the economy, including the commercialisation of new processes, products and services. As it is possible to see from the Table 5, positive tendency is that intramural R&D expenses exceed extramural R&D expenses, leading role taking by wholesale and retail trade. One reason for the difference observed in the innovation activities dominated by acquisition of machinery and equipment and training may be due to different environmental conditions for renovation in separate economic activities.

Table 5. **Innovation activities of enterprises, 2004–2006** (Per cent of enterprises with innovation activity) (Innovation activities..., 2007)

	Intramural R&D	Extramural R&D	Acquisition of machinery and equipment	Acquisition of other external knowledge	Training	Market introduction of innovations	Other preparations
<b>Total</b>	44.1	26.9	70.7	31.2	48.7	32.9	21.5
<b>Mining and quarrying</b>	37.5	12.5	37.5	-	25.0	37.5	25.0
<b>Manufacturing</b>	44.6	13.0	75.7	20.8	42.2	39.7	24.3
<b>Electricity, gas and water supply</b>	48.8	32.6	69.8	18.6	53.5	9.3	16.3
<b>Construction</b>	30.8	11.1	61.4	30.6	42.2	10.6	20.8
<b>Wholesale and retail trade</b>	63.5	95.1	64.9	61.5	63.5	35.4	2.1
<b>Transport, storage and communications</b>	38.2	15.1	83.0	22.6	58.5	27.4	14.6
<b>Financial intermediation</b>	61.3	41.9	80.6	51.6	77.4	71.0	25.8
<b>Other business activities</b>	45.5	29.7	66.0	39.2	49.3	40.2	39.7

A big influence for the successful work ensuring long term competitiveness of Lithuanian companies and their survival in the open global market is providing training of future innovative entrepreneurs. During the analysed period the biggest part of innovation activities has been concentrated namely in training. While the world changes rapidly, the participants of Lithuanian market understand the importance of entrepreneurship and how it influences the innovative opportunities for future business development perspectives.

### Conclusions

The increasingly changing global business environment is characterized by integration, rapid technological changes and growing competition and has forced enterprises to find new ways of competing effectively. The theoretical and empirical aspect of current business development highlights the importance of entrepreneurship and innovations as one of the most fundamental key drivers of change. Need to be competitive forces enterprises to be innovative in all areas of business activity. There is considerable overlap between entrepreneurship and innovation.

Innovation is the specific tool of entrepreneurship by which entrepreneurs exploit change as an opportunity for a different business or service.

The very successful growth of the economy of Lithuania has been very much determined by the value added created in the economic activities of agriculture, construction, wholesale and retail trade, real estate, transport, warehousing and communication as well as manufacturing. There is a strong connection between a nation's wealth and its innovative capacity. Increasing global competition together with increasing speed in the development of new technologies, have led to the higher innovation intensity and more emphasis on R&D thus recognizing new opportunities and exploiting them quickly with successful timing. However, R&D levels in Lithuania still considerably below EU levels.

Unable longer to compete on basis of low costs, Lithuanian enterprises must strive to build a new source of competitive advantage based on knowledge and expertise. Despite the importance of innovative activities for successful development of new advantages it should be noted that only 18.4 percent of Lithuanian enterprises are engaged into innovation activities. The slowness of the whole process of innovation activities in Lithuanian enterprises is a consequence of incremental adaptations to changing firm and environmental conditions rather than the result of a deliberate strategy.

Cooperation is seen as an important requirement of the innovation system for a number of reasons. Cooperation of Lithuanian enterprises seeking access to the knowledge necessary for their innovations is expressed not only by cooperation among upstream and downstream participants of value chain network. Noticeably that in downstream activities suppliers is the most important partners in innovative activity. Innovations management in the value chain is increasingly based on a network view. It should be noted, that the impact of consultants and higher education institutions is twice as much than of research institutions. The size of the supply network, both upstream and downstream, is likely to influence the necessity of environmental monitoring and potential for collaboration. Therefore future research should strive to explore the broader network approach that enterprises face in the innovation-promotion assistance environment.

## REFERENCES

1. Clarke, L. (1994), *The Essence of Change*, Prentice-Hall, Englewood Cliffs, NJ.
2. Drucker, P.F. (1994), *Innovation and Entrepreneurship: Practice and Principles*, Heinemann, London.
3. GDP per capita in PPS (EU 27-100). Resources described on 7 February 2007. [http://epp.eurostat.ec.europa.eu/portal/page?\\_pageid=1996.39140985&\\_dad=portal&\\_schema=PORTAL&screen=detailref&\\_language=en&product=STRIND\\_ECOBAC&root=STRIND\\_ECOBAC/ecobac/eb011](http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996.39140985&_dad=portal&_schema=PORTAL&screen=detailref&_language=en&product=STRIND_ECOBAC&root=STRIND_ECOBAC/ecobac/eb011)
4. Real GDP growth rate. Resources described on 8 February 2007. [http://epp.eurostat.ec.europa.eu/portal/page?\\_pageid=1996.39140985&\\_dad=portal&\\_schema=PORTAL&screen=detailref&\\_language=en&product=STRIND\\_ECOBAC&root=STRIND\\_ECOBAC/ecobac/eb012](http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996.39140985&_dad=portal&_schema=PORTAL&screen=detailref&_language=en&product=STRIND_ECOBAC&root=STRIND_ECOBAC/ecobac/eb012)
5. Gross domestic expenditure on R&D (GERD) Percentage of GDP. Resources described on 8 February 2007. [http://epp.eurostat.ec.europa.eu/portal/page?\\_pageid=1996.39140985&\\_dad=portal&\\_schema=PORTAL&screen=detailref&\\_language=en&product=STRIND\\_INNORE&root=STRIND\\_INNORE/innore/ir021](http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996.39140985&_dad=portal&_schema=PORTAL&screen=detailref&_language=en&product=STRIND_INNORE&root=STRIND_INNORE/innore/ir021)
6. Hurley, R.F., Hult, G.T. (1998). Innovation, market orientation, and organizational learning: an integration and empirical examination. *Journal of Marketing*, Vol. 62. P. 42-54.
7. Innovation activities of enterprises. Resources described on 11 February 2007. <http://www.stat.gov.lt/en/pages/view/?id=2305>
8. Ireland, R.D., Hitt, M.A., Camp, S.M., Sexton, D.L. (2001). Integrating entrepreneurship actions and strategic management actions to create firm wealth. *Academy of Management Executive*, Vol. 15 No.1. P. 49-63.
9. Jatuliavičienė, G., Kučinskienė M. (2006). Globalization drivers and their impact on Lithuanian economic growth and development // *Ekonomika: Mokslo darbai*, Nr.73. P. 34-45.
10. Johnson, D. (2001). What is innovation and entrepreneurship? Lessons for large organizations.// *Industrial and Commercial Training*, Vol. 33 No.4. P.135-40.
11. Kanungo, R.N. (Ed.) (1999), *Entrepreneurship and Innovation: Models for Development*, Sage Publications, London, .
12. Kučinskienė M., Jatuliavičienė G. (2002). Globali ekonomika ir antreprenerystė. // *Ekonomika: Mokslo darbai*, Nr. 60(2), pp. 69-78.
13. Long-term strategy of development of Lithuanian economy till 2015. Resolution of Seimas of Lithuania Republic Nr. IX-1187. 2002 11 12.
14. Schumpeter, J. (1934), *The Theory of Economic Development*, Harvard University Press, Cambridge, MA, (reproduced, New York (1961).
15. Science and technology indicators. Expenditure on R&D. <http://www.stat.gov.lt/en/pages/view/?id=1480>
16. Sundbo, J. (1998). *The Theory of Innovation: Entrepreneurs, Technology and Strategy*, Edward Elgar, Northampton, MA,
17. Zhao, F. (2001), "Managing innovation and quality of collaborative R&D", *Proceedings of 5th International & 8th National Research Conference*, Melbourne.
18. Zhao F. (2005). Exploring the synergy between entrepreneurship and innovation.// *International Journal of Entrepreneurial Behaviour & Research*. Volume 11, Nr. 1. 2005 P. 25-41.