

Performance of Information Technology Projects and Best Practices: How do Best Practices Affect the Results? An Exploratory Survey to the Light of Brazilian Experience

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ABSTRACT: This article aims to verify the influence of management practices of Information Technologies in the Performance of Results, like: customer satisfaction, business returns and sales. The research was oriented to Brazilian project management experience. This research is structured in two phases: a) Framework of a conceptual model; and b) Verification of the Conceptual Model. The research was elaborated to the light of the literature and guidance of specialists with technical and scientific knowledge about the object under investigation. The data was extracted through a judgment matrix of scalar type, in which specialists judged the variables that compose the conceptual model. To reduce the subjectivity of the results, the following methods and techniques were applied: Pareto Principle and Student's T test. The results were satisfactory and allowed to validate the research. The influence levels derived from the research allow the managers to improve their efforts in the practices which present more influence in the company results, once there are priorities, by degree of importance, of each of the practices in the results: customer satisfaction, business and sales. We recognized the need of reproducing and replicating the methodological procedures used in this work in other experiences, as well as the need to amplify the scope of specialists, once the study is limited to the Brazilian experience.

KEYWORDS: Project management practices, Information Technologies, Performance of Results.

I. INTRODUCTION

Recently, the relevant changes turned more fluid and dynamic the organizational frontiers as a response to the accelerated rhythm of knowledge diffusion (Abrahamson, 1991[1]; Griliches, 1990[2]; Liebeskind, 1996[3]; Teece, 1986[4]), of international innovation and competition (Chesbrough and Rosenbloom, 2002[5]; Feenstra, 1998[6]; Santos and Eisenhardt, 2005[7]; Christensen, 2003[8]; Damanpour, 1996[9]). This inspires the consideration of how to gain with innovation (Teece et. al., 1997[10]; Tidd et.al., 1997[11]; Teece, 1986[4]; Martin, Horne, Schultz, 1999[12]; Wheelwright and Clark, 1992[13]). Therefore, innovative enterprises use their abilities to appropriate of the economic values generated through their knowledge and innovations (Cockburn and Griliches, 1988[14]; Griliches, 1990[2]; Teece, 1986[4]; Harabi, 1995[15]). This way, the offer of innovational products is used as a quality pattern in the dispute by urgent demands. In this perspective, the organizations try to upgrade the way they perform their activities, especially in the organizations based in information technology (IT) projects. According to Stewart (2008)[16], for strategic reasons, Information Technology (IT) has been even more implemented by organization, aiming to improve the efficiency of projects as well as the control and productivity of inner process. Thus, project management in IT must be done in an efficient and effective way, always focused on the frequent market changes and other inner and external

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factors that may influence negative or positively the development of projects (Stewart, 2008[16]; Uzzafer, 2013[17]; Sudhakar, 2012[18]; McGrew and Bilotta, 2000[19]; Edmonds, 2009[20]).

The development of an IT project involves a diversity of complex events, in a context of uncertainty and risk, which may affect the project flux, frustrating expectations of stability. We must have in mind that the risks may come from many origins and scenarios, provoked by environmental events or from the project itself. The characteristics of a project vary a lot, and are analyzed in different ways. The literature diverges in relation to the conception of a development project of products. The good practice recommends a sequence of articulated actions, which consist on the following phases: (i) planning of needs; (ii) institutionalization and formation of project teams, as well as the establishment of communication procedures (including market test); (iii) consolidation of objectives, results and goals of the project development; (iv) sketch the reference project; (v) study of costs, receipts, cash flow; (vi) study of the social impacts; (vii) analysis, allocation and risk management (preliminary evaluation); and (viii) analysis of basic viability. Of all these elements results the attractiveness of a project of product development, especially its return and stability.

Many times, the projects present inconsistencies between the resources and its implementations, beyond a lack of alignment between the projects and the performance of the companies' implementation capacity and/or with the strategy of the organization. This requires efficient planning and management of the projects, which demands the consideration of management practices which really influence in a satisfactory way the results of business. In other words: which practices have significant effects in the business results? This priority of the practices is not always simple task, since, one way or another, all of them influence the results, in greater or lesser extent. As we said, the IT projects "usually contain a significant quantity of uncertainties, like continuous change of the project scope to accommodate the most recent demands of the market, the imprecise initiative of budget and schedule, as well as the high complexity of the system". This is not always easy to control and accompany (Islam, 2011, p-1[21]). These factors increase the probability of potential risks along the project cycle, causing, among other factors, other problems as schedule delay, economic loss, customers or markets dissatisfaction, as well as the reduction of the capacity of a well-succeeded conclusion for the project. The safer way to avoid or solve these problems is the continuous amelioration of the management plan, wherein one of the most effective ways to make this improvement result in positive effects is when the management practices are mapped, highlighting the failures as well as the best and successful practices and when you understand the influence these practices exercises on the project performance, and the characteristics of this influence. When you know which is this influence, how and when to use it, you can use these practices in a preventive way, before any failure, to assure positive performances as the customer satisfaction, or to contain any problem, avoiding unsuccessful practices, so you can increase the chances of getting to good results.

This study comes from a literature gap about the influence of project management practices in the performance of results, based on the Brazilian experience of IT project management. Little of the reference literature present studies related to this subject. Some approaches are generic about the topic "best practices in project management". The main studies related to the subject are: A model critical success factors for software projects, written by Sudhakar (2012)[18]; Contextualized Project Management Practice: A Cluster Analysis of Practices and Best Practices, by Besner and Hobbs (2013)[22]; Attitudes and leadership competences for Project Success, by Müller and Turner (2010)[23]. It's important to highlight that any of these studies emphasizes the "influence of the main management practices in the performance of information technology projects, like customer satisfaction, business return and sales". Thus, this contribution gains importance once it allows not only to identify the main factors of success and failure in project management, but measures the influence of these practices in view of the three kinds of performance already mentioned, contributing to the field of project management, allowing managers and developers to choose with a larger safety margin which practice to be used or avoided, making possible a decision based on more precise information about the scalar degree of positive or negative impact by this or that success or failure practice.

From this perspective, this article aims to verify the influence of IT project management practices in the performance of results like: customer satisfaction, business return and sales. The research was directed to the experience of project management in Brazil. This article is structured according to the following sections: Theoretical background,

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Framework of a conceptual model and hypothesis, Methodology, Verification of the conceptual model: results and underlying analysis, and Conclusion.

II. RELATED WORK

II.1. INTRODUCTION

This chapter talks about relevant aspects presented in the specialized literature about IT project management, the main management practices mentioned and all the issues related to the subject.

II.2. IT PROJECT MANAGEMENT: PERSPECTIVES AND CHALLENGES – WHAT DOES THE LITERATURE SAY?

II.2.1 GENERAL ASPECTS, DESCRIPTION, PERSPECTIVES AND CHALLENGES

Project management must be understood as the “application of knowledge, abilities, tools and techniques to the project activities aiming to attend to its requirements” (PMBOK ® GUIDE, 2008, p-12[24], own translation). According to the PMBOK ® GUIDE (2008, p-11[24]) “a project is a temporary effort to create an exclusive product, service or result”. To the PMBOK ® GUIDE (2008)[24], the project manager, when developing his activities must: identify the requirements that guide the project; act as an adapter of different needs, expectations and concerns of the stakeholders as the project is planned and realized; balance the conflicting restrictions of the project as, for example, scope, quality, schedule, budget, resources, risk and others.

In fact, the changes in one or more managed element may reflect in significant changes, once the management occurs in an interactive way in which the factors are connected and every modification in the previous factor will possibly affect the following one (or ones) (PMBOK® GUIDE, 2008[24]; Stewart, 2008[16]). In relation to that, the PMBOK ® GUIDE (2008)[24] states that the project management plan is interactive and goes through a progressive elaboration during the project, which will imply in continuous improvement and detailing of an activity plan as there is more detailed, specific and exact information available, which makes the management plan improve continuously. About that, Edmonds (2009)[20] says it's important to adopt a consistent approach in project management to ensure that it has its beginning, middle and end well controlled and organized.

It's reaffirmed that the good practice in project management presupposes the execution of elementary activities that, when adopted by the project manager enables situations like: immediate and appropriate response to the risks along the project cycle, ensuring its viability and continuity; the cost estimation to the project for each stage of its cycle, as well as the cost estimation for the strategic planning, the budget determination and the control of costs aiming to establish a more appropriated distribution of resources to each stage, to make possible the conclusion of the project inside the approved budget; the identification and management of information related to the managed benefits so that, among other advantages and improvements, you have more information available to decision making, as well as better quality of results. Cooper (2005, apud Akroyd and Maguire, 2011, p-213[25]), says that global competition and technological development has substantially shortened the product life cycle, giving more emphasis to the development and succeeded introduction of new products. According to Alpert and Hartshorne (2013)[26], the schedule definition and the necessary stages to complete a project, identification of parts which can help or disturb the progress of the project, discovery and mitigation of the project risks are just some of the benefits that are obtained by the use of a project management approach. Thus, the great challenge is to realize an efficient and effective management.

II.3. IT PROJECT MANAGEMENT AND BEST PRACTICES

To achieve project management with efficiency and effectiveness it's elementary to make a careful analysis of the best practices of success related in the specialized literature to use these practices as a model of efficient management. Project management practice is the effective application of theoretical concepts and other knowledge, techniques, tools, abilities and processes with the aim of having the intended success with the project. The PMBOK ® GUIDE (2008)[24]

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states that good management practices are those who can be applied to most of the projects in most of times and whose value and utility are a general consensus. Good practices are the correct application of appropriate knowledge, processes, abilities, tools and techniques that may have a significant impact in a project success. The inappropriate practice or, in other words, the failure factor of a project is the lack or fail in any project management activity which may generate problems that can jeopardize the success of the project. The Standish Group (1994, apudSudhakar, 2012, p-538[18]) informs that this kind of research is very necessary nowadays, because more than 50% of software projects fail or face big challenges as delays on schedule, increase of costs and bad quality. To Sudhakar (2012, p-538[18]) "big quantities of resources like money, time, hardware, software, human resources may be saved by the increase of the success tax of software projects". The author believes that if a project manager previously knows what the critical factors of success of his project are, he may increase the chances of this project to succeed.

II.4. BEST PRACTICES AND THE PERFORMANCE OF IT PROJECTS

Still according the PMBOK ® GUIDE (2008, p-24[24]) "there isn't an only way to define the ideal structure for a project". So, to trace a board that contains the best management practices is a hard task, once it is necessary to filter the most interesting and prudent reports of specialists from many ones found in the literature. The specialists are unanimous to say that the best management practices have, as result, the success of the project. A team with technical abilities and competences to play an important role, favoring the positive results of a project (Barry and Lang, 2003; Jiang et al. 1996; Keil et al. 2002; Procaccino et al. 2006; Somers e Nelson, 2001; Standish Group International, 1999; apudMcLeod and Macdonell, 2011, p-24:11[27]). About this subject, Shaul e Tauber (2013)[28] inform to have detected, in a modern research, that the "training program" to all the stakeholders is one of the critical factors of success. This is important because the stakeholders can acquire technical knowledge about the implementation of business process and to learn how to explore the system and its functionalities as a whole.

Other theories say that a good interpersonal relationship and good communication are also important to the interaction with the users and to favor the dialogue among different groups of users (Baddooet al. 2006; Fitzgerald et al. 2002; Jiang et al. 1998; Marion e Marion, 1998; Wixom and Watson, 2001; apudMcLeod e Macdonell, 2011, p-24:12[27]). After a criterious study, some of the factors pointed by Nitithamyong and Skibniewski (2011)[29] as success factors are: the support to top management; the presence of a champion; the formation adequacy; the quality of support services of the service provider; the ease of use and reliability of the system; the engagement of the user to the planning; the alignment to the project goals; the data safety; the adequacy of resources; the experience of team members with a computer; the project duration. Nixon, Harrington and Parker (2011, p-214[30]) say that the "style of leadership is na effective tool used by project managers to influence the result of a project".

III. FRAMEWORK OF A CONCEPTUAL MODEL AND HYPOTHESIS

In this section we present the conceptual model (fig. 1) and study hypothesis.

Conceptual Model: traces the correlation between the independent variables and dependent variables. To verify this correlation, we first analyze the influence of each of the 18 practices (independent variables) on each of the three performances (dependent variables). After we extract the average values of influence attributed to the practices, we will test the reliability of the correlation between the variables) through the test T.

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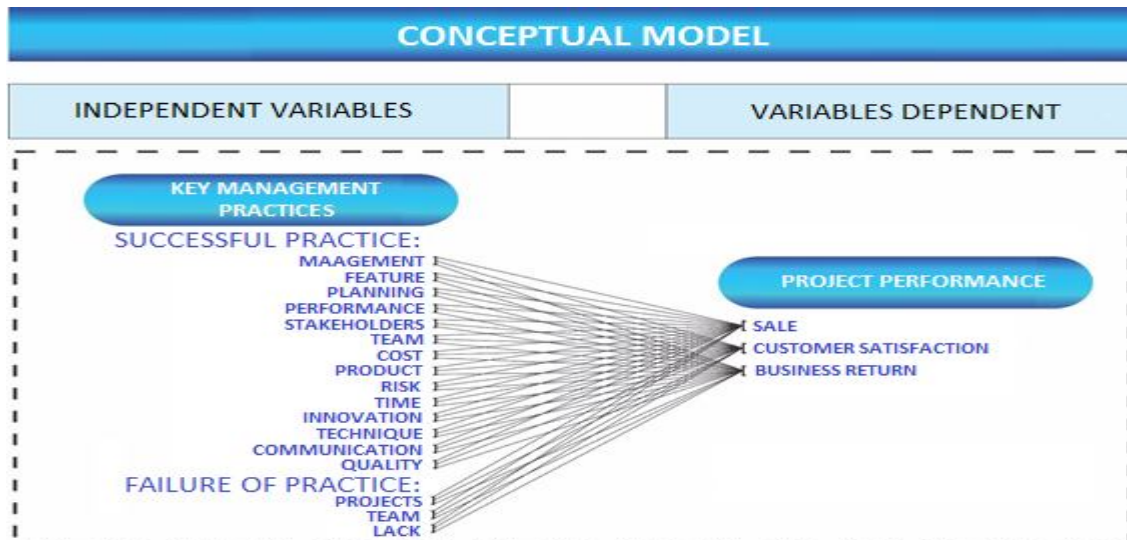


Figure 1: the conceptual model

Independent Variables: The success of an information technology project depends on the adoption of good management practices and the avoidance of failure factors along the cycle of this project. However, as the specialized literature brings reports of the most varied species of good practices and failure factors, it is indispensable to realize the extraction of these practices and the careful grouping of them to establish which are the most important. So, it was possible to establish that the practices that compose the conceptual model of this research in the condition of independent variable are: 1 – intervention of top management; 2 – support to innovative ideas that influence positively the characteristics of the product or performance; 3 – appropriated planning to the project execution; 4 – good performance in terms of time, cost and quality; 5 – importance given to the stakeholders; 6 – creation of multifunctional teams with appropriate communication; 7 – concern to the real cost of the project; 8 – concern to the quality of products and services; 9 – plan of response to risks; 10 – time management; 11 – innovation management and the company's ability of conception; 13 – technical and efficient solution to the problems; 14 – appropriate and high level processes and factors of communication; 15 – quality management; 16 – fails in the project with poor standardization, inappropriate model and disobedience to guidelines; 17 – problems to the project team like lack of experience, inappropriate training, lack of technical and specialized abilities; and 18 – lack of means and positive attitude (for example: lack of information and appropriate tools).

Dependent Variables: The following performances of the project were considered as dependent variables: customer satisfaction, business return and sales.

Hypothesis: The management practices influence in greater or lesser degree the performance of information technology (IT) projects in the perspective of customer satisfaction, business return and sales.

IV. METHODOLOGY

This work is centered on the verification of the influence played by IT project management practices in the performance of the results: customer satisfaction, business return and sales. The model is confirmed to the light of the results with the answers given by the specialists consulted by a judgment matrix of scalar type (Likert scale from 1 to 5, taking 1- Very weak influence; 2 – Weak influence; 3 – Influent; 4 – Strong influence; 5 – Very strong influence). The research was developed based on specialized theories, from which we extracted data to the identification of the variables that compose the conceptual model. In this phase, by the way, after careful bibliographic review it was possible to select 94 papers, published in national and international basis as Emerald and Science Direct; a total of 2.559 success practices and 182 failure practices, from which, after the submission to more specific criteria, resulted in 1.997 success practices and 175 failure practices. After that, considering the high number of variables, we observed the

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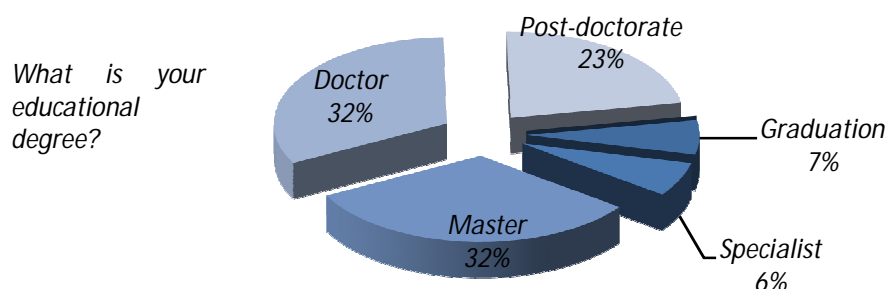
need of a new selection based on cluster and frequency measure techniques, with the aim to define, among the previously identified practices, which were the most related by specialists. The keywords that define every practice were identified by a rigorous filter and manual cluster, aiming to ease and enable the process of selection of the main management practices with more safety. After that, to establish a reliable cut which would result in the choice of the main practices we used the Pareto Principle. It made possible to identify the 15 most frequent success practices and the 3 main failure practices that make the independent variables. The choice of the dependent variables was based on the relevance given to these by the specialized literature. This model was then confirmed (structure and content) by specialists, with technical and scientific knowledge about the subject. This investigation was based on the studies of Besner and Hobbs (2013)[22] and by Sudhakar (2012)[18] which developed researches investigating the contextual varieties in management practices and the critical factors of success of the project, respectively. In this study, to verify the feasibility of the conceptual model, a questionnaire was applied to the following specialists: project managers, managers with emphasis in Information Technology, company managers, production managers and IT analysts. All the professionals were selected based on technical and scientific criteria. The data was collected through interviews, by the application of the questionnaire mentioned above, of the judgment matrix type. The sample basis resulted in the answers of 31 specialists. As we mentioned before, we used the Likert scale from 1 to 5.

V. VERIFICATION OF CONCEPTUAL MODEL: RESULTS AND UNDERLYING ANALYSIS

In this section we presented the results and underlying analysis. We verified and confirmed the relation among the variables (best success practices, worst failure practices and performances of customer satisfaction, business return and sales) through the use of technique Student T test to data analysis, which was the most appropriate for this application, once it was necessary to check if the average of the values given by the specialists, based on the Likert scale from 1 to 5, were between the higher and lower limits of the confidence interval established. This, at its time, would corroborate in a more technical way to the relation among the variables, given more consistence to the results.

However, before we go into the data analysis which confirm the conceptual model, it is necessary to present the technical-scientific qualification, that, according to the graphics Bellow, have specialized knowledge and great experience in the area, which validates their participation on the research and demonstrates the degree of importance of their answers.

Graphic 1 – Level of academic formation of the specialist who answered the judgment matrix questionnaire: 32% of them are doctors; 32% are masters; 23% have a PHD; 7% have a major and 6% are specialists.



Graphic 1: academic titularity of the participants

Most of the interviewers have elevated degree of education (Graphic 1). In fact, to complex activities, like project management, which requires technical domain of many knowledge areas, high qualified professionals is, with no question, fundamental to the assurance of high performance of results.

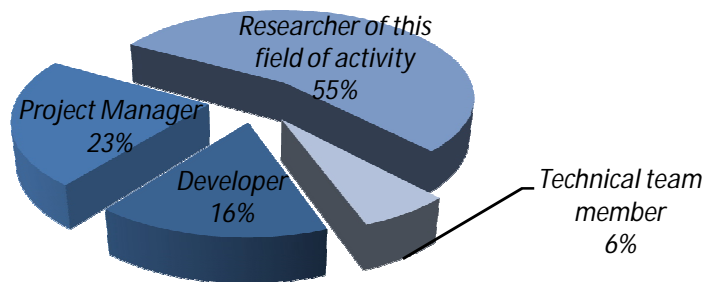
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Graphic 2 –the role played by the interviewed in their daily work practice, in relation to the information technology projects. At the graphic bellow we can see that 55% of the interviewed said to be a researcher of this subject; 23% are project managers; 16% are IT project developers and 6% are technicians of IT projects management teams.

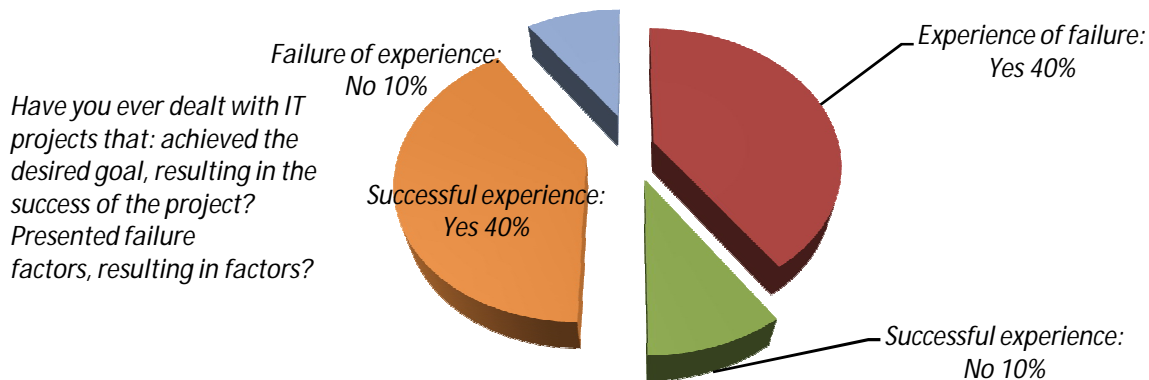
*What is your role
in relation to the
information
tecnhonolgy
projects?*



Graphic 2: the role of the interviewed in relation to the projects

In Graphic 2, the technical-scientific capability of the interviewed becomes even more evident, once we can see that all of them have already dealt with this hive of activity called “project management” in researches or in day by day work activities.

Graphic 3 – verification of the specialists’ experiences with well succeeded and failed projects. In this graphic we can see that 40% of the interviewed have already dealt with succeeded projects and 10% haven’t. Other 40% of the interviewed related to have experience with failed projects and 10% said that have never dealt with unsuccessful projects



Graphic 3: participation in projects which resulted on success or failure

This graphic gives more reliability to the answers given, because most of the interviewed affirm to have dealt to information technology projects which achieved their goals, resulting in success (40% of the interviewed), as well as the IT projects that presented failure factors, resulting in failure (40% of the interviewed). Therefore, the answers presented represent the theoretical and practical knowledge accumulated along the specialists’ experiences with IT project management.

After these considerations, we can start to analyze the data through the judgment matrix. About that, we must say that the following steps were adopted:

Step 1: in a first moment, we applied the method of average extraction of the influence levels (Likert scale from 1 to 5), attributed by the 31 specialists to each of the 18 practices, in relation to each of the 3 performances. According to the

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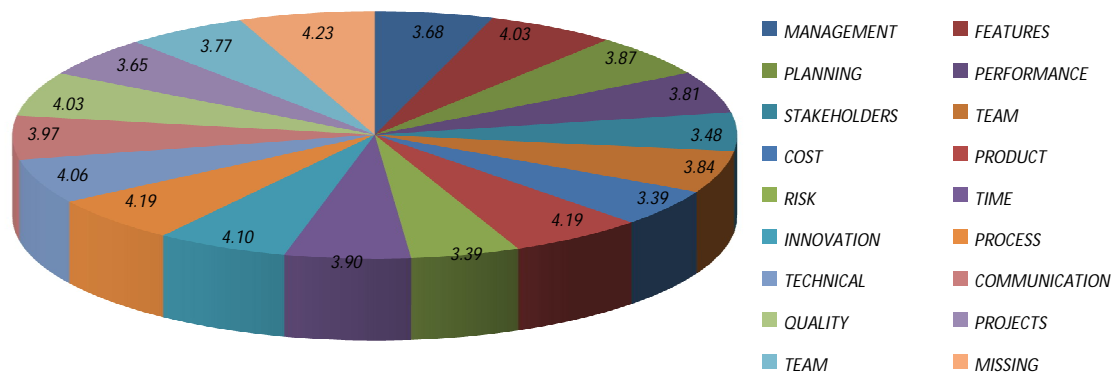
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scale, the influence levels were defined as: 1 – Very weak influence; 2 – Weak influence; 3 – Influent; 4 – Strong influence; 5 – Very strong influence.

According we may see in the graphics bellow, the levels of influence detected of the 18 practices in relation to the 3 performances were:

Graphic 4 – presentation of the averages extracted from the values of influence levels attributed by the specialists to each of the 18 practices in relation to the sales performance. The seven practice with bigger average values are: 1st Problems with the project team (inexperience of members, inappropriate training, and lack of specialized technical abilities); 2nd Effective management processes; 3rd Concern to the quality of products and services; 4th Innovation management and the company's ability of conception; 5th Efficient technical solution to the problems; 6th Quality management; 7th Appropriate and high level processes and factors of communication.



Graphic 4: performance – sales

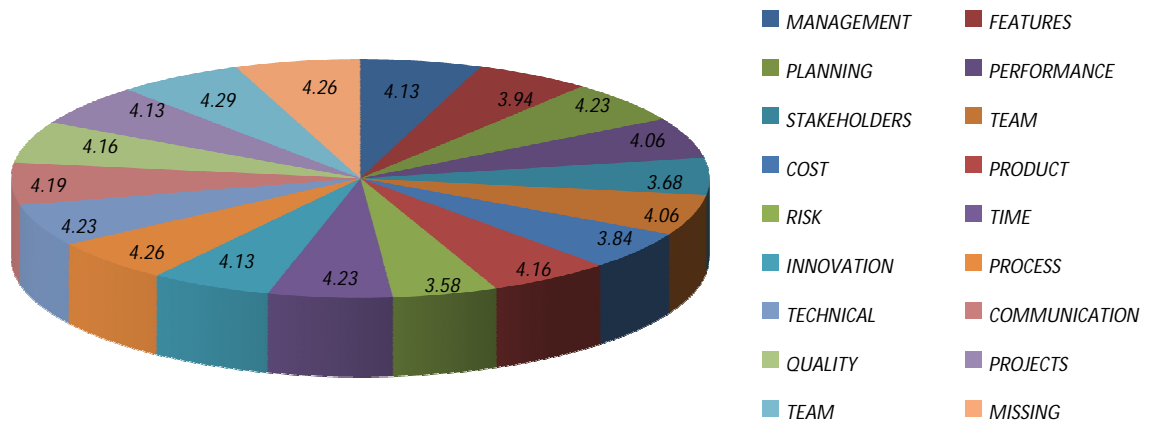
According to the Graphic 4, the practices with a higher level of influence in relation to the performance of sales are: **Lack of means and positive attitude** (example: lack of information, lack of appropriate tools); **Effective management processes**; **Concern to the quality of products and services**; **Innovation management and the company's ability to conception**; **Efficient technical solution to the problems presented**; **Quality management**; **Support to innovative ideas which influence positively the characteristics of the product or the performance**. From that, we can conclude, therefore, that the success of the sales performance is closely connected to the organization's ability to technical vision, because when the company wants positive results, it needs to provide to its team de appropriate means to get good project management, as well as to adopt positive attitudes with logistic support to the project team, allowing the presentation of efficient technical solutions. It is also necessary to support and manage the innovation and the concern to process focused on an effective management which will reflect in the quality of products and services, which may also be a goal for the management.

Graphic 5 – presentation of the average extracted from the values of influence levels attributed by the specialists in relation to each of the 18 practices in relation to the business return performance. The seven practices with bigger average are: 1st Problems with the project team (inexperience of members, inappropriate training, and lack of specialized technical abilities); 2nd Lack of positive means and attitude (example: lack of information of appropriate tools); 3rd Effective management processes; 4th Efficient technical solutions to the problems; 5th Time management; 6th Planning appropriate to the project execution; 7th Appropriate and high level processes and factors of communication.

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Graphic 5: performance - business return

About the business return, it is possible to verify, in the Graphic 5, that the main practices which influence this performance in a higher level are: **Problems in the project team** (examples: lack of experience, inappropriate training, lack of technical and specialized abilities); **Lack of means and positive attitude** (for example: lack of information and appropriate tools); **Effective project management**; **Efficient technical solutions to the problems**; **Time management**; **Planning appropriated to the project execution**; and **Appropriate and high level processes and factors of communication**.

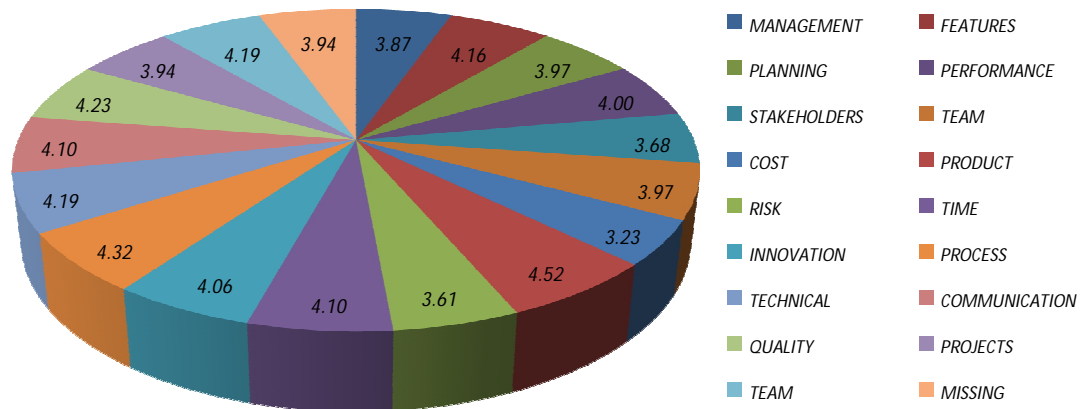
The degree of importance attributed to these practices indicate that, according to specialists, to get the business return that the organizations want, the companies need to pay attention to the team recruitment and training, to solve failures as lack of ability, inexperience and lack of training. It is also necessary to consider the need of means and logistic support to the team members, so they can present efficient and immediate technical solutions to the problems that may appear along the project life cycle. By considering these points, the organization shows to be done an appropriate planning, as well as effective management process of factors like time and communication. This happens because a good team of project management with practical and theoretical knowledge, as well as the necessary resources to the execution of its activities, is able to realize strategic planning and the progressive elaboration of the management plan, making it continuously better, developing a project within the schedule defined and using high level communication.

Graphic 6 – presentation of the media extracted from the values of influence levels attributed by the specialists to each of the 18 practices in relation to the customer satisfaction. The eight practices with bigger average are: 1st Concern to the quality of products and services; 2nd Effective management processes; 3rd Quality management; 4th Problems with the project team (inexperience of members, inappropriate training, and lack of specialized technical abilities); 5th Efficient technical solution to the problems; 6th Support to innovative ideas that influence positively the characteristics of the product and its performance; 7th Appropriate and high level processes and factors of communication; 8th Time management.

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Graphic 6: performance - customer satisfaction

About the customer satisfaction, according to the graphic above, the practices which present a higher level of influence in relation to this performance are: **Concern to the quality of products and services; Effective project management; Quality management; Problems with the project team** (example: lack of experience of members, inappropriate training, lack of specialized technical abilities); **Technical and efficient solution to the problems; Support to innovative ideas that influence positively the characteristics of the product or its performance; Appropriate and high level processes and factors of communication; and Time management.** We can say that, so an IT project can succeed to the customer satisfaction, it's necessary to adopt a mix of the attitudes presented before to the previous performances. So, it is necessary to recruit and train the team more carefully to solve problems. It is also important to see as relevant the need of means and logistic support to the project team members, because it allows them to present efficient and immediate technical solutions to the problems. These concerns must reflect effective management processes of factors like time and communication, once a good project management team with practical and theoretical knowledge and with the necessary resources to the execution of its activities is able to make a strategic planning, as well as the progressive elaboration of the management plan, making it continuously better, developing this project within the schedule and with high level communication. Beyond that, the organizations must support and realize innovation management, because this, according to Lawson and Samson (2001, p. 384, apudSaunila and Ukko, 2014, p-33[31]) allows the continuous transformation of knowledge and ideas in new products, processes and systems to the company's and stakeholders' benefits. All of these practices, together, may guarantee the quality of products and services.

Step 2: after we obtained the average, whose values are exposed in Graphics 4, 5 and 6, we tried to verify the reliability of the relation among the variables (practices x performances). To do so, we used the data analysis technique called Student T test. Therefore, the data presented before were tabulated on Excel and, after that, through this technique, we got to a confidence interval with higher and lower limits or, in other words, within the confidence interval, which technically corroborates the relation among the variable, giving consistence to the results, as we can see in the charts above.

Table 1 – Presentation of the technical analysis of reliability of the correlation between independent variables (18 practices = 15 successful and 3 failed) and the dependent variable of sales performance, traced by test T. On the table bellow we can see that the averages of the influence levels of these practices are between the higher and lower limits and, therefore, within the confidence interval, which, consequently, confirms the correlation between the variables (practices x sales performances).

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SALES PERFORMANCE									
SUCCESS									FAILURE
PRACTICES	AVERAGE	STANDARD DEVIATION	ALFA	SIZE	ERROR	INFERIOR LIMIT	UPPER LIMIT	CONFIDENCE INTERVAL	
MANAGEMENT	3,68	1,045214389	0,05	31	0,383388	3,294031622	4,060807088		
FEATURES	4,03	0,795146568	0,05	31	0,291662	3,740595949	4,323920181		
PLANNING	3,87	1,087564113	0,05	31	0,398922	3,472046005	4,269889479		
PERFORMANCE	3,81	1,108132207	0,05	31	0,406466	3,399985438	4,212917788		
STAKEHOLDERS	3,48	1,121634752	0,05	31	0,411419	3,07245202	3,895289916		
TEAM	3,84	1,240880714	0,05	31	0,455159	3,383550956	4,293868398		
COST	3,39	1,115867954	0,05	31	0,409304	2,977793104	3,796400444		
PRODUCT	4,19	1,013882138	0,05	31	0,371895	3,821653416	4,565443358		
RISK	3,39	1,085584922	0,05	31	0,398196	2,98890101	3,785292538		
TIME	3,90	1,164898814	0,05	31	0,427288	3,475937471	4,330514141		
INNOVATION	4,10	1,011758822	0,05	31	0,371116	3,725658062	4,467890326		
PROCESS	4,19	1,046242637	0,05	31	0,383765	3,809783489	4,577313285		
TECHNICAL	4,06	1,062559296	0,05	31	0,38975	3,674766233	4,454266025		
COMMUNICATION	3,97	1,079625582	0,05	31	0,39601	3,571732074	4,363751796		
QUALITY	4,03	1,110071198	0,05	31	0,407177	3,625080662	4,439435468		
PROJECTS	3,65	1,198565451	0,05	31	0,439637	3,205523933	4,084798647		
TEAM	3,77	1,230438334	0,05	31	0,451328	3,322865123	4,225521973		
MISSING	4,23	0,990275296	0,05	31	0,363236	3,862570541	4,589042363		

Table1: sales performance

Table 2 – Presentation of the technical analysis of reliability of the correlation between independent variables (18 practices = 15 successful and 3 failed) and the dependent variable of business return performance, traced by test T. It was possible to see, on the table below, that the average of the values of influence levels related to these practices are within the higher and lower limits, therefore, within the confidence interval, which confirms the correlation between the variables (practices x business return performance).

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PERFORMANCE BUSINESS RETURN									
SUCCESS								FAILURE	
UPPER LIMIT	INFERIOR LIMIT	ERROR	SIZE	ALFA	STANDARD DEVIATION	AVERAGE	PRACTICES		
4,467100912	3,790963604	0,338069	31	0,05	0,921662826	4,13	MANAGEMENT		
4,202276551	3,668691191	0,266793	31	0,05	0,727346037	3,94	FEATURES		
4,576478235	3,875134669	0,350672	31	0,05	0,956022225	4,23	PLANNING		
4,405142716	3,723889542	0,340627	31	0,05	0,928636415	4,06	PERFORMANCE		
4,094426593	3,260412117	0,417007	31	0,05	1,136869877	3,68	STAKEHOLDERS		
4,430529417	3,698502841	0,366013	31	0,05	0,997847145	4,06	TEAM		
4,181453292	3,495966062	0,342744	31	0,05	0,934407983	3,84	COST		
4,490689106	3,83189154	0,329399	31	0,05	0,89802651	4,16	PRODUCT		
3,94467677	3,216613552	0,364032	31	0,05	0,992444576	3,58	RISK		
4,549892003	3,901720901	0,324086	31	0,05	0,883541262	4,23	TIME		
4,424635933	3,833428583	0,295604	31	0,05	0,805892279	4,13	INNOVATION		
4,59911556	3,917013472	0,341051	31	0,05	0,929793595	4,26	PROCESS		
4,505310588	3,946302316	0,279504	31	0,05	0,762000762	4,23	TECHNICAL		
4,49925696	3,887839814	0,305709	31	0,05	0,833440853	4,19	COMMUNICATION		
4,504033938	3,818546708	0,342744	31	0,05	0,934407983	4,16	QUALITY		
4,467100912	3,790963604	0,338069	31	0,05	0,921662826	4,13	PROJECTS		
4,621036335	3,959608827	0,330714	31	0,05	0,901611461	4,29	TEAM		
4,557074436	3,959054596	0,29901	31	0,05	0,815178587	4,26	MISSING		
CONFIDENCE INTERVAL									

Table 2: performance business return

Table 3 – of the technical analysis of reliability of the correlation between independent variables (18 practices = 15 successful and 3 failed) and the dependent variable of customer satisfaction, traced by test T. On the table bellow, we can see that the averages of the values of influence levels related to the practices mentioned are within the higher and lower limits, therefore, within the confidence interval, which confirms the correlation between the variables (practices x customer satisfaction performance).

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PERFORMANCE CUSTOMER SATISFACTION									
SUCCESS									FAILURE
UPPER LIMIT	INFERIOR LIMIT	ERROR	SIZE	ALFA	STANDARD DEVIATION	AVERAGE	PRACTICES		
4,222051838	3,519883646	0,351084	31	0,05	0,957146296	3,87	MANAGEMENT		
4,462229359	3,860351287	0,300939	31	0,05	0,820437858	4,16	FEATURES		
4,374919338	3,560564532	0,407177	31	0,05	1,110071198	3,97	PLANNING		
4,401812512	3,598187488	0,401813	31	0,05	1,095445115	4,00	PERFORMANCE		
4,105046136	3,249792574	0,427627	31	0,05	1,165821506	3,68	STAKEHOLDERS		
4,363751796	3,571732074	0,39601	31	0,05	1,079625582	3,97	TEAM		
3,589042363	2,862570541	0,363236	31	0,05	0,990275296	3,23	COST		
4,855905114	4,17635295	0,339776	31	0,05	0,926317719	4,52	PRODUCT		
4,043564054	3,182242398	0,430661	31	0,05	1,174093107	3,61	RISK		
4,442878121	3,750670267	0,346104	31	0,05	0,943569065	4,10	TIME		
4,391711551	3,737320707	0,327195	31	0,05	0,892019576	4,06	INNOVATION		
4,66910232	3,97605897	0,346522	31	0,05	0,944707954	4,32	PROCESS		
4,49925696	3,887839814	0,305709	31	0,05	0,833440853	4,19	TECHNICAL		
4,467890326	3,725658062	0,371116	31	0,05	1,011758822	4,10	COMMUNICATION		
4,5634469	3,888166004	0,33764	31	0,05	0,920495425	4,23	QUALITY		
4,313551794	3,557415948	0,378068	31	0,05	1,030711207	3,94	PROJECTS		
4,553181869	3,833914905	0,359633	31	0,05	0,980454141	4,19	TEAM		
4,368823797	3,502143945	0,43334	31	0,05	1,181397022	3,94	MISSING		
CONFIDENCE INTERVAL									

Table 3: performance customer satisfaction

The presentation of the confidence interval eases the comprehension of the results, because it gives them more technical credibility by showing reliability that the averages obtained are between the higher and lower limits.

VI. CONCLUSIONS

This article aimed to verify the influence of Information Technology management project practices in the performance of results like: customer satisfaction, business return and sales. The study was based on the Brazilian experience with

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projects. In fact, the project management practices influence in greater or lesser extent the performance of the results. This confirms our hypothesis that: *The main management practices influence in greater or lesser extent the performance of information technology (IT) projects, in relation to the customer satisfaction, business return and sales.* This study got to many conclusions. In a first moment, we can conclude that, to be more sure about the positive results in relation to the sales, organizations and project managers may realize continuous improvements on the management plan of their projects, focusing on the availability of appropriate resources and logistic support so their teams can conceive an effective project management, which reflects, among other attitudes, in efficient, appropriate and immediate technical solutions to the problems emerged during the project cycle, assuring the viability and continuity of the project towards the success.

About the perspective of success in sales results, the organization must support and manage innovations, because the innovative ideas make possible the appearance of new products, processes and systems that guarantee benefits to the enterprise and the stakeholders. All these positive practices may have as a goal the quality of the product and the service, because this goal will guarantee the success of the sales performance.

About the success of the business return, the organization must see the appropriate recruiting and training as relevant and essential on the process of solving failures like lack of technical abilities, inexperience and lack of training. It is also important to consider the need of providing means and logistic support to the project team members so the team may present efficient and immediate technical solutions to the problems. These concerns must also reflect on an appropriate planning and in effective management processes of factors like time and communication. This happens because a good project management team, with technical and practical knowledge, and with the necessary resources to the execution of its activities, are able to use high level communication and to realize strategic planning, as well as the progressive elaboration of the management plan, making it continuously better and developing the project within the schedule.

To obtain success with the customer satisfaction, it is indispensable the adoption of all the practices related before about the other performances. Thus, the organizations must select their member carefully, and enable them to be appropriately trained, with the aim of reducing failures, as well as to provide means and logistic support to allow the presentation of immediate and efficient technical solutions to the problems. These concerns may reflect in efficient management processes factors as time and communication, and in support to innovation management, so all these practices may assure the quality of products and services which, in the end, will result on the customer satisfaction.

It is important to highlight that the specialists interviewed unanimously stated that the adoption of practices of success and the refuse to failure practices, described on the judgment matrix which composed the questionnaire, influence positively in the performance of a project. This affirmation accompanies the results exposed in the graphics and corroborates the hypothesis considered, consequently, validating this research. We conclude that this study is relevant, because it talks about a very important subject that was not yet explored by other authors, and there aren't, by the way, any studies specifically about the "influence of the main practices of information technology management project like customer satisfaction, return of business and sales". So, this research fulfills a gap in the literature.

We expect that this study, by highlighting the level of influence exercised by IT management project practices in relation to the performance of sales, business return and customer satisfaction may contribute to the development and improvement of management processes, taking into consideration that they provide innovative information able to help positively and significantly to the developers of this kind of activity, increasing the chances of positive results. We reinforce, nonetheless, that the field research is limited to the Brazilian experience, and we recognize that it is necessary to expand the study to other experiences, as well as amplify the sample to other specialists with theoretical and scientific knowledge about this relevant subject to the practice and to the theory.

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