

ECONOMICS OF THE ENTERPRISE INNOVATION

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Abstract: *The paper deals with enterprise innovative approaches that are a proactive tool for increasing competitiveness in the constantly changing environment. First, we define possible types of innovation, key rules that lead to maximizing the effectiveness of innovation and basic stages in the implementation of the innovation process applied in enterprises. The important part of the article pays attention to main approaches of innovation. In the analytical part of the article, we are focused on the comparison of the basic indicators of innovation in industry and services in the Slovak Republic. Proactive companies use a number of effective innovative methods, which are key success factors.*

Keywords: Innovation, enterprise innovation, effective innovative methods.

1 INTRODUCTION

There is no doubt that nowadays is the innovative approach very powerful tool for increasing the level of competitiveness. It can be said that if the enterprise does not innovate its products and processes, its chance to be competitive among other companies is much lower. The issue is not the dilemma whether to innovate or not, but how to innovate successfully and how to avoid mistakes. In the history, we can find many examples, when the great innovative idea was not successful, because the journey from the initial idea to the final delivery of successful product is very long.

2 INNOVATIONS

Innovations in general offer new solutions of problems developed by changes in enterprise environment, requests of customers, technological development, globalization and other activities of recent era. The main aim of innovations is to create and introduce new products onto the market, which fulfil growing requests of customers on functions of the product, its variability, usefulness, frugality, quality, reliability, lifespan, design, but also environmental feature. Customers use to prefer by new products their newness, individuality, affordable price, availability and comfort of usage in harmony with technical, economic and social progress. We distinguish several types of innovations (Fig. 1).[4]

To make the enterprise successful and competitive, it is necessary to pay attention on all mentioned types of innovations. We cannot focus only on, for example innovations of products, even though they are recognized as very important.

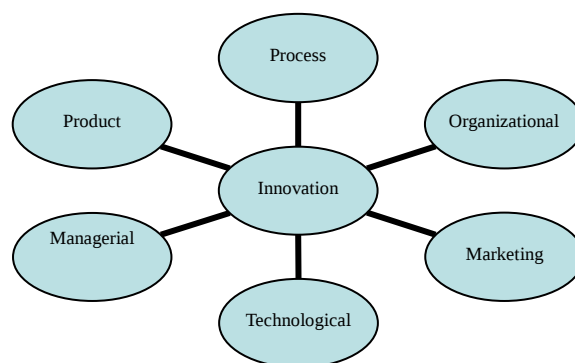


Fig. 1 Main types of Innovation

To reach maximal effectiveness of executed innovations, we should follow the rules (Table 1) (above all by products innovations. However, it can be applied also on other types of innovations).

Table 1 Rules for effectiveness of innovation [1]

Rules	Characteristics
Systematic nature	Each innovation will be overcome one day; will stop fulfilling its role and it is necessary to have prepared another innovation, which will replace the old one, to avoid losses of unpreparedness. It is necessary to watch competitors, scientific and technical development, and formation of marketing analyses of the market. In the moment of the end of one innovation should immediately start the new, following innovation.
Complexity	Requested innovation should not be developed and executed in isolated way. Everything in the enterprise is subordinated by a different level of mutual dependence. Shared innovation should be the part of so called innovation network, including production, supply of materials, technologies, workforce, management and others.
Timeliness	The viewpoint of the timeliness is connected with above mentioned rule of systematic nature. Subsequent innovation should be carried out in time, in order to avoid losses. At the same time, the innovation should be thoroughly prepared, to implement it in the shortest possible time.
Consistency	The rule of consistency means the thorough research examining following rules of previous innovation, through the consistent analysis. So we can obtain information about the effectiveness of previous regulations within the innovation process.

It is also necessary to emphasize that innovations are not a simple issue, which is represented by results of the research (Fig. 2). Despite of it is nowadays very clear that without innovative approach, it is very difficult to achieve long-term competitiveness.

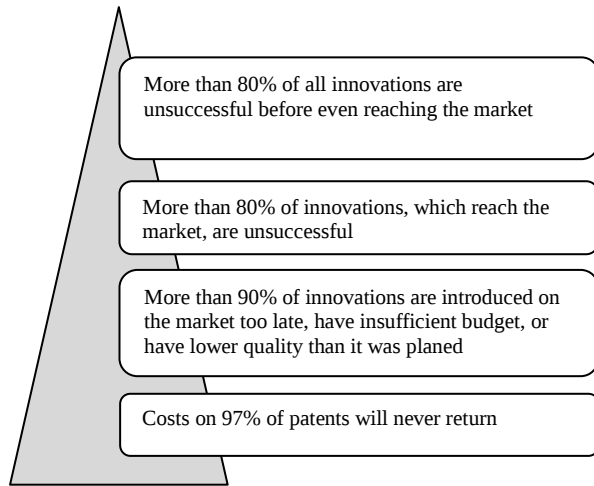


Fig. 2 Results of research about successfulness of innovations [4]

During the innovation process should the enterprise focus on five phases (Table 2).

Table 2 Phases of innovation process [1]

Phases of innovation process	Description
Recognition of potential opportunities to innovations	The enterprise should continually watch internal and external environment, customers' needs, results of research activities, behaviour of competitors, etc.
Selection of the best ideas	It not possible to invest in all ideas of the innovation, thus it is necessary to select only those, which offer the highest probability of competitive advantage formation.
Investment into the selected innovation and obtaining of resource knowledge for its usage	Executing of the innovation from the phase of the development to the introduction of the product or service onto the market.
Implementation of the innovation	Executing of the innovation from the phase of the development to the introduction of the product or service onto the market.
Analysis of previous phases	The objective is to analyze reached successes and failures and to take a lesson for future innovation process.

Recently, the knowledge, skills and abilities are becoming the key source of organizations for building their competitive advantage. Creativity can also be considered as a source. Creativity represented by a thought, or an idea becomes equally significant productive input as the capital and workforce. Creativity is the basis for invention and innovation. On

the following figure, we can see places, where new ideas use to be created most frequently (Fig. 3). [5]

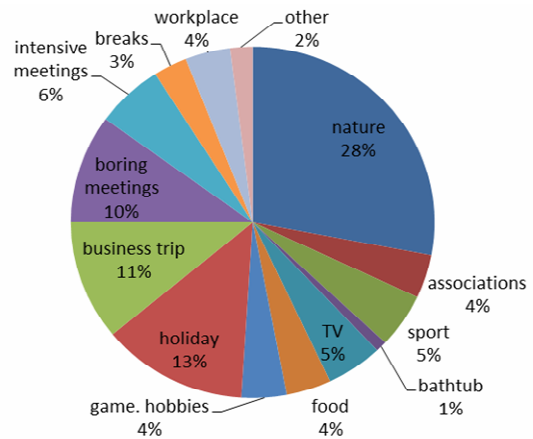


Fig. 3 Places of ideas creation [4]

3 INNOVATION METHODS

There are many innovation methods and systematic approach methods, for example, TRIZ, WOIS, Creax. Intuitive methods are, for example, Brainstorming and Brainwriting, Mind Mapping, Bionics, etc. The key element of the success is also above mentioned creativity. Methods are considered only as an auxiliary tool and a methodical guideline.

TRIZ is a method for Creation and Solution of Innovative and Inventive Issues. This systemic method guides its users from unclear problem situation, through the detailed analysis of the system, to the right formulation of the issue and innovative tasks, and to the solution of these issues, with the usage of unique and strong solution tools of the method (Fig. 4). TRIZ is applied by large and also small enterprises on various levels, for solutions of real, practical, everyday problems, and for creation of strategies of future technologies. [9]

TRIZ strengthens competitiveness of all technology-based organizations, and therefore many leading global companies use and study this method. Companies included: Emerson Electric, Ford Motor Co., General Motors Corp, Johnson & Johnson, Procter & Gamble, 3M, Siemens, Phillips, LG Rockwell International, UNISYS, Xerox Corporation, Sony and many others. This method, originally created for solutions of mechanics' problems, is nowadays used in several different departments, including electronics, biology, management, sustainable development and environment.

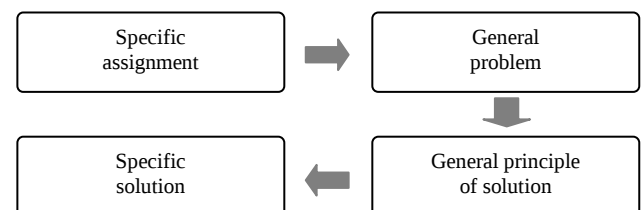


Fig. 1 Main principles of TRIZ [4]

TRIZ uses two methods: analytical (FNA – serving for definition of the right innovative issue) and synthetic (ARIZ – serving for revealing technical and physical differences and for seeking of innovative solutions). Beside this, it is supported by unique software (Invention Machine – IM) for collection of information, analysis, and synthesis of solutions and verification of found solutions. [2]

WOIS (Widerspruchorientierte Innovationsstrategie) is an innovative method, which helps to set rightly strategic direction of the enterprise and enables recognition of barriers in time, in the form of development contradiction (Fig. 5). It is focused on innovation process and describes the development to the higher system by spiral as a continual and never ending process. This spiral shows the development patterns from the past and reached borders of innovation process. With its help, significant successes reached companies, like BMW, Brose, Bosch, Siemens, etc. [11]

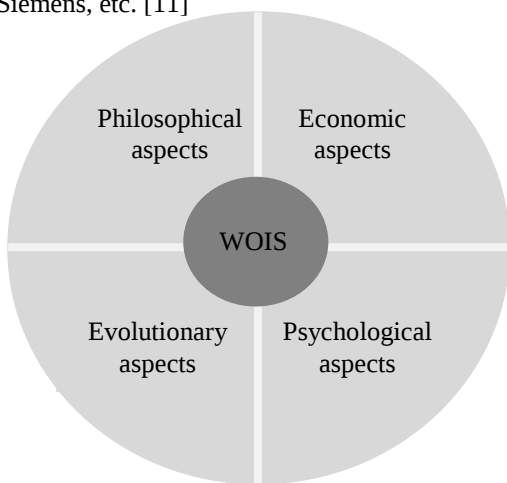


Fig. 2 Elements of the methodology WOIS [4]

Creax, similarly as TRIZ, is based on the theory that every problem was already solved in the past. After the thorough analysis of the problem, this method examines patents, technical literature and generates innovation solutions. [4]

Innovation methods as brainstorming and brainwriting are used mainly for generating of ideas, stimulation, creativity and teamwork, and simple solutions of problems. [8]

Mind Mapping serves for writing down and monitoring the thought process. The principle is the freedom of thinking over the problem as a whole unit (Fig. 6). It is used by the description of the problem, searching for definitions of the problem, analysis of the problem, preparing of the presentation, planning of actions, preparing of business meeting or by searching for opportunities for problem solutions. [9]

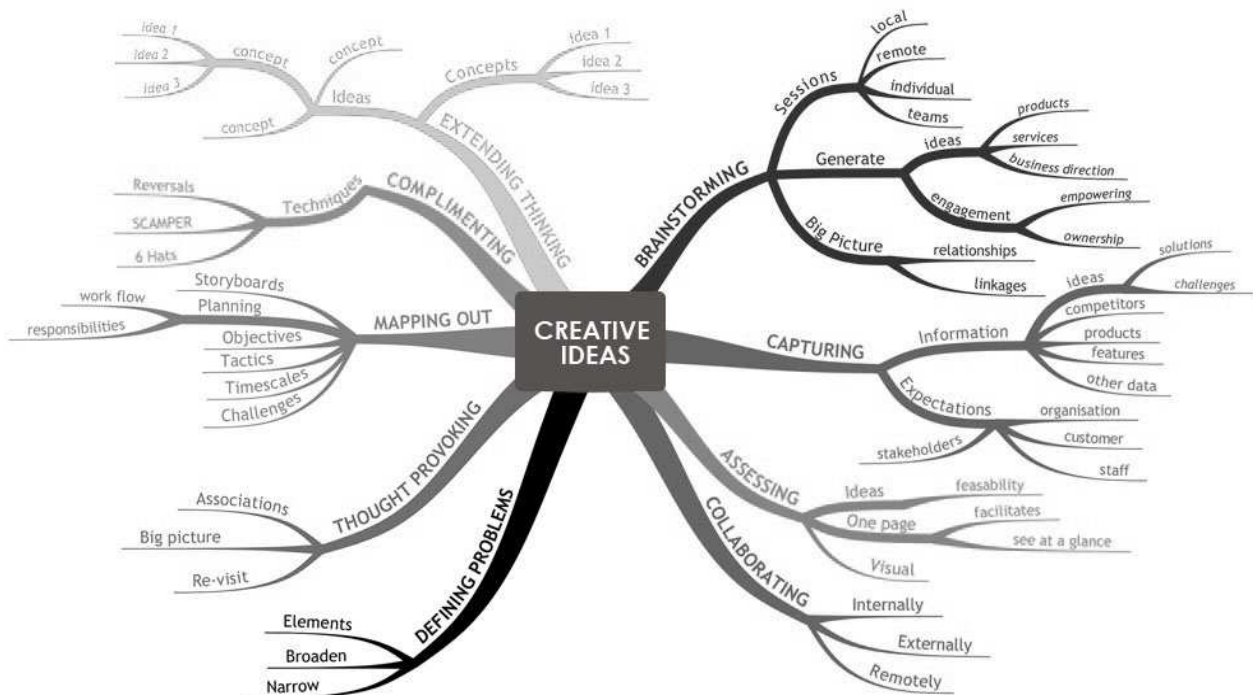


Fig. 3 Example of Mind Maps That Help Implement Innovation and Ideas

Bionics uses the knowledge of the structure and functions of living organisms for solution of theoretical problems and development of new technologies. Bionics is nowadays mostly applied in automobile and engineering industry.

4 INNOVATION ACTIVITY OF ENTERPRISES IN SLOVAK REPUBLIC

The research, carried out by Office of Statistics among 7977 enterprises in particular departments and

different size groups, shows the decrease of innovation activity in Slovak enterprises. In 2010-2012 was in Slovakia 31,3% innovatively active enterprises (Table 3) – enterprises, which introduced onto the market new, or significantly improved products, processes, organizational or marketing innovations. However, we can include there also enterprises with non-finalized or interrupted innovation activity. [6]

Table 1 Structure of enterprises by kind of innovation activity [6]

Kind of innovation activity	Number of enterprises with innovation activity				Share in total number of enterprises in %			
	total	industry	con-struction	services	total	industry	con-struction	services
All kinds of innovation activity	2496	1197	194	1105	31,3	32,4	16,1	35,8
Technological innovation	1393	723	59	611	17,5	19,6	4,9	19,8
Successful tech. innovations	1347	697	51	599	16,9	18,9	4,2	19,4
Product innovation only	389	199	8	182	4,9	5,5	0,7	5,9
Process innovation only	347	159	23	165	4,4	4,3	1,9	5,4
Product and process innovations	611	340	19	252	7,7	9,2	1,6	8,2
On-going and/or abandon-ned innovation activities only	46	26	8	12	0,6	0,7	0,7	0,4
Non-Technological innovation	1103	474	135	494	13,8	12,8	11,2	16,0
Enterprises without innovation activity	5481	2492	1010	1979	68,7	67,6	83,9	64,2

Share of turnover for selling of new or significantly improved products from total turnover is an important indicator of the influence of innovation activity (Fig. 7) and in 2012 it represented 40,2%. It means that enterprises with technological innovations achieved more than a third of turnover for innovated products. [6]

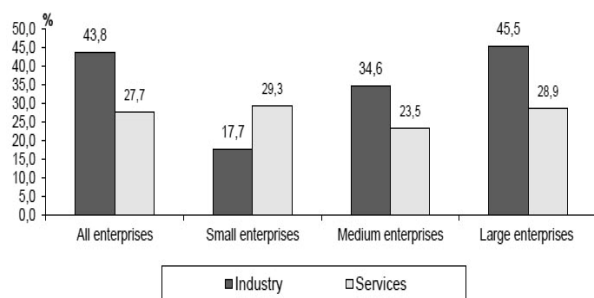


Fig. 4 Share of turnover from new or significantly improved products in total turnover in 2012 [6]

Share of expenses for innovations from total turnover represents the intensity of innovation and in

2012 in Slovak enterprises it represented 1,76% on average. The highest intensity of innovation in industry used smaller enterprises (4,30%) and larger enterprises in services (1,63%) (Fig. 8). [6]

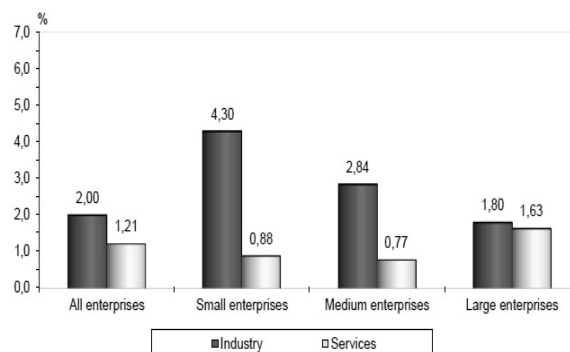


Fig. 5 Innovation intensity in 2012 [6]

On the basis of low level of enterprise innovation activity in Slovakia within the EU, was created a summary of recommendations for innovation strategy for Slovakia, until 2020, by legal regulations of Ministry of Justice, in which are mentioned

following tasks of subjects, participating on managing and coordination of research and development activities in Slovakia[7]:

- To create motivating conditions for wider connection of Slovak enterprise subjects into the mutual cooperation with domestic and foreign research and development workplaces.
- To implement the system of effective public support of participating of Slovak subjects in scientific and research projects of EU.
- To create and implement the system of motivation of global enterprises, to make them enter more significantly into the Slovak research and developing area.
- To create an attractive environment offering workforce with higher education and new forms of national aid, motivating foreign investors to develop the research and development in Slovakia.
- To ensure the support of MSP, where the failure of the market appears the most frequently, mainly by starting innovation enterprise subjects,
- To increase innovation activity of Slovak enterprise sector.
- To improve cooperation of state and university sector with enterprise sector.
- To increase connection of innovation subjects into the international innovation activities.

4 CONCLUSION

The necessity of innovations in enterprise sector is unambiguous and innovations for enterprises are the essence for survival, improving and so obtaining the competitive advantage against other enterprises, not only on domestic, but also on global markets. Growth and improving of Slovak enterprises, with low level of innovation activities, we can see in usage and application of above mentioned innovation methods and creative team. These key elements are tools, which use to push enterprises forward and the state should for this cooperation create suitable conditions, tools and motivational subjects.

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