Project management best practices implementation: critical issues in telecommunication companies*

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Abstract: The broader use of project management knowledge and best practices, especially the Project Management Institute approach, requires investments and new competencies. Thus, many companies have invested significantly in project management practice development, but they are often frustrated with the tangible achieved results. The aim of this paper is to discuss the main critical issues of project management implementation in Brazilian companies. The adopted methodological approach was multiple cases, carried out in three companies in the Brazilian telecommunications sector. These companies were selected due to the significant investment in project management and the practices they focused on improving. Moreover, the three companies play different roles in one of the most dynamic sectors in the Brazilian market. The data collection was carried out by spontaneous interviews (YIN, 2005) based on a script, with an interlocutor who knows the project management concepts with access to top management. As a result, it could be highlighted that companies believe that their investments produce good results, although they will only be able to demonstrate this when they develop solid project management programs and align them with corporate strategies and when appropriate strategic performance measures are available.
Keywords: project management, telecommunication, project management value.

1. Introduction

The Project Management discipline has become more and more present within companies and academic researches. The results of its utilization by companies are beginning to be visible, as demonstrated by the results from CHAOS published by the Standish Group. This study indicates that the percentage of projects finalized with success is up from 16% in 1994 to 29% in 2004. The non-delivered or non-utilized projects were down from 31% in 1994 to 18% in 2004.

In the last 10 years, PMI has strengthened its position as promoter body of project management practices through the dissemination and updating of PMBOK and the project management professional (PMP) certification global growth.

This exploratory study comprises the project management practices research on three companies in the Brazilian telecommunications sector: two operators, one fixed and the other mobile, and a vendor of telecommunication equipment and services for operators. The holistic multiple case methodology was adopted. The starting point was the study on a pilot company in order to validate the adherence of the analysis tool with the research needs.

Several evidence sources were used for the pilot case with the intention of making an accurate analysis of the interview script applied in the other companies. The other case studies analyses concentrated on a focused interview (MERTON et al. apud YIN, 2005) of approximately one hour with a previously selected interlocutor. In two of the three cases, the documentation provided by the interviewees was analyzed to validate the result of the research.

An individual analysis of each of the case studies was carried out, followed by a cross-analysis comparing the previous results and thus leading to the conclusions of this study, with evidences that reinforce some of the trends presented by SABBAG (2005).

The paper begins by providing some theoretical background of project management trends in section 2. In sections 3 and 4, the field research design is presented,

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followed by field research findings and case studies analysis. Finally, section 5 brings the paper conclusions.

2. Theoretical overview

This section aims to point out the main trends in project management in order to build a theoretical framework that allows developing the research assumptions and key questions. In this paper, trend means "general direction where a situation is changing or developing to" as suggested by HORNBY (2000).

2.1. Trends in project management

In spite of different approaches on the best practices in the project management field, there is a general consensus about the increasing importance of their application in companies, especially those with high degree of innovation (LITKE, 1995; PMI 2005; KERZNER, 2000, 2001; CARVALHO & RABECHINI Jr, 2005).

First, it is important to highlight the changes in the project management field. According to KERZNER (2000), several distinctive characteristics can be found in the past, present ant future view of project management, as shown in Table 1.

On the other hand, SABBAG (2005) states that several contradictory trends can coexist simultaneously, as presented in Table 2. The evidences that justify the trends are part of a dynamic context. As the context changes, the trends can be reinforced or no longer make sense.

DINSMORE (1999) presents some factors that point to the maturing of organizations in the use of project management practices. Among these factors are: external pressures from the market to work faster, cheaper and better as well as a strong commitment of the main players of the organization.

CARVALHO & RABECHINI Jr (2005) summarize the main trends into **two waves**. The first one started in the 1990s and emphasizes the efficiency and project management best practices focus on project. The second one focuses on effectiveness and prioritizes organizational project management models in order to reach value and success in this field. The authors argue that the most widely used model, which represents the first wave in the project management body of knowledge - PMBOK (PMI, 1996, 2000, 2004). organization models such as project management maturity model - PMMM (KERZNER, 2000, 2001) and organizational project management maturity model - OPM3 (PMI, 2003) represent the second one.

2.2. Organizational structure

According to VASCONCELLOS & HEMSLEY(2002), the organizational structure is the result of a process in which the authority and activities are distributed so as to achieve organizational results. As stated by these authors, the structures can be divided in two main types: traditional and innovative.

The traditional structures must be used in organizations with repetitive activities, stable environments and with the following characteristics: high level of formalization; unified command; high specialization, vertical communication, use of traditional ways of departmentalization.

Table 1. Changing times for project management (KERZNER, 2000).

Factor	Past view	Present View	Future View
Definition of success	Technical terms only	Time, cost, technology, and customer acceptance	Time, cost, technology, and customer acceptance; minimum scope changes; no business disturbance
Project manager's background	Technical	Technical or non-technical	Must understand the business
Organization	Dedicated teams	Partially dedicated teams	No dedicated teams
Authority	Project manager has maximum authority	Project and line managers share authority	Shared authority with team empowerment
Human resources	Negotiate for best people	Negotiate for best team	Negotiate for results
Team building	Sensitivity sessions	Selected coursework	Certification training and curriculum development

Table 2. Trends in project management - adapted from SABBAG (2005).

Reinforce project management	Weaken project management
• Project Management became an institutionalized job; • Certified professionals are required; • Project Management embraces strategic projects; and • The interest moves to Programs and Portfolio.	• The project management fashion became weak; • Project management remains a specialized service; • Senior and skilled consultants attend the market; • Project management focuses on extra exceptional projects; and • The main challenge keeps linked to enterprises.

The innovative structures have been created so that organizations could adapt themselves to a more competitive and complex environment. They present inverse characteristics to the traditional structures: low level of formalization; use of advanced ways of departmentalization; multiple command, high diversification; horizontal and diagonal communication.

The Project Management Institute - PMI (2003) presents three types of structure that manage projects: functional, projectized and matrix, as follows:

- functional structure: similar to the traditional structure, grouped by specialties with a well-defined command line and vertical communication;
- projectized structured: the specialists are grouped by projects, reporting to the project manager and frequently regrouped according to the organization projects portfolio. The support activities to the projects can be decentralized, allocated to each project, or centralized providing services to the project managers; and
- matrix structure: it is a mix of the functional and projectized structures. It can be classified as weak matrix (with characteristics similar to the functional structure), strong matrix (with characteristics similar to the projectized structure) and balanced matrix (where there is indeed a balance between functional and projectized structures).

The modern organizations normally present a structure model composed by the combination of the above structures. VASCONCELOS & HEMSLEY apud RABECHINI (2003) present a matrix index which orients the formation of a matrix structure by using three variables: project manager's authority, measured by the percentage of decisions that he can make; communication standard, measured by percentage of times a piece of information is transitioned between the project manager and his team without passing through the functional managers; and positions differentiation, measured by the percentage of project managers who do not occupy other management position.

KERZNER (2000, 2002) states that "restructuring an organization only to add project management is unnecessary and perhaps even dangerous. Companies may need to be restructured for other reasons, such as making the customer more important. But successful project management can live within any structure; just as long as the culture of the company promotes teamwork, cooperation, trust, and effective communication."

PATAH (2004) concludes that the choice of the organizational structure must be adequate to the company strategy. It is important to analyze the company positioning regarding its strategy and, from that point, identify the most adequate structure.

SHIMIZU et al. (2006) also emphasize different kinds of structures that should be used in the project context, i.e., **hubs, webs** and **hypertext.** The hubs and webs were proposed by MINTZBERG & HEYDEN (1999) apud SHIMIZU et al. (2006), and could be defined as follows: "A hub serves as a coordinating center. It is any physical or conceptual point at which people, things, or information move"; "Webs…are grids with no center; they allow open-ended communication and continuous movement of people and ideas." The third structure, **hypertext** proposed by NONAKA & TAKEUCHI (1997) apud SHIMIZU et al. (2006) is composed by three levels: business system; project team and knowledge base.

2.3. Project management office - PMO

According to RODRIGUES et al. (2004) there is not a definition for project management office (PMO) accepted worldwide. The literature emphasizes the PMO classifications, the selection of adequate attributions for each organization and their implementation.

DINSMORE (1998) classifies the PMO in five models, according to its functions: autonomous project team, project support office (PSO), project management center of excellence (PMCOE), project management office (PrgMO) and chief project office (CPO).

Synthesizing the several proposals, RODRIGUES et al. (2004) adopted the following models:

- model level 1: project support office, focused on specific projects and aiming at providing support to the project managers in managing resources;
- model level 2: project management office, focused on programs or multiple projects and aimed at establishing methodologies, monitoring performance and disseminating project management practices; and
- model level 3: chief project office focused on the management of projects portfolio and strategic issues in project management. Within this model, PMO orients and allocates the resources and is responsible for the execution and the success of the projects.

Generally speaking, according to CRAWFORD (2002), the main stages in the implementation of the PMO are: 1) the concepts adaptation to the company reality; 2) make a pilot, solve short-term issues and make revisions and adaptations in the model; 3) global implementation, considering medium and long-term needs; and 4) PMO maintenance activities and new opportunities identification.

2.4. Competencies of the project manager and sponsor

"(…) the project manager is fundamental to conduct successful projects due to the existence of many points of conflict among users, team etc." (RABECHINI Jr., 2005).

"(…) the project managers are today, more than ever, seen as people who are going to implement the corporate strategies and objectives, instead of being just the messengers of the projects evolution and their failures". (PINTO et al., 2003)

As can be seen, the expectation regarding the project manager is enormous. This subject has been part of several academic studies and it has generated polemic among executives. Two conflictive trends presented by SABBAG (2005) reinforce such polemic: a) certified professionals are required; and b) mature and talented consultants meet the market demand.

The first trend reinforces the need of technical competencies development for project management with emphasis on nine knowledge areas pointed by PMI (2004). The second case emphasizes the personal competencies such as leadership, negotiation, results focus and acquired expertise throughout the professional's career.

KERZNER (2002) points out, as presented in Table 2, that the need of knowledge in the company sector will surpass technical knowledge, also suggesting that professional certification will be a goal for organizations.

The PMI published in 2002, the Project Management Competencies Development Framework - PMCDF, aimed at facilitating project managers' development. This framework is based on the assumption that **competence has a direct effect on performance.** This impact degree or extension can vary depending on certain factors such as the project type and characteristics, or organizational context. It is composed by two groups of competencies distributed in the matrix of knowledge areas with process groups: the first group with knowledge competencies and performance and the second with personal competencies.

KERZNER (2002) presents the importance of the Project Sponsor as a way to guarantee the execution of the strategy and to support the project manager in solving conflicts.

DINSMORE (1989) also highlights the importance of the project sponsor with the function of supervising and protecting the manager and the project from the risk of potential negative impacts, and establish the authority of the project manager before the organization.

2.5. Organizational development in project management

RABECHINI Jr. (2003) proposes a model with three layers of competencies: individual, team and organization. According to the author, in the structuring of the layer Organization, the following benefits can be observed: project management processes organization; language equalization and knowledge about project management broadening, increasing the possibility of job rotation among the project managers; adequate and standardized project management methodology and tools use; understanding that there are several alternatives for individual competences development; more effective decision making with the use of indicators, historical basis and statistic analysis; better performance due to trends analysis and bad performance common causes elimination; developing capacity for continued improvement by involving more people in decision making and searching for a new management level.

To obtain such benefits, according to the author, some integrated actions are necessary to develop the three supporting pillars: process, strategy and change effectiveness.

2.6. Project management methodology

KERZNER (2002) reinforces the need of developing a new project management methodology sustained by appropriate software. As stated by the author, one of the major mistakes is to develop methodology and tools in a non-integrated process. When organizations develop methodologies and tools that are complementary, there is synergy and the benefits are maximized.

KERZNER (2002) also presents the standard-based methodology main benefits: reduction in time cycle and costs; realistic planning with greater possibilities of achieving the foreseen schedule; better communication of the team expectation regarding the scope and deadline; knowledge acquired or lessons learnt maintenance; faster delivery thanks to more rigid controls; program risks global reduction; better decision making; growth in customer satisfaction and trust; emphasis on customer satisfaction and added value; partnership with customer in achieving results; better involvement in customers strategic planning; comparisons of performance and continued improvement.

2.7. Program and portfolio management

According to the PMI (2003), "a program is a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. (…) In contrast with project management, program management is the centralized, coordinated management of a group of projects to achieve the program strategic goals and benefits".

From this definition, it is possible to understand that projects with common objectives gain synergy when managed as a program. In some organizations, strategic programs have a self structure similar to a PMO to coordinate the documentation and to monitor projects. In many cases, the full time allocation of resources to the program is also justified, in a projectized structure, thus providing agility and focus to implement these projects. Also according to the PMI (2003), "a portfolio is a group of projects or programs and other grouped works to facilitate effective management in order to meet the goals of strategic businesses".

Although portfolio management is a recent theme in project management, this practice is already quite developed in product management and development. The main portfolio management techniques are related to the selection of projects for investment, and their control to guarantee projects adherence to the organization strategic goals.

JEFFERY & LELIVELD (2004) conclude that companies need to be at a very advanced stage in portfolio management to attain concrete results. This points out that the organization must go through several maturing stages without intermediate results, which reinforces the maintenance of the investments. The success cases count on strong support from the top management that maintains the investments at the intermediate stages and facilitates the breaking of barriers.

As the portfolio management is directly linked to the implementation of the organizational strategy, the most mature organizations have better ways of integrating the portfolio management tools and the traditional tools for strategic planning, such as Balanced Scorecard, Business Intelligence and Management Integrated Systems.

2.8. Critical success factors

PINTO & SLEVIN (1987, 1988) identified ten critical success factors from the definition of success, which considers time, cost, effectiveness and customer's satisfaction. They are: project mission, management support, plan, consultant customer, personnel, technical tasks, customer's approval, monitoring, communication, conciliation.

PINTO & SLEVIN (1987, 1988)'s model focuses on the analysis of projects individually. On the other hand, KERZNER (2002) presents the critical success and failure factors of the adoption of project management practices within an organization according to its maturity stage.

These factors presented by KERZNER (2002) are the foundation of the maturity model developed by the same author. From these concepts, KERZNER (2002) introduces two new components that integrate his definition for excellence. The first one considers that an organization at this stage must have a continued flow of successful projects and a small percentage of failures. KERZNER (2002) reinforces that an organization with 100% successful projects is not taking risks adequately. The second component points out that the decisions made individually in each project take into account the organization strategic goals.

According to COOKE-DAVIS (2002), the critical success factors should be analyzed in three groups. The first is related to project management practices; the second focuses on an individual project; and the third highlights the consistence of project success. He also reinforces the importance of linking project management, corporate strategy and people development.

3. Field research methodology

Many organizations invest in project management without being aware of the range of possibilities that this discipline offers. Thus, they are not capable of taking most of the adopted practices and give visibility to the work that has been done.

This article aims to identify the reasons why such organizations have being making this investment, to verify the main adopted practices and the results they have obtained. Besides contributing to the organizations and professionals who work in this sector, this article seeks to promote the enrichment and diffusion of knowledge in project management.

3.1. Goals and general methodological aspects of the research

The aim of this analysis is to identify the justifications used by organizations from the telecommunications sector to make the investments in project management viable and to map the practices prioritized by them. Based on the referential analyzes, the following central questions have been raised:

- why do organizations decide to invest in project management?
- how do they implement this decision? and
- how do they measure the results obtained?

This study will be considered successful if it is able to raise information about the project management practices of the analyzed companies, answers the above questions and leads to more specific studies within organizations in the same sector.

The multiple case study methodology, holistic-kind, was adopted and as a starting point, the study was applied to a pilot-organization in order to validate the analysis instrument to the research needs. After that, three cases were studied and analyzed individually, and finally cross-analyses were made to find the common issues.

This method were chosen due to the difficulty of elaborating good propositions before knowing the reality of the researched organizations. In this case, according to YIN (2005), the case study must be preceded by the questions that identify what is going to be explored, the aim of research and the criteria to evaluate whether the exploration has been successful.

The selection of the pilot-organization was made based on the access of the author to the organization, with the possibility of using several evidence sources, and on the high investment made by the company in the development of project management practices in the last five years. According to the aim of this research, it was necessary to select three companies for the exploratory study: a fixed

operator, a mobile operator and a telecom equipment and services vendor.

The source chosen for data collection was the interview with a professional of each of these organizations, with knowledge in project management and access to the top management. For that, the professional should have a manager or director position related to project management, work for at least three years in the studied organization and preferably have the PMP (project management professional) certification.

Two to three organizations of each group have been invited to take part in the study. From these, the first organization that accepted the invitation and met the qualification criteria for the interviewee was selected.

3.2. Research limitations

This research has limitations pertinent to the use of interviews as the main source of information, such as oblique or imprecise answers, and also to the use of three cases for the analysis.

To minimize this effect, the research tool was tested with different interlocutors from the pilot-organization and adapted to reflect the interviewees' opinion with the highest precision possible. Another assumption adopted was the elaboration of an individual report for the interviewees' evaluation.

This study also presents another limitation related to its goal: the researched organizations are from the telecommunication sector.

3.3. Research tool

An interview script was elaborated with open questions comprising the following topics: external context of the organizations, internal context of the organizations, company history in project management, organizational structure, project management office (PMO), stakes and responsibilities, methodology and tools, portfolio and program management, organizational development, individual competences, critical success factors, used metrics and results evaluation.

4. Field research findings

The Brazilian telecommunication sector underwent a major restructuring from the privatizations at the end of the 1990s. Several national and multinational companies, investment funds and pension funds organized themselves to acquire or launch a telephony operator. Thanks to the high investments made, the volume of fixed and mobile lines has grown considerably. Today, this sector is suffering from a new phase of consolidation in a very competitive scenario and an instable regulatory environment, with a series of mergers and acquisitions that lead to major organizational changes. Table 3 presents a briefing on the studied organizations and the profile of each interviewee.

In Table 3, it can also be observed that the two first operators, cases A and B, have similar characteristics, including the quantity, investment and duration of projects. These organizations have as customers individuals and companies, and all their revenues are from the sale of

Table 3. Studied cases general information.

Case A - fixed operator	Case A - mobile operator	Case A - telecommunication vendor
Foreign Capital	Foreign Capital	Foreign Capital
7,500 employees	6,400 employees	2,750 employees
600 employees in projects	1,200 employees in projects	700 employees in projects
Sales of US$ 6.5 billion per year (approximately)	Sales of US$ 3.7 billion per year (approximately)	Sales of US$ 500 million per year (approximately)
Does not sell projects	Does not sell projects	Projects are the main source of sales
Average of 15 strategic projects and 100 common projects per year.	Average of 5 strategic projects and 100 common projects per year.	Not informed
Investments from US$ 26 to 45 million in each strategic project.	Average investments of US$ 45 million in each strategic project.	Not informed
Average strategic project duration: 20 months.	Average strategic project duration: from 18 to 24 months.	Not informed
Interviewee profile		
Production engineer, with a master degree in the same area.	Electrical engineer, PMP and project management specialization.	Electrical engineer, PMP and project management specialization.
Operations and IT General Director	IT Project Manager	Quality and Process Manager
20-year experience	8.5 year experience	15-year experience
6 years in this organization	6.5 years in this organization	4.5 years in this organization
15 years in project management	2 years in project management	10 years in project management

telephony services. Thus, both projects and the development of project management practices within the organization must generate results internally to justify the investments.

On the other hand, the telecom equipment and services vendor, case C, the main customers of which are the mobile and fixed operators, generates important revenue with the projects proceeding from the operators. In this case, the projects are normally preceded by a services providing contract with a determined price and a profit margin that will directly depend on the effective cost management. The development of competencies in project management in this kind of organization turns into a way of surviving.

4.1. Case A - Fixed operator

4.1.1. Justifying project management

The interviewee justifies the investments in project management as a way of promoting business efficacy and synergy between the company strategy and its implementation. The main benefits, from his point of view, are the in time delivery and the communication management to align all areas in the company goals and deliver the new products and services faster than the competitors.

4.1.2. Project management implementation

The project management practices started to be implemented in the company after its privatization in the late 1990. First, the projects were focused on a new company implementation, created from many acquisitions in the Brazilian market, and to expand the network to deal with hard goals to meet the contractual issues assigned by the Brazilian government. To make it possible, the company decided to develop an approval process, build a coordination team and outsource the projects implementation.

After that, the project amount was reduced, and the company was able to focus on the development of project competencies. In 2002, the company was reorganized, and the project management was decentralized to each business unit. There is a very strong attention to the project approval process, in which the project sponsor has to work on the business plan, align it with other stakeholders' interests and present it in a project committee to be approved. The committee also assigns a business unit to implement the project, which is responsible for assigning the project manager. There is not a standard structure for project management. The most important project is managed by a company director in a part time dedication with 5 full-time managers, 7 full-time support staff and more than 100 staff from other areas or outsourced.

Despite having a software engineering methodology for IT projects, there is no control about its use. There is not a corporate program for project managers' development or any plans to implement a corporate PMO, either.

The main project management competencies are business-oriented, such as conflict management, escalation and critical issues management. Technical and sector knowledge are desired, but not important. The project managers are evaluated based only on the results achieved.

4.1.3. Evaluating project management

The main success factors for the project manager are project prioritization so as to focus on the most important strategic issues and make the project implementation visible for the executives. To address these points, the strategic projects are regularly presented to the executive committee. There is not any corporate standard to evaluate, neither the projects results nor the company maturity in project management. Usually, the projects are evaluated based on the business case approved by the project committee and on time delivery. There is not enough quality control in the project implementation, either. "Many times, we have to correct problems after the project implementation", said the interviewee.

4.2. Case B - Mobile operator

4.2.1. Justifying project management

It is the same as the first company. Under his point of view, project management allows the company to deliver the strategic goals faster and better than its competitors.

4.2.2. Project management implementation

As the privatizations of the fixed and mobile operators have occurred almost at the same time, the project management practices implementations were very close. The projects were also focused on a new company implementation, created from many acquisitions in the Brazilian market. They have also focused on the market penetration because of the government concession to other operators in the same area. They started with a project manager development in 2001, selecting 50 employees for a PMP certification training program. At the end of 2002, they had 22 project managers certified as PMPs.

There is a PMO, reporting to the commercial vice-president, responsible for the strategic projects planning, control and communication. Usually, these projects have a project manager reporting to 2 IT directors and to the commercial vice-president, responsible for the execution and technical issues of the project.

The PMO is also responsible for the methodology and tools development, and for evaluating these projects according to the company Balanced Score Card. They are in a final step to implement the MS enterprise project management and they plan to integrate it to the BSC tools.

Despite the initial investments in the project manager development, few initiatives were taken after that to keep the human knowledge alive in the organization. Due to the high level of employees` turnover, most of it is already gone. Differently from the others, the focus in this company is on the technical skills.

4.2.3. Evaluating project management

The main success factor for project practices implementations is senior executive support. "The PMP training program in 2002 just happened because a senior executive sponsored it" said the interviewee. In this company, the strategic projects results are measured against the BSC goals, but there is not any process to evaluate the project development maturity.

4.3. Case C - Telecommunication solutions vendor

4.3.1. Justifying project management

Although the operators have no revenue from project management, they invest a lot of money to contract projects from the telecommunication vendors. That is the main reason why companies in this sector have to invest in project management to survive. The interview with this company confirms that project management is the main source of revenue, based on contracts with a well defined price, deadline and scope. These companies need to accurately manage the cost and the clients' expectations to have a good profit and to open the doors for new contracts.

4.3.2. Project management implementation

The headquarters define and promote the good practices while the subsidiaries choose what is adequate to each country. The headquarters created 4 levels of project management (PM1 - Project Leader, PM2 - Project Manager, PM3 - Project Director and PM4 - Executive Project Manager), but the career path to achieve them is not clear. They also developed a training program for each level and maintain an intranet with articles and recommendations.

There is a framework as a guideline for the three methodologies: 1) network solutions and complex contracts; 2) product development; and 3) process reengineering. The company uses the Primavera software for some complex projects, and uses MS Project and MS Excel in the others. All project documents are stored in a common network and the updates are informed to the stakeholders through electronic mail. Nonetheless, they do not control the use of the methodologies and tools. They plan to develop a system to integrate all these project management tools and control the use of the methodologies.

The main project management competencies are business-oriented, such as leadership, communication and organization; the sector knowledge and specific project management competencies are desired, but not mandatory; and the technical skills are not important. The company acknowledges the PMP certification as an important step in the project professional development and has a lot of expectations concerning the project managers, placing them as the main responsible for the companies results. "The have already used a Mr. Incredible picture in a development program", exemplified the interviewee.

4.3.3. Evaluating project management

The main success factor is the logistics to deliver the imported equipment on time. "There are some logistics issues that are out of the organization control, and some of our competitors do not have this problem because they manufacture their products internally".

There is not any corporate standard to evaluate either the projects or the company maturity in project management. The projects are usually evaluated individually based on the project margin, deadline fulfillment and client satisfaction, obtained through a client research for each project implemented.

4.4. Results analysis

In the operators, the justifications are related to the improvement of effectiveness in the implementation of the strategy with greater control on deadlines and costs, sponsored by the company management in Brazil. In the analyzed vendor, there is a strong orientation from the headquarters for the adoption of project management practices. Within this organization, the projects are one of the main sources of revenues and thus the effective application of these practices is directly reflected in the profitability.

In the second stage, each presented a different set of adopted practices. From the project management point of view, the three companies present functional structure, although the vendor sets up a new project structure for each new contract. The mobile operator presents a very complex structure for the management of strategic projects in which the project managers report to three different directors. In the fixed operator, the project committee identifies the area responsible for the project which is going to organize the structure.

In the fixed operator and in the vendor, there is not a corporate PMO or plans to implement it. In these organizations, some projects have a structure for controlling and planning, named PMO. However, in the mobile operator, there is a centralized PMO which reports to the vice-president of sales, responsible for controlling and planning strategic projects. In the fixed operator, the IT area is implementing a PMO under the responsibility of the interviewee to control projects, improve methodology, give

support to the teams and promote good practices in project management within the IT area.

In the mobile operator, the PMO disseminates the monitoring reports in a standardized way and centralizes the information about the strategic projects. In the other two companies, there is not a standard for monitoring. In both cases, the people responsible for the most important projects present the evolution during the executive committee meetings, with variable periodicity.

In the two operators, the main role of the project manager is "to make it happen". "He must focus on the critical points, give visibility to the conflicts and force decision making", comments one of the interviewees. In the mobile operator, there is a little more emphasis on the technical skills of the project managers. In the vendor, the interviewee identifies some divergences between the speech and the practice of the organization. On the one hand, the company promotes trainings in project management, values certification and highlights the importance of using a methodology. On the other hand, the company does not monitor the use of the methodology and evaluates the project manager based only on the results achieved (cost, deadline and customers' satisfaction). There, the project managers are compared to Disney's superhero, Mr. Incredible.

Although all interviewees have pointed out that their organizations have methodology in project management, they also pointed out, generally speaking, that there are no controls over its use. In the mobile operator, the methodology was developed during the implementation of the PMO by a specialized consultancy firm, and it is maintained by the PMO itself, which uses it in strategic projects. In the fixed operator, there are two methodologies for the project development: the first is part of the methodology for new products development and the second is exclusive for IT projects, developed based on software engineering concepts. In the vendor company, there is a framework that is used as an integration basis of the three project management methodologies: network solutions, product development and process re-engineering.

The fixed operator understands that the use of project management tools is not important. The mobile operator is the final phase of implementing integrated software for project management, while the vendor company pursues software for project management, but it does not use them regularly. The interviewee understands that this will come true when he can implement project management software integrated to the business management software in the organization.

None of the organizations presented specific practices for portfolio or program managements or a structured process for the development of organizational competencies in project management.

The most important individual competencies, in the interviewees' opinion, are the behavioral ones. For the fixed operator, they represent 80% of the necessary competencies to be a project manager. Knowledge about the business sector was considered important, but not essential for the three interviewees. The mobile operator considered the technical competences as the most important ones. The certification in project management is valued in two of the three organizations, but it is not considered fundamental. "The most important in the certification is the demonstration of persistence and dedication to achieve a personal goal", emphasizes one of the interviewees.

The vendor company was the only one which presented a career in project management, with four levels: Project Leader, Project Manager, Project Director and Project Executive. Nevertheless, there is not a formal process or a career plan for the development of employees.

In the third stage of the interview, the critical success factors and the results evaluation were approached. None of the organizations makes an effective evaluation of the project management practices use. The three interviewees pointed out the concern about the financial control in the project, considering that, in the vendor, this control is directly related to the company's profitability. In the two operators, there is an effective control for the projects approval, but the evaluation of what has been done is not made after the project implementation.

The main metrics used by the companies are deadline and cost, considering that, for the vendor, customer' satisfaction is also considered and has an important weight.

5. Conclusions

With this study, it was possible to realize that the project management practices are a reality within the organizations although they have demonstrated few results that prove their effectiveness. The organizations justify their investments in qualitative way without proving the results in a structured manner. Although one company generates revenues with project sales, a major advance was not verified in comparison to the others.

Regarding the analyzed practices, all studied companies partially use what has been exposed in the theoretician referential. However, none of the three companies presented an integrated and structured process that characterizes a mature organization in terms of project management.

The pilot-organization underwent a similar process, with different investments in project management practices that were unified from the implementation of a corporate PMO in 2005 with the support of the shareholders council and the executive committee.

The implementation of these practices in an isolated way generates, one the one hand, some results that can serve as a starting point for a future integration but, from another point of view, it generates few measurable results, which can cause

the discarding of these initiatives and risk the credibility of the involved practices and professionals.

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