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Best Practices in It Project Management: A Survey In The Light Of the Brazilian Experience

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ABSTRACT: Recently, relevant changes have made organizational boundaries more fluid and dynamic in response to the rapid pace of knowledge diffusion, and innovation and international competition. This helps to reconsider how to succeed with the information and innovation. Information Technology (IT) is increasingly being implemented for strategic reasons, so as to enable improved efficiency and to improve the control and productivity of internal processes. In this perspective, this study aims to identify which management practices projects described in the literature, can be considered as best practices in managing IT projects in the Brazilian context. The literature review enabled the identification of management practices for IT projects and the survey with professional judgment matrix applied to the Brazilian context allowed us to identify, among these, the best practices in the light of the Brazilian experience.

KEYWORDS: Practices, Project Management, IT Experience, Brazilian.

I. INTRODUCTION

Recently, relevant changes have made organizational boundaries more fluid and dynamic in response to the rapid pace of knowledge diffusion [1, 19, 44], and innovation and international competition [9, 12, 13, 14]. This helps to reconsider how to succeed with the information and innovation [29, 44, 45, 46, 52]. A significant numbers of organizations are investing large amounts of resources into information and communication technologies as they seek to gain competitive advantage. Information Technology (IT) is increasingly being implemented for strategic reasons, so as to enable improved efficiency and to improve the control and productivity of internal processes [41].

In fact, with the constant expansion of the information technology use, the challenge is to better manage IT projects in order to maximize its development and benefits [33]. And part of this challenge can be solved with the use of practices to perform the correct job well [12, 33] mainly because the vast majority of IT projects are not completed, or, many IT projects fail because they were not properly managed [12, 42, 51]. Project management (GP) has clearly been used to achieve good results in the projects. It is crucial for the implementation and success of any project [4, 36]. Further, project managers have a responsibility to use practices to ensure project success [12, 27, 48]. And, to achieve best practice the project manager must balance its capacity in terms of knowledge, skills and personal characteristics [4].

Although, there is no global conception for project management, an unified theory [18, 32]. However, the basis of the project management theory includes, as it is the case on many management theories, a collection of best practices, are drawn largely from a big project study in the North American engineering [18]. Practice in project management can be

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2014

understood as an action that generates results to the project, using for this purpose, techniques (systematic procedure / method) and tools (artifacts that support the use of the technique, something tangible) [16, 32]. In this sense, the identification of the best practices in project management that can lead to successful IT projects. It is an important step to ensure the highest return on organizations investment, and develop greater skills in managing IT projects.

Due to this fact, what are the best practices in project management that could be adopted in the IT projects management? Project management does not depend on a particular methodology [12, 32]. It can be said that no specific practices depend on project management. Many companies have their own methodology, its own project management practices. Therefore, it is necessary and important to identify which project management practices are described in the literature, and reflecting how project managers use different management techniques, and experiences using "real world" in the field of IT project management, which can be considered as best practices in managing IT projects. When a project adopts these best practice forms, it can achieve a high degree of technical control, which in turn facilitates management [7]. Further, this work aims to identify best practices in managing IT projects in the context of the Brazilian experience, it was taken from project management practices found in the literature and used in managing successful projects. To achieve this goal, there was used the literature search and survey with Brazilian experts, which indicated, among the practices identified in the literature, the best practices for managing IT projects.

II. THEORETICAL BACKGROUND

Project Management

The Project Management Institute - PMI [32] defines project management as the application of knowledge, skills, tools and techniques to project activities in order to meet their requirements. Managing a project comprises defining goals and objectives through the planning and actions control, activities, and tasks necessary to complete a project successfully [16, 49, 51, 53]. It includes identifying project requirements, to adapt to different needs, concerns and expectations of stakeholders as the project is planned and conducted, and balancing the conflicting constraints such as scope, quality, schedule, budget, resources and risks [32]. Therefore, according to the studies conducted so far, the knowledge areas involved in managing projects are nine: integration, scope, time, cost, quality, human resources, communication, risk, acquisition and the interested parts, including 47 cases of project management involved in these areas [32]. In reference to a project management process, o PMBOK [32] defines five groups: Beginning, Planning, Execution, Monitoring and Control, and Closure. Managing a project, after all, is to act in order to achieve the proposed objectives within defined success criteria, following a previous planning time (schedule) and cost (budget) [27, 53]. Therefore, many companies are adopting the structure of projects in their day to day. In various sectors, the approach to project management is gaining ground by allowing a better use of resources to achieve clearly defined objectives for the organization.

Management of IT Projects

To identify the basic aspects of a typical IT project compared to projects in other areas, it is the first step to understand how to manage it [12, 48]. Mainly because IT companies have multiple projects going on simultaneously, and are structurally related, in other words, it is very common that the initiation and success of a project depend on the result of another project [12]. Besides what is common to all projects, IT projects have some peculiarities features demands to a project manager even greater technical skill and interpersonal leadership. Among them one can mention: intangibility of much deliverables (especially software projects); difficulty to identify the requirements and track progress; estimates of time measured in man / hours [12]. And yet, a minimum level of technical knowledge by the IT project manager [27]. Without technical knowledge, to ensure proper planning and acceptable progress of each action becomes a much more complex activity [12, 27]. To identify the best practices for managing IT projects currently used is essential to understand what practices project management are, from what we know about project management, and about the practical term, through the literature review to check existing practices.

Practices in project management

Among the practices of project management, the PMBOK Guide [32] describes the body of knowledge in project management, and it is considered as a basic reference in this area being "widely recognized" as the best practice, which means that their knowledge and practices "are applicable to most projects in most of the time and that there is a

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2014

consensus about their value and utility." This does not mean that the knowledge described should always be applied uniformly in all cases, that is, the organization or the project management team will determine what is appropriate or not, for a specific project [32].

Definition of "Practice"

According to [16], practice in project management is understood "as an activity consisting of three elements: action itself (something that generates result), using one or more techniques (systematic procedure / method) and tools (artifacts that support the use of the technique, something tangible). " The best practice is a proven process that delivers measurable improvements in efficiency and / or effectiveness. Organizations / companies seek the best practices to help them accelerate their progress toward performance improvement, and to guide them around the pitfalls that could slow or even halt their initiatives [26]. In accordance to [16], who made a literature review to find the best definition for the term "practice" in project management, not only presented by PMBOK, the term "practice" is a twofold definition. The first one is given by dictionaries, where "the term relates to the frequency of execution on a particular activity, when it is practical, the frequency is high, defining it as a synonymous of expecialization, experience". The other definition is adopted by the [32], and Spoonhower Huttenlocher and Cambridge Dictionary, cited by [16], where the term is defined as "an action or way of working, regardless of the degree of specialization ". According to studies done, the definitions analysis, also by [16], and considering the objective of this research it has focused on managing projects, proposed by [32], this definition is the most appropriate for this work: "Practice is a specific type of professional or management activity that contributes to the execution of a process and that may employ one or more techniques and tools."

In accord to [16] analyzes, about the definition of "practice" in project management, it was understood as the "action" itself, which generates income for the project, and still perceives the existence of two new terms "Technical" and "tool", which are defined by [32] as follows:

"Technique (technique) is a defined systematic procedure, used by a human resource to perform an activity in order to produce a product or result or provide a service, which can employ one or more tools."

"Tool (Tool) is something tangible, like a model or a software program, used in carrying out an activity to produce a product or result."

This relationship has been adequately characterized by [16] as a theoretical model according to Figure 1:

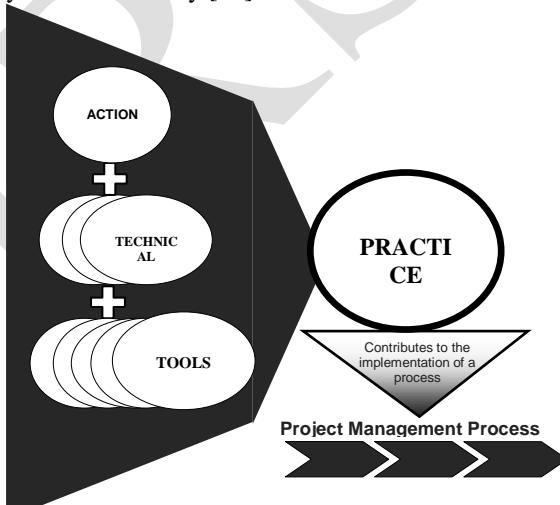


Figure 1 - Theoretical Model. Source: [16]

"Traditional" Practices

The "guides knowledge", better known as "Boks - Body of Knowledge" in project management, developed from the consolidation of associations such as PMI - Project Management Institute and others who work in the standardization and dissemination of knowledge and practices project management are labeled by theorists with the traditional project management theory and present a set of practices, techniques, and tools summarized in standards that can be used in most projects [16]. Moreover, traditional methods require a lot of discipline in planning, with careful monitoring of the

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2014

various project life phases cycle, which often prevents changes in planning. For instance, this is because traditional methodologies consider projects that are controllable, predictable structures, with limits (beginning, middle and end) clearly defined, which facilitates detailed planning, and the fulfillment of that plan until the end without many changes [38]. Thus, the practices listed in the [32] can be considered as the "traditional practices" project management.

"Agile" Practices

In order to increase the agility of project management using visual, interactive and simplified practices, the approach of Agile Project Management has emerged, Agile Project Management - - APM [8, 10, 21]. The new approaches of agile project management, also known as "Agile methodologies" seek for better conditions to manage projects in dynamic environments, with many uncertainties, subject to the occurrence of changes, which in most cases are considered beneficial and should occur" [16], in IT projects, due to their characteristics, especially software development projects, it falls in properly [8, 21]; [16].

Agile methodologies have emerged from a contemporary movement, where project management is based on a set of principles approach, whose goal is to run a project in a dynamic, flexible, adaptive, simple, iterative and agile valuing constant changes and active client participation during project execution" [5, 10, 15, 24, 37, 38, 39, 47]; [16]. As a result, over time, new project management practices have been proposed and characterized as agile practices [16].

Practices in the Management of IT Projects

From the studies conducted to identify a set of practices, many described actions, techniques or tools used in project management in general, and also in project management in IT. In his research on practices of project management scope and time from the perspectives of agile and traditional approaches, [16] presented an inventory of practices, grouped into actions, techniques and tools, according to his definition of practice in project management cited earlier on this work. This inventory was developed as a result of his research, using research methods such as systematic literature review and case studies. From the observation of practices in the management of IT projects found in an initial review of the literature [27, 34], it can be stated that the inventory practices proposed by [16] becomes a northern interesting to identify best practices in the IT projects management.

Where as, by observing, beyond common to all projects characteristics, peculiarities more than IT projects have, they were previously reported as the difficulty in measuring results, especially in software projects and difficulty in identifying requirements and monitor project progress and time estimates, one can say that most of the practices described refers to the process improvement, mainly software process such as RUP methodologies - Rational Unified Process [34, 50], CMMI - Capability Maturity Model Integration [27, 34], Metrics for Software Process, among others. Another example, in [6], can be verified using the Microsoft Office Project tool assisting in making appropriate decision with regard to time, cost and quality of the project.

After all, from the practices identified one can assemble the array of judgment that will be used to pinpoint the best practices for managing IT projects.

III. METHODOLOGY

In line with the objective of this study, the survey can be classified as exploratory, with a quantitative and qualitative approach. It was used in the first instance, the literature search to identify the management practices of IT projects, and the survey to indicate the best practices, and finally, to interpret and quantify the information collected. To identify practices of project management, it was used in addition to the literature found mainly about the inventory practices proposed by [16]. In the research by [16], a systematic literature review aimed to "identify and analyze studies that present practices, techniques and tools qualify as" agile "and" traditional "facing the project management" was held. Besides, this research made it possible to understand the term practice in project management, and which path to follow to identify best practices for managing IT projects.

In order to refine the research, it was done a checking data between the data practices described in the inventory of practices [16], and practices described from a simple literature review applied to IT projects, to see which of these practices can reproduce success with IT projects, which are considered "best practices". From the definition of the term "practice" found in the [32], and yet, what was observed in the literature, the practices presented in matrix judgement were divided in actions, techniques and tools, which were used together form the set of practices in project management.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2014

Most actions, techniques and tools embedded in the questionnaire were removed from inventory management practices proposed by [16] projects, and the inventory results of a systematic literature review on practices of project management scope and time the perspectives of "agile" and "traditional" approaches. In addition, practices found in the literature review on best practices in managing IT projects were entered.

In the figure below the percentage of shares can be checked with the graphs, techniques and tools qualify as "agile", "traditional", or both, on the practices identified in the research.

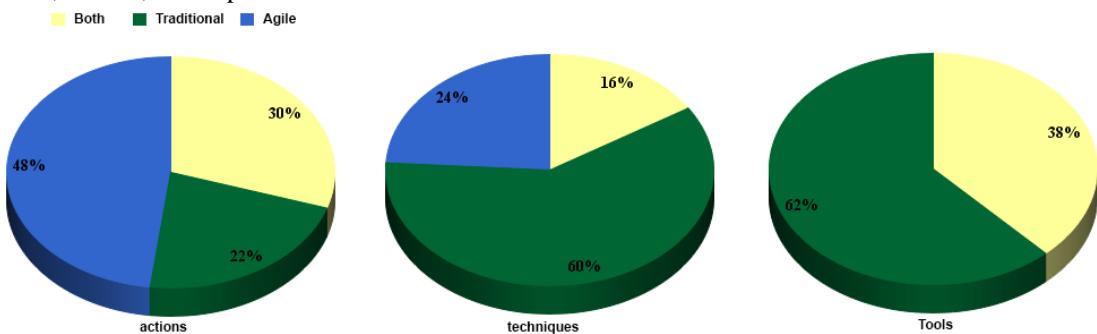


Figure 2 - Percentage of Practices for Managing Projects in approaches "Agile" and "Traditional".

After identifying the literature on project management practices applied to IT projects, data collection with a questionnaire with the judgment matrix together with experts in project management was carried out. This questionnaire was made available in an online form, which could be accessed through a link sent via email to approximately 50 experts. The questionnaire was divided into two parts. The first part, it was investigated the profile of the specialist, in order to validate the information collected in the questionnaire. In the second part, an array of trial where the expert could indicate the practical management of IT projects are being used in the workplace and even may add practices that were not presented in the matrix given.

In the survey, the practices were grouped into actions, technical and project management derived from the literature agile and traditional tools, each one briefly described as to help in the understanding of its meaning and importance in the management of IT projects. In the tables available in the expert judgment matrix could indicate the degree of "best practice" between practices presented, with minimum degree 1 and the maximum degree 5 depending on the opinion and experience on the subject. The practices identified are presented in accordance to the following tables:

Actions to manage projects		
Approach	Action	Description
Agile	Ask for a Time Commitment	Each new story is asked for the team if it can be delivered in this iteration.
Tradit.	Collect requirements	To define and document the roles and design and product functionality necessary to meet the needs and expectations of stakeholders process.
Tradit.	Controlling Scope	Process of monitoring the progress of the project scope and the product and managing changes in the scope baseline.
Both	Controlling the project plan	Project progress and monitoring process atualization of your a
Agile	Scope change control	Evaluation of the factors that create scope changes, to ensure the pre-established goals process.
Agile	Project opening term	It is a short document that describes what will be done, and what results the company will get when the project is completed.
Agile	Creating the Vision	Creating the Vision of the development.
Both	Identify the work required	Process of identifying the total work required for the project by identifying

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2014

	for the project (product, delivery, etc.)	elements such as product design, components, modules, activities deliveries, etc. ..
Agile	Customer Focus Groups	Meetings are ongoing to demonstrate versions of the final product to the client team in order to obtain periodic feedback on how the product meets customer requirements.
Agil	Daily Scrum	Daily follow-up meeting of 15min.
Both	State the problem / opportunity	State the problems and opportunities from the project.
Tradit.	Defin the activities	Identifying the process specific actions to be undertaken to produce the project deliverables.
Both	To define Project Scope	Detailed development description of the project and product process.
Both	To define the objectives of the project	To describe the objectives of the project.
Tradit.	Develop schedule / Estimating durations of activities and resources.	Activities sequences analysis, durations, resource and schedule constraints necessary to the process.
Agile	Determine Target Velocity/ Estimating Velocity	Determine Target Velocity/ time during a iteration.
Agile	Identify and measure gaps	To create margin wrapped error functionalities estimates to be delivered.
Tradit.	To finalize project plan	Develop work plans for phases of project analysis and cost estimates.
Agile	To prioritize requirements	To do a list in the order of priority for each resource.
Agile	To prioritize necessary work	To prioritize requirements of Backlog Product.
Agile	To measure complexity	It is a relative measure of an artifact size
Both	To estimate costs	Project cost analyses.
Both	To control costs	Monitor cost performance to detect and understand the variations in relation to the cost baseline.

Table 1 - Actions to manage project - Adapted from [16]

Techniques to manage project		
Approach	Technique	Description
Tradit.	Setting advancing and waitings	Used to adjust late project activities to the plan.
Tradit.	Alternatives analyses	Choosing an alternative methodology for the activities cronogram execution.
Tradit.	Product analyses	Breakdown product, systems analysis, requirements analysis, software engineering, value engineering and value analysis.
Tradit.	Decision tree	Provides a simple method to systematize a class of facts, combined probability and opportunities.
Both	Balanced Score card	Balanced framework of indicators, complements traditional financial measures with criteria that measure the business performance from three other perspectives: customer, internal processes and innovation and learning.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2014

Agile	Case points estimates	Estimate based on the number of cases.
Tradit.	Critical Path Method	Method used to predict the duration of the project, determining the critical path.
Tradit.	Group dynamics	A moderator leads the meeting between stakeholders and experts.
Tradit.	Duration and Total Work Effort	Divide the total hours of effort for the duration of the task, resulting in the percentage spent on the project.
Tradit.	Interview	Direct approach by asking questions
Tradit.	Model /Template	Pattern of activities or a part of the list from a previous project list.
Tradit.	Resource Leveling	Used to optimize the distribution of tasks among the resources.
Agile	Product Backlog	List of functional and non-functional requirements of the project.
Both	Meeting	Ato ou efeito de reunir.
Tradit.	Simulation	Using Simulation Models, risk estimatives etc..
Tradit.	Stoplight Reports	Use of adhesives (green, yellow and red) in the reports to indicate the status of the project.
Ágil	SCRUM	Agile scrum practices.
Both	WBS	Subdividing project deliverables and project work into smaller components and more manageable process.
Both	Measuring the Software Process	
Agile	Process Tailoring	Adaptation process
Agile	Features Cards	The members record cards information gathered from discussions of requirements.
Tradit.	Especialized Opinion / Wokshop	Technical reviews of the project team members or other experts, who have experience and skill in the development of detailed statements of the scope of projects.
Tradit.	Program Evaluation and Review Technique	Technique used to calculate the duration of a project when there is uncertainty.
Agile	Change Control system costs	Track changes in costs.
Tradit.	Analysis of performance measurement	Planned value (PV). Value added (VA). Actual cost (AC). Estimate to complete (ETC) and estimate at completion (EAC). Cost variation (CV). Schedule variance (VP). Cost Performance Index (CPI). Cumulative CPI (IDCC). Performance Index (SPI).

Table 2 - Techniques to manage project - Adapted from [16]

Tools to manage projects		
Approach	Tools	Description
Both	Meeting ata	Written record that describes what happened.
Tradit..	Database	Electronic data repository using the search information.
Both	Card / Wall Autoadesivos	Card for writing

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2014

Both	Checklist	Checklist of activities already made or yet to be made.
Tradit.	Contract	Document of agreement between two or more parties.
Both	Email	Electronic message
Tradit.	Gantt	Chart Visual Planning, communication and control of project progress.
Tradit.	Quality Manual	The quality manual is a document that describes the quality system of the organization in its entirety, explaining the scope of the system, possible exclusions, documented procedures established for the system and the interaction between the processes of quality management.
Both	Models / Prototype / Template	What is the reference or that is given to be played.
Both	Table / Wall	Any surface, limited, mobile or fixed, where information, graphics, bright points, etc., for information.
Tradit.	Report	Exposure of what we saw, heard or observed
Both	Software project management	Ex. MS Project, Open Project, etc
Both	Framework	A framework is a collection of various pieces of the Project functionality management.

Table 3 - Tools to manage project - Adapted from [16]

IV. ANALYSIS AND RESULTS

From the responses collected from the survey questionnaire, the consolidated information extracted from the trials of practice (second part) matrix will be used as samples for statistical purposes, and data concerning the professional profile turn (first part) will be analyzed only for the purpose of the information validation contained in the judgment matrix. In the first part of the questionnaire, as previously mentioned, information on the profile of the specialist were collected, such as: industry it serves, working institution, graduation level, area of expertise, knowledge and experience in GP. In Figures 3 and 4, one can observe the results as the first part of the questionnaire. From these results it was possible to enforce the judgment of each one experts as to the practices identified by owning the rightness to the research profile.

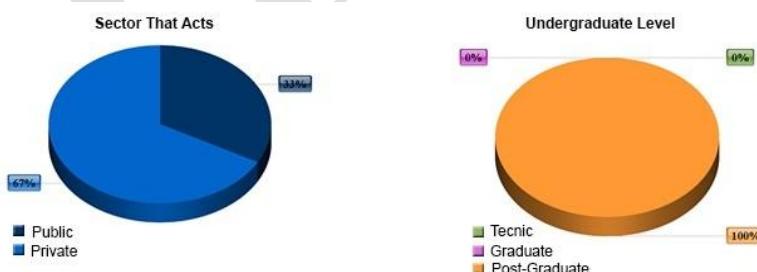


Figure 3 - Analysis of Profile of Project Managers (market segment and level of graduation)

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2014



Figure 4 - Analysis of Profile of Project Managers (Area, knowledge, experience)

Looking at the charts one realizes that most of the research participants specialists works in the private sector, consulting and project management, having minimum experience of two years in the area of project management, with the majority having more than four years of experience. Regarding the graduation level, all are post-graduates, possessing expertise in both traditional and agile management projects, as well as certification in GP. With regard to the practices identified and presented in the trial, where each expert judged each practice from 1 to 5, as the best practice for the management of IT projects, the statistical matrix with the samples average results were made for each practice a ranking of the best practices, in the end it was presented according to the opinion and experience of the experts consulted. To extract the information and prepare the ranking of the best management practices for IT projects, it was used the measures of position, according to [40], it constitutes a more concise way of presenting the results contained in the observed data, the average arithmetic widely used for being popular and understandable in addition to the simplicity of the calculation. Further, the statistical averaging for each practice was done, grouped into technical actions and tools, as the results in Figures 5 and 6, and the average trial practices judged from 3-5 considered the best practices in accordance to the experience and the experts participant judgment.

When analyzing the results it appears that the management of IT projects that reproduce successful tools are mainly found in the traditional approach being used - PMBOK - together with the techniques used in the two approaches, to perform actions also found in the two approaches, agile and traditional . One can also observe that in the management of IT projects, actions are performed, prioritizing activities that ensure fasteners and objectivity to the process, with techniques that focus primarily on managing scope and requirements, and time changes, with tools that assist in the control of activities and resources, and the use of successful models.This can be justified due to the inherent characteristics of IT projects, which were already mentioned in this research, as the most deliverables intangibility of the project, difficulty of identifying requirements, difficulty in tracking progress and estimate time [12], in other words, practices that are deemed higher up in the ranking of the best practices presented in the graphs.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2014

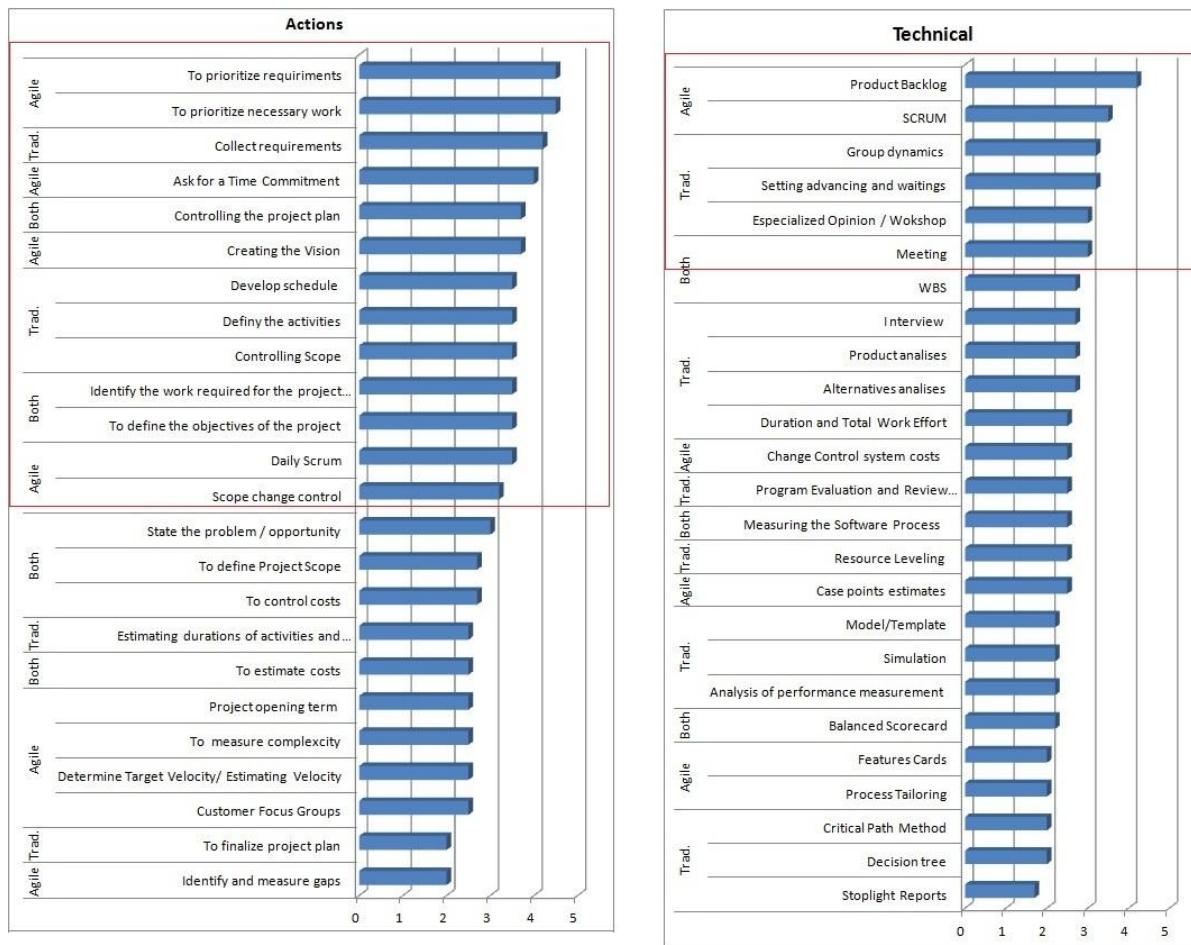


Figure 5 - Ranking of actions and Ranking of technical

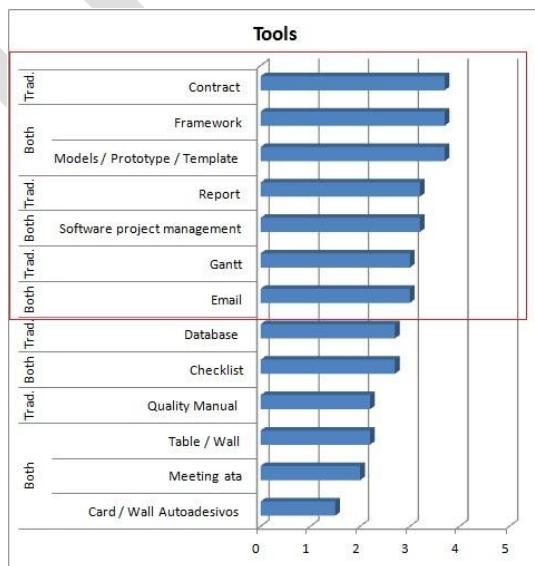


Figure 6 - Ranking of tools to manage IT projects

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2014

V. CONCLUSION

The objective of this study was to identify which management practices projects described in the literature, can be considered as best practices in managing IT projects in the Brazilian context. The study strived to fill a gap in the existing literature about project management. By analyzing the data collected, it was realized that the method adopted was adequate to achieve the objectives proposed in the research. Further, the study shows it is relevant because it allowed identifying the best practices for managing IT in the light of the Brazilian experience. Furthermore, it is concluded that the Matrix applies judgment can also be adapted and applied to identify best practices in project management from other areas. When analyzing the results obtained by judgment matrix as a tool for data collection, it was revealed by the averages of each practice, that there is still no general consensus among project managers on best practices in project management IT.

Of the findings of the state of the art and state of practice, it is reasonable to state that this research is vulnerable to criticism. This study includes several limitations. The percentage below the average of responses obtained on the data, it is concluded y that there is still a need to continue to collect data to obtain a more accurate result as the identification of the best practices with regard to the managers experience projects in Brazil. Another observation is that, in the management of IT projects still no role model, or practices defined to be used. What exists is the junction of traditional approaches to project management, with new approaches, focused primarily in the management of IT projects, due to its particularities. The perspective is that one can be on track to discover the best practices to be used, however, it is believed that this road is still long, and that it should also dispense too much time on studies and research to perhaps arrive at a model that for sure plays more success role on IT projects. This work, as described in its objective, set out to identify best practices in managing IT projects in the light of the Brazilian experience. For instance, it is proposed as a recommendation to study how these practices are performed on each project, in other words, how each tool and technique is used in IT projects, in actions that reproduce the project successfully.

REFERENCES

- [1] Abrahamson, E. 1991. Managerial fad and fashion: the diffusion and rejection of innovations. *Academy of Management Review*. 16, 586-612.
- [2] Ahern, T., & Leavy, B., Byrne, P.J (2013). Complex Project Management as Complex Problem Solving: a distributed knowledge management perspective. Elsevier: Ireland.
- [3] Ali, U., Kidd, C. (2013). Barriers to effective configuration management application in a Project context: an empirical investigation. Elsevier: *International Journal of Project Management*, Vol.32, N.3, pp. 508-518.
- [4] Alias, Z., Baharum, Z. A., & Idris, M. F. (2012). Project Management towards Best Practice. *Procedia – Elsevier: Social and Behavioral Sciences*, 68(November), 108–120. doi:10.1016/j.sbspro.2012.12.211
- [5] Amaral, D.C., & Conforto, EC, Benassi, JLC, Araújo, C (2011). Gerenciamento Ágil de Projetos – aplicação em produtos inovadores. Saraiva: São Paulo.
- [6] Anuar, N. I., & Ng, P. K. (2011). The Role of Time , Cost and Quality in Project Management, 630–634.
- [7] Ashman, R. (2004). Project Estimation: A Simple Use-Case-Based Model. *IEEE Computer Society*, 40–44, 520-9202/04.
- [8] Augustine, S. (2005). Managing Agile Projects. Virginia: Prentice Hall PTR. Cambridge, Advanced Learner's Dictionary. Disponível em: <http://dictionary.cambridge.org/> Acessado em dezembro de 2013.
- [9] Chesbrough, H., Rosenbloom, R.S. 2002. The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3) 529-555. Six components for a business model.
- [10] Chin, G.(2004). Agile Project Management: how to succeed in the face of changing project requirements. Amacom: New York, 2004.
- [11] Cohn, M. (2005)Agile Estimating and Planning. Prentice Hall PTR: New York.
- [12] Costa, Rodrigo (2011). Gerenciamento de Projetos de TI -1 ed. Ver. -Rio de Janeiro: RNP/ESR.
- [13] Christensen, C. M, Raynor, M. E., 2003. The Innovator's Solution: O crescimento pela inovação. 1^a ed. Rio de Janeiro: Elsevier.
- [14] Damancour, F., 1996. Organizational complexity and innovation: Developing and testing multiple contingency models. *Management Science* 42 (5), 693-713.
- [15] Decarlo, D. (2004). Extreme Project Management: using leadership, principles, and tools to deliver value in the face of volatility. Jossey Bass: San Francisco.
- [16] Eder, Samuel (2012). Práticas de gerenciamento de projetos de escopo e tempo nas perspectivas das abordagens ágil e tradicional. Dissertação (Mestrado – Programa de Pós-Graduação em Engenharia de Produção e Área de Concentração em Processos e Gestão de Operações) – Escola de Engenharia de São Carlos da Universidade de São Paulo, USP, São Paulo.
- [17] Evangelista, G. (2009). Proposta Metodológica para Avaliação de Riscos em Projetos de Parcerias Público-Privadas de Investimentos em Infra-Estrutura de Transporte Rodoviário Utilizando Escalagem Psicométrica. Palmas, TO, UFT.
- [18] Garel, Gillers (2012). A history of Project Management Models: from pre-models to the standard models. Cnam Paris: France.
- [19] Griliches, Z., 1990. Patent Statistics as Economic Indicators: A Survey, *Journal of Economic Literature* 28: 1661-1707.

International Journal of Innovative Research in Science, Engineering and Technology

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Vol. 3, Issue 12, December 2014

- [20] Heldman, Kim (2005). Gerência de Projetos -Fundamentos. Um guia prático para quem quer certificação em Gerência de Projetos. Campus. Rio de Janeiro.
- [21] Highsmith, J. (2004). Agile Project Management: creating innovative products. Addison-Wesley: Boston.
- [22] Kozard-Holland, Mark (2013). PROCTER, Chris. Florence Duomo project (1420-1436): learning best project management practice from history. Elsevier: United Kingdom.
- [23] Kwak, Y. H., Anbari, Frank T. (2008). Analyzing project management research: perspectives from top management journals. Washington: USA.
- [24] Leach, L. (2005). Lean project management: eight principles for success. Advanced Projects Boise: Idaho.
- [25] Ling, Florence Yean Yng. LOW, Sui Pheng. WANG, Show Qing. LIM, Hwee Hua. (2007) Key Project Management Practices Affecting Singaporean Firms Project Performance in China. Elsevier: China.
- [26] LOO, Robert (2000). Working towards best practices in project management a Canadian study. Pergamon: Canadá.
- [27] Muller, R. & Turner, R. (2007). The Influence of Project Managers on Project Success Criteria and Project Success by Type of Project. *Management Journal Europeia*, Vol. 25, N. 4, pp. 298–309. doi:10.1016/j.emj.2007.06.003
- [28] Marques, G., Gourc, D., Lauras, M. (2010). Multi-criteria performance analysis for decision making in project management. Elsevier: France.
- [29] Martin, C. R., Horne, D. A., Schultz, A. M. 1999. The business-to-business customer in the service innovation process. *European Journal of Innovation Management*, Vol 2. Nº 2, 55-62.
- [30] Martinsuo, Mira (2012). Project Portfolio Management in Practice and in Context. Elsevier: Finland.
- [31] McHugh, O., Hogan, M. (2010) Investigating the rationale for adopting an internationally – recognized project management methodology in Ireland: the view of the project manager. Elsevier: Ireland.
- [32] Project Management Institute – PMI (2013). Project Management Institute. A Guide to the Project Management Body of Knowledge (PMBOK® Guide) - Fifth Edition – Portuguese.
- [33] Reyck, B. De, Grushka-cockayne, Y., Lockett, M., Ricardo, S., Moura, M., & Sloper, A. (2005). PROJECT The impact of project portfolio management on information technology projects, 23, 524–537. doi:10.1016/j.ijproman.2005.02.003
- [34] Sägesser, K., Suisse, C., Joseph, B., Technologies, W., & Grau, R. (n.d.). Introducing an Iterative Life-Cycle Model at Credit Suisse IT Switzerland, 68–73.
- [35] Sanjuan, A. G., & Froese, T. (2013). The Application of Project Management Standards and Success Factors to the Development of a Project Management Assessment Tool. Elsevier: *Physics Procedia*, 74, 91–100. doi:10.1016/j.sbspro.2013.03.035
- [36] Schwaber, K. (2004). Agile Project Management with SCRUM. Microsoft Press: Washington.
- [37] Shenhar, A., Dvir, D. (2007) Reinventing Project Management: the diamond approach to successful growth and innovation. Harvard Business School Press: Boston.
- [38] Smith, P. G. (2007). Flexible Product Development – building agility for changing markets. Jossey-Bass: San Francisco.
- [39] Soderholm, Anders (2007). Project Management of Unexpected events. Elsevier: Sweden.
- [40] Stewart, R. A. (2008). A framework for the life cycle management of information technology projects: Project IT. International Journal of Project Management, 26(2), 203-212.
- [41] Stoica, R., & Brouse, P. (2013). IT project failure : A proposed four-phased adaptive multi-method approach. *Procedia Computer Science*, 16, 728–736. doi:10.1016/j.procs.2013.01.076
- [42] Tavares, Marcelo (2007). Estatística Aplicada à Administração. Sistema UAB/MEC.
- [43] Teece, D. J., Pisano, G., Shuen, A., 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*, 18 (7), 509-533.
- [44] Teece, D.J., 1986. Profiting from technological innovation. *Research Policy* 15 (6), 285–305.
- [45] Tidd, J.; Bessant, J.; Pavitt, K., 1997. Managing Innovation Integrating Technological, Market and Organizational Change, John Wiley & Sons, New York.
- [46] Thomke, S., Reinertsen, D. (1998). Agile product development: managing development flexibility in uncertain environments. California Management Review, v.41, n.1, p.8-30.
- [47] Verner, M. J. & Evanson, W. M. (2005). In-House Software Development: What Project Management Practices Lead to Success? *IEEE Computer Society*, 0 7 4 0 - 7 4 5 9 / 0 5.
- [48] Verzuh, E.(2000) MBA Compacto, Gestão de Projetos. Campus, São Paulo.
- [49] Xu, Peng. RAMESH, B. (2008). Using Process Tailoring to Manage Software Development Challenges. *IEEE Process Management ITPro*. vol. 08, pp. 39-45.
- [50] Wateridge, J. (1995). IT projects : a basis for success, *International Journal of Project Management* Vol 13, N. 3, pp. 169–172.
- [51] Wheelwright, S., Clark, K. 1992. Revolutionising Product Development. Free Press, New York.
- [52] Wit, A. De. (1988). Measurement of project success. Butterworth & Co (Publishers) Ltd, vol. 6, N. 3, pp. 164–170.