Gestão de Serviços Operacionais com ITIL

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Abstract - Information Technologies (IT) and Information Systems (IS) play a fundamental role in organizations. We have witnessed a IS transition from a support role to a business partner role. This increased responsibility and impact in business performance leads to a tighter control and higher demand on IS Departments. To respond to these requirements, organizations turn themselves to Service Management frameworks, ITIL being the most widely used. However, many ITIL projects fail, and the most commonly documented cause is organizational resistance. The goal of this work is to test the hypothesis that using best practices described in the People CMM framework for improving organizational maturity has impact on achieving a greater ITIL maturity as well.

Keywords: ITIL, People CMM, people, organizational maturity, service management

1. Introduction

The impact of Information Systems (IS) on business is ever growing. We have witnessed the transition from the industrial age to the information age. (van Bon et al., 2007) This growing impact on organizations success lead to an also growing demand on IS management. To satisfy these demands, organizations turn themselves to the IT Service Management (ITSM) discipline.

ITSM strives to improve the alignment of IT efforts with business needs, and to manage the efficient provision of IT services with guaranteed quality. Several frameworks were developed to help organizations reach their goals - not only in terms of performance but also in terms of being legislation compliant. One of the most popular frameworks is ITIL - Information Technology Infrastructure Library. As the name implies, it's a collection of the industry's best practices over the years, documented in a way that organizations can structure themselves around the services lifecycle.

ITIL involves three major components: People, Processes and Technology. These components work together as gears (see Figure 1). Processes improve the efficiency and effectiveness of the organization. Technology can help execute those processes by reducing time, effort and costs of executing those processes. People play a fundamental role: they execute the processes and use the technology. If they don't adapt to the processes or technology, all is rendered useless.

Achieving a balance in this triangle is challenging. On the other hand, technology is becoming considered as a commodity (Carr, 2004). Acquiring technology that supports IT Service Management is a matter of budget. The processes are well documented in ITIL's books and are based in the industries best practices, so the problem shouldn't be there (although it should be noted that process implementation may vary depending on the organization). Assuming that
processes are feasible in one way or another, the conclusion is that the core of the balance lies on people.

1.1. ITIL Implementation

ITIL benefits are documented on its books, but nevertheless a good number of ITIL adoption projects don't reach their end. A study conducted by Cater-Steel and Tan (2005) concluded that about 30% of the organizations who made part of the study were disappointed with ITIL implementation. The fact is that implementing ITIL is not easy (Roepke et al., 2000).

A recent study (Pereira and Mira da Silva, 2010), conducted in several organizations with the objective of creating an ITIL maturity model, demonstrated that the number of organizations who have a poor ITIL implementation should not be ignored. Worse than that, the same research concluded that most of those organizations aren't aware of that fact.

Another study, conducted by Evergreen (2006), shows that the main factor that affects ITIL projects is organizational resistance to change. This reinforces the idea that the “People” component is what organizations need to control in order to increase the success of their ITIL projects.

![Figure 2 - Factors that prevent ITIL adoption in Australia, Hong Kong and Singapore (Bitinger, 2005)](image)

A Gartner study (Bittinger, 2005) (see ) shows that around 25% of ITIL adopters in the Australia region identified the lack of time due to fighting fires as a reason for not implementing ITIL, and additional 12% consider that they don’t have enough internal skills maturity. In Hong Kong only 7% are too busy fighting fires, but a slightly larger number (13%) also considers that they don't have enough internal skills maturity.

1.2. People CMM

The People Capability Maturity Model (People CMM) is a organizational maturity framework that describes the key elements of managing and developing the workforce of an organization. It describes an evolutionary improvement path from an ad hoc approach to managing the work- force, to a mature, disciplined development of the knowledge, skills, and motivation of the people that fuels business performance.
It has 5 maturity levels (see Figure 3), where 1 is the most basic. At each maturity level, a new system of practices is added to those implemented in earlier levels. Each overlay of practices raises the level of sophistication through which the organization develops its workforce (Curtis et al., 2002).

The People CMM framework provides organizations with a structured reference that they can use to improve their HR management. Although it is not dogmatic, organizations are encouraged not to ignore process areas or maturity levels.

The People CMM framework only requires that processes are executed. The focus is not evaluating how the processes are implemented. For instance, the framework only requires that performance is measured, but it doesn't state how. This can lead to cases where the process is implemented but in an inefficient way or in a way that doesn't bring much value to the organization. To mitigate this factor, there are Measurement and Analysis practices in each level, that may help the organization evaluating their effectiveness.

The main added value of the framework is that it gives an holistic view of HR management and provides the means necessary to assess the as-is state.

2. Research Issue

Organizations must build an infrastructure based on People, Processes and Technology that is able to leverage IT's potential. When IT leaders recognize that people are one of the major problems preventing the success of ITIL projects, or from another perspective one of the critical success factors for ITIL implementation (Evergreen, 2006) (Sharifi et al., 2008), it means that an organizations people infrastructure is a main building block that can prevent it from moving forward.

There are many little things organizations can do to improve their performance before they invest on a full blown ITIL project. For instance, people may simply be too overscheduled to do everything that they have to do and that can have an impact on incident reporting (part of the Incident Management process in ITIL). Or people may not be aware of their responsibilities in certain activities and what impact that has on their performance.

The solution isn't finding the right people to implement ITIL. The challenge is on how to leverage the organizations workforce in order to extract all the potential provided by ITSM best practices.

The research issue that this study will address is:
Can we overcome people related problems in ITIL adoption projects by improving organizational maturity first?

By addressing and overcoming this problem, we are taking a big step towards more and better ITIL adoption projects that result in better IT services.

3. Hypothesis

The theory behind this hypothesis is that managing people (or human resources) is an important measure in the management of ITIL adoption projects. By effectively monitoring, controlling and managing the human resources involved in the project, we can, e.g. detect problems or know if someone is struggling with the new assignments and provide extra training.

Managing human resources, however, is not trivial and involves several dimensions: recruiting, monitoring and controlling performance, rewards and compensations, among others. Due to that fact, we must come up with a model for measuring HRM (Human Resource Management) that includes the main dimensions.

This is where the People CMM framework helps us. It’s a model with 5 maturity levels, each one comprised of best practices that should be performed by organizations. Those best practices are split into different areas that vary according to maturity levels.

The goal of this proposal is assessing if we can use the People CMM framework to establish a relation between the quality human resource management and the success of ITIL adoption projects. This relation is expected to be positive, meaning that an organization with a better human resource management is better prepared and has a more mature ITIL adoption. This comes from the fact that the framework itself defends that there must be a balance between people, processes and technology.

In conclusion, the hypothesis that was tested in this work is:

Using best practices described in the People Capability Maturity Model for human resource management positively influences ITIL projects.

A positive relation won't automatically prove causality. There can be other factors that can influence both scores. However, if this study eventually demonstrates that organizations with a higher P-CMM maturity have lower ITIL maturity, the hypothesis is rejected.

4. Assessment Method

For this work, we chose to focus on the Level 2 of the People CMM project. After choosing the scope of the assessment, we chose to perform a questionnaire based assessment. Curtis et al. (2002) say that this method is best applied as an initial, first-time, or incremental self-assessment, which allows organizations to focus on areas that need the most attention. Awareness of, and buy-in to, the improvement activities is promoted through participation in the questionnaire process.

The questionnaires follow a qualitative approach. This means that it isn't supposed to gather a large number of answers. Instead, IT leaders are subject of the interview. This is due to the fact that the questionnaire covers a great deal of aspects that regular IT employees may not be aware of.

A first version of the questionnaire was created, that included all goals, practices, and so on. However, this version had 14 pages and a 10 point scoring scale, making it highly unlikely that individuals were open to answer. A lighter version was created, reformulating questions to include more than one practice. The questionnaire was shortened to 3 pages and the scoring system was simplified (5 points scale), making it more accessible. However, rigor was also lost and that should be taken into account when analyzing the results.
It should be noted that there is both a paper and an online version of the tool. The questionnaire was created with the purpose of being answered online, in a less intrusive manner. This way people could analyze the questions, think about the answers and eventually use their best judgment. However, in one of the cases results were poor. People didn't answer, leaving it for later and eventually never responding. Because of this, a paper version to be answered face to face was also created with some slight changes to adapt to the new format. However, much time was lost in this process.

5. Case Studies

In this chapter are presented three case studies. Each one has a brief description of the organization in matter of dimension, budget and the size of the IT department. These numbers provide a good insight of the weight that the organizations give to IT. All the numbers used in the descriptions were taken from the organizations available public information such as financial reports and strategic plans. The names of the organizations are not disclosed, and due to being public organisms, the industry is not disclosed as well because that would make clear which one it is.

Each case study includes the final questionnaire results, which were collected following the method described in Chapter 4.

5.1. Organization A

Organization A is a public organism that maintains its activity in all points of the country. It supports, coordinates and helps selling the activity of a sector that provides the employment of 10.2% of the active population of the country and is responsible for 11% of the country's GIP (as of 2010).

The organization itself employs around 600 people, and the number grows to 1000 with outsourced staff. Organization A's IT department has 5 resident workers and counts with 20 outsourced employees. This represents 2.5% of the total staff. The IT department's organization in represented in Figure 4.

The organizations budget for 2010 is €229 Million, of which €5 Million concern IT. This means that the IT budget represents 2% of the total budget. This value doesn't include expenses with staff or infrastructures.

The organization focuses IT on its core business of giving support to the sector, with activities such as infrastructure management being outsourced. There is an ongoing ITIL adoption process, with an already working Service Desk. The organization also has a CMDB but keeping it updated has been a problem for the last 2 years. This means that although the organization has some ITIL processes being executed there is much room for improvement and manual work that requires coordination and communication (such as updating the CMDB) is a major problem.

5.1.1. Results
Results are shown in Figure 5. Communication and Coordination, Performance Management and Training and Development areas obtained a score higher than 3. However, no areas achieved the score of 3.5 and no evidences were asked. This organization shows some balance between management areas although the Compensation area falls behind the others. With some effort it’s possible to achieve a score of 3.5 in all areas which would provide a better human resource infrastructure. Despite the results, this organization still remains in Level 1.

5.2. Organization B

Organization B is a public institute responsible for the planning, conception, execution, maintenance and evaluation of all the IT initiatives of a Portuguese ministry. The client base is immense, because it counts with all the country's resident population, all the private companies and the State itself.

This organization had 211 permanent workers as of 2008. All of these workers can be considered IT staff, since the organization can be seen as the ministry's IT department. The organization has 7 different business units, represented in Figure 6. Business units represented as “Application Solutions 1” and “Application Solutions 2” are areas responsible for different public organisms whose names are not disclosed.
In 2008 the organizations budget was €24,911,744, and as happens with staff, it can be all considered as IT budget. This value includes hardware and software expenses (€3,518,785) and staff (€8,942,600).

### 5.2.1. Results

Results are presented in Figure 7. Overall, they were very positive. Three areas achieved the minimum score (3.5) and the other areas were close behind, all with a score higher than 3. Although not being enough to achieve Level 2, it surpasses by far the score achieved by Organization A. Being a larger organization (211 permanent workers versus only 5) also adds value to the result, since more people are harder to manage. Also, the organization never had a human resource management initiative, so it’s normal that room to improve still exists, as well as in the other case studies.

![Figure 7 - Results for Organization B](image)

### 5.3. Organization C

Organization C is a public organism that serves the Ministry of Defense, employing 12,736 people, as of 2007. Of those, 143 were considered IT staff. This means that in 2007 IT Staff represented 1% of the organizations work force. Of those 143, only 41 were considered to have an IT related career. That means that 71.3% of the IT staff isn’t considered to be an “IT person”. This number suffered a 13% growth since 2005.

Expenses related to IT in 2007 were approximately €6 Million, which represented about 1.09% of total expenses. These expenses do not include salaries.

This organization is currently undergoing some changes in order to achieve the organizational structure represented in Figure 8. One of those changes is an ITIL adoption project and was interested in knowing if their staff was ready for such a project. Although some processes similar to the ones described in ITIL are implemented (such as incident management), the fact is that they function very poorly. The objective was to make a People CMM assessment and compare the results with previous studies.

![Figure 8 - Organization C's Hierarchy](image)
Human resource management is centralized for the entire organization and not only the IT department. As such, it concerns all of these departments, although some local management is done by department leaders. An interesting fact is that a person may only perform a job/role for a maximum period of 3 years. This promotes high rotativity of people, knowledge and authority.

5.3.1. Results

Figure 9 shows the results of the questionnaires. As we can see, results are very low and only the Training and Development area has a score greater than 3. Since none of the areas reached the minimum level required in the scope of this work (see Chapter 4), no evidences were asked.

It’s clearly a poor result, when compared to the other case studies. One of the conclusions taken from this assessment is that Organization C has great room for improvement in terms of organizational maturity. Since the organization is in the middle of great organizational changes, it would be much valuable to include a project with the goal of improving organizational maturity.

6. Data Analysis

This section presents a comparative analysis of the results obtained in the three case studies. This analysis focuses on the relation between the ITIL maturity and the P-CMM questionnaire results.

Before we can make an analysis, a point of comparison in terms of ITIL maturity is needed. The organizations were classified as first, second and last, in a way that the more mature organization is first and the least mature is last. If the organizations were more balanced in terms of ITIL maturity, this wouldn’t be possible to do and a formal evaluation was necessary. The ranking is represented in Figure 10.
Organization B was be considered as the first in this ITIL maturity ranking. This is a natural choice since the organization is currently ready to apply for the ISO 20000 certification, which means a full ITIL v2 adoption. The other two organizations are far behind. In second place comes Organization A, since it has the Service Desk function implemented and is currently making an effort to keep an up to date CMDB. Organization C comes last since it doesn't have any ITIL processes implemented. There are some processes that are similar, such as Incident Management, but they function very poorly. For instance, the incident management process in particular doesn't have a centralized point of contact. This means that an internal client that has a problem of some sort is sometimes forced to manually call 3 or 4 different people in order to find the one that can solve the problem.

We can do the same thing with the P-CMM questionnaire results (Figure 11) and as we can see, the ranking is the same, with Organization B having the higher score and C having the lowest.

This will be an important result to analyze the hypothesis.

7. Hypothesis Validation

The hypothesis under test was:

*Using best practices described in the People Capability Maturity Model for human resource management positively influences ITIL projects.*

Based on this sample (Organizations A, B and C) we can't reject the hypothesis. The results demonstrated that organizations with a higher P-CMM score also have the highest ITIL maturity, and vice-versa. However, we must keep in mind the limitations of the case studies. The sample was very small (only 3 organizations) and due to various factors the questionnaires weren't answered in the same conditions.

The organizations are also very different in size and culture. There are also more valid assessment methods than questionnaires, such as audits and official SEI evaluations. This work doesn't prove that a cause-effect relation exists between P-CMM and ITIL maturity levels, but it reinforces it.

Organizations can invest their time and money in improving human resource management with a stronger confidence that the investment will eventually translate itself into a better infrastructure for an ITIL project.

It will also encourage organizations to do this kind of assessment and evaluation, since it has no direct financial costs as the framework is free of charge and the questionnaires used in this work will also be available for anyone to use them. If organizations assess themselves with this questionnaire, it will not only have an impact on ITIL implementations, but also on the original purpose of the P-CMM framework that is human resource management. Gaps and areas for
improvement will be identified and this will translate into a better overall organizational performance.

This work can be considered successful since the expected results were achieved. Not only the hypothesis was not rejected, but the work also provides research and insight into an area that lacked documentation. It also provides organizations a tool for self-evaluation (the questionnaires).

8. Conclusion

In this work we tested the hypothesis that mature organizations in terms of human resource management are more successful in ITIL adoption projects. We studied three distinct organizations with different relative ITIL maturity levels, ranging from an organization who’s applying for an ISO 20000 certification (which means a complete ITIL implementation) to an organization that is struggling to get started.

The case studies involved an assessment of the P-CMM practices performed in each organization, which were then compared with the ITIL maturity levels. This assessment used a qualitative approach, in which questionnaires were given to key people in the organizations, with a broad view of the areas being evaluated.

The results showed that the ranking of P-CMM and ITIL maturity levels coincide. While this doesn't prove a cause-effect relation, it reinforces the hypothesis and lays the foundation for future work with more valid and strict assessment methods.

These results should encourage organizations interested in adopting ITSM frameworks, particularly ITIL, to perform these self evaluations. Not only will the evaluation provide insight towards ITIL adoption, it will also identify areas in which organizations can improve in order to provide a better working environment and improve overall organizational performance.

This study showed that organizational maturity influences other maturity levels, particularly the growth or the consolidation of ITIL maturity levels that happen in the project phase.

9. Future Work

The conclusions taken from these case studies are important and add valuable insight to service management area. However, there are still many interesting things that can be built on top and parallel to this work. This section presents some suggestions for future work.

The first obvious suggestion would be to overcome the limitations presented by this work and gather a larger sample of organizations. It would also be interesting to study organizations from other countries, since in Portugal the universe is very limited in terms of certified organizations.

Also, instead of using the assessment method provided in this work, it would be valuable to perform full P-CMM audits, with a longer cycle. Due to time and bureaucratic difficulties, it was impossible to perform more strict audits. However, since the first step is already taken by this work, doors are now open for further investigation.

Another suggestion would be to design a service improvement program (and apply it to a real organization) that would simultaneously improve IT and HR management. For instance, let’s imagine that one of the organizations from the case studies presented wants to improve HR management in order to build a better infrastructure for a future ITIL adoption initiative. Instead of doing two separate projects that would take a considerate amount of time, it should be possible to design only one project that simultaneously improves the two areas.

This can be achieved, hypothetically, by inserting performance management and compensation by objectives into ITIL processes. This way, not only would the organization be implementing, for example, incident management, but also introducing the concept of performance management and meritocracy.
References


