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IDEA RELEVANCY ASSESSMENT IN PREPARATION OF PRODUCT DEVELOPMENT

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ABSTRACT
In order to maximize the prospects it is necessary to thoroughly evaluate a number of ideas proposed and estimate their potential for new product development. Ideas description, evaluation and selection methods were researched in the production companies with online survey. The objective of the study was to get insight into companies' innovation policies and practices particularly regarding methods and models used for verification and selection of the ideas. Results of the survey indicated attributes used to describe ideas, and potential criteria and methods for assessment and evaluation of ideas. The proposed ideas selection methodology is consequently based on the, by survey, determined needs of the practitioners.
In this paper a part of the study is presented explaining ideas processing suitable for product development and the assessment model of idea relevancy factor with associated criteria, attributes and metrics. Validation of the proposed method was carried out on a real case example by application of two multi-attribute ranking methods. The validation shows that the presented methods are very well suited for decision making in the early phases of product development.

Keywords: idea evaluation and selection, idea management, innovation management, fuzzy-front-end, product development

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1 INTRODUCTION

In today's fast-paced business environment, innovation is a prerequisite for success and perhaps even for survival on the market. That's why innovation has found its way to the top of the agendas in organizations around the world and become a "buzz" word used in many occasions with manifold interpretations and understanding. Innovation as the term is often used to describe how organizations create value by developing new knowledge and/or using existing knowledge in new ways. The term is often connected with a development of new products or services, but organizations can also innovate in other ways, such as through new business models, management techniques and organizational structures (AMS, 2006). New product development is a process during which available ideas, capacities and resources are used to create new or change an existing product (Feyzioglu and Buyukozkan, 2005). According to the researches (Cooper and Kleinschmidt, 1991), (Herstatt and Verworn, 2001), big difference between market "winners" and market "losers" are usually caused by differences in the quality of conducted analyzes during the preparation of the product development. The early stage or preparation of product development (PPD) is a process that precedes the formal product development process (NPD) (Cooper, 1993), (Khurana and Rosenthal, 1998), (Koen et al., 2001). Ideas creation, evaluation and selection are the most important activities during the preparation of product development (Khurana and Rosenthal, 1998), (Koen et al., 2001), (Hansen and Birkinshaw, 2007), (Galagher et al., 2006), (Husig and Kohn, 2003). The creation of new ideas, both by individuals and teams is a process that ensures the idea as a key component for the product development (Alves et al., 2005). Numerous models, methods and techniques that encourage the ideas generation are developed (Glassman, 2009). After completing the generation and collection of ideas, the question of quality and relevance of collected ideas arises. Number of collected ideas in some cases can be extremely large. On the one hand, a large number of ideas is an advantage, since allows different perspectives of the problem observed; while on the other hand, it requires an outstanding commitment to find key values in the collected and reviewed ideas. During the PPD the participants lack a good awareness of what will be the final product, not only in terms of its looks, but also in terms of its functional and other features. Therefore, classification, assessment, evaluation and selection of ideas in PPD are now commonly carried out on the basis of expert knowledge of the reviewers or assessors (Soukhoroukova et al., 2010). Such estimates are often based on a small number of attributes, which are insufficient for various cases of product development. More detailed and accurate evaluation with a number of attributes, are often too specific for certain product and are hard to implement in general (Montoya-Weiss and O'Driscoll, 2000), (Xie and Zhang, 2010), (Chin et al., 2010). Some studies consider general approach to the description, comparison, and evaluation (qualitative and quantitative) of ideas for product development (Messerle et al., 2012), (Roussel et al., 2012).

The research presented here, attempts to define a model of attribute based idea description suitable for qualitative and quantitative assessments in PPD based on the proposed model, methods and criteria for ideas evaluation. The goal of the research is to outline the methodology for ideas selection that is relevant to the preparation phase of product development.

2 RELATED WORK

The innovation process can be divided into three stages: preparation of product development (PPD), new product development (NPD) and commercialization. Unlike the usual term fuzzy front end (FFE) (Smith & Reinertsen, 1991), we thought that the area Front-End is not only an entry into NPD but instead an essential factor in forming or not forming a successful future product. This is not only a phase, but a separate process of new product creation (Stevanovic and Marjanovic, 2011), and instead of using the term FFE we decided to use, for this designing process, the term: preparation of product development (PPD).

Oportunitiy identification, idea generation, gathering and selection, and concept development and testing are the usual parts of PPD. Idea assessment, evaluation and selection are the most important activities during the PPD or as stated in (Koen et al., 2001) „*...The critical activity is to choose which ideas to pursue in order to achieve the most business value*". The process of assessment, evaluation and selection of ideas reduces the risk and uncertainty in the future product development, which has been discussed by several researches (Sherman et al., 2005), (Salomo et al., 2007). Unlike the process of creating ideas, which is primarily a creative process, a process of evaluation and selection of ideas is primarily analytical process. The process of evaluation and selection of ideas is based on estimation of

“goodness” of ideas and conformity to the overall set of goals: business, strategy, development, production, customer, marketing, finance, management, market, etc. (Feyzioglu and Buyukozkan, 2005). The more risk factors and uncertainties over the PPD are discovered, there will be fewer opportunities for errors in the specification and conceptualisation of the future product. Evaluation and selection of ideas have been the subject of many researches (Montoya-Weiss and O'Driscoll, 2000), (Feyzioglu and Buyukozkan, 2005), (Alves et al., 2005), (Binz et al., 2007), (Aagaard, 2008), (Ferioli et al., 2008), (Messerle et al., 2010, 2012), (Paasi and Valkokari, 2010), (Roussel et al., 2012), (Stevanovic et al., 2012). In the research reports authors have approached the problem from different angles, depending on the particular case of their research. Thus Aagaard, (2008) describes examples of new product idea evaluation emphasizing "*the metrics are critical in idea evaluation and idea improvement ...*", and specifying criteria defined by Montoya-Weiss and O'Driscoll, (2000) as follows: marketing, technology, business and human factor. Alves et al., (2005), state that in the process of reducing the number of ideas they were looking for convergence techniques based on analytical and logical processes. In study, "*How do you measure the success potential and the degree of innovation of technical ideas and products*" Binz et al., (2007) claim that for the technical products is not enough just to be a new (novelty criteria) but it is also necessary to be successful in the market (*success potential*). Application of unremarkable multi-attribute methods and processes of group decision making may be found in the work of Chang et al., (2008), in which the authors present a model of ideas evaluation process for product development, and clarify the application of methods. While implementing the evaluation, they used following evaluation criteria: compatibility with the business strategy, synergies with other products, technological feasibility, market attractiveness and competitive advantage. In the process of idea evaluation for new product development Feyzioglu and Buyukozkan, (2005) propose the eight step model, based on artificial intelligence and fuzzy logic. In a detailed study on the selection of ideas for new product development Ozer, (2005), possible aproaches in new idea selection process are considered. In this context, the author emphasizes the possibile implementation a large number of analyses. As part of the EU project "*Creative Trainer*", a significant number of methods and techniques for evaluating ideas have been analyzed and presented for a variety of purposes Rebernik and Bradač, (2009).

However, despite a significant number of papers and many research findings, there is still a large gap between the process of idea generation for product development and innovation of product. There is no unique methodology for description, assessment, evaluation and selection of ideas.The above activities are studied and implemented on a case-by-case basis. According to the report (AMI, 2006), comprehensive global survey that included over 1,300 respondents, and that is based on a series of interviews with companies that are considered the best-in-class in innovation management, nearly half (48%) of the respondents reported that they "*don't have a standard policy for evaluating ideas*,". The next common responses: about 17% said that they use an "*independent review and evaluation process*", while 15% said "*ideas were evaluated by the unit manager where the idea was proposed*". The survey clearly indicates that there is no obvious strategy for selecting or even evaluating ideas. The research presented is attempting to contribute to overcome these gaps.

In addition to findings presented in literature, the initial data for this survey was collected through own empirical research. The primary objective of this empirical study was to show how and when companies collect ideas, what are the motives for such endavour, what are the companies’ needs for ideas, the companies’ capacity for gathering ideas, and which mechanisms are used for verification and selection of the ideas. In addition, the intent of the study was to determine whether the needs of the companies could be classified and generalized. The third groups of objectives sought to find what essential features of ideas are important for the companies for describing and assessing the value of ideas, and how the firm made a selection of ideas for new product development. The complete questionnaire contains a total of **106** variables grouped into **35** questions, in which they responded. The results can be found in Stevanovic, (2012).

3 ASSESSMENT METHOD

Preparation of product development (PPD) basically consists of three parts, that are cyclically repeated: (1) product definition based on recognition and evaluation business opportunities and available ideas (2), definition of the ideas as a basis for definition the new product concept, and (3) definiton of the product concept comparing ideas collected against the criteria, requirements and objectives for defined product. The idea life cycle is usually displayed as five-cycle process

(Westerski, Iglesias, 2011): idea generation, idea improvement, idea selection, idea implementation and idea deployment. First four cycles are carried out during the PPD.
According to (Stevanovic, 2012) the ideas treatment during PPD has been decomposed into five sub-processes (Figure 1): IDEA GENERATION, IDEA DESCRIPTION, IDEA ASSESSMENT, IDEA EVALUATION and IDEA SELECTION. In the every sub-processes idea set is transformed, reduced or rearranged. IDEA GENERATION (A1) covers: an event definition for idea generation, process of generation, proces of gathering and recording ideas and the process of idea screening according to the predefined criteria.

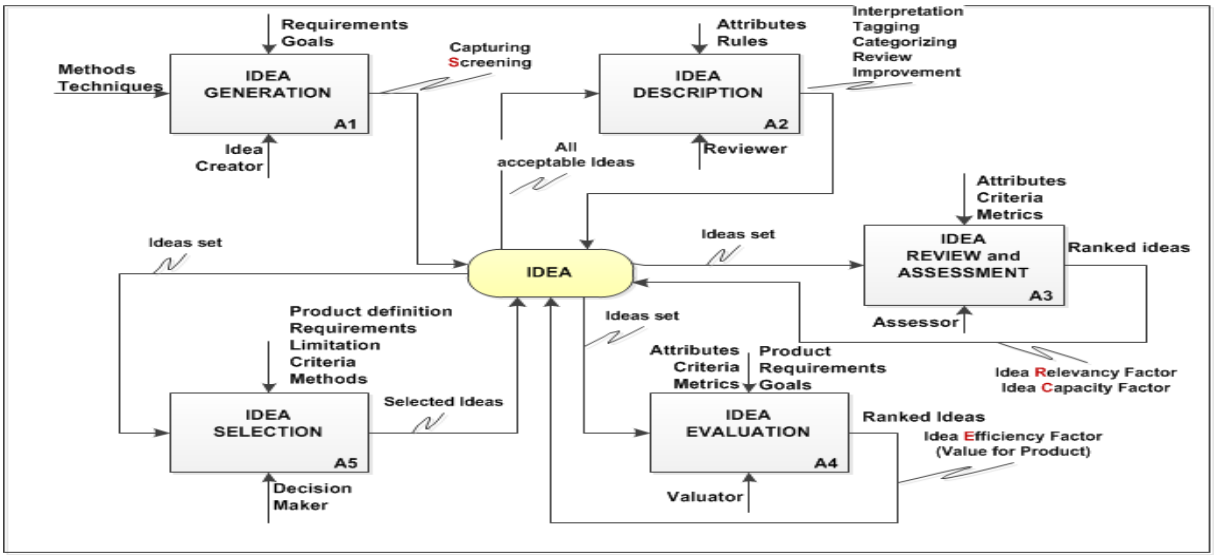


Figure 1 Proposed ideas processing model for idea selection during PPD

Idea ***screening*** is the "first barrier" for acceptance ideas into the PPD, and is implemented according to assessment of strategic, ethical, ecological and general (business) eligibility of ideas. The IDEA DESCRIPTION (A2) comprises the semantic interpretation given by proponent based on three groups of criteria corresponding with: product, goal, activity, by which ideas could be uniquely attributed thus fostering precise communication between participants in the process. The unique description of ideas is essential for further idea processing: search capabilities, ideas categorization and monitoring. Qualitative and quantitative assessments performed in different domains are parts of IDEA ASSESSMENT (A3) sub-process. Qualitative assessments are based on reviewers experience and vest knowledge. The quantitative assessment is performed in two levels based on different metrics. The quatitative assessment on the first level is expressed by ***relevancy factor*** of ideas and the assessment on the second level by the ideas ***capacity factor***. Relevancy factor measures the significance of an idea at early stage, while the capacity factor measures ideas acceptability, usability, creativity and potential. IDEA EVALUATION (A4) is implemented by the relevant assessors based on requirements and goals definition, structured in the following groups: product, user, market, economics and social requirements. The result of the idea evaluation is ranked set of relevant ideas based on the value of the idea ***efficiency factor***, which is a compound measure of technical, customer, market, financial and social efficiency factors, and forms the basis for the idea selection process. IDEA SELECTION (A5) is conducted by group and/or individual choice from a set of ranked ideas, based on relevant knovledge and defined rules.
While above given overall description thus not provides details in the following part of this paper, the method of determining the idea relevancy factor (basic ideas value), will be presented, followed by the assessment and ranking of a particular group of collected ideas. Assessment of the idea relevancy aims to provide first ranking of collected ideas, and also recognize those ideas that have extremely high or higher potential for product development. Assessment of core values of an idea is based on the assumptions of cost-benefit analysis, which means that both positive and negative influences the idea might induce considered. Four criteria for assessing idea relevancy (novelty, the importance of success, the benefit of the collected ideas and the risks) are defined consequently to the literature research and survey results (Stevanovic, 2012). Setting up the importance (impact) of each criteria and the value of an idea's attribute according to each criterion the metrics of idea attributes is established

enabling comparison of ideas, or ranking the set of ideas, making early identification of poor and extremely good ideas that may lead to the development of entirely new products (radical innovation) possible. Every idea can be observed through the basis of defined criteria: novelty which idea brings to a/the product, cost and benefits that idea brings, and finally the risk that the implementation of the ideas can cause to the product. The proposed idea attributes and metrics has been evaluated through field survey mentioned before. Based on the survey results attributes used to evaluate and determine the value of the four criteria is selected. In order to ensure uniform evaluation of the properties of the total set of ideas and unambiguous metrics the relationship between descriptive criteria and numerical values has been proposed and evaluated through the survey. In tables (Table 1, 2, 3, 4), attributes and descriptive criteria values corresponding to the numerical value of grades 1, 5, and 9 are given. Descriptive attribute values are basic and should be understood as a framework. Also the numerical value of the score values of custom interval number scale, which is used in the study (1 to 9, with the main values of 1, 5, 9, intermediate values 3, 7, and additional values of 2, 4, 6, and 8). The following table (Table 1) illustrates the attributes and metrics to evaluate the novelty that the idea brings to the product, users, manufacturer and the market.

Table 1 Attributes and framework for the assessment of novelty that the idea brings

NOVELTY	Values		
	1	5	9
FOR PRODUCT	Idea offers nothing new for product	Idea changes the product	Idea makes the product total novelty
FOR USERS	Idea offers nothing new for the users	Idea is a change for a user	Idea is completely new to the user
FOR PRODUCERS	Idea offers nothing new for the producers	Ideas is a change for manufacturer	Idea is complete novelty for the manufacturer
FOR MARKET	Idea offers nothing new for the market	Idea represents a change for the market	Idea is a complete novelty for the market

In table (Table 2) the attributes and metrics to evaluate the cost implicated idea is shown.

Table 2 Attributes and framework for the assessment of the idea's cost

COST	Values		
	1	5	9
DEVELOPMENT	Development cost will reduce	Development cost will not change much	Development cost will rise
PRODUCTION	Production cost could be significatnly lower	The production cost remain the same	The production costs will rise
COMMERCIALIZATION	Commercialization costs could be quite reduced	Commercialization cost will stay alike	Commercialization costs could rise
AFTER SALES	After sales cost could be lower	After sales costs will stay alike	After sales costs could rise

Table 3 shows the attributes and metrics to assess the benefit that an idea brings.

Table 3 Attributes and framework for the assessment of the idea's benefi

BENEFIT	Values		
	1	5	9
FOR PRODUCT	Marginal advantage	Solution for large number of needs	Unique product
FOR USERS	Users/Market will not notice it	Users/Market will be satisfied	Users/Market will be thrilled
FOR PRODUCER	Price problematic and uncertain profit	Idea offers acceptable price but uncertain profit	The idea offers acceptable price and certain profit
FOR ENVIRONMENT	No influence on environment	Energy saving, environment safe	Sets new standards for the environments

Table 4 illustrates the attributes and metrics for risk assessment the idea brings. To estimate the basic idea value we look at very limited set of potential risks: technological, market, business and economic risks.

Table 4 Attributes and idea risk assessment framework

RISK	Values		
	1	5	9
TECHNOLOGICAL	Marginal (negligible) risk	Tolerant (controled) risk	Intolerant (uncontroled) risk
MARKET	Marginal (negligible) risk	Tolerant (controled) risk	Intolerant (uncontroled) risk
BUSINESS	Marginal (negligible) risk	Tolerant (controled) risk	Intolerant (uncontroled) risk
ECONOMICAL	Marginal (negligible) risk	Tolerant (controled) risk	Intolerant (uncontroled) risk

Valuation of ideas for these criteria is implemented quantitatively, according to the qualitative values indicated in Tables 1 to 4. Quantitative assessment is determined in the range from 1 to 9. Figure 2 shows the hierarchy of idea relevancy assessment.

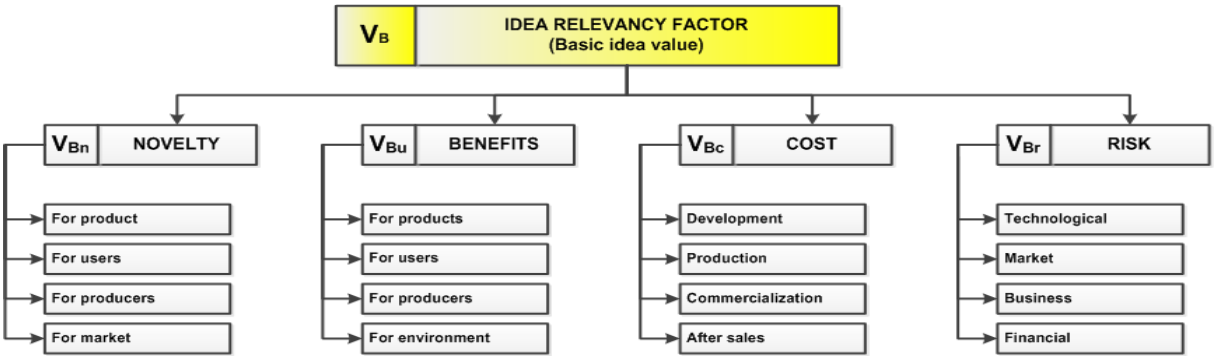


Figure 2 Hierarchy of criteria for assessing the value of ideas relevancy factor

Based on carried out evaluation of the idea relevancy factor, every idea is described by four values: benefits, novelty, risk, and cost.

$$V_B = V_B\{V_{Bu}, V_{Bn}, V_{Br}, V_{Bc}\}$$

Determination of total idea relevancy factor of V_B is than calculated according to expression:

$$V_B = \frac{w_{Bu}V_{Bu} + w_{Bn}V_{Bn}}{w_{Br}V_{Br} + w_{Bc}V_{Bc}}$$

Where:

$w_{Bu}, w_{Bn}, w_{Br}, w_{Bc}$ are the values of importance of each criterion, and

$V_{Bu}, V_{Bn}, V_{Br}, V_{Bc}$ are the values of the criteria, which are defined as the geometric mean of corresponding attributes.

4 VALIDATION OF THE ASSESSMENT METHOD

Presented model for assessing the idea relevancy factor provides basis for the implementation of assessment and ranking of a set of collected ideas. Through the analysis of publications in the field of research we came to an asumption that in assessment we will have better results with:

a) Engaging a large number of qualified assessors and appraisers from various compatible areas, rather than engaging experts in a particular domain
b) The implementation of the assessment process of idea values is performed in several stages with the same or a different number of assessors

During the idea selection process, a great number of facts regarding the environment are unknown to the decision-maker, from the transformation process (design process), to the final state (final product). Number of alternatives, the number and types of criteria, the number of decision makers and the complexity of the procedure are the main features of the complexity of decision making. Case assessment, evaluation and selection of ideas are a typical multi-attribute decision making problem. A significant factor for the application of certain decision making methods is the possibility of implementation of the sensitivity analysis, which includes an assessment of the possible impact of changes in the value of the criteria to the final ranking of alternatives. Taking this into account for the purpose of this research the evaluation and selection of ideas is implemented gusing one method of valuation of individual attributes and criteria and one evaluation methods comparing attributes and criteria in pairs. Fot the first example the Simple Additive Weighting method (Afshari et al., 2010), and for the second alternative Analytical Hierarchy Process method (Saaty, 1980) are used.

4.1 The case study implementation

Evaluation of the proposed method and the determination of the idea relevancy value are carried out on the set of collected ideas for the development of new functionalities in order to improve the snow and ice removing machine in confined spaces. The product requirements, goals, a framework for gathering ideas, and the evaluation process are described below.

The product:

The product is ice and snow removing machine, for the purpose of cleaning the surfaces where these activities are usually done manually.

Requirements:

- The possibility of clearing snow from hard surface to depths of up to 25cm of snow.
- The possibility of removing ice from surfaces with a concrete base and ice thickness up to 2cm.
- The ability to access and clean up the poorly accessible areas: parking, sidewalks, walking trails, taxi and bus stopps, yards.
- Working in temperatures down to -25 degrees C.
- Ability to control the transport of cleaned snow and ice.

Goals:

- Clean snow and ice from the area where it is usually done manually
- Enable the usage for the elderly.
- Provide more machine functions.
- Minimum energy consumption

Idea gathering:

- Given that the existing database did not have any satisfactory idea, we started defining an event for the collection of new ideas. The event was created and in the given period we collected **189** ideas.

Checking eligibility of collected ideas:

In the process of screening, we were checking the suitability of each idea by the four criteria:

- Strategic suitability (Q: Is the idea strategically eligible for the manufacturer?)
- Ethic suitability (Q: Is the idea ethicaly eligible for the manufacturer?)
- Ecological suitability (environment and energy preservation)
- General suitability (general acceptability of idea, how serious is the idea)

After conducting suitability checks of collected ideas, **62** were thrown out and **127** ideas were kept for further assessment.

Qualitative assessment of the collected ideas

Qualitative assessment was conducted through describing the features and opinion reviewers about ideas. For some ideas it was estimated that they should be improved, while other ideas did not receive a passing grade by the reviewers. After completion of the qualitative assessment, 26 ideas were retained for the implementation of quantitative assessment. Part of the ideas are functionally correct but are associated with development of larger vehicles for snow removal, therefor have not been acceptable according to product criteria. In addition some of the ideas were incomplete, and were sent for refinement and improvement to the authors of the ideas. After completion of the qualitative assessment we kept **11** ideas to further assess and evaluate.

4.2 Ideas assessment using SAW method

Determination of the basic value is conducted through the criteria: novelty, cost, benefit, and risk (Figure 2). During the assessment of estimators for each of the remaining 11 ideas, that are subject to validation, estimated the value of each attribute.

Table 5 Value of the idea relevancy factor using SAW method

VALUE OF THE IDEA RELEVANCY FACTOR (basic idea value)																							
Idea / Criteria		BENEFITS					NOVELTY					RISK					COST						
		For Product	For Users	For Producer	For Environment	V_{Bu}	For Product	For Users	For Producer	For Market	V_{Bn}	Technological	Market	Business	Economic	V_{Br}	R & D	Production	Comerzialization	After Sales	V_{Bc}	V_B	V_B
Wi						0,4					0,2					0,2					0,2		
1	1	5	5	3	5	4,40	3	5	5	3	3,87	5	5	5	5	5,00	3	3	3	5	3,41	1,51	11,72
2	2	3	3	3	3	3,00	3	5	5	3	3,87	7	5	5	7	5,92	5	5	3	5	4,40	0,96	7,44
3	3	3	3	3	3	3,00	3	3	3	3	3,00	3	7	7	7	5,66	3	3	5	3	3,41	0,99	7,71
4	4	3	3	3	3	3,00	3	5	3	3	3,41	3	7	5	5	4,79	5	3	5	5	4,40	1,02	7,96
9	5	5	5	5	5	5,00	7	7	5	7	6,44	3	3	3	3	3,00	3	3	5	5	3,87	2,39	18,60
13	6	1	1	1	1	1,00	1	1	1	1	1,00	5	5	5	5	5,00	5	5	5	5	5,00	0,30	2,33
21	7	3	3	3	3	3,00	3	3	3	3	3,00	5	7	7	7	6,44	5	5	7	5	5,44	0,76	5,89
22	8	3	3	3	1	2,28	3	3	3	3	3,00	5	5	5	5	5,00	5	5	5	5	5,00	0,76	5,88
23	9	3	3	3	3	3,00	3	3	3	3	3,00	5	5	5	5	5,00	5	5	7	5	5,44	0,86	6,70
24	10	3	3	3	3	3,00	3	3	3	3	3,00	7	7	5	5	5,92	7	5	7	7	6,44	0,73	5,67
25	11	7	5	5	7	5,92	5	7	5	7	5,92	3	3	3	3	3,00	3	5	5	3	3,87	2,58	20,08
																						12,86	100,00

A total of 16 evaluated attributes, 4 for each of the criteria. Value assessment by assessors is generally defined in Tables 1, 2, 3, 4, and it was ranged from 1 to 9. The following table (Table 5) shows the results of sub-criteria value estimation.
Based on the score for each attribute, the value is calculated for each of the criteria. Criteria value is calculated as the geometric mean score of attributes from a given set of criteria. For comparison with other factors, the value of the idea expressec in the last column is the normalized value of the idea relevancy factors. Ranking of the idea through the idea relevancy factor of applying the SAW method is presented below (Figure 3) (horizontal- ideas number, vertical – normalized relevancy factor). Basis for ideas ranking, a subset of ideas is selected for the product development selection.

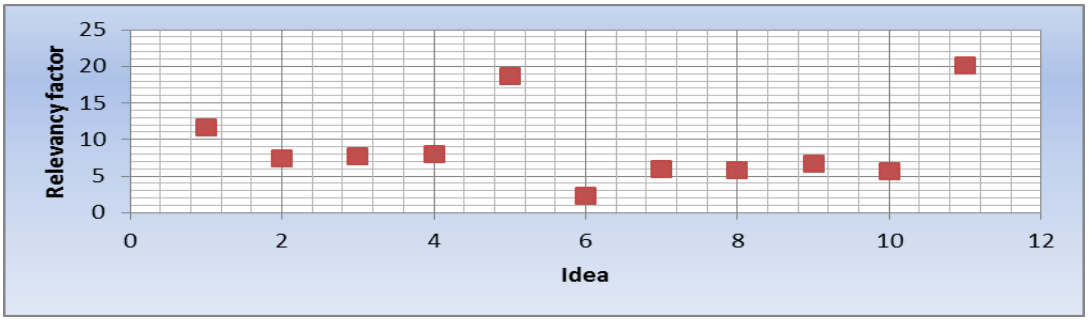


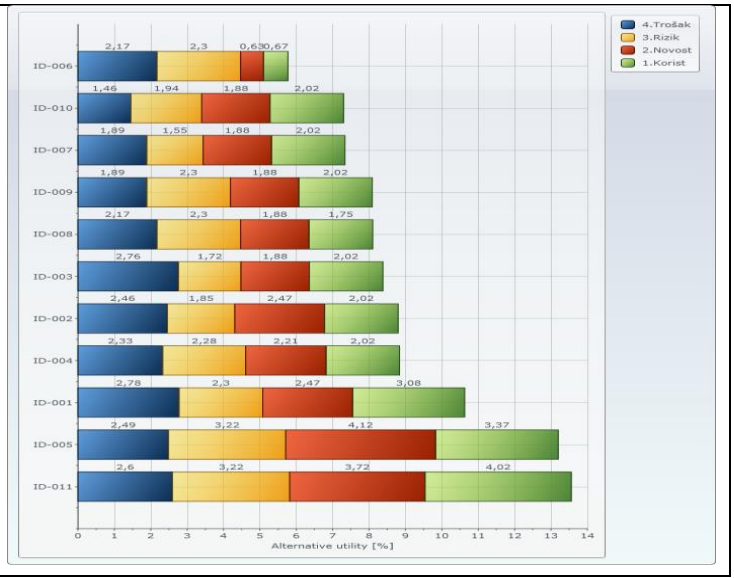
Figure 3 Idea ranking using SAW method

4.3 Ideas assessment using AHP method

Idea assessment using AHP method was carried out with the new assessors who had access to validation set of 11 ideas using the AHP method. Assessment was conducted using the web version of MakeITRational progam. Appraisers have defined, according to their preferences and their best knowledge, the importance and value of each criterion. Defining the importance of the criteria, the assessors agree on the value of each criterion by pair vise comparison. For determination the value of attribute, one group of valuators used a direct estimate of the value, and another group of assessors used assessment of ideas in pairs. Results of the assessment are presented in the tables (Table 6) for each of the criteria sets for which the estimate is.

Table 6 Value of the Idea relevancy factor using AHP method (group 1)

Idea / Criteria	BENEFITS	NOVELTY	RISK	COST	RELEVANCY
ID-001	12,3	9,9	9,2	11,1	**10,6**
ID-002	8,1	9,9	7,4	9,8	**8,8**
ID-003	8,1	7,5	6,9	11,0	**8,4**
ID-004	8,1	8,8	9,1	9,3	**8,8**
ID-005	13,5	16,5	12,9	10,0	**13,2**
ID-006	2,7	2,5	9,2	8,7	**5,8**
ID-007	8,1	7,5	6,2	7,6	**7,3**
ID-008	7,0	7,5	9,2	8,7	**8,1**
ID-009	8,1	7,5	9,2	7,6	**8,1**
ID-010	8,1	7,5	7,8	5,9	**7,3**
ID-011	16,1	14,9	12,9	10,4	**13,6**
	100,0	100,0	100,0	100,0	100,0



5 DISCUSSION

With implementation of assessment for the considered case of the 11 ideas, we collected the results of assessment of a group of assessors through the SAW method, and the results of two groups of assessors through the AHP method. These results are marked with the **SAW, AHP_1 and AHP_2**. Since are the results obtained by different methods, we can check the correlation between them by calculating Pearson's and Spearman's rank coefficient. For this purpose, the results are shown in Table

7, conducted by ranking the results for each set. For the case of the values of the idea relevancy factor, calculated correlations are positive and have a value greater than 0.8, therefore it is possible to conclude that there is a correlation between the relevancy factors obtained by **SAW** and **AHP** methods for both groups of peers, and that is a strong positive correlation.

Table 7 Comparison of the results of the ideas relevancy factor

	SAW_{11}	AHP_{11}	R_{SAW11}	R_{AHP11}	di^2	SAW_{11}	AHP_{21}	R_{SAW11}	R_{AHP21}	di^2
1	11,72	9,83	3,0	3,0	0,0	11,72	10,63	3,0	3,0	0,0
2	7,44	7,80	6,0	6,0	0,0	7,44	8,79	6,0	5,0	1,0
3	7,71	7,70	5,0	8,0	9,0	7,71	8,38	5,0	6,0	1,0
4	7,96	8,70	4,0	4,0	0,0	7,96	8,84	4,0	4,0	0,0
5	18,60	14,00	2,0	2,0	0,0	18,60	13,21	2,0	2,0	0,0
6	2,33	6,48	11,0	11,0	0,0	2,33	5,77	11,0	11,0	0,0
7	5,89	7,53	8,0	9,0	1,0	5,89	7,34	8,0	9,0	1,0
8	5,88	7,79	9,0	7,0	4,0	5,88	8,10	9,0	7,0	4,0
9	6,70	8,16	7,0	5,0	4,0	6,70	8,09	7,0	8,0	1,0
10	5,67	7,48	10,0	10,0	0,0	5,67	7,30	10,0	10,0	0,0
11	20,08	14,53	1,0	1,0	0,0	20,08	13,56	1,0	**1,0**	0,0
	100,0	100,0		Σ	**18,0**	100,0	100,0		Σ	**8,0**
				Spearman's Coefficient	**0,918**				Spearman's Coefficient	**0,964**
				Pearson's Coefficient	**0,988**				Pearson's Coefficient	**0,991**

To the existence of a strong positive correlation points out the display of the results obtained by assessment of the idea relevancy factor (Figure 4).

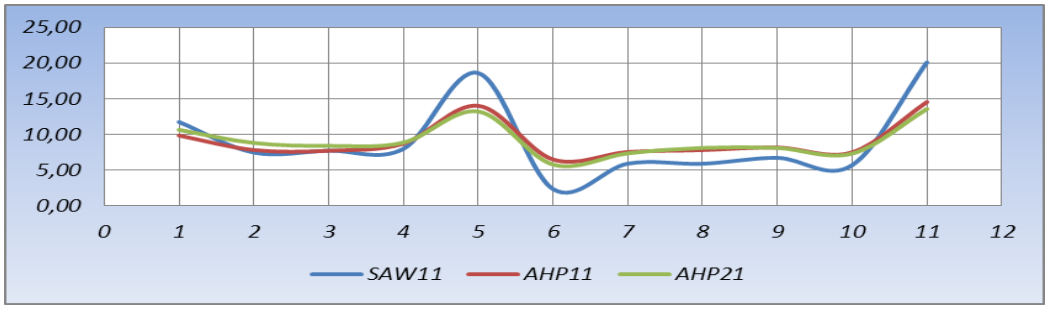


Figure 4 Results of the assessment of the ideas relevancy factor

6 CONCLUSION

In this research attempt was made to understand value of ideas and assessment methods relevant for preparation of new product development. Studying the idea life-cycle in PPD we recognized processes relevant for assessment, evaluation and selection of ideas. We have conducted that idea assessment has to be performed in different domains and stages. One of the assessmenets, the idea efficiency, is presented. The assessment is based on a unique metric for the implementation. Validation that was conducted on the proposed method showed a high degree of applicability of both (SAW, AHP) multiatribute ranking methods, and a high degree of correlation between the results obtained. The proposed assessment method provides a uniform, rapid and comparable resulst, applicable particulary in a systems of open innovation.

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