A Two Dimensional Matrix Presentation for Idea Evaluation

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ABSTRACT

Idea evaluation is an important step in innovation management process. The idea management process starts with idea generation phase that should produce as many ideas as possible. Then the best one should be selected to be further developed. In the model presented in this paper there are two 2-dimensional tables, one for customer and the other for producer. The value for customer is divided to two factors: usefulness and economic efficiency. The same way the table of producer is divided to marketability and productivity. The evaluation is based on a matrix formed by a group of criteria, weight factors and knowledge base. The method was tested by using a prototype software developed with Microsoft Excel.

Keywords – Innovation management, idea evaluation, creativity, matrix method.

I. INTRODUCTION

The companies in Europe need to improve their competitiveness. One of the most important ways to do this is to increase the performance of innovation capabilities. This is even more important in SMEs which form the great majority of European business sector. The fact is, however, that most of the SMEs do not have resources or knowledge to formulate an innovation strategy nor to put it in practice.

Since this paper deals with ideas, it might be essential to review the position of ideas in innovation management area. Simply putted innovation is a commercialized idea, which makes the idea a central and probably the most important part of innovation. Idea management is one step in innovation management process, though it is often given less attention that should be necessary. Too often the problem solving process approaches by taking the first introduced idea and continues with it. The creative part of process is easily seen inefficient and less productive than the other more strictly managed parts of the process.

The other side of the coin is that in modern world innovation process should be rapid. There is no extra time to spend in idea management. It is essential to have something concrete and visual rapidly in the early stages of process. After that you can use them to demonstrate and sell to the management. This means that very efficient tools are needed, but also the culture and strategy should support this kind of approach.

The modern thinking used in rapid innovation is the concept of modular and open innovation. The modu

lar innovation is based on the idea of breaking complex projects into separate modules that have as little dependence as possible and with precise interfaces: this independence helps improve a module by changing it for another or dividing it, with no impact on the rest of modules.[1]

Another successful application is open source. The management techniques for open source rely on the principles of modularity and distribution: a complex product is divided into multiple components which realization depends on the community. [1] Very promising results have achieved by using a student community as an open innovation source.

There are several (tens) of methods to generate ideas. Using them effectively it is possible to generate a group of ideas. Because of the limited and oriented thinking in most cases the result is inevitable and really new ideas have not been presented. This is understandable, because most of the best ideas born suddenly, and not in a fixed place and time. The other dangerous phase is the evaluation of ideas. Is it really possible to understand which, if any, of the several ideas is the best. While there were several methods to generate ideas, there are also several methods to evaluate them. Since most of them are based on some kind of board, and that way limited to objective decisions, this paper introduces just another tool that can be used to help in finding the best source of innovation: the best idea.

II. IDEA MANAGEMENT AS A PART OF INNOVATION MANAGEMENT PROCESS

The IMP3rove –project was established by European Commission. The target of the project was to improve the performance of innovations of SMEs in Europe. The term Innovation Management is defined in the project to be the capability to manage an invention/idea of

- new products, services, processes, production methods, organizational forms, or
- an elementary improvement of a business (model) system up to its successful realization [2].

Their holistic approach of innovation management can be crystallized to a "House of Innovation" (Fig. 1). As can be seen, the idea management part of the house is quite small, but at the same time essential part of it. Without ideas there are no innovations.

Idea management process always starts with idea generation phase that should produce as many ideas as possible. Then the best one should be selected to be developed further. In fact the main concern of idea management is not actually to select the best of ideas

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but also evaluate if there are any ideas that can be further developed for example by combining them. In case there is none, the only way to proceed is to get back to idea generation phase.

The method to use in idea evaluation is also dependent of the innovation type in question. Innovations can be classified for example according to their novelty or consequences. They can be program innovations introducing new product, technological innovations which improve products and processes, organizational or managerial innovations. Radical innovations make significant changes while incremental innovations proceed with several smaller steps. It is clear that no single evaluation method is useful for all innovation types.
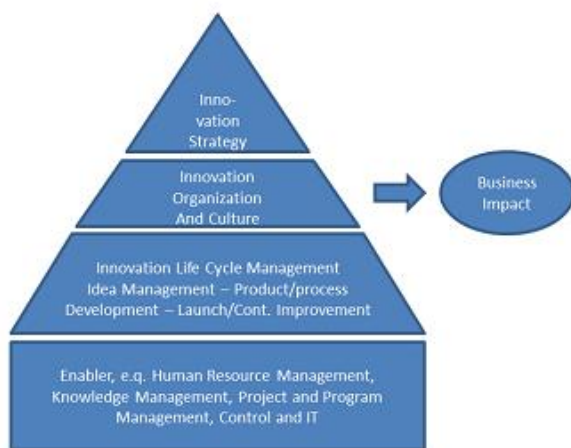

Figure 1. The house of innovation according to Insights of ….[2]

Brebemic and Bradac [3] have presented 29 different methods to evaluate ideas in their research. These methods have been selected because they are relatively simple and that way more easily benefitted in SMEs. Two of them are relatively close to the idea of this paper. The basic concepts of them are presented below.

Evaluation matrix can be found under many different names, such us decision matrix, grid analysis, AHP matrix, bid decision matrix, comparison matrix, decision alternative matrix, importance vs. performance matrix, measured criteria technique, opportunity analysis, performance matrix, rating grid, scoring matrix, vendor comparison, weighted criteria matrix, cost-benefit matrix, options/criteria matrix.[5][6]

The main aim of evaluation matrix is to evaluate an idea in accordance to several factors or criteria. It is applicable when considering more characteristics or criteria of an idea. Evaluation matrix has many application possibilities in different areas. However, to use it efficiently the scoring criteria must be carefully selected. It is individual or group technique which enables more detailed analysis of vital factors.

Kano model is analysis of customers' preferences [4]. As such it is very focused and appropriate in the product development phase. However, it could also be employed in identifying customer needs, determining functional requirements, concept development and analyzing competitive products. It could be performed in group or individually, but is not useful for general idea selection.

Kano model is a useful technique for deciding which features you want to include in a product or service and which attributes products should have. It helps to break away from a profit-minimizing mindset that says you've got to have as many features as possible in a product, and helps to think more subtly about the features to include.

THE TWO DIMENSIONAL MATRIX PRESENTATION FOR IDEA EVALUATION

The three main concerns in idea evaluation are:
- to select the best idea for further development,
- to be sure that the best one is really the best and
- to be able to easily get back to generation phase if no one of the ideas is good enough.

In fact this selection phase should not be taken as a black and white situation in which the only target is to select one of the many. The creative working should go on and the ideas must be looked also in the sense that if any of the good sides of different ideas can be combined.

When evaluating an idea there is actually need to evaluate the innovation that is based on the idea. Therefore the evaluation should be based on the possible business opportunities of the innovation. Business opportunities are on the other hand based on the markets and on the other hand on the realization of the innovation. The markets are dependent on the user or customer and realization on the manufacturer or producer.

In our model there are two 2-dimensional figures, one for customer and the other for producer (Figure 2). The value for customer is divided to two factors: usefulness and economic efficiency. The same way the figure of producer is divided to marketability and productivity. Both figures are further divided to four areas. One of them is green showing that the ideas falling in this area are most considerable for further development. One of the areas is red showing that these ideas are less considerable. If an idea appears on green area in both figures, it will be a winning candidate (like the idea number 3 in figure 2).

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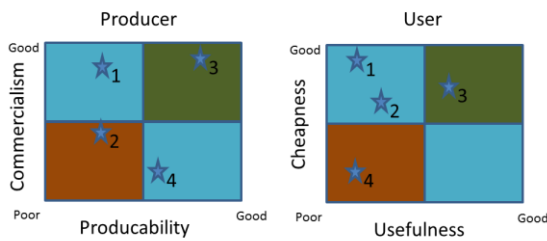**Vol. 3, Issue 2, March -April 2013, pp.1673-1676**

Figure. 2. The areas used to position ideas.

The evaluation is based on a matrix formed by a group of criteria, weight factors and knowledge base. The criteria are divided to four sections for all four factors. Each factor will have 5 criteria and therefore there will be 20 criteria altogether. Every criterion will have a weight factor showing how important it is. The knowledge base is a matrix of weight factors telling how much each criterion will impact on the evaluation factors. That may sound a little bit confusing, but hopefully the Figure 3 explains it better.

There is a prototype software developed using Microsoft Excel. The prototype includes space for five different ideas at a time and the user must evaluate the values of criteria for every one of them. After that the graphs will show the positions of ideas in the two figures. Screenshots of the application can be found in Figures 4 and 5. The idea 1 is clearly the best, but also the idea 2 should be considered.
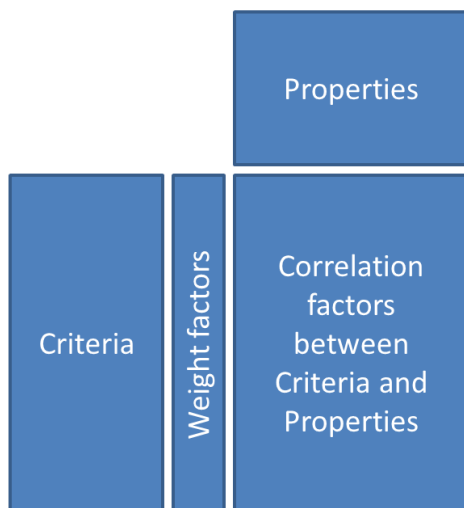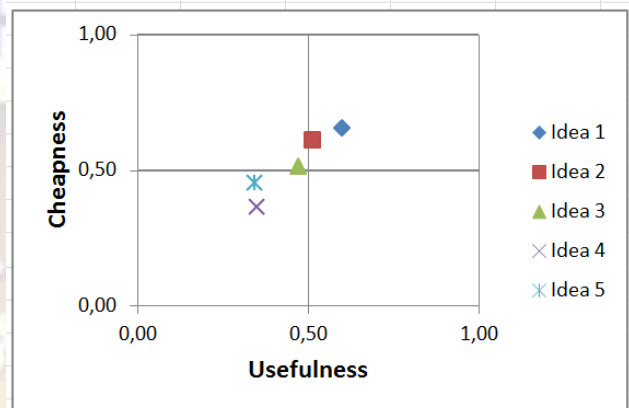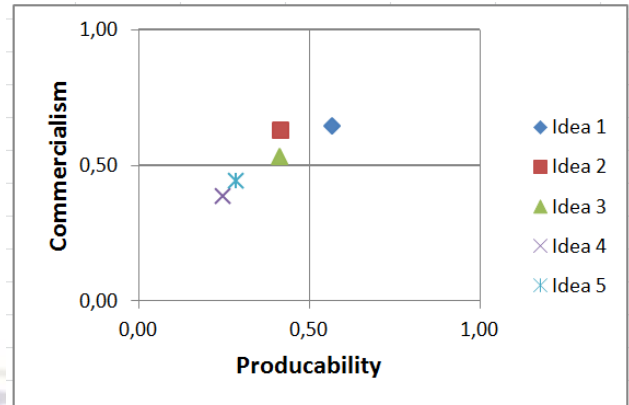

Figure. 3. The matrix positions.

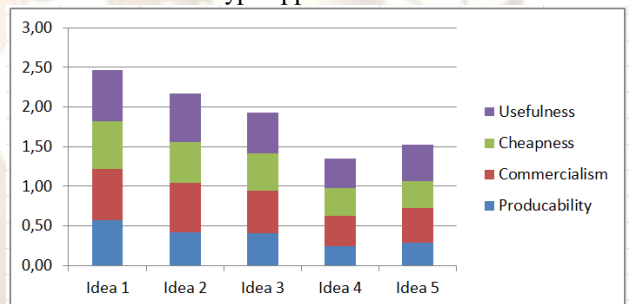Figure. 4. The fourfold table presentation of the prototype application.

Figure. 5. The histogram presentation of ideas in prototype application.

III. CONCLUSION

The evaluation of ideas is an important part of innovation management process. Without tools it may be difficult to see the differences between ideas. There are also two sides to be considered: the customer and the producer sides. The idea may be excellent when looking from the customer side, but impossible or too expensive to realize by the producer.

The visual representation makes it easier to recognize the best idea or to find out which ideas should be considered to put together. The Microsoft Excel – based prototype seems interesting, but it needs more test cases to develop to a serious tool for real life innovation management.

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