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## Proposal of Evaluation System for Successful Application of Innovation Strategy through a Set of Indicators

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### Abstract

Problems of evaluating the successful application of the innovation strategy in the company is still poorly explored and in practice weakly applied area of innovation management. The aim of this paper is to create a system for evaluating the success of the application of innovative strategy through a set of indicators based on detailed analysis of sources and conducted research. During research were used different methods: content analysis - the study of documents, synthesis, comparative analysis, process analysis, statistical analysis, modelling, and methods of empirical research. As the main finding it can be considered proposal of the evaluation system for successful application of innovative strategy through a set of indicators. The main conclusions include the following: The most common reason why companies access to the creation and implementation of innovative strategies is a situation where information about innovations, innovative ideas and opportunities are scattered between different systems and there is not their mutual integration. The most appropriate indicator for application of the innovation strategy can be therefore considered as quality of information. Quality assurance and the effective work with information and knowledge are crucial to the functioning of innovation management.

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*Keywords:* Innovation, strategy, evaluation, indicators.

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### 1. Introduction

Creation and implementation of innovative strategies in the enterprise is a complex process touching all aspects of the business. Includes organizational change, innovation processes reengineering (Kubina, 2011), as well as the collection, analysis and use of innovative ideas, innovation opportunities, knowledge and other components of the innovation capacity of the enterprise. The most common reason why enterprises access to the creation and implementation of innovative strategies is a situation where information on innovations, innovative ideas and

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opportunities are scattered between different systems, and there is not their mutual integration. In most cases, there is no uniform system for collecting and recording information on innovation and knowledge.

Quality assurance and the effective work of information and knowledge are crucial to the functioning of innovation management. As long as will be achieved quality of the information in the enterprise, then will be achieved the indicators of processes, management and support resources.

## 2. Objective and Methodology

The main aim of the paper is to acquire new knowledge in the field of innovation management that is focusing on the area of innovation strategies and measure of the success of its application through a set of indicators. Proposal of self-assessment methodology of successful innovation strategy application in the enterprise can significantly help to identify weaknesses of a business in this area and identify space for further improvement. Solution of the issues examined in the paper requires the use of several methods Depending on the character of each part of the solution.

For the acquisition and collection of information were used method of analysis of documents (when analysing current and historical data relevant to the issue), questionnaire method and the method of semi - structured interviews (data collection in empirical research), method of observation (visiting enterprises).

For the information processing was used mainly method of quantitative assessment (formation of statistical averages, percentages, application of statistical tests and other statistical methods) and the comparative method (when comparing data Obtained from the relevant empirical research and the collation of data from the analysis of secondary sources).

For solve of the problem were used methods of induction, deduction, synthesis (self-assessment methodology in developing of successful application of innovation strategy), abstraction and modelling.

## 3. The Current State of Dealing with the Issue

Among the professional public is currently debate about definition of innovation strategy and allocation of areas of their operation. Kovac (2007) sees innovation strategy as determining long-term fundamental business goals and determines the activities and resources for achieving these goals. Orientation of goals is focused on timely response to changes in signalling of need of innovations. The above-mentioned variability of innovation strategy highlights Zauskova (2006). Innovation strategy is often called in the scientific literature such as e.g. scientific and technical, development-innovation or research and development strategy. Zauskova (2006) gives some attention to the fact that the scope of the adjective (in the context of innovation strategy) may be wider, respectively narrower. According Malek Alekakhlagh et al. (2013), innovation strategy must be based on knowledge and facts, supplemented with learning and creativity to cope with the concepts of change and the ability to expand an institution's creative capacity. Zgrzywa-Ziemak & Walecka-Jankowska (2013) show, that the location of the innovation strategy in the corporate strategy initiates the innovation process from the determination and configuration of future product parameters based on the product and organizational environment analysis.

There are a few definitions of an innovation strategy in the literature, but each of these cover only a section of the overall role of an innovation strategy. Table 1 summarizes the definitions of the term innovation strategy.

Based on a thorough analysis of domestic and foreign literature, we can proceed to the following definitions of innovation strategy: *"Innovation strategy is innovative direction of business approach to the choice of objectives, methods and ways to fully utilize and develop the innovative potential of the business. This is the direction given of its boundary, which determines the potential of innovative strategies."*

Table 1 Definitions of innovation strategy

Author(s)	Definition
<i>Gilbert (1994)</i>	Innovation strategy determines to what degree and in what way a firm attempts to use innovation to execute its business strategy and improve its performance.
<i>Bessant, Tidd (2007)</i>	Innovation Strategy helps to understand what, why and when to carry out innovation activities.

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<i>Tamayo-Torres et al. (2010)</i>	Innovation strategy reflects industry's tendency to engage and support the new ideas, novelty, experimentation and creative processes that may result in new products, services or technological processes and finally performance improvement.
<i>Guan et al. (2009)</i>	Innovation strategy is fundamental to the success of innovation in manufacturing industries and related firms.
<i>Wei &amp; Wang (2011)</i>	Innovation strategy could enhance business performance or reduce performance gap merging from changes in the market environment.
<i>Mariadoss, Tansuhaj, and Mouri (2011)</i>	Innovation strategies could result in new technologies, products or processes that are intended to (a) minimize the costs of the environmental impact of business activities, and (b) improve the efficiency in the usage of materials and energy.
<i>Manu &amp; Sriram (1996)</i>	Innovation strategy determines how an organization uses innovation to adapt or change its environment.
<i>Cooper &amp; Edgett (2010)</i>	Innovation strategy is an essential tool for performance improvement even in difficult times.

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#### 4. Empirical research - situation in Slovak enterprises

The main objective of the survey was to identify the key elements of the management of innovation processes and the use of innovative potential of Slovak enterprises. Survey included 321 respondents. After converting the actual sampling error was at 5.46 %. The survey was conducted from October 2012 to January 2014.

Managers of Slovak enterprises identified as the main criteria on which they decide on a further embodiment of innovative ideas into innovation opportunities the availability of funds (25.81 %). Other important decision criteria are the reality of demand, technological options, available knowledge in the subject area and the availability of human resources. In terms of priorities in decision-making in the least possible is time and the physical space needed in the development phase. About 46.11 % of surveyed enterprises have developed a system for rewarding employees' innovative ideas. The most common forms of remuneration include financial reward (80.54 %), formal recognition (38.93 %), material reward (25.50 %), job opportunity or promotion (18.12 %).

As the most experienced issues hindering effective management of innovation processes were identified: the lack of necessary funds to ensure the innovation process (210 enterprises), distrust of the management of enterprise to the possible outcomes (187 enterprises) that arise from innovation and lack of information security of innovation processes (168 businesses).

#### 5. Proposal of evaluation system of successful application of innovative strategy through a set of indicators

Evaluate the success of application innovation strategy in the enterprise can be based on appropriately selected measurable indicators or metrics. Based on these indicators, managers will be able to assess and validate the correctness of setting innovation strategy in terms of business. The choice of indicators should be based and take into account the chosen innovation strategy and the objectives of applying innovation strategy. This methodology is intended for managers for self-assessment of the success of the application of the innovation strategy. Evaluation realize the pre-determined evaluation team. The whole process of self-assessment successful implementation of innovative strategies can be divided into three basic phases:

1. Preparatory phase
2. Implementation phase
3. Final and evaluation phase

In the first step is needed to proceed to the formation of self-assessment of the success of the application of the innovation strategy. In the *preparatory phase*, the enterprise must set appropriate criteria and develop the concept. Established system of self-assessment is needed in the next step incorporated into the corporate strategy. Emphasis is needed to establish the evaluation team and the selection of evaluators. On the basis of predetermined

characteristics are identified suitable employees for the position evaluator. The next step is to access their training, where they establish their roles and define their competence.

Taking into account the on-going innovation activities enterprise sets out the objectives of evaluation and provides the means how they will be achieved.

After these preparatory actions it is possible to come to the proposal of evaluation program. Firstly it is needed to select the methodology that be used in the evaluation and establish assessment indicators. It is also necessary to take into account a number of innovative factors. Besides these parts of the evaluation program should also include a timetable, substantive content. It should also be established rules for evaluation or defined organizational aspects. Proposal of evaluation program is then consulted with the company's management, resp. with the responsible manager.

After its approval, the evaluation team begins preparation for the detailed evaluation of familiarizing with the adopted program of evaluation.

In the *implementation phase* occurs assembly and subsequently to analyse the underlying materials obtained from various information sources. At this stage of the evaluation it is possible take data from information system. Consequently, on-going evaluation of individual evaluators, in which it is appropriate to conduct interviews with employees and company partners who know the innovation activities and processes.

*Final and evaluation phase* focuses on the processing and finalization of the evaluation results, which includes evaluating the effects of innovation and draft of recommendations. An evaluation report is provided by management and then can begin the discussion about potential differences. After approval of the evaluation report it is needed to implement the proposed improvements. This process of self-assessment of success of applying innovation strategy does not end. Based on discussions with the management of enterprise have to also set out measures to improve program of evaluation and assessment of the system. In the last part of the process employees of enterprise are informed with the conclusions of the whole evaluation process, which may be expressed.

Important activity in the process of self-assessment of the success of the application of innovation strategy is the choice of evaluation indicators. In the literature can be found number of different indicators and recommended methods. It is important to take into account when selecting these assessment indicators terms of the enterprise, condition or phase of the innovation process and innovation competence. Set of appropriate indicators for self-assessment of the success of the application of innovative strategies it is shown in table 2.

Table 2. System of suitable indicators for the success applying of innovation strategy, taking into account the different phases of the innovation process

Phase of the innovation process	Evaluation Indicators
<i>Creation of the need</i>	Number of identified unmet needs
	The number of identified problems (product, process...)
<i>Creation of invention</i>	Number of ideas by staff
	Share ideas submitted and successful ideas
	The number of new strategic activities (newly created innovative opportunities)
	The number of new competencies (e.g., knowledge, experience) for innovation
<i>Creation of innovation</i>	Number of on-going innovation
	The amount of time of managers spent with innovation compared to normal operational tasks
	Number of managers having training in the methods and tools of innovation
	Number of patents per year per employee
	Number of awards, publications
	The higher rate of productivity
	Number of improved products, processes, processes
<i>Penetration of</i>	The average time from filing an idea to its profitability in the market

<i>innovation</i>	Number of new markets surveyed last year Number of products launched in the last year + Revenues Profitability of newly listed products for the last three years Volume of sales from innovative products Return on investment in innovation The percentage decrease in the cost of innovative processes and products Lifetime of an innovative product
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Source: Processed according to Trommsdorff and Steinhoff, 2009; Chromjakova and Rajnoha; 2009

## 6. Conclusion

In addition to indicators, relevant area of evaluation is also an area of quality of information and the process of application of the innovation strategy in the enterprise. Correctness of successful application confirms the fact that in the course of implementation as well as during the implementation of innovative strategies in the enterprise, will be low intensity form of potential problems:

- Ignoring of the inputs conditions
- Absence of feedback
- Lack of development of innovation program
- Errors in determining of strategic goals
- Exclusion of human factors
- Automatization of previous incorrect innovation processes
- Absence of system for evidence of innovative ideas, opportunities and innovations
- Non-utilization of innovation potential
- Insufficient starting point of formulated strategy

Most appropriate indicator for the success of the application of the innovation strategy in the enterprise can be considered quality of information. At the same time it should be noted that in principle there is no universally correct measure of success of applying innovation strategy. The choice of assessment methodologies and indicators depends on the case and evaluation purposes. However, for such a major indicator of the success of the application of the innovation strategy can be regarded as achieving the innovation objectives.

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