

Analysis about the implementation level of ITIL in SMEs

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Abstract. Information Technology and Infrastructure Library (ITIL) is a fundamental need for any company or industry, especially for Small and Medium Enterprises (SMEs). However, there is an increasing demand on how to proceed to correctly implement it. There is not a clear guide, methodology or algorithm for it. The first step to take into account is to understand the current implementation level of ITIL processes in SMEs. Knowing the current level will help to set up a solution. In this paper, we present the results and analysis of a survey done in 64 small and medium enterprises of Madrid, Spain. The results let us knowing the current implementation level of ITIL processes.

Keywords: ITIL; SME; processes; implementation level.

1 Introduction

Due to the growth of software companies, a lot of new software tools for business were developed. Many large, medium and small companies have adopted Information Technologies (IT) based solutions. On this scenario, new services (based on IT) and new business models have emerged. The new companies demand new software and more services to technological companies as pointed in Mas et al. [1]. ITIL (Information Technology Infrastructure Library) is one of the standards that companies follow when implementing IT services. ITIL is used in large companies, because they have resources dedicated to implement it.

Analysing official data from the Ministry of Industry in Spain [2], around 40% of companies have less than 10 employees. And the data are even more significant if we take into account that almost 95% of companies are small and medium enterprises (less than 250 employees) in Spain.

The small companies have not specific resources dedicated to implement ITIL. It is even surprising the percentage of companies operating their business far from the ITIL processes, as pointed in Network World [3]. This is something identified in Binders et al. [4] and Shang et al. [5]: the fact is that ITIL is long, expensive and risky

for SMEs. Anyway it is important to highlight that most of the procedures described to implement ITIL just consider factors that may affect its implementation and how to deal with them. Some examples can be found at Ahmad et al. [6] and Pollard et al. [7].

This leads to the question: Is it possible these small companies follow ITIL? i.e., with such few resources, is it really possible to implement the processes recommended by ITIL? Should it be needed to adapt ITIL to SMEs? What are SMEs doing today related to the implementation of ITIL?

Taking in consideration what has been previously exposed, we are looking for how to help SMEs during the implementation of ITIL. The main objective of this paper is to know the current situation of SMEs in terms of ITIL implementation. In this way, a survey has been conducted to know how SMEs deal with processes, standards, certifications and specifically which experiences they have related to the processes of ITIL. The specific objectives of this research related to SMEs are:

- to know which ITIL processes have been widely implemented in SMEs.
- to gather information about the most interesting ITIL processes for SMEs (some processes could be interesting for a SME but have not been implemented for different reasons, for example its high implementation cost).
- to analyse which ITIL processes will be implemented in short term in SMEs.

The rest of the sections are organized as follows: initially an overview is made to get information about ITIL and SMEs. After that, the technical aspects of the survey are shown. We continue analysing the results of the survey and, finally, some conclusions are discussed.

2 Overview of ITIL and SMEs

2.1 Information Technology Infrastructure Library

ITIL is the most common approach to ITSM (Information Technology Service Management). In fact, ITIL is a de facto standard -as pointed in Hochstein et al. [8] to provide quality services. The current ITIL practices are the result of multiple experiences and several reviews of its previous versions. The current version is ITILv3, updated in 2011 (known as ITIL 2011), and it was organized in five books: Service Strategy [9], Service Design [10], Service Transition [11], Service Operation [12] and Continual Service Improvement [13].

The Service Strategy is oriented to design and implement the service from the perspective of capability and strategy. It defines a guided overview on the principles to be used for developing the policies and processes across the ITIL service lifecycle. The processes included in ITIL 2011 are: Strategy Management for IT Services, Service Portfolio Management, Financial Management for IT Services, Demand Management and Business Relationship Management, although companies are not really aware of them, as remarked in the survey of itSMF [14].

The Service Design is fully oriented to designing and implementing a service. The objective is to turn strategies and objectives into services useful to the company. It takes care for all the lifecycle of a service, the continuity of the service and the quality

of the service. The processes included in ITIL 2011 are: Design Coordination, Service Catalogue Management, Service Level Management, Availability Management, Capacity Management, IT Service Continuity Management, Information Security Management and Supplier management.

The Service Transition processes are addressed to move services into operation. The main idea of these processes is to control risks through Transition Planning and Support, Change Management, Service Asset and Configuration Management, Release and Deployment Management, Service Validation and Testing, Change Evaluation and Knowledge Management.

There is another group of important processes described in ITIL practices orientated to Service Operation. These processes ensure efficiency when operating a service as well as the value for the client. The processes included are: Event Management, Incident Management, Problem Management, Request Fulfilment and Access Management.

Finally, there is a Continual Service Improvement process that describes the 7 step of the improvement process.

2.2 SMEs in Spain

It is well known that the number of large enterprises is really small compared to the number of SMEs. This is a typical distribution in many countries. Regardless the ratio of large/small companies differs from one country to another, the percentage of SMEs is over 90%. For example, taking data from latest years in one of the most industrialized regions in Spain (Madrid), the number of companies with less than 10 employees is around 88% and the number of companies with more than 250 employees is lower than 1%.

IT expenses are not uniformly distributed as pointed in Marquez et al. [15]. This leads to a situation where some regions with companies offering high value services need to implement ITIL processes to compete while other regions are just offering primary industry products and services. As indicated in Gorriti et al. [16], European countries have not taken profit of the introduction of IT in SMEs. Even if high investments have been made in technology, the lack of processes make the investments useless. There is no knowledge enough in SMEs about the world of practices, regulations, certificates and so. Even if there are some attempts to clarify it, as Muñoz et al. indicate [17], SMEs are not aware of them. SMEs are not worried about quality and processes, govern and IT management as indicated in Aragon et al. [18]. The introduction of IT in SMEs is different from one industry to another. For example, financial, media or technology industries innovate and adopt IT and IT regulations very quickly as pointed by Mas et al. [1] while manufacturing industry is slower.

3 Survey Methodology

In order to know the current implementation level of ITIL in SMEs a web survey was designed. A web questionnaire has been created and it was hosted in a public site, so all the answers could be saved on-line and analysed.

3.1 Scope

The scope of the survey was defined to companies operating in Madrid region. Madrid was selected because is the region in Spain with the highest number of companies. Initially, it was used a database containing around 10,000 companies. A subset of 150 companies was randomly selected. The companies included in this study were from different industries such as Education, Tecnology, Financial, Marketing and Logistics among others. A message was sent to invite them to participate.

3.2 The Survey

The companies were initially asked about general information: company name, number of employees, number of IT employees, age of the company, industry. After that, the companies were asked about their interests on practices for IT management (quality, risks, business, certifications, competitiveness and costs), results of the implementation of practices (control of services, improvement on ROI, better alignment of IT department and business, better IT governance, savings), knowledge of the SME about standards (ISO 20000, ISO 9000, ISO 27001, BS 25999, ITIL, COBIT, PMBOK, PRINCE2 and others).

And finally we proposed a set of questions specifically dedicated to the processes of ITIL. We asked about every specific process in ITIL. In this case, questions with three options for the answer were offered:

1. Not implemented and not planned.
2. Not implemented but planned at medium term.
3. Implemented or will be implemented in short term.

3.3 Technical Issues

The sampling company selection method was randomized and one staged. Once the period to answer has overcome, the total number of responses was 64. The results obtained from the survey indicate a confidence level of 90% and a sampling error not higher than 8.5%. The percentages of error must be interpreted, as the response is in the interval 2 ± 0.17 , which still avoids overlapping with the rest of the intervals for responses 1 and 3.

4 Results and Analysis of the Survey

In this section we will present the main results of the survey conducted and a brief analysis and discussion about them. Most of the companies know about ITIL v3 but do not really know about the new processes of ITIL v3 2011 (in fact, it represents just a slight update), so we will present results related to the processes of ITIL v3.

4.1 Size

Approximately, 38% of the respondent companies have 1-9 employees, 45% have 10-49 employees and 17% have +50 employees. There is no large company in the survey and more than 80% of the companies have 49 or less employees. This is coherent with the official results published by the Ministry of Industry in Spain [2] that suggested that 40% of Spanish companies have 9 or less employees.

Anyway, the results in Fig. 1 are much more significant. In this case we have represented the answers classified by the number of employees in the company. The results show the bigger the companies are, the better the results are. That is, as the staff is bigger, the company seems to be more prepared to implement ITIL processes. That was really the interest of the study, as mentioned in the introduction section. The question we arose was if the SMEs could implement these ITIL processes with such small staff and facts show the hypothesis was correct. This result pushes us to help SMEs to implement ITIL processes.

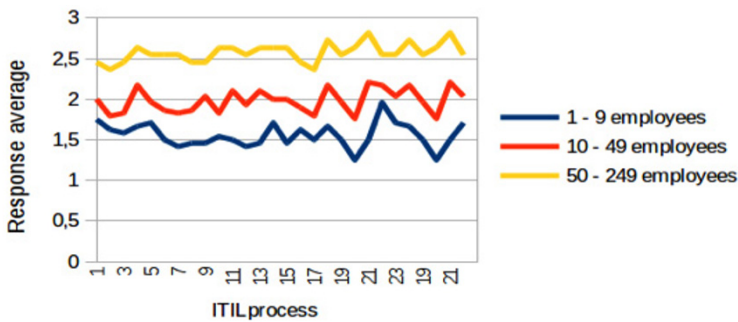


Fig. 1. Number of responses by size

4.2 Strategy processes

The results for the implementation level of ITIL strategy processes are shown in Fig. 2. The most relevant issue in this point is that the average for the three processes included in the survey, take a value close to 2. This could mean that SMEs have not implemented these processes but they have planned to do it in a medium term. As we will comment later this is dependent on the value of variance because depending on its value the results could mean that SMEs are planning to implement the strategy group of processes in a short term or it could also mean (if variance is high) that some SMEs have already implemented these processes and some others have not implemented them (and they do not have planned to do it).



Fig. 2. Coverage of the ITIL Service Strategy processes



Fig. 3. Coverage of the ITIL Service Design processes

One of the questions in the survey was related to the implementation level of the service strategy processes. In fact, the companies were asked if they thought they had implemented processes for managing the strategy. In most of the cases the response was negative. But when the companies were asked for every independent process, their answers were affirmative, i.e., they had already implemented those processes or they will have them in a short term.

This situation may be caused by the fact that companies do not realize they are implementing ITIL processes when they really are. This obeys to the need to implement these processes because of demands of its own daily operation.

Nevertheless, there is another issue to take in consideration. Although what we have previously explained is one of the reasons, we must have a look at the variance of the responses. If we do, we will realize that the big variance obtained is appointing that companies usually have or have not implemented these processes but they do not usually have plans to do it. It may happen probably because these processes are not complicated to be implemented, that is, just when a SME decides to implement it, it can do it quickly with no long plans for it.

Finally, the conclusion about these processes is that it is not easy to find companies that have implemented the service strategy processes. We must think how far a SME is from managing the financial aspects of its IT department or how far is from planning the demand. Of course they will always prefer to assign resources to daily operations than managing demand or financial aspects of its IT area.

4.3 Design processes

As we can see in Fig. 3, SMEs are far from having these processes implemented. Just taking a look at the results, SMEs do not even have planned to implement some of the processes. In this case, it must be appointed a great variance in results, what represents big differences among all companies analysed.

We must appoint that the specific process referred to the service catalogue management is not implemented in many cases and will not be in a short future. This

is a relevant and worrying result because it means that IT departments do not always have a clear service catalogue which turns in accepting almost any kind of job.

We must pay also special attention to continuity and security management processes as the average is lower than 2. This means that companies do not really care about both topics. That is something we could expect, as these processes are expensive and not easy to be implemented.

The results let us think there is no a clear activity to manage the suppliers, even if we could think this is a basic process. If we think in any company, but especially on those SMEs that hardly have resources, this should be one of the processes most assumed. But the fact it is that the situation is far from this. The situation is that due to the small staff (and so small size) of the companies, SMEs cannot dedicate resources to follow a supplier management process.

The results for the capacity process and availability of resources are better than the rest of the service design processes, which means that companies try to manage their capability and resources. This is happening because they represent direct costs and so SMEs are more sensitive to the management of these processes.

4.4 Transition processes

The results are really polarized in extremes again, what leads to a really significant variance. If we just get conclusions on the average values, we could think that SMEs have not implemented transition processes but they will in a short future. But that is not the case. An average close to a value of 2 – as we can see in Fig. 4, is meaning either companies are thinking about a medium term implementation of transition processes or -and that is the case- there is a great variance between those companies interested on ITIL processes and another ones that are not.

This group of processes is critical for any IT department or ICT based company. This explains why the planning and delivering processes are better scored than the rest of the processes, even compared to the processes of the other groups. We must think that these companies or IT departments are forced to deliver results.

Anyway, we must pay attention to the fact that some processes are not implemented in most of SMEs, for example, the knowledge management process.

Something similar can be concluded for the availability management process. The reason is that SMEs are just focused on delivering in any manner, no matter the conditions.

The conclusion with the validation process is not different: being as relevant as it is for the quality of a service, it is surprising that all SMEs do not have it fully implemented.

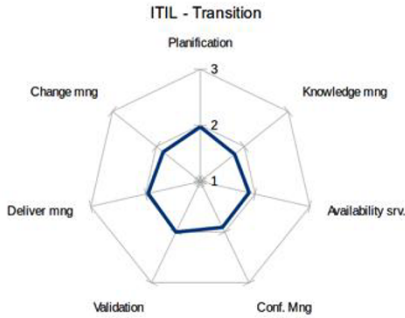


Fig. 4. Coverage of the ITIL Service Transition processes

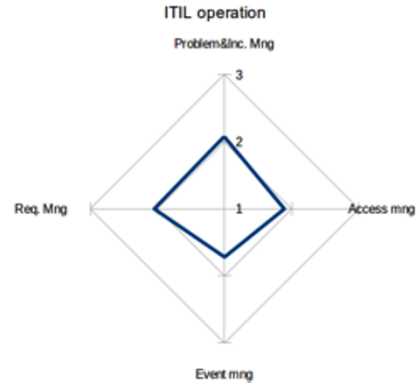


Fig. 5. Coverage of the ITIL Service Operation processes

4.5 Operation processes

Regarding the group of processes for the service operation, some issues were grouped in the same question just to avoid a longer questionnaire. It is relevant the fact that incidents and problems really matter and SMEs are more sensitive to them than to other ITIL processes. If we take a look to Fig. 5, we can see that results are also really close to a value of 2 (in the case of problem and incident management processes is a bit higher) but in this case the variance obtained is lower which indicates how SMEs take care about these processes.

Nevertheless, it cannot be concluded that this is a solved question for SMEs because the averages obtained are not at the top but still far from it. It is a fact that results are slightly better than in other groups of processes but it is possible to find improvement actions for SMEs. Even though SMEs do not clearly establish differences between some processes, for example *Problem Management* and *Incident Management*. This topic is aligned with the response obtained in one of survey questions that demanded information about the SMEs knowledge on ITIL and similar practices. This issue can be also determined from the responses obtained when asked about different references about good practices. SMEs do not really see any difference among ITIL, COBIT, COSO and others.

If we take a look at the results of request fulfilment, incident and problem management, a high percentage of companies have implemented the associated processes. Some other processes as event management or access management have not been implemented. What can be concluded again is that IT departments have just implemented the processes they 'consider' really relevant for the business. We highlight 'consider' because, in this case, there is no reason for not having implemented the event management process or the access process.

Unlike it happened with the security and continuity processes, the event management does not represent an extra cost as it can be implemented with the same resources than the incidences resources.

Something similar can be said about the access management process. A false security feeling drives SMEs to not implementing the access management process. As it can be deduced from the survey, small companies do not pay attention to access management. This may obey to the fact that security is not a tangible asset and so the perception of risk is not so high.

4.6 Continual Service Improvement process

Finally, the coverage of the continual service improvement process was 2.2. In this case there is a result better than in the other group of processes. This may be caused by well-known standards and practices such as CMMI (in any of its representations), Six Sigma or LeanIT, as SMEs seem to be really aware of its importance.

There were some questions about the reason to implement the practices related to this process, and the SMEs answered that the main reasons were cost savings, quality level improvement, business needs and competitiveness improvement. So, even there is not a unique objective when implementing these practices, SMEs identify the need to do it.

5 Conclusions

The main conclusions we have obtained up to now are summarized in the next points:

1. Only very few studies are focused on SMEs. In general, studies do not distinguish between large and small companies.
2. The results show us that no process stands out above other. In any case a guide to help SMEs to take a decision on the process to be implemented is necessary.
3. The data obtained in the survey show that companies are very polarized: either they have already implemented (or they are on the path) most of ITIL processes, either they have not started yet.

This paper has provided an insight into the current business practices in Spain, in particularly the SMEs related to the region of Madrid.

References

1. Mas, M., Quesada, J.: Las nuevas tecnologías y el crecimiento económico en España. Fundación BBVA (2005)
2. Dirección General de Industria y de la Pequeña y Mediana Empresa: Retrato de las PYME 2013. Ministerio de Industria de España (2013)
3. NetWorldWorld, <http://www.networkworld.es/actualidad/un-64-de-las-empresas-ve-en-til-la-clave-para-mejorar-la-reputacion-de-las-ti>

4. Binders Z., Romanovs A.: ITIL Self-assessment approach for small and medium digital agencies. *Information Technology and Management Science*, 17, 1, 138-143, De Gruyter Open (2014)
5. Shang, S.S.C. and Lin, S.F.: Barriers to implementing ITIL – a multi-case study on the service-based industry. *Contemporary Management Research*, Vol. 6 No. 1, 53-70 (2010)
6. Ahmad N., Tarek N., Qutaifan F., Alhilali A.: Technology adoption model and a road map to successful implementation of ITIL. *Journal of Enterprise Information Management* 26:5, 553-576 (2013)
7. Pollard, C.: Justifications, strategies, and critical success factors in successful ITIL implementations in US and Australian companies: an exploratory study. *Information Systems Management*, Vol. 26 No. 2, 164-175 (2009)
8. Hochstein A., Zarnikov R., Brenner W.: Evaluation of service oriented IT management in practice. In: *Proceedings of ICSSSM'05 2005 International Conference on Services Systems and Services Management*, pp. 80-84 Vol. 1 (2005)
9. Cabinet Office: ITIL® Service Strategy, 2nd ed. Norwich, UK: The Stationery Office (TSO) (2011)
10. Cabinet Office: ITIL® Service Design, 2nd ed. Norwich, UK: The Stationery Office (TSO) (2011)
11. Cabinet Office: ITIL® Service Transition, 2nd ed. Norwich, UK: The Stationery Office (TSO) (2011)
12. Cabinet Office: ITIL® Service Operation, 2nd ed. Norwich, UK: The Stationery Office (TSO) (2011)
13. Cabinet Office: ITIL® Continual Service Improvement, 2nd ed. Norwich, UK: The Stationery Office (TSO) (2011)
14. Institute of Systems Science: itSMF 2013 Global Survey on IT Service Management. itSMF International (2013)
15. Márquez Ramos, L., Martínez Zarzoso, I., Sanjuan Lucas, E., Suárez Burguet, C.: Efecto de las TIC sobre el comercio y el desarrollo económico. *Análisis para el caso de España. Estudios de Economía Aplicada*, 25 (1) (2007)
16. Gorriti, M., Álvarez, J. L. R.: La contribución de las TIC al crecimiento económico en España y los retos del sector. *Presupuesto y gasto público* 39, 243-266 (2005)
17. Muñoz Perrián, I.L., Ulloa Villegas, G.V.: Gobierno de TI-Estado del arte. *Sistemas y Telemática* (2011)
18. Aragón Sánchez, A., Rubio Bañón, A.: Factores asociados con el éxito competitivo de las pyme industriales en España. *Universia Business Review* 8, 38-51 (2005)

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