



WoodEMA, i.a. - International Association for Economics and Management in Wood Processing and Furniture Manufacturing



University of Ljubljana  
Biotechnical faculty  
*Department of wood science and technology*

# **Development trends in economic and management in wood processing and furniture manufacturing**

**Kozina, Slovenia, 2011**

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Processing and Furniture Manufacturing  
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## PREFACE

The international scientific conference »Development trends in economic and management in wood processing and furniture manufacturing« was held in Kozina, Slovenia, 8-10 June 2011, and was organised under the auspices of the WoodEMA international association.

This conference brought together over 30 researchers from 10 countries and provided a relaxed forum to present and discuss new ideas, new research directions, and to review current trends in this area. It was based on short presentations that should encourage discussion by the attendees. These proceedings contain 34 contributions of more than 60 authors, which present a wide variety of research and application topics.

Wood industry has gone through radical structural changes and this has forced companies to learn to respond quickly and adapt to new conditions of severe competition. According to the interdisciplinary character of the field of wood processing and furniture manufacturing the presented papers covered numerous subjects. From this standpoint, the present publication is a diversified compilation of theoretical approaches and practical solutions to the problems of wood industry.

Organizing a conference is a lot of work, but it is also a lot of fun. I truly enjoyed and I would like to thank all the participants for their contribution and everyone who has helped make this conference a reality and a success.

For Organization Board:  
Dr. Leon Oblak, Associate Professor  
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Kozina, June 2011



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# AUDIT OF INNOVATION PROCESS IN SELECTED SMALL AND MIDDLE ENTERPRISES IN THE WOODWORKING INDUSTRY

Anna ZAUŠKOVÁ, Alena KUSÁ, Veronika PIZANO

## ABSTRACT

Innovation process creates new possibilities based on the combination of various groups of knowledge. Innovation process may be fully realized only in healthy and functional economic. Even though, the economical crisis and its negative impacts on the companies should start their innovation activities. One of the actual problems of small and medium enterprises is the measuring of effectiveness of the innovation process. In this article we deal with the establishment of appropriate tool for innovation process evaluation proceeded in small and medium enterprises by audits.

**Keywords:** innovation, efficiency, measurement, audit, enterprises.

## 1. INTRODUCTION

Innovation process generally gains more global character and its importance raise on all governance levels – national, regional, intra-plant. Politics of each country start to consider the position of business innovation activities support and creating the innovation environment keeping the sustainable grow of its competitiveness as the key position within plans and actions of the country. Innovation activities are successful especially in countries that are able to manage them effectively.

Innovation processes are generally considered as the key of economic and social development. Innovations are the important factor of business units grow, they are source of extra value for the customer and extra profit for the businessman. Innovations as the competitiveness pillar on one hand and as the result of creative intellectual processing of information, knowledge and skills on the other hand become the instrument of further society development which further influences the elements of innovation process and innovation management processes.

## 2. PROPOSAL OF INNOVATION PROCESS AUDIT IN SMALL MEDIUM ENTERPRISES

In order to define defects and to specify right tools to improve the company innovation process is necessary at first to realize innovation process audit. Goal of the first phase of project VEGA 1/0496/09: “Integrated model of innovation management audit aimed on evaluation and measurement of innovation and marketing processes of Slovak small and medium businesses efficiency” that has been solved on Department of Marketing, Trade and World Forestry, Faculty of Wood Science and Technology, Technical University in Zvolen, is to define and develop the proposal of innovation process audit for small and medium enterprises. Audit proposal fully respects the universality of its use for the business of each industry and their focus of activity, is aimed on the processes and business sources which are related with the innovations in business. The proposal is based on the method of selected measurable criteria but in order to keep the complexity of the evaluation even immeasurable criteria.

We can agree on the allegation that the innovation process exist in each organization, company or enterprise. If we want to develop and manage this process, we need to find the answer to the following question: "How large it is and by what is his dimension conditioned?" We can expect that the results of measuring can help us not only to reveal the weaknesses of existing innovation process but also to predict the innovation activity of employees. Let's try to define the basic. Four basic innovation fields which include the innovation process in company can be generally characterized for the reason of definition of measurement efficiency of innovation process methods. We are talking about product innovation, process innovation, organization and marketing innovation.

The measuring methods by itself define the fields or indicators that can be divided in measurable and immeasurable where both are important by the state of business innovation process evaluation.

## 2.1. Proposal of audit criteria according the innovation process phase

By the proposal of innovation process audit we can start from particular phases of innovation process where audit will be aimed on each phase separately with defined measurable and immeasurable criteria. Phases of the innovation process are following:

- Phase of invention creation,
- Phase of innovation creation,
- Phase of innovation diffusion (penetration) – see Figure 1.

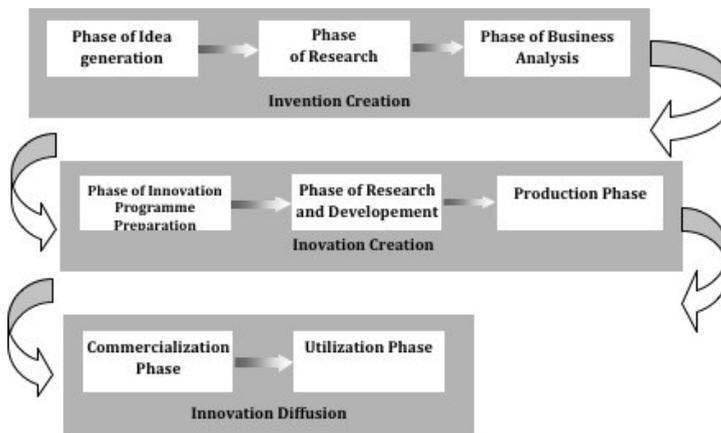


Figure 1. Innovation process

Source: Zaušková, A., Loučanová, E., *Inovačný manažment* (2008)

**Phase of invention creation** represents the criteria which are connected with ideas sources, internal or external sources. The criteria in this phase are aimed on employees potential evaluation whose are mostly the source of invention (ideas) and improvements. So that this source would be able to generate valuable ideas, education and qualification is its condition. By creation of appropriate conditions will raise the motivation of this source to generate inventions. If there is not any human potential in the company that would be able to do this activity, company rely on the external sources – as scientific, professional and teaching institutions, cooperation with suppliers and partners, competition analysis and analysis of customer demands. In order to reach synergy effect it is optimal to combine all of the mentioned sources, where support of all participants is expected.

**Phase of innovation creation** represents mostly the expenses related with the tool investment which are the final tool to reach the innovation activity or the source of innovation by itself. We are

talking about the research and development expenses in particular. If the company does not realize it, it is usually provided from the external sources as the machines and appliances, external know-how, software and so on. It is necessary to understand this phase of innovation process from the wider point of view and that is the reason why the proposal of audit criteria contains the measurement criteria from each field and activity that the company or business realizes. That is the only reason how can the innovation process be evaluated as the complete process without the result deformation that could happen if we chose and aimed on several fields only. This phase includes the criteria from technologies field, organization, planning, products, marketing, investments and research.

**Phase of innovation of diffusion** presents the final phase of the innovation process in a company. Through applying of the innovation activities in all areas of the company we can expect medium to long-term effect which is characterized by measurable criteria, such as sales from new products, geographic markets, market segments, new sales created by innovation activity, increase of new customers and so on. By evaluation of these sales we get a real feedback, which will give us information about the efficiency of individual actions and innovation activities. Other indirect indicators of successful implementation of innovation activities may be, for example not measurable indicators of the type of shortening the reaction time to customer requirements, reduction of the number of complaints, the overall increase of the product level, increase of market share and so on. We can assume that the mentioned effects of innovation activities realization will not be recorded in the same accounting period as costs invested for their implementation.

In connection with the identified phases of the innovation process, it is possible to characterize basic indicators which directly or indirectly point at the performance of innovation process in the company in determined phases.

Table 1 presents division of innovation process phases and indicators belonging to them. Measurable indicators are there identified as M and not measurable criteria as N.

Table 1. The phases of the innovation process and performance measurement indicators

Phase of innovation process	Indicator	Measurability of innovation process
Invention creation A	A1 Employees with university degree education / employees (%)	M
	A2 Costs of qualification increase / sales (%)	M
	A3 Total number of training days / employees	M
	A4 Direct / indirect employees (%)	M
	A5 Acquisition of external know-how / sales (%)	M
	A6 Workforce quality	N
	A7 Employees motivation and satisfaction supporting invention creation	N
	A8 Evaluation of status and quality of partnerships	N
	A9 Realization of competition analysis	N
	A10 Level of cooperation with the surroundings - suppliers, partners, customers	N
	A11 Level of cooperation with scientific research organizations	N
	A12 Cooperation agreements in the area of innovation (institutions, state, schools)	N
	A13 New technologies monitoring, analysis of their using in a company	N
	A14 Existence of a innovation projects portfolio	N
	A15 Planning of invention and innovation resources	N

<b>Innovation creation B</b>	B1 Costs of research and development / sales (%)	M
	B2 Machinery and equipment provision / sales (%)	M
	B3 Investments / sales (%)	M
	B4 Expenses on preparatory phase of production and launching on the market / sales (%)	M
	B5 Realization of research and development results in the practice	N
	B6 New product technological degree	N
	B7 Competitiveness of a new product (price- costs- quality)	N
	B8 Introduction of innovation for the field of business	N
	B9 Reducing of the product development cycle	N
	B10 Period of launching a new product on the market	N
	B11 Level of information technology utilization in all processes	N
	B12 Change of organization and principles of corporate governance	N
	B13 Production flexibility (adaption of production to market requirements)	N
	B14 Planning changes of used technologies	N
<b>Innovation diffusion C</b>	C1 Sales from new products / sales (%)	M
	C2 Sales from patented products / sales (%)	M
	C3 Return on capital used in production (%)	M
	C4 Value of refused supplies / production consumption (%)	M
	C5 Marketing costs / sales (%)	M
	C6 Sales of new geographical markets / sales (%)	M
	C7 New market segments sales / sales (%)	M
	C8 Total new sales / sales (%)	M
	C9 Value of the claimed products / sales (%)	M
	C10 New customers / total number of customers (%)	M
	C11 Increasing of product quality levels (ISO certificates)	N
	C12 Customer requirements reaction time	N
	C13 Market share	N

### 3. CONCLUSION

The actual audit of the innovation process will be implemented through an evaluation questionnaire, which will include individual evaluation criteria grouped according to stages of the innovation process. Therefore it is divided into three main parts where each part will include questions related to the measurable and not measurable criteria.

Regarding the defined indicators a questionnaire will be drawn up for the company which will aim to determine the status of its innovation process. To obtain relevant and comprehensive results, both the general issues associated with the company and its characteristic and measurable and not measurable indicators will be included in the questionnaire. General information and measurable indicators will be completed by selecting one of the options offered for their self-evaluation

Not measurable indicators will be questioned by statements, which are assigned a number according to significance (1 to 5) that best describes the situation in the company.

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