Critical success factors for project management support information systems: SEBRAE/RN Case

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Abstract

The current economic climate is driving the work of companies in the execution of projects that need to be managed and monitored periodically. Historically term goals, cost and quality are thermometers to measure success or failure of companies. For better project management, systems are needed that give support from the structure to the budget of each project, as well as its monitoring throughout the execution. The result of the components mentioned above reflect the overall results of the institution. Therefore, this study investigated through case study methodology, critical success factors for information systems that support project management in Sebrae/RN, and sought, through the project managers, to raise factors that influence decisions in search of improving the performance of the organization studied. Thus, a quantitative and qualitative research was applied. The results showed the critical success factors that hinder optimal performance of information systems from the structuring to the execution and monitoring of projects.

Keywords: Information systems; Project management; Critical success factors.

Introduction

According to Vargas (2005), with flexible work teams, resources and efforts focused on organizational needs and planning based on projects, successful corporations realize that the use of project management concepts is universal. Thus, project management can be applied in any organizational context anywhere in the world, becoming an ally to organizational planning in the search for better results and competitive advantages. The knowledge about the difficulties encountered in projects management in

relation to the information systems that give them support and the will to investigate the determining factors to improve this scenario, based on the theory of the Critical Success Factors, which, according to definition Rockart (1979), are areas of significant and decisive contribution to the success of an organization, are the reasons why it has been decided to investigate such factors in Sebrae/RN .

Project management can be currently contextualized as a temporary effort dismembered into actions with predefined starting and ending date in order to achieve a higher goal. As a result of this new scenario where organizations work project management, also comes the need to use information systems to measure results and monitor these projects, which have direct influence on the institutional results of organizations. In many cases the systems currently used to manage projects of institutions do not measure concrete results that could support assertive decisions of these projects and consequently of the institutions.

In this perspective the present study comprises a theoretical and empirical analysis of the Critical Success Factors (CSF) based on Rockart theory (1979), directed to project management support information systems, using as study object the organization where the author works, which offers support Service for Micro and Small Companies in Rio Grande do Norte - Sebrae/RN, by collecting data through the project managers.

Given the above, the work aims to discuss the following problem: What are the critical success factors for project management support information systems?

Goals
General
To investigate the critical success factors for project management support information systems according to the view of projects managers in Sebrae/RN.
Specific
a) Identify the CSFs for project management support information systems in Sebrae/RN ;
b) To analyze the influence of the CSFs in projects management.
Rationale
The growing importance of management though projects is based on the fact that it can be considered the best way to manage temporary projects, unique and multifunctional that characterize processes such as innovation, improvement or adaptation to the organizational environment , causing the success of organizations in practices of project management encourage more organizations to consider seriously project management (PINTO, 2002).

Noting the scientific approach, researches are more intense in engineering areas such as production. In the administration area they are still scarce, although the search for studies related to project management in this area are already very intense due to the need for strategic planning in institutions, from which may derive, in many cases, projects that need to be well managed mainly through timely information for decision making.

Under the empirical aspects, this research is relevant to deepen the studies in the area of information systems for project management and to make it clear to the managers from the organization studied the real importance of information systems to

support project management, as well as the influence of its results on the overall performance of the institution, more specifically by the information and knowledge they demonstrated.

The proper use of resources appears as an important social contribution of the study, as it will impact on the effective use of information to obtain better results in the projects of the institution studied.

Theoretical framework
Assessment of Information Systems

Several models can be used when evaluating an Information System (IS). One model proposes the assessment considering the quality of the information generated. According to Zwass (1992) it is essential to determine what information is required and the quality of that information because when an information system is implemented it is expected to provide this information with the disired quality .

Thus, Maçada and Borenstein (2000) emphasize that the IS assessment is increasingly gaining importance, as organizations adopt a quality-oriented approach by using the ISs as tools to provide and measure the quality of their services to their customers. Evaluating an IS is a key factor to characterize the success of its implementation and to ensure its continued use.

As for the success or failure of the implementation of an information system, there are different evaluation criteria, and the most important are (LAUDON; LAUDON, 2004):

• User system utilization level;

• User satisfaction particularly as the conformity of the system's functional requirements;

• favorable attitudes of users and information technology staff;

• Objectives achieved ;

• Financial return to the organization (by reducing costs or increasing sales or profits)

Project Management

In response to increasing accountability for results by shareholders, investors, beneficiaries, society, etc., and due to a great concern about the effectiveness and efficiency, project management has become such an important tool in organizations, contributing to problem solving, planning and management in face of the complexity of the current organizational environment. For Vargas (2005) project management provides numerous advantages over other forms of management, as it has proven effective in achieving desired results within the organization set term and budget.

Barbi (2011) explains the project as a temporary endeavor, with a start and an ending date, which goal is to create or improve a product or service. The management or project management would act to achieve the proposed goals within certain quality parameters, according to previous planning terms (schedule) and cost (budget).

The concept of project management has undergone an evolution in recent years. Before there was the traditional view that the project manager was a specialist, usually

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hired by engineering companies. However, currently this professional is part of the staff in medium and high positions within the organizational charts, taking strategic positions in organizations (BARBER , 2004 apud BIRTH; SOUSA NETO, 2011) .

The study related to information systems and project management had also gone through a major boost with the works of Turner (1994), Kerzner (2002), Pinto (2002), Dias (2000), Rao (2008), Stair (1998), The 'Brien (2004), Possi (2004), Kenski (2007), Turban (2003), Vargas (2005), Laudon and Laudon (2001), Gil (1987), Andrade and Falk (2001). In 1969 it was founded the PMI - Project Management Institute (PMI, 2011), in Georgia Institute of Technology in Atlanta, allowing its members to share best practices and experiences in project management. Having operated for over 40 years, it has become the world's largest supporter to the project manager profession, working in more than 160 countries. In order to create a recognized and independent structure of knowledge that would lead to greater professionalization of the practices applied to project management, the PMI has created a Handbook called PMBOK - Project Management Body of Knowledge. The PMI institute offers international awards that attest to the knowledge of the best project management practices, compiled into the PMBOK and updated constantly.

According to the PMBOK (2004) in project management are included initialization, planning, implementation, monitoring, control and closure. Managing a project also means identifying needs, setting clear and achievable goals, equating the requirements of quality, scope, time and cost, as well as adapting the specifications and plans to different stakeholders' interests.

Performance Evaluation in Project Management

Projects can be assessed for success or failure from different perspectives. Pinto and Slevin (1988 apud ROBIC ; Sbragia , 1996) considers both internal and external aspects for project performance evaluation.

Assessment of information systems used to support the Project Management

The implementation of information technology in any process in the organization is an intervention performed to change its status, in order to improve its results, and as regards project management it is no different.

Laudon and Laudon (2004) in a classic study of the project management said it is difficult to get a consensus on the success or effectiveness of a particular information system. The profile of each user can change the perception of the system, so an user with intuitive profile, oriented towards feelings and emotions can make a totally different evaluation from that one made by a more analytical and quantitative profile user.

Critical Success Factors

According to Rockart (1981), the critical success factors refer to the limited number of areas where satisfactory results ensure successfull competitive performance for individuals, departments, or organizations. John F. Rockart, senior professor of the Sloan School of Information Technology Management, MIT, is known for the

development of the information method of CSFs (MASSACHUSETTS INSTITUTE OF TECHNOLOGY - MIT, 2007). The CSFs have been used to present or identify a few key factors that are used as am aim for organizations to succeed (DANIEL cited ROCKART, 1979, p. 85).

Although the concepts of FCS have been published by Rockart in 1978, from the expansion of Daniel's work (1961), as it is of a limited scope (working paper), they only gained wide visibility in the business environment in the article entitled "Chief Executives Define Their Own Data Needs" from Harvard Business Review, in 1979. Since then, the method of FCS is increasingly used by organizations and there has been whitten a large number of articles and publications on the method: in 1989, Forster and Rockart reported more than 200 papers published on the subject, having the concept and uses of FCS being explored and expanded in various ways.

Rockart (1979) used the concept of FCS as the basis for the development of a method of definition of management information. This use has three aspects :

- If a factor is considered critical, it should receive due attention and investment including finance time and effort, in order to guarantee its good performance, thus ensuring the success of the organization.

- If a factor is considered critical and gets the attention and mentioned investments, it should be accompanied by information that make possible their control and consequent corrective and improvements actions.

- Once a critical factor should be closely linked to the organization's business, its executives who are responsible for that should define the factors, their forms of measurement, their performance standard and the necessary information.

According to the definition of Rockart (1979), the critical success factors of an organization are areas that have significant and decisive contribution to its success.

Oakland (1994) considers Critical Success Factors the key factors that the organization must have or need and which together can accomplish a mission. Similarly, Bruno and Leidecker (1984) define FCS as those characteristics, conditions or variables that, if properly sustained, maintained or managed, can have a significant impact on the success of the competitiveness of a company.

Table 1: International publications in the form of articles

Author (a)	Year	Title	Journal / Event
Hardcastle, C;Edwards, P; Akintoye, A and Bing L	2005	Critical success factors for PPP/PFI projects in the UK construction industry: a factor analysis approach	*Public Private Partnerships, Opportunities and Challenges*
Yeoh, William and koronios, Andy	2010	Critical Success Factors for Business Intelligence Systems	Journal of Computer Information Systems
Fiona Fui-Hoon Nah, Janet Lee-Shang Lau, JinghuaKuang	2001	Critical factors for successful implementation of enterprise systems	Business Process Management Journal
Lavagnon A. Ika , AmadouDiallo, Denis Thuillier	2012	Critical success factors for World Bank projects	International Journal of Project Management
Hwang, B. and Lim, E.	2013	Critical Success Factors for Key Project Players and Objectives: Case Study of Singapore	Journal of Construction Engineering and Management

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Source: Author of the presente paper, 2013.

Critical Success Factors in Project Management

Critical success factors (CSF) are used to support and measure the success of a strategic approach and tactics for implementation of projects intended to ensure the success of the project and support the proper allocation of limited resources.

Searching the Critical Success Factors in the área of project management, researches began in the sixties (FORTUNE , WHITE, 2006). However, according to Belasse and Tukel (1996) success factors and failure particularly in projects were introduced by the project manager's experience on the success or failure of the project and the technical performance was used as a measure of success. It was concluded that the previous experience of a project manager has minimal impact on project performance, while previously managed project size affects the manager 's performance.

According to Crawford (2003) Baker's work, Murphy and Fischer (1988), which used a sample of 650 completed aerospace, construction and other projects with information mainly provided by project managers, remains one of the most extensive and authoritative studies on factors that contribute to project success. In the study they present the idea that perception plays an important role in defining success on projects, suggesting that the most appropriate term would be "perceived success of the project." The authors present a list of ten factors which presence would tend to improve the perception of project success, while its absence would help to increase the failure perceived. They are: 1. Project team Commitment to objectives; 2. Accurate initial estimates of costs; 3. Adequate capacity of the project team; 4. Adequate funding for completion of the project; 5. Apropriate planning and control thecniques; 6. Minimum early difficulties; 7. Guidance for task (versus social orientation); 8. Absence of bureaucracy; 9. Project manager presence where it takes place; 10. Success criteria clearly established.

Crawford (2003) conducted a literature review and survey of the critical success factors in projects relating to 13 studies, analyzing how often they were mentioned according to the focus segment of the study and also according to the time that the study was conducted. The table below shows the overall ranking considering the thirteen studies analyzed.

Table 2: Success factors identified in the literature

Fatores de Sucesso
Planning
Monitoring and control, Team selection, technical performance
Communication / Leadership / Strategic Management / Team Development
Monitoring and control / Organizational Support / stakeholders Management (other)
Organizational Structure
Project Definition/ stakeholders Management (customers)

Source: Crawford (2003).

Critical Success Factors in IT Management

The Critical Success Factors (CSF) can be seen as a way to assist managers of IT and business as regards improvements in organizational processes, which effect is much richer if seen within a given context taking into account each of the steps of the execution process (SOMERS and NELSON , 2001).

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Albertin (2002), through literature review and case studies, developed a work to identify the FCS in the computer area also using some matching theories, in order to help executives, either from the computer area or not, identify the situation of the factors in their own organizations and ways to follow and improve these factors. He divided the critical factors into some functions of the organization, according to the the table below that shows these functions and the critical factors considered by Albertin in each of those.

Table 3: Critical success factors per function

FUNCTION	CRITICAL SUCCESS FACTOR
Planning	Top Management Support
	Strategic Alignment
	Prioritization Process
	Estimates Process
Organization	Organizational Structure
	Participation in the Organization
Personnel	Sociopolitical Aspects
	New Technologies
Direction	IT Management
Control	Performance and Quality Control

Source : Adapted from Albertin (2002)

Regarding the critical factors of planning, which are critical to the achievement of the objectives, a strong support from senior management is needed to create an environment where information technology becomes part of the strategy. Its is also neecessary strategic alignment, including the dimensions of business, IT as well as internal and external environments, ensuring long-term upport to IT plan in relation to the organization. The prioritization process is achieved with the integration of senior executives, users and information systems managers. Albertin also defined seven factors affecting priorities: business objectives, business strategies, financial benefits, intangible benefits, process automation, internal controls and technical importance. The process of estimating the necessary efforts to fulfill orders constantly requires historical information, monitoring and subsequent feedback, what will lead to preparation of reliable plans. Regarding the critical factors of the organization a clearly defining function of the organizational structure is highlighted, with attention to the level of responsibilities, duties, communication channels and active participation of all levels. The underlying framework of IT comprises hardware, Operacional software, communication technology, equipments and support required to unable que applications of the business. Analyzing the FCS for the Personal Function it is highlight that technicalities still tend to have more relevance than management aspects, damaging the relationship between IT management with the organization. In this role the two critical factors indicated are related to the domain of technologies used and new technologies, as well as the attention of those involved in information management to the organization's business and its socio-political aspects, not limited to an essentially technical posture. Although the Personal function, considering the use of outsourcing, the new IT area structure now has a totally different proportional distribution, with greater emphasis on strategic area and resource management. With regard to new technologies, this FCS

involves acquisition, assimilation, dissemination and use of new technologies, either through internal or external prospecting.

Regardin the direction function Albertin mentions the centralization of decisions and information, common feature in this function still. The emphasis on training and personal development in IT has been, until recently, very technical. As regards the control function the establishment of performance and quality control of products and activities summarizes the identified FCS. The performance control in the area of the service to the units is focused on dates, time and project completion, in addition to being exercised, mostly only on more operational activities, so satisfaction surveys are not very present .

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Characterization of the Case Study Organization

The Support Service for Micro and Small Companies in Rio Grande do Norte-SEBRAE/RN is an Autonomous Social Service, set up by public deed in the form of private, non-profit associative entity, regulated by statute, independent of the Federal Public Administration. The administration of the Sebrae/RN is performed by an Advisory Board, a Supervisory Board and an Executive Board. The social statute of Sebrae/RN is the legal instrument establishing the principles that guide the institution.

The performance of SEBRAE/RN stems from the formulation of a set of projects and activities structured with the participation of public and private institutions as well as the beneficiaries, aimed at promoting sustainable development, competitiveness and technical and managing development of small business. In line with the country's development model, based on the special attention to small business, income distribution and the promotion of entrepreneurship, SEBRAE/RN develops actions aimed at promoting knowledge, access to financial services, information and technology dissemination as well as business training, strengthening the segment that generates the largest number of jobs in the country. On average 70% of its projects are structured and in accordance with the Oriented Strategic Management for Results – GEOR methodology. GEOR enables the effective participation of the target audience and partners in the construction and implementation of projects, focusing on results, aimed at increasing the capacity to promote the competitiveness and sustainability of micro and small businesses.

The strategic management system reflects the values of GEOR, keeping the peculiarities of each project and its type of service. This system will support the project throughout its duration as well as managers and other stakeholders in its implementation. In recent quantitative research applied to the target audience of a sample of 25 Sebrae/RN service projects satisfaction was rated 8.8, applicability 7.5 and the effectiveness of projects 7.9. The index exceeded the average rate of Brazil, which shows the results of the project in the view of the project public as regards management by project applied in the study institution.

It is worth noting that the data presented on the institution and its processes were obtained through documentary analysis research authorized by the company.

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Methodology

Characterisation of the research

To achieve the overall objective of the study, which is to investigate the critical success factors for information systems that support the project management in the view of Sebrae/RN projects managers, an exploratory and descriptive research was carried out through case study, with mixed approach by using quantitative and qualitative methods. Thus, this research can be classified as qualitative and quantitative, descriptive, explanatory and exploratory through the case study method.

Scope of the study

The research was developed during the year 2013, with quantitative and qualitative approach, through case study in SEBRAE/RN. The primary data collection was conducted through questionnaires applied to 30 project managers, and occurred in view of elucidating the main critical success factors in relation to the support of information systems to projects management and their results. The collection and processing of data was quantified by means of statistical techniques, in order to guarantee the accuracy of the results and statistical generalizations. This approach aligns with the positivist tradition of knowledge building, which through reductionism aims at variables control and the restriction of value judgment possibility, by hypothetical-deductive reasoning (ROESCH, 2005).

 Sebrae / RN was chosen as the unit of analysis because of its importance to society, the relevance of the result of the work for the elucidation of the critical factors, generating higher economic efficiency in the organization, as well as because of the feasibility of conducting the research in the organization due to the fact that the author is part of the work environment of the case study, but did not conduct the research as a participant, being restricted only to the observation, which characterizes case study.

The process of collecting data was through a questionnaire via e-mail containing a presentation text of the research and requesting a form filling.

The form was hosted on Google Drive and respondents had the period of 102 days to fill, that is, from 17/06/2013 to 09/27/2013. The waiting time was 102 days. The extended time was due to the event called PPA - Multi-Year Plan of the institution during this period, so it was extended for almost two months, when managers were involved in programming their activities for the next four years, what led to the need to send the questionnaire for the second time to obtain a larger number of responses.

For the analysis of the suggestions and criticisms of SEBRAE-RN management systems, it was used the ManyEyes software content analysis, free platform created by IBM. The tools Word Cloud Generator and Word Tree were used. Wills (2013) states that by the use of ManyEyes tools it is possible to build complex easy visualization systems. Such views allows the viewer to understand instantly from a prior knowledge of what is being analyzed .

The quantitative approach allowed to analyze the demographic profile of the sample, to investigate the CSFs and to identify possible different opinions of CSFs for

demographic variable . Therefore, it was necessary to use descriptive statistics, graphs and analysis of variance - ANOVA .

The questionnaire was prepared by using the structure of Albertin (2002), which divided the critical factors of information technology management by some organization functions, as showb by the table below, which demonstrates these functions and the critical factors considered by Albertin linked to the questionnaire variables applied to project management.

Table 4: Constructs and research variables

GROUP QUESTIONNAIR	FUNCTION	CRITICAL SUCCESS FACTOR	QUESTIONNAIR VARIABLES
Group 01 Information Systems	Planning	Top management support	Var 01 - Update of Strategic Management System (stimulus)
			ar 02 - Monitor project performance in the Strategic Monitoring System
		Strategic Alignment	Var 03 - Alinhamento do Strategic Management System
		Prioritization Process	Var 04 - Update of Strategic Management System as priority activity
	Organization	Organizational Structure	Var 05 - How quickly the necessary authorizations for projects in the Strategic Management System are
			Var 06 – Access to both Strategic Management and Monitoring Systems
		Participation in the organization	Var 07 - Support for the use of both Strategic Management and Monitoring Systems
	Personell	New technologies	Var 08 - Domain of both Strategic Management and Monitoring Systems functions
	Control	Performance and quality Control	Var 09 - periodic assessment of the use of systems
Group 02 Project management	Planning	Prioritization Process	Var 10 - Dedication and effort in the process design/project planning
			Var 11 - Search of knowledge related to the project
		Top management support	Var 12 - Induces motivation to stakeholders
			Var 13 - Lidership in project
		Strategic Alignment	Var 14 – Alignment of project to the strategies of SEBRAE
		Top management support	Var 15 - Support of leaders
			Var 16 - Support of stakeholders in the implementation of the project

Source: Author's elaboration, 2013.

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Results

The results presented below are derived from quantitative and qualitative research conducted by questionnaire containing 16 closed questions and 02 open questions applied to projects managers in Sebrae/RN in order to identify the Critical Success Factors in support for information systems to support project management.

Analysis of the variables in the questionnaire applied

At this stage of research when we analyze the critical success factors that Rockart (1981) characterized as the limited number of areas where satisfactory results ensure success competitive performance for organizations, it was revealed the quantitative results of the research, and these critical factors are evident. The research instrument consisted of a questionnaire applied to the project managers where 01 - less agreement and 05 - greater agreement.

Analysis of variance between CSFs and demographic profile

ANOVA analysis of variance between the questions of the survey instrument and the issues of demographic profile was performed. The objective of this analysis is to identify significant differences in the assessment of Critical Success Factors of systems for demographic variables related to SEBRAE-RN .

The demographic variables analyzed were: gender, place of work, working time and age. The independent variables correspond to the 16 items assessing the CSFs .

Table 5 shows the result of ANOVA of CSFs and gender. Out of the 16 CSFs only Var03 – Strategic Management System alignment showed significant differences between averages. The average difference by stratum shows that the male audience assessed better the variable by 1 score on the scale from 1 to 5 used in the survey instrument .

Table 5: ANOVA between the critical success factors and gender

Variable	Levene Test	Squares average	df	Teste F	Sig.
Var03–Strategic Management System Alignment	3,736 Sig. 0,063	6,533	29	5,965*	0,021
			strata		Variation
Diferença de médias			Male 3,9	Female 2,9	1

Source: Author's Elaboration.
Note: * significance level at 0,05.

Regarding the service time demographic variable, there were no significant differences in the evaluation of CSFs, being possible to attest that regardless of the respondents service time, the perception of CSFs has remained constant. The Constancy

is the result of a strong spread of the institution's values among its employees and equal treatment to all.

For the local work variable, it presented greater incompatibility of opinions. It is evident the difference of views between strata ranging from 0.8 to 5 variables. Respondents based on the interior responded with greater uniformity the 5 variables. This finding can be attributed to strong performance of the institution in the interior towns of the state, and to its strong work on training, dissemination of values and motivation of these employees, not allowing the distance from the capital and the managers who reside there hinder the institution management and results.

Table 6: ANOVA between the critical success factors and workplace

Variable	Levene Test	Squares average	Df	Teste F	Sig.
Var01 –Strategic Management System update (stimulus)	2,371 Sig. 0,135	4,200	29	5,227*	0,030
			strata		Variation
Average Differences			Interior 3,5	Capital 2,7	0,8
Var04 – Strategic Management System update as priority activity	1,566 Sig. 0,221	5,952	29	6,239*	0,019
			strata		Variation
Average Differences			Interior 4,1	Capital 3,3	0,8
Var09 – periodic assessment on the use of systems	0,033 Sig. 0,856	5,148	29	4,101*	0,05
			strata		Variation
Average Differences			Interior 3,1	Capital 2,3	0,8
Var12 – Induces motivation to project stakeholders	0,264 Sig. 0,611	5,260	29	6,514*	0,016
			strata		Variação
Average Differences			Interior 3,7	Capital 2,9	0,8
Var16 – Support of stakeholders in the implementation of the project	1,095 Sig. 0,304	4,610	29	4,897*	0,035
			strata		Variation
Average Differences			Interior 3,8	Capital 3,0	0,8

Source: Author's Elaboration.
Note: * significance level at 0,05.

About age, divergent opinions were found only in Var05 - Quick necessary authorizations for projects in the Strategic Management System, with a significance of 0.039 . The result is shown in Table 7.

Table 7: ANOVA between the critical success factors and age

| Variable	Levene Test	Squares average	df	F Test	Sig.
Var05 – Quick necessary authorizations for projects in the Strategic Management System	0,412 Sig. 0,667	1,896	29	2,978*	0,039

Source: Author's Elaboration.
Note: * significance level at 0,1.

Figure 1 shows the strata had greater difference. It is noticed that the respondents aged between 20 and 25 years old and the ones above 55 years old rated 5 to Var05, the strata of those who are between 25 and 35 years old evaluated with average 3. Similar averages can be seen in the strata of the aged between 36-45 and between 46 and 55.

Figure 1 Differences per stratum of age.
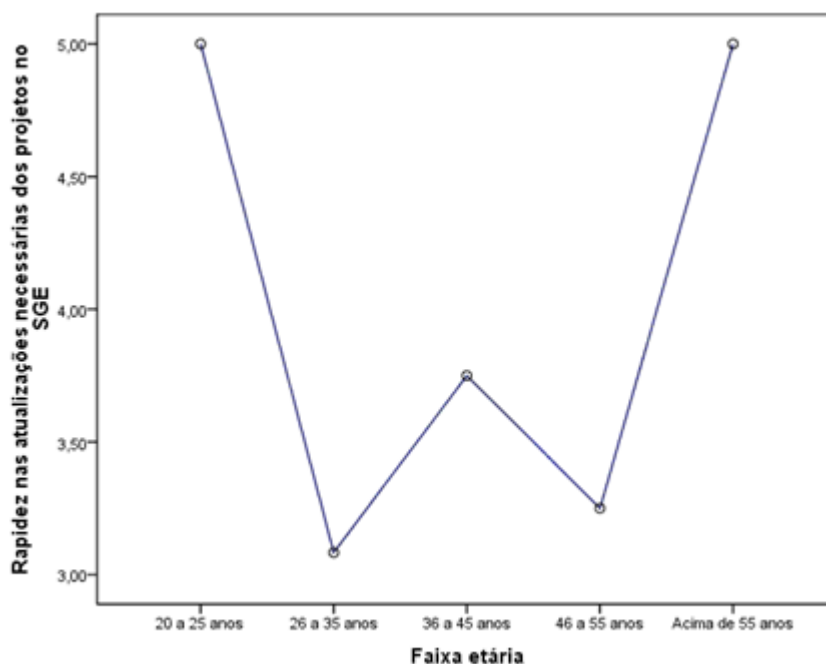
Source : Author's elaboration.

From what is shown in the chart it can be inferred that employees between 20 and 25, who are surely coming in to the institution do not have a very high level of maturity to require authorization to be performed more quickly, as well as respondents over 55 years old, what may be due to the fact that these individuals come from generations when technology and processes were not going at the same speed as nowadays.

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Linear correlation analysis

For quantitative analysis of the data also was used linear correlation study technique, adopting computational applications. The questionnaire was coded to numbers and tabulated in Microsoft Excel 2007. After that, the data were recoded to the software Statistical Package for Social Sciences (SPSS) v. 017, by which was carried out the processing of data. Linear correlation tests were performed using Pearson, which is efficient to identify the degree of relationship between variables in an interdependent relationship and is used to measure the relationship between dimensions through the correlation coefficient "r" ranging between 0 and 1, and 0 - no correlation and 1 - perfect correlation. (Hair et al, 2006; CORRAR; PAULO, SON DIAS, 2007) being established through the frequency table X and Y variables and the number of cases "n".

One of the work 's objectives is to search for the degree of influence that the analyzed factors have on each other, and it was in order to deepen these more meaningful relationships between the factors of each construct that Pearson correlation analysis was performed.

Table 8: Pearson correlations between the variables

	VAR1	VAR2	VAR3	VAR4	VAR5	VAR6	VAR7	VAR8	VAR9	VAR10	VAR11	VAR12	VAR13	VAR14	VAR15	VAR16
VAR1	1	,756**	-0,006	0,339	0,339	0,198	0,169	0,019	,363*	0,096	0,116	,411*	-0,064	-0,035	0,357	,588**
VAR2		1	-0,017	0,141	0,321	0,004	0,121	0,177	0,223	,385*	0,15	0,238	0,019	0,063	,398*	,710**
VAR3			1	0,258	,406*	,418*	0,149	0,144	0,222	0,324	0,042	,553**	,460*	0,229	,628**	0,077
VAR4				1	0,361	0,172	0,15	0,128	,386*	0,327	0,249	,486**	0,193	0,106	0,345	0,304
VAR5					1	,481**	,572**	0,352	,374*	0,185	0,044	,430*	0,341	0	,586**	0,315
VAR6						1	,457*	0,349	0,225	0,114	0,157	0,292	0,348	-0,038	,370*	0,043
VAR7							1	,522**	0,056	0,225	0,124	0,253	0,183	-0,133	,388*	0,112
VAR8								1	0,261	0,35	,605**	0,157	0,292	0,208	0,15	,386*
VAR9									1	0,226	0,189	,609**	,449*	-0,105	0,246	,433*
VAR10										1	0,342	0,193	0,327	0,164	0,237	0,352
VAR11											1	0,262	0,174	,364*	0,027	,395*
VAR12												1	0,302	0,023	,633**	,411*
VAR13													1	0,113	0,257	,413*
VAR14														1	0,115	0,153
VAR15															1	0,337
VAR16																1

Source : Author's elaboration.

Looking at the table it can be seen that the highest correlations which have more significance and coherence can also be observed in the statistical test performed ANOVA. The Var 7, 5 and 6 deal with the support and access systems and their speed are also shown correlated, confirming the observation. The Var 8:07 dealing with the field of features and necessary support also appear correlated. The Var 24:01 dealing with the motivation of stakeholders and system update shows that if the manager make efforts in the system update stakeholders will feel more motivated to monitor the project, as the information will be timely. The Var. 2,15 and 12, which deal with the support of leaders, motivation of stakeholders and performance monitoring shows that once motivated by the leaders of the project monitoring would happen more often, the manager would feel motivated if the leaders also participate in the project monitoring, as well as stakeholders. The Var. 16, 1 and 2, dealing with stakeholder support to project updating and performance demonstrate that stakeholder involvement is also relevant in view of the project manager.

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Conclusion

In relation to the research aims, which is to investigate the critical success factors for information systems that support project management in the view of projects managers in Sebrae/RN, some critical factors were identified, but in summary, the managers find difficulties, propose improvements, identify critical points but evaluate systems more positively than negatively.

Managers signaled towards the need for a periodic evaluation, the Question control was evaluated with low percentage of agreement and this work will contribute already performing a partial evaluation of such systems, top management support is vital for the improvement of control. In relation to this Question we suggest that controls are improved and have an established periodicity, by evaluating users periodically, identifying gaps and motivating users in relation to their improvement in the use of tools. Another point observed was the need for motivation of stakeholders towards greater involvement in the project, this point also will motivate managers regarding the update of project information in the information system, as there will the awareness about stakeholders monitoring also characterizing a control of its use in the system. Among these stakeholders can be inserted into the top management executives, valuing the work of the project manager while devoting time to feed and monitor data in the systems. The updating of information is another factor that, in the manager's view, is weakened due to the volume of activities during project execution, so an alert mechanism for managers in relation to deadlines would be an interesting alternative.

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