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THE MODEL OF MODERN INNOVATION INFLUENCE TO COMPETITIVENESS AT RECESSION

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Abstract

The article deals with influence of modern innovations on enterprises competitiveness. The different concepts of competition, from D. Ricardo and H. Adams up to M. Porter and Kim Chan and R. Mouborgne are analysed. The results of comparative analysis are provided in table 1. Different models of competition and competitiveness are analyzed. There is stressed that very important role plays M. Porters‘ 5 market forces, Diamod and Dubble diamond models and latest modifications made in the model. Some drawbacks of competitiveness models from K. Lancaster up to A. Rugman and latest authors as well as the author are submitted in table 2. The weakness of the Diamond model discovered and modification of Diamond model is made by incorporating the innovation in the model as it is proposed in picture 1.

The importance of innovations for competition of enterprises is disclosed. The definitions of innovation and competitiveness of different authors are submitted. Innovation as risky process in competition from J. Shumpeterian economic view to innovation up to P. Drucker and McMeekin and D. Soutterton commercionalization as well as EU innovation policy are analyzed. Short analysis of Lithuania's position in the EU economy on innovation is made.

The G. Brennan's optimistic idea on innovations at recession period that innovation could be a chance for companies to leapfrog their competition is stressed. Some data from Fray's analysis demonstrating the idea mentioned are provided in the article. According to Ch. Frey, founder and editor of Innovation tools, innovation climate has improved in 47,5 % of companies, and only for 25,9 % of respondents – has worsened at recession. But because the customers even at recession tend to the innovative, reasonably priced and hyped-up products and because the markets at recession are tightened, it is good time to invest in research and renew the products, processes, structure and management as main elements of competitiveness, as it has been recommended by Lisbon strategy. The impact of main areas of innovation on competition criteria (goals) is shown in picture 2 and impact of main elements of management improvement is shown in picture 3. Thus model of interaction between main innovation management factors shows direct and indirect influence of innovation on reengineering, competitiveness and employees satisfaction.

The importance of innovative enterprises of Lithuania for the competitiveness of Lithuanian economy is stressed. It well demonstrates analysis of activity of innovative enterprises a UAB "Five Continents", UAB " Alna", UAB "Information Technologies Centre". But main point in the article is methodology for construction the model of direct and indirect influence of segregated elements of innovation management on segregated criteria of organizational competitiveness. The main suggestion is to enhance the activity of organizations at recession by improving strategies mainly by restructuring, training the personnel and management.

Key words:

Innovation, innovative models, competitiveness, interaction between innovations and competitiveness.

Introduction

Innovative, oriented to change enterprises are the keystone of countries economy and competition beacons. Innovation and new technologies become inevitable for withstand the constraints of competition challenges in overstocked markets at recession period. Although there are many scientific publications on the subjects of innovations and competitiveness, but the interaction is still not discovered between them suitably. Especially is not discovered the influence of segregated elements of innovation model for a segregated elements of competitiveness.

For implementation of innovations very important role play information technologies, the development of which is very fast and accelerated in the recent years. Information and newest technologies for effective Information by itself and newest technologies for effective information collection, handling and submission become more important for competition than ever. It also demonstrates investigation activity of 13 Lithuanian companies working with and creating information technologies by themselves e.g. UAB: „Penki kontinentai“, „Informacinės technologijos“, „Alna“, „ SONEX Technologies“, „ Baltic Amadeus“, etc.

The M Porter‘s Diamond model to demonstrate the role of some factors for competition and its place between the other factors is often used by different authors as background for analysis of competition factors. But the main point of the article is methodology of construction of the model of influence of segregated elements of innovation on segregated criteria of organization competitiveness. The model and conclusions are formulated on basis of research and data from research booked by the Ministry of Economy and European Commission and Innovation tools research. Data on activity of the entities mentioned are collected from information published in different information sources. For the reason of property rights protection non published data from the enterprises are used only for formulation of findings and suggestions.

Subject of research – Innovation models proposed in scientific literature, situation in implementation of innovations in world economy and Lithuania and results of activity of innovative enterprises in Lithuania.

The goal of research – determine the influence of modern innovations for competitiveness and suggest the model of interaction between innovation elements and competitiveness criteria as well as suggestions for improvement of interaction between innovations and competitiveness.

The methodology of research – logic analysis of scientific literature, reports, statistic data published and some unpublished research materials (only for formulating model and suggestions).

Conceptual overview of competition theories

The essence of competition were analyzed by many variety of authors. First concept of competition has been formulated in XIX century by A. Smith (1904) and D. Ricardo (1817), J. Clark (1887)**,** R. Ely (1901) H. Adams (1887), who examined the conception of monopoly and oligopoly price discrimination, and dynamics of processes in the markets. Schumpeter, J. (1934*)* described competition as fight of old with new. According to him market accepts the new sceptically, but if innovators succeed to implement novelty the competition tools withdraws enterprises using old technologies, while J.Clark pays much attention to the competition restrains and limitation factors.

Nowdays in global economy competition theory is based on eight main factors of competition: national economy potential, economy internacionalization, government activity, financial sector, infrastructure, management, science and technology, and human resources. Baldvin and M. Porter (1996) accented that well known five market forces express the essence of competition: existing present competitors, bargaining forces of suppliers and buyers, new competitors and possible substitutes. At the end of XX century has been spread different concepts: of market share, as the main criteria of market power, scale economies, generic strategies, mergers and acquisitions, competitive environment etc. The variety of concepts on competition still exists and are highlighted differently by different authors (see table 1).

Table 1. Concepts of competition

Authors	Concepts (statements) of competition
Vanberg (1996)	Framework of rooles, conditioning pecularities of functioning and could serve as target for purposeful undertaking of human beings.
International Wocabulary (1990, 2000)	1) rivalry of manufacturers for favorable economic conditions. (economic aspect) 2) one of the forms of fight for the same conditions for existence or reproduction of single or few organisms (biological aspect)
Saviotti Kraft (2004)	Style that companies compete for products selected by consumers. The interaction intensity proportional to product advantages.
M.Porter (1990)	Dynamic developing process, sustainable developing area in which appear new products and marketing streamlines, new markets and market segments and new manufacturing processes.
Kerber (2006)	„Test of hyphotesis on competition“ were the knowledge are generated and promulgated through imitation.
Jucevičius (2006)	Competition is notably complex category but not situation or mode measured by one or few parameters by using all possible conditionning within the frame of concentric range of competition and right for free choose.

Source: Šliburytė L. (2000. p. 34).

The concepts of competition are changing according to changes in Generic Management concepts from F. Taylor up to e- governance as well as competition theories from A. Smith and D. Ricardo up to intelligence in rivalry and „blue ocean“ strategy. Aggressiveness, commitment, confidence, competition, voluntary cooperation are not only attitudes or behavior: it‘s rather intangible assets.

The variety of competition concepts (paradigms) can be grouped in three groups: 1) resource – based view suggests that firms over time accumulate unique resources and skills that allows firms get distinctive competences; 2) the country industry view or related to the external view of competition; 3) business network approach that accents the importance of business relations (buyer-seller relationships, cooperation, etc.). J. Strandskov (1999) from Arhus School of Business argues that each of the paradigms relies on three different sets of sources: firm specific advantage (FASs), localization specific advantages (LSAs), and relationship specific advantages (RSAs) Accentuating the role of human resources for firm competitiveness Ch. Kim and R. Mauborgne (2005) stressed that organization can become great only if it recognizes people as main factor of activity effectiveness. The sixth principle of „blue ocean“ strategy presented by them stresses that to build peoples trust and commitment deep in the ranks and inspire their voluntary cooperation, organizations need to build execution into strategy from the very beginning. Also it must be counted all kind of resources including psychological ones.

Conceptual analysis of innovation theories and policy

There are different concepts of innovation treated in scientific literature. Most often innovations are treated as risky process oriented for change for converting knowledge into competitive product or service. According to J. Schumpeter innovation is more economical than technological phenomenon. Any technological invention will be not accepted as innovation if it will not motivate economy or net profit growth. A. McMeekin and D.Southerton (2007) holds that invention becomes innovation only when it is commercialized. A. Jakubavičius, R. Strazdas. K. Gečas (2003) stressed that it doesn't matter what would be a technological invention, it will be never accepted as an innovation, if it doesn't stimulate the economy and solid-profit increasing. In order to get a solid-profit organization has to get unique advantage in comparing with competitors in internal and global markets.

According to European Commission, innovation policy – as a generic policy – is set of actions intended to raise the quantity and efficiency of innovative activities. In turn, innovative activities are the creation, adaptation and adoption of the new products, processes or services. By creating a culture that encourages and respects employee contribution, organization can continuously outpace the competition what is very important by implementing the new innovation model. A. McMeekin and D. Southerton (2007) are pointing out, that innovation means an integrated creation, development, general prevalence and efficient resort of the new technologies in daily human activity. Thus the companies ought to follow S. Derry‘s (2009) suggestion quickly and effectively weed out those ideas and innovations that do not meet five basic selection criteria: value, suitability, acceptability, feasibility, endurance. Ch. Kim and R. Mouborgne (2005), are right by suggesting six market transformation steps and stressing that though of market constrains it is possible to predict how to change market convention and how to create „blue ocean“ and readjust the market systematically. Though it is known for the Government that the background of productivity and competitiveness of industry and country prosperity are the innovative, oriented to changes and adaptation of latest knowledge enterprises, Lithuania is one of less developed countries in EU in the contention. As has been stressed by B. Melnikas, A. Jakubavičius, R. Strazdas (2000). Lithuania has significantly lower output from input for innovations than Poland, Greece, Hungary, Slovac Republic, Check Republic, Malta or Romainia and Bulgaria.

Analysis discovered that according to 5 innovation criteria: motivation of innovation, knowledge creation, dispersion, implementation and intellectual property, Lithuania falls in cluster with Greece, Spain, Bulgaria and Russia. According to INNOBAROMETER (2004) estimation Lithuania was on the 5th place from the bottom between EU countries on intellectual property, on 7th place in knowledge creation and only on entrepreneurship and innovations – on the middle of the line. Only 8.9 per cent of entities that has an opportunity to get support from innovation support schemes has seized the opportunity. That is because only ¼ of Lithuanian companies are investigating in research of the new technologies, ¾ of Lithuanian entities does not provide innovative activity. Innovative activity of the remainder entities are limited by adaptation of innovative technologies created in developed countries. Thus strategic innovative models offered in scientific literature are used too slightly in Lithuania.

Innovation as key factor of competitiveness at recession

Special attention to innovations ought to be paid at recession period because there is little chance to invest for market expansion: all markets are shrinked. For illustration the Innovation Climate survey, provided by Ch. Frey (March 2009), founder and editor of Innovation tools may be submitted. According to Survey (352 companies investigated) innovation climate has improved in 47,5 % of companies, and only for 25,9 % of respondents – has worsened (of which for only 8 %

– got significantly worse). Looking at budget used for innovation as an objective criteria it seems that recession all in all has positive impact: in 28,2 % companies innovation budgets has increased and 36,9 % did not changed the budgets whilst only 18,2 % decreased by more than 30 %. One half of companies (50,9 %) use – incremental innovation (product innovation) strategies, whilst breakthrough innovation and disruptive innovation get a lot of press these days as an inadequate at recession period. As G. Brennan (2009) stresses: while others are tightening their belts, truly successful companies use the recession as a chance to leapfrog their competition. They know that if they focus on innovation while others are cutting costs, they will quickly catapult past everyone else.

For innovation to be more than a modern word it has to be incorporated into a business's structure. For this A. Bruce (2009) suggests six „Ps" model for innovations to be successful: Planning, Pipeline, Process, Platform, People, and Performance as an elements of an integrated framework. Recession encourages the enterprises and employees to work harder, to plan tighter, to speed the processes. As St. Lindegard (2009) points out to get the best out of the recession situation companies usually: 1) clean up the portfolio and get rid of „living-dead" projects; 2) pay more attention to develop better processes and set sharper deadlines to make innovation more efficient; 3) pay more attention to external partners to get extra funds for innovation; 4) larger companies can acquire innovation cheaper as the price promising smaller companies drops. G. Brennan suggests 7 creative ways that innovation can help for recession – proof the business: 1) use open innovation to reduce R&D costs; 2) use process innovation to reduce operating costs; 3) use innovation to match supply and demand; 4) solve the customers pain; 5) fail cheaply; 6) before you can multiply, you must first learn to divide; 7) use innovation to improve supplier's business. And he stresses the bottom line by saying "use innovation to leapfrog the competition". But the model does not show which of the elements in the circle is more important for enterprise competitiveness than another one. Thus, it is a necessity to estimate and rate them by impact power criteria. S. Derry (2009) stressing the importance of employees creativity at recession points out that once company have set an integrated innovation framework and trained employees in innovation tools and processes they are going to generate a lot of ideas.

Innovation and competitiveness interaction models

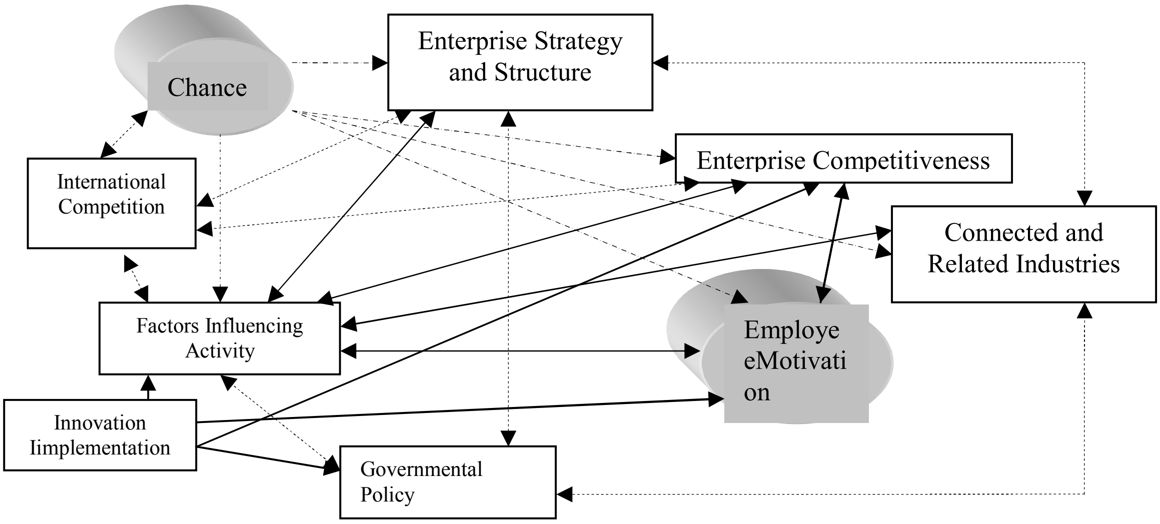
For reaching competitiveness task in 7th and 8th decades of XX century enterprises most attention paid to advertising and branding. Than attention has been noted for improvement of productivity and value added. To-day most attention is noted for how to survive and improve competitiveness in global markets at recession. At recession competitiveness became even more important and complex problem. Thus as C. Franczek (2008) pointed out the roots of company – human potential – could be strenghtened by long-lasting hedging strategic policy by safeguarding good management, high skills, and innovative environment. One of the main ways to become competitive in knowledge society is implementation of perspective innovations. That is why interaction between innovations and competitiveness became very important for research and practice. In the chain of competition models described in literature, very important role plays M. Porters' 5 market forces and Diamod and Dubble diamond models and latest modifications made by different authors, including Nine factors model. The advantages of the models are that by using more factors the better accuracy is reached. But the models also have some drawbacks. Special attention for M. Porters Dimond model analysis by the scientists from Lithuania and other countries has been provided. The weak points of the model has been analyzed by the K. Lancaster (1966), C. Baird (1975), S. Oster (1999), A. Rugman (2000), V. Snieska and V. Kavaliauskaite (2003). Some drawbacks of competitiveness model from K. Lancaster up to A. Rugman and latest authors as well as INNOBAROMETER are submitted in the table 2.

Table 2. Some drawbacks of M. Porters' Diamond models

No	**Authors**	**Short comments**
1	K.Lancaster (1966), C. Baird (1975)	Customers get satisfaction from and are oriented to characteristics of goods/services but not form goods itself
2	V. Kvainauskaitė, V. Snieška (2003)	The model is difficult to implement in practice, and in well-stocked markets it is about impossible to get enough information on every product.
3	S. Oster (1994)	Model can not discover competitiveness factors in integrated economies.
4	A. Rugman (2000)	Model does not fit correctly for developing economies: it has been constructed for well developed ones.
5	Č. Purlys	Model does not estimate innovations as factor influencing competitiveness

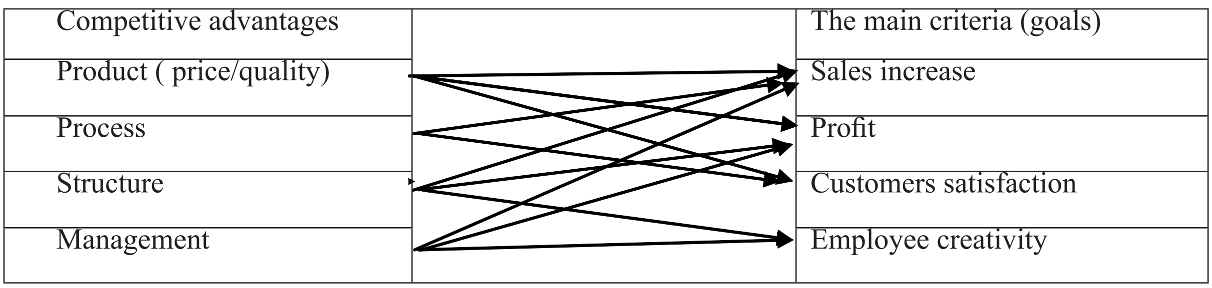
Composed by author

On the basis of the publications new Diamond model, modified by the author is proposed in **picture 1.** The main improvement of the Diamond model is incorporation of innovation as the very important influence factor for organizational competitiveness at recession.



Picture 1. Modified theoretical model for research of competitiveness (original from Porter, M. 1990)

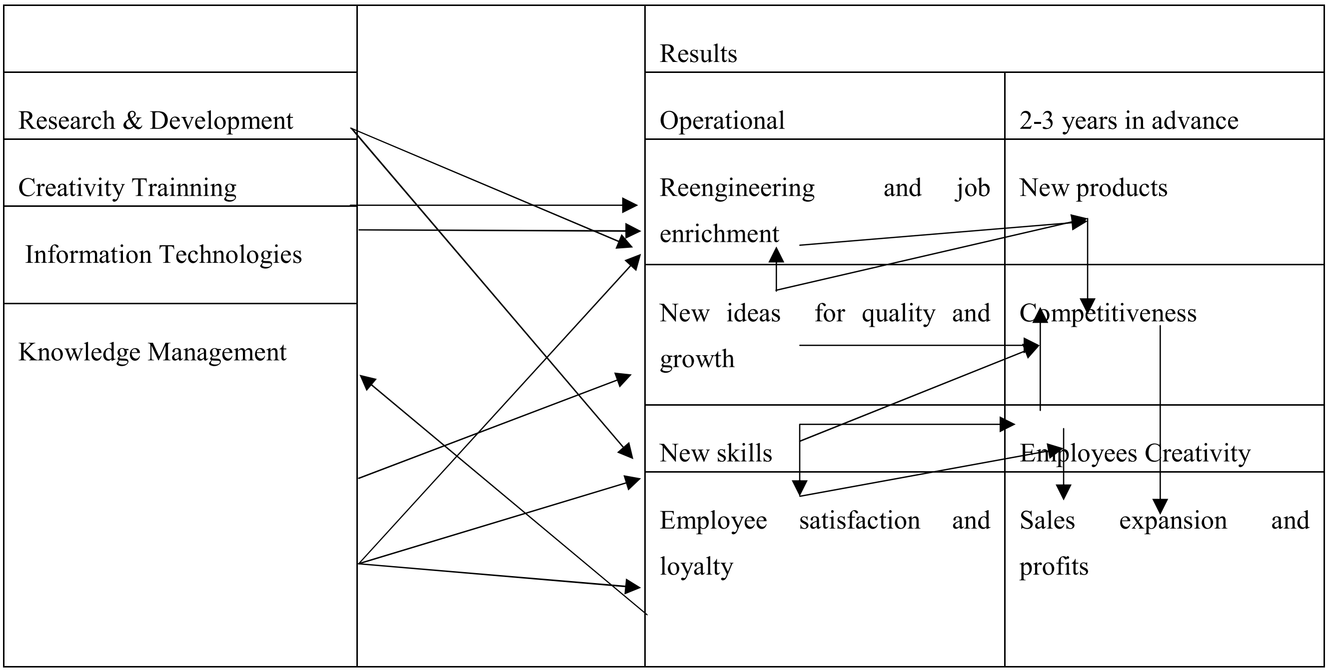
The higher turbulence of market the more difficult to estimate the demand of goods/services as well as other factors influencing competition. Demand capacity depends on prices of the goods. But the customers usually tend to the innovative, reasonably priced and hyped-up products that usually are ensured by implementation of innovations. And whereas implementation of innovations became an important factor to ensure competitiveness it ought to be included in Diamond model. As it is proposed in the model, implementation if innovations play few roles: it influences competitiveness directly by price wars and offensive („red ocean“) strategies and indirectly through motivation of employees and all factors of enterprise activity and sometimes via lobbistic activity through governmental policy. Thus it is good time to invest in research and renew the products, processes, structure and management as main elements of competitiveness, as it has been recommended by Lisbon strategy and European Commission. The model of said above could be as shown in picture 2.



Picture 2. Model of competitive advantages influence on companies results

In turn every of advantages are complex. Let's look at management element (advantage) in detail. The management as well as product has a very strong impact to all criteria (goals) of competition: sales, profit, customer and employee satisfaction as process influence mainly on customers and employee satisfaction while profit is influenced mainly by product, structure and management. Thus selection of competitive strategy depends on prioritization of goals. For example if company needs badly to increase sales or/and profit it must improve product structure and management, if company wants to increase employees creativity it must improve process, structure and management, etc.

Looking for management improvement from the innovation point of view the main elements will be research and development, creativity training, information technologies and knowledge management. Thus model of interaction between main innovation management factors and competitiveness at recession period ought to be as it is shown in picture 3.



Picture 3. Interaction model of innovation and competitiveness at recession period (by author)

As it is viewed from the model the interaction is quite complex: some are direct when others – collateral or both as for competitiveness. The model ought to be filled out by feedbacks but than the picture as it is composed becomes difficult to grasp. Most complicated is influence to competition of new ideas and new skills. According to our investigation (2008) it is seen especially in communication and information technology enterprises, as UAB"Penki kontinentai", „Alna", UAB „Informacinių technologinių centras" etc. that reached very good results on information technology: many of them are Microsoft partners and some has gotten „Golden partners of Microsoft " awards. Almost all are growing rapidly, has very important contracts and are working for Latvia, Kazachstan, Uzbekistan, United Kingdom, etc. As an example, the competitive capacity of UAB „Penki kontinentai" could be demonstrated by its growth rapidity in 2001-2007 as it is shown in table 3.

Table 3. UAB „Penki kontinentai 2001-2007 activity results, mln. LTL

Criteria	2001	2002	2003	2004	2005	2006	2007	2008 data still not available
Consolidated turnover	25,0	76,8	80,2	82,7	220,0	305,0	382,0	
Of it: products	25,0	65,5	67,0	60,3	93,0	144,0	178,0	
services	–	11,3	13,2	22,4	127,0	261,0	204,0	

Source: http://www.5ci.lt

Research showed that the very important elements of competitiveness of the firms are skilled employees and quality of products (software and equipment) and services in software implementation Concentration resources for creativity training and knowledge management at recession period is most important and effective strategies for competitiveness in nearest future, though at operational period it seams as waste of time and money. As research shows the best policy at recession period is concentration of efforts on processes reengineering creativity training and knowledge management. Especially it is recommended for enterprises working on information technologies. As P. Sloan (2009) stresses on his interview „they need people who are disruptive, ... people who are challenging ..... people with challenged thinking, ... people who are counter-cultural". Newly thinking creative people determine future of Lithuania, the small country with only resource – its people. Following of Winston Churchill quotation we are out of time and we are out of money, therefore, gentleman, we will have to think. There is no other way for Lithuania's competitiveness as creativity training and knowledge management.

Conclusions

Innovations is the life blood of competitive company. The ability to produce innovative product using the most advanced methods becomes the dominant source of competitive advantage in knowledge society. Even a single winner product that will emerge from the innovation process can highly effect the competitiveness of the company. Against all the recession odds global markets still present many opportunities for expansion for companies willing act as innovators. Companies in every country and all industry sectors must innovate to survive in recession.

Innovation typically adds value for organization but may also have negative effect, because it is always connected with risk. As innovations are estimated in few aspects: as beneficial and risky, as phenomenon and as a process, as technological and social, all aspects should be analyzed carefully at recession period. To follow the Lisbon strategy innovation must become one of key factors ensuring competitiveness.

To get the best out of the recession situation the companies ought to: 1) clean up the portfolio and reject not very effective projects; 2) pay more attention to develop better processes and sharpen deadlines; 3) pay much attention to external partners to get funds for innovation; 3) use process innovation to reduce operating costs; 4) use open innovation to reduce R&D costs; 5) use time and resources available for skill and creativity development and knowledge management.

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