SOFTWARE PROGRAMS AND SUGGESTIONS FOR MANAGEMENT OF IDEAS: AN ANALYSIS OF REQUIREMENTS

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The information systems are tools to aid business and need to be aligned with organizational objectives. The literature advocates the need for requirements elicitation in a systematic way to the real business needs. This research identified the key features and requirements that software must include a program to meet business suggestions. For this, searched in technical journals in information systems, books, articles, websites and documents related to the subject available by internal software development companies. These companies have modeled and developed Web based software for management suggestions. It was found in the results, the software has pre-established requirements, such as accessibility, user control, registration and distribution of ideas and also serve as a channel to stimulate the creativity of employees, providing ideas that generate organizational innovation.

Palavras-chaves: Innovation, Survey of Requirements, Program Suggestions
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Abstract: The information systems are tools to aid business and need to be aligned with organizational objectives. The literature advocates the need for requirements elicitation in a systematic way to the real business needs. This research identified the key features and requirements that software must include a program to meet business suggestions. For this, searched in technical journals in information systems, books, articles, websites and documents related to the subject available by internal software development companies. These companies have modeled and developed Web based software for management suggestions. It was found in the results, the software has pre-established requirements, such as accessibility, user control, registration and distribution of ideas and also serve as a channel to stimulate the creativity of employees, providing ideas that generate organizational innovation.

Keywords: Innovation, Survey of Requirements, Program Suggestions

1. Introduction

The ideas became a resource whose administration acquires strategic relevance in the organizations. It is possible to find a continuous source of good ideas in the own organizational atmosphere. The administration of ideas, allied to the use of Technologies of Information (TI), increases the efficiency and allows larger competitive advantage. One of the ways of capturing those ideas is through a Program of Suggestions. The new tools of TI allow the organizations to buy customized “packages”, adapting them in agreement with the need of each atmosphere (SZAFIR-GOLDSTEIN E SOUZA, 2003).

In this context, the software industry has been introducing some innovations into the market: some applications that promise to collect the collaborators’ ideas and to address them to the administrators of the Program of Suggestions in an easy, agile and secure way. This could make possible the identification, the evaluation and the implantation and the supplementation of fast feedback to employees who made suggestions.

For Schepers, Schnell and Vroom (1999), the use of those technologies in Program of Suggestions allows to store and to organize the suggestions automatically and also to monitor them continually during the evaluation process. Another highlighted benefit is the ability of sending comments to the authors of the ideas, allowing its reformulation for the next evaluation step. According to Silva Filho (2007), these benefits happen only because of the easiness process of software modification. However, the author calls attention to the importance of establishing requirements for system effectiveness. Those requirements serve as reference and base for the definition of functionalities that the system should contain.

In agreement with such assertives, authors as Sommerville (2003), Xexéo (2004) and Coser (2009) say that the stage of specification of requirements is the most important one for projects of software development. In that phase those difficulties appear to elicit, to create, to analyze, to validate and to manage the necessary requirements for the functionality of the system. The description of the requirements, through the mapping of organization processes which should be incorporated to the software, can assist the needs of the organization.

This paper aims to identify the requirements of software for administration of ideas in Program of Suggestions, so that the application can assist in an efficient way the program and
the organization objectives. The contribution of this research consists on identifying these requirements, seeking to assist the process and the structure of a Program of Suggestions. Therefore, the need to improve the way of managing the number of ideas in the organizations (around thousands) has already been observed by Barbieri, Álvares and Cajazeira (2009).

For the methodological procedures, a qualitative research was done through collecting data from many researches and through evaluation of internal documents from five software developer companies which accepted to participate in this study.

The study justifies the growing participation of computer programs in the Brazilian market, for the integration need of technologies of information to the objectives of the business, and mainly, for the shortage of the literature that refers to the technological tools that serve as support to the administration of ideas.

2. Generation of Ideas

“Innovation in an organizational context requests good ideas, the initial fuel for any unpublished practice.” (TERRA, 2007, p. 23).

2.1 Generation of Ideas for Organizational Innovations

Every idea carries a certain potential that can be taken advantage of. New and good ideas can provoke great changes, improvements or earnings for the organization.

According to Ettlie (2001), nowadays the success of the generation and the flow of new ideas are decisive factors for most of organizations. The process of organizational innovation usually depends on those ideas capable of generating a new product, a new process or a new service. They are projects that capitalize new opportunities and they provide a differential competitiveness.

For Robinson and Schroeder (2005) and Dávila, et al. (2007), innovations come with the generation of ideas selected in agreement with the organizational objectives. These innovations allow the construction of new knowledge, simplifying processes, solving problems, redefining and conquering new markets. It also establishes competition rules and, mainly, it maintains the organizational competitiveness.

However, Barbieri, Álvares and Cajazeira (2009) consider that the generation of ideas constitutes one of the main concerns of the organizations which are seeking to produce innovations in a systematic way. For the authors, ideas appear in function of two reasons: first, it is concerned with problems, in other words, needs and current opportunities of the production and commercialization area of the own organization; second, it is about the capacity of generation of new proportionate opportunities for the enlargement of the technical and scientific knowledge.

But, rarely the totality of the ideas is taken advantage of. Steven and Burley (1997) demonstrate in a research that in some sections, it is necessary more than 3.000 original (raw ideas) ideas to create a new product of expressive commercial success, denominated “jewel of the crown” product. Illustration 1 presents the 7 stages, identified by the authors, that an idea has to go through in order to become a successful product.
For Steven and Burley (1997), stage 1 represents the total of ideas. In stage 2, there is the presentation of the best ideas to the administration. Phase 3, after some experiments, it presents larger probability of generation of patents. After the first three stages, only about nine projects survive due to great efforts of development. However, only 4 of those projects reach stage 5 where the efforts will be centered for the development of the product. Stage 6 configures the commercial release of the products. Finally in the last stage, stage 7, the “jewel of the crown” products are obtained.

Barbieri, Álvares and Cajazeira (2004) and Prada and Abreu (2009) observe the need to create a solid aligned structure to the organizational objectives in order to identify and address good ideas heading for the continuous of the innovation as organizations avoid the risk of developing projects in an isolated and useless way.

Therefore, organizations need to consider time, cost, intellectual capital, the technology and the tools that support any process. In agreement with Prada and Abreu (2009, p. 4), the development of innovative projects that begin when an idea is selected for the innovation portfolio, should help generating ideas aligned with organizational objectives. So the success of managing good ideas depends on the structure and the process of implantation of a Program of Suggestions.

2.2 Generation of Ideals versus Programs of Suggestions

According to the Book of Ideas (Japan Human Relations Associations JHRA 1997), the concept of System of Suggestions is the process through which own solutions are adopted by the administrative team. These programs value and stimulate the innovative initiatives, besides improving the efficiency and the organizational competitiveness seeking to obtain ideas to solve specific problems, such as, reduction of costs or time, productivity increase, safety, improvement of the processes, products, quality, administrative works, inventions or changes in the method work.
As a specific model doesn't exist, those Programs should be studied and applied to each company individually, observing the local culture. The Program of Suggestions, according to Souza and Yonamine (2002), has a structure quite simplified. The ideas should contemplate the following steps:

- Registration: all of the employees participate with their ideas individually or in group;
- Analysis of the technical and economical viability: the ideas are analyzed by a technical team, that divided them in measurable, whose return can be quantified and not measurable where the evaluations are qualitative;
- Award: the measurable ideas receive award in value stipulated previously by the organization. The no-measurable ones can be changed by points or prizes non-financial in the section of coordination of the program.

It is important to highlight that Programs working with financial reward as incentive to the suggestions should follow some rules. Some organizations stipulate a percentage on the return with the implantation of the idea, while others adopt fixed values, independent of the financial return that the idea will provide. Programs which do not work with financial reward tend to establish a collective return and the rewards are symbolic, such as stability in the job, distribution of profits and results, opportunities of personal development, nominations, recognition plates, collective financial rewards, or some goods (BARBIERI; ÁLVARES; CAJAZEIRA 2008).

2.3 Criteria of Selection, Evaluation and Implantation of ideas

The criteria for selection and evaluation of the ideas need to be very defined, clear, transparent and objective. Based on specific criteria, the ideas which are most aligned to the organizational objectives are selected. This is the most difficult phase, because selecting an idea despite other ones can generate uncertainties and doubts. (PRADA; ABREU 2009).

Trying to avoid such negative feedback, the foregoing authors affirm that there are several procedures and criteria to be followed as demonstrated in chart 1.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Criteria to be observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of the idea</td>
<td>- Alignment with the organizational strategy;</td>
</tr>
<tr>
<td></td>
<td>- Aggregation of value;</td>
</tr>
<tr>
<td></td>
<td>- Balance (time / cost / resources);</td>
</tr>
<tr>
<td></td>
<td>- Creation of new markets;</td>
</tr>
<tr>
<td></td>
<td>- Relationship with the goals previously defined;</td>
</tr>
<tr>
<td></td>
<td>- Return and benefits.</td>
</tr>
<tr>
<td>Classification of the idea</td>
<td>- Sum of the weights attributed to the selection criteria;</td>
</tr>
<tr>
<td></td>
<td>- The author's data;</td>
</tr>
<tr>
<td></td>
<td>- Feedback to the author;</td>
</tr>
<tr>
<td></td>
<td>- To identify the need of accomplishment of experiments.</td>
</tr>
<tr>
<td>Request of Experiment</td>
<td>- To inform the purpose;</td>
</tr>
<tr>
<td></td>
<td>- Evaluation of the object;</td>
</tr>
<tr>
<td></td>
<td>- To establish the size of the project.</td>
</tr>
<tr>
<td>Identification of needs</td>
<td>- Procedures for the development of the idea;</td>
</tr>
<tr>
<td></td>
<td>- Identification of obstacles;</td>
</tr>
<tr>
<td></td>
<td>- Information taken of the decision.</td>
</tr>
<tr>
<td>Approval</td>
<td>- If it controls all of the information for implementation of the idea;</td>
</tr>
</tbody>
</table>

Source: Adapted of Prada and Abreu, 2009
Another factor of relevance mentioned by the literature, as for the process of evaluation of ideas, is the feedback given to the authors. Prada and Abreu (2009) consider this factor creates a creative, motivated and trustful atmosphere. Therefore, the authors believe that it is necessary to maintain the participants well informed, communicating and explaining the acceptance or rejection of the idea. Ideas can also pass for an improvement process and a new selection process. It is important to present a schedule of phases, making the reward criteria very clear to the selected ideas authors.

For the selected ideas, VanGundy (2007) calls attention to some relevant factors as the involvement and liability of the participants on the proposal, the perception of the impact and possible opposition that the idea can face. Of course that not all ideas will be accepted thoroughly, so the gap is between what the idea really is and what it could be, in other words, the selected ideas are those that are related to a solution potential and the ones that could be applied in the solution focusing a problem. The quality of an idea even when it seems to be highly capable of solving a problem lies on the implementation process. Any idea can have little value if not implemented adequately (VANGUNDY, 2007, p. 237).

Therefore, it is possible to transform inputs in outputs (entrance and exit), that becomes new products, processes or services, through a Program of Suggestions. It is a form of registering systematically all the employees' ideas for the innovation processes.

A software was created searching for improving of the effectiveness and the dynamics of selection, evaluation and implementation processes of ideas. This tool aims to support the reception, classification and selection processes of ideas. It also allows to control and to manage ideas in easy, agile and safe way, guaranteeing to the organization the registration of the suggestions, contributing to the planning processes, motivating the innovation, the systemization of improvements and the organizational renewal.

3. Technologies of the Information

According to data from the Brazilian Association of the Companies of Software - ABES (2008), the Brazilian market of software and services in 2007 occupied 12th position in the world market. It also shows the participation of the computer programs in the Brazilian market in 2004 which was 27% increasing to 33.6% in 2007 and with forecast of overcoming the 40% until the end of 2010.

The internet modified the spread of the information significantly. New systems, technologies and procedures are available to be used by anybody. The result was the increase of the speed of the innovations in all of the sections, reducing the production costs (KILIAN 2005). It also appeared the need in using the collaborators' creative capacity to discover new solutions, new ideas and the increase of the organizational competitiveness.

3.1 Software of Support for Program of Suggestions

In the software market, besides the continuous increase, it is perceptible the need to integrate business intelligent functionalities in the software development process seeking for quality and agility to capture new business opportunities. This kind of perception is mainly part of software systems to support administration of ideas. This software gathers in a database the whole knowledge generated by the collaborators, allowing the process of sending ideas to
managers or head of administration, and the rescue of the same ideas in case of new evaluation as well.

In that sense, Xexéo (2004) affirms that the systems of information are implanted in the organizations with the objective of aiding the planning, observation, communication and controlling steps of the processes. And the task of recognizing and describing the requirements of a system, defining the way it should function, exist in order to assist the expectations of all interested in it.

These systems are constantly developing trying to correct mistakes or add new resources and functionalities to the existing software. According to Silva Filho (2007), the easiness of software modification is one of the main factors that motivate the growth of use and demands of new techniques and interaction mechanisms.

Therefore, it is extremely important the knowledge of requirements, once it will serve as reference to the system developers, and it also serves as base for the definition of scope of the functionalities that the system should contain.

### 3.2 Functional requirements and Nonfunctional requirements

Getting to know the requirements is some of the responsible stages for the identification, modeling and needs of the business that they should be assisted by the systems of information, focusing in the real objective of the business independently of the model of engineering of adopted software (AZEVEDO; CAMPOS 2008).

The requirements understand functionality or restriction that the system should have to assist the user's need. The identification of the functionalities should be capable to also assist needs of the company, for such Sommerville (2003, p.82) defines:

- The functional requirements are declarations of functions that the system should supply, in other words, how the system should react to specific enters and how it must behave in certain situations. It shall include all of the functions requested by the user, being consistent.

- The nonfunctional requirements are the restrictions about the services or the functions offered by the system, and among them they stand out restrictions of time, restrictions on the development process, patterns and others. It could be related to the reliability, time of answer and space in disk.

The complete description of the requirements helps the mapping of the organization processes, so that these can be reproduced in software assisting the needs of the organization. Illustration 2 represents the stages, based on the literature, seeking to specify the necessary requirements to the service of the Program of Suggestions.
The process begins with the collaborator depositing the suggestion in the system *intranet* or internet which is available in the company. The system sends all of the suggestions for the appraiser that verifies the conformities of the idea, in other words, it controls all of the necessary information for the subsequent analysis.

In another moment, the appraiser receives the suggestions, it analyzes the economical viability, classifying them in measurable or not measurable, including the punctuation given by a table of usefulness or other factors previously established with the calculation of the expected profit.

After this last analysis, in case the cost is larger than the stipulated limit, the suggestion goes directly to the head of administration that will make new analysis of the idea for its implantation. If the cost is according to the established parameters, the implantation of the idea can be made by the own boss, manager, responsible or technician of the benefitted area.

When the suggestion is approved, the generator of the idea receives the recognition through formal communication or by the system. The status of the suggestion, even if reproved, is available for the author consultation at anytime. The author can ask for a new evaluation or even modify the suggestion for new participation. The good operation and administration of that system result in success for both organization and collaborators.

**4. Procedures of Research**
The research has an applied and qualitative approach. In terms of its objectives, it is classified as a descriptive research. The software meets all these requirements recommended by software engineering, but some adjustments are necessary in order to respond efficiently to the objectives of any program of Suggestions. According to the technical procedures, the research is classified as bibliographical so technical magazines, books and online information related to the subject were used in the attempt of identifying the basic requirements of software for administration of innovative ideas in Program of Suggestions.

For the selection of the sample, a research was accomplished in a site of search (pages of Brazil) in the following way:

- After typing the sentence “software for programs of suggestions” 943,000 pages appeared. Due to the extension of those results, only the first ten pages were consulted resulting in 100 results, of which only two developer companies were identified.

- For the second search, it was typed the following key-word: “software; administration of ideas; suggestions and innovation” (also for research in pages of Brazil), 161,000 pages of results appeared. Using the same previous criteria, four more companies which develop software for administration of ideas were identified.

For that first research, it was searched for corporate sites of the companies related to the similarities of the subject such as transparency of the process, agility, flexibility, integration of the system, among others.

In a second moment, phone contact was made with seven companies selected through the criteria already mentioned, explaining the objective of the research. For the seven approached companies, five of them formed the total population of that study. The five companies sent internal documents and a demonstrative version of the application with a presentation in PowerPoint of the software. Of the five companies which made their material available, one was selected to have an interview. The criteria used for the selection of that company was the geographical proximity of the company to the researcher.

The interviewee company supplied explanation of the operation of the Program of Suggestions in video. The company explained their procedures for the development of the software, in way to assist the needs of the Program and, it also presented in PowerPoint all of the procedures used by the collaborators, from the opening of the initial page of the Program to the process of sending suggestion for the coordination section. The company was clear about each detail according to each stage of the Program relating with the functional and nonfunctional requirements of the application. All of that, made the identification and analysis of the approached concepts for this study possible.

The results obtained with that research allowed to obtain answers to the following research problem: Which are the requirements that software of support to the administration of ideas should present to assist a Program of Suggestions?

To guarantee the anonymity, the companies will be represented through the letters of the Greek alphabet, Alpha, Beta, Gamma, Delta and Epsilon.

The research obtained an additional result. Some specific characteristics of those systems were identified. The comparative among those characteristics is described in a summary, in chart 2.

5. RESULTS
The selection of the applications made possible to identify some characteristics and additional functionalities in the software for administration of a Program of Suggestions.

<table>
<thead>
<tr>
<th>Business</th>
<th>Characteristics of the software for administration of ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>Ease of access to the Program of Suggestions for being available in the internet; flexibility on the support of the processes independently of the organizational structure and transparency in all of the stages of the process.</td>
</tr>
<tr>
<td>Beta</td>
<td>Control of costs; administration of the employees' suggestions in head office level, branches or departments; availability of managerial and analytical reports.</td>
</tr>
<tr>
<td>Gama</td>
<td>The software generates an index of probability of success of the ideas after the analysis of the general and specific aspects accomplished previously by the manager; one of the options that the system offers is the study of the technical and economical viability of the idea (EVTE), other option is the calculation of the Present Value Liquidate (VPL) of the investment for the implementation of the suggestion.</td>
</tr>
<tr>
<td>Delta</td>
<td>The main page offers a fast link of access to the program; the system calculates the value of the award with base in the criteria of defined values for the appraisers; the time to register the suggestions are limited.</td>
</tr>
<tr>
<td>Epsilon</td>
<td>It makes available a free version for companies up to 400 collaborators, including the lodging options, use statistics; the number of posted ideas is limitless; it is an administration software for signature; the value is stipulated by the number of users and in agreement with chosen plan; it generates reports and graphs for attendance of the ideas more voted for.</td>
</tr>
</tbody>
</table>

Source: own authorship.

Picture 2 - Characteristics of the Software for Administration of Ideas

The requirements should be aligned to the organizational objectives, to assist and to join value to the improvement and innovation processes of the collected ideas in the Program of Suggestions. The understanding of functional and nonfunctional requirements, based on the literature, is described in chart 3. They were used as criteria for the analysis of the software which were part of this study.

<table>
<thead>
<tr>
<th>Functional requirements</th>
<th>Nonfunctional requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>Usability</td>
</tr>
<tr>
<td>Control of User</td>
<td>Maintenance</td>
</tr>
<tr>
<td>Registrations of the idea</td>
<td>Reliability</td>
</tr>
<tr>
<td>Distribution of ideas for section</td>
<td>Performance</td>
</tr>
<tr>
<td>Feedback for the user</td>
<td>Portability</td>
</tr>
<tr>
<td>Reports</td>
<td>Reusability</td>
</tr>
<tr>
<td>. Calculation of the award</td>
<td></td>
</tr>
<tr>
<td>. Calculation of the Cost of implementation of the ideas</td>
<td></td>
</tr>
<tr>
<td>Return on investment tax</td>
<td></td>
</tr>
</tbody>
</table>

Source: own authorship

Picture 3 - Survey of requirements

The nonfunctional requirements are preset in the engineering and conditioned to the quality of the development of the software. For such, Silva Filho (2007) defines them as:

- **Usability**: interaction between the system and the user - it is the easiness of learning and easiness of use.
- **Maintenance**: modifications, repairs, alterations and additions of new functionalities in the software;
- **Reliability**: chances of the software not to cause problems in the system for time and conditions you specify;
• performance: it is a quality attribute and it has capacity to restrict the speed of operation of the software
• Portability: it is the easiness of transferring the software of a computerized environment to another;
• Reusability: it is the use of projects which have already been developed in new components;
• Safety: that requirement characterizes the access not permitted and data in the system. It assures the integrity to the intentional or accidental attacks.

The description of the functional requirements was accomplished through the analysis of the materials obtained for the research, each requirement will be detailed according to each observed characteristic.

5.1 Analysis of the Requirements
According to the analysis of the documents, the requirement accessibility of the system makes possible to manage the employees’ suggestions in an easy and agile way, because it is available on a link in the company site which collaborators have daily access.

In the functionality of the user's control, the access happens through the register of a password that allows the collaborator to access all the other functionalities. The functionalities presented that are presented in the following pages are: the registration field for a new suggestion; the option of follow the status of the suggestions and the option of registering the idea in the section previously stipulated by the software.

After sending ideas for the analysts, each author receives the information of the analysis process, in other words, the status. This status is demonstrated if the idea was evaluated and if it was accepted or rejected as well.

As an option, the manager can configure the software to define which users' groups will have access to the reports of calculation of the award and of cost and return tax.

5.2 Comparative of the Requirements
For the analyzed software, Chart 4 displays which the functional and nonfunctional requirements were identified in the research.

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Software</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
<th>Epsilon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Accessibility</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- User's control</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- register of idea</td>
<td>X*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>- Distribution</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- Feedback</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- Reports</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonfunctional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Usability</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- Maintenance</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- Reliability</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- Performance</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- Portability</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- Reuse</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Source: Data of the research

Chart 4 - Specifications found in the software of administration of suggestions
The asterisk (*) identified characteristics in the software of Alpha company means that there is a difference in registering suggestions for specific activities. For the ideas distribution, the users need to type the name of the group and the area in which the ideas shall be applied, this option is not pre-configured.

This same characteristic is in the software of the company Epsilon. It is subdivided in categories, and it does not register the sections or the responsible people for the evaluation. Besides some reports, the software presents graphs that help in the interpretation and visualization of the implantation indexes, evaluation and rejection of the suggestions.

In the reports option, the asterisk in the software of the company Epsilon means that two graphs are visually visual. One of them presents a general statistics of voting and comments on the ideas, the other displays a graph, in pizza form, that represents the status of ideas.

6. Final consideration

In the comparison of the five software characteristics, concerning the technology used for the development, they all stood out for the transparency of the process, through the feedback supplied to the user. The agility, through the distribution of ideas for section, it is already pre-configured in the system. There is also certain flexibility, in the form of rescue of the ideas that are stored in a database, allowing the consultation at any moment.

As for the performance of the system, it is possible to integrate it to other departments, making possible for the coordination of the Program to collect a larger number of ideas and to do the selection process spending less time.

A lot of attention was given to nonfunctional requirements: safety requirement, referring to the registration of ideas; usability requirement through the easiness to register ideas; the reliability in respect to the transparency of the whole process, and finally, the performance requirement for cost estimative and the return of ideas implementation for the organization.

These conclusive statements allow the inference that all software has good interaction between the system and the users and that the applicative admits repair and changes if necessary. As for the reliability, it has quality and it assists efficiently all the demands of the Program of Suggestions.

However, it is noticed that software used by Beta and Gamma companies are more concerned in assisting the Program of Suggestions with the performance requirement, focusing on cost calculation costs and financial return of the implanted ideas.

In Delta Company, the software restricts the time of registering a suggestion in ten minutes, limiting a more meticulous description of an idea. The software of Epsilon Company possesses an innovative characteristic: it offers a free version of the system for companies up to 400 employees. This makes possible the reduction of costs for implantation of the system in small and average companies. Another advantage refers to the adoption and implantation of an automatic initial system in the Program of Suggestions. It allows that the company acquires gradually the offered packages, in agreement with its needs.

As for the nonfunctional requirements, all the software assists the accessibility needs, the user's control, registration and distribution of ideas and as for the necessity of supplying feedback to the user. However, the software used by the companies Alpha and Delta does not efficiently assist the functional requirement in the generation of reports. This can complicate the decision making phase because of the economical viability verification in the implantation of the idea process.
Finally, it is expected that the identification of functional and nonfunctional requirements and the highlighted characteristics of this study may be incorporated to the software in order to contribute significantly to the success of the processes of ideas generation for the organizational innovation.

Certain limitations were found during the research due to the lack of applicative handling in the organizational environment. Without such limitation, it would become much easier to evaluate deeply the software quality. As suggestion for future studies, the development of practical activities related to the software use is recommended in a Program of Suggestions for larger contributions.

References


