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IMPLEMENTING SMALL&MEDIUM IT PROJECTS IN SMALL&MEDIUM ENERPRISES

Case Studies

Keywords

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Modern Technology
Cloud Computing

JEL Classification
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Abstract

Information technology is essential nowadays for all companies. Small enterprises are an important part of the economy and this article aims to provide some useful insight in implementing modern IT projects to benefit them. Due to the limited funding available for the IT infrastructure in most start-ups and small businesses, the projects should be adapted to fulfill the needs of the company for the lowest cost.
The paper will start by defining small and medium project management theory and outlining the target of the study, small and medium sized companies. Next it will show a number of case studies of IT projects implemented in different types of small companies in Romania. Based on these implementations we will draw some conclusions relevant to most small companies which need to design or improve their IT infrastructure.

SMALL AND MEDIUM PROJECT MANAGEMENT THEORY

Project management is a "science" which evolved considerably in order to keep up with the growth of IT. In successful IT projects, management processes follow a standard and a comprehensive methodology, designed for the business environment and adapted to its needs, by improving them as a result of day-to-day practice.

It is of upmost importance that the effort put into management processes to be dimensioned to the size and complexity of the project.

Small and medium projects require a smaller effort. But as the project grows in size (quantity of resources, number of partners sub-contractors, value of project, etc.), proportionally, so does the amplitude of the management processes and the effort put in, requiring more coordination. Scaling a project, filing it into one of the following categories: small project, medium project or large project; should be the first step accomplished before deciding on the right management process (University of Saskatchewan, 2009). In Appendix A Table No.1, we have presented a way of segmenting the IT projects.

ITS Project Management Group present a very interesting concept in classifying projects, which is evaluating the size of the work by considering the risk matrix The matrix can be seen in Appendix A Table No.2. Risk evaluation is done according to the 6 element categories and upon following these criteria, it will be established if the project is best suited under a different project category (ITS Project Management Group, 2012; http://en.wikipedia.org/wiki/IBM_Rational_Unified_Process).

In this context, the matter of correct scaling arises, in terms of effort assigned to the task.

Management processes will be considerably reduced for smaller and medium projects, but they will not diminish the phases taken in a project: Initiation, planning, execution, monitoring and control and completion (Project Management Institute, 2013). Although, at first glance, a small or medium project is easily managed, we will go through a few elements which prove that a bad or inexistent approach of project management can lead to project failure:

- Lack of leadership; not enough importance given to the processes which sustain leadership throughout the project
- Weak risk management; lack of monitoring and knowledge about risk within a project can lead to greatly exceeding the initial budget by "accomplishing a risk"
- Lack of understanding of business process' complexity; frequently small and medium projects can approach complex processes, while sometimes they are completely overlooked or misunderstood (Petre, 2010)
- Lack of support from the management; small and medium projects are unfortunately, treated superficially by the management team, mostly due to small income and effort
- Not applying specific or adapted processes for small or medium projects; usually, within IT companies, there are no standard project specific processes, specially designed for small and medium projects
- In IT, project failure will take effect when final users are not considered from the beginning to the end of the project (Rakos & Associates Consultants Ltd., 1990)

(Campbell, 2008) An IT project can be managed by synthesising all the necessary information on a single page. What stands out in this concept is that the dynamic of projects limits us to optimising our work

style for monitoring and controlling the small and medium projects in order to keep costs at a minimum.
Project size impact the number of the team members for the project. (Harvard Business School Press, 2004) A team with few people may not have all the required skills for the project, on the other hand a bigger team could not be supported by the budget of the project. It is a challenge for the project manager to manage a small or medium sized project in the IT field and to finalize it in time, following the budget and quality lines. All the issues treated until now concern big size companies (Akbar, Hassan, & Abdullah, 2012). Tailoring the processes for small projects should not impact the quality.

SMALL AND MEDIUM SIZED COMPANY'S THEORY

The definition of small and medium enterprises (SME) is constantly being altered due to the evolution of global and European economy.
(Comisia Europeana, 2007) According to current definitions:

- An enterprise is considered small when it has no more than 50 employees and a turnover under 10 million Euros.
- An enterprise is considered medium when it has fewer than 250 employees and a turnover that does not exceed 50 million Euros.

(Centru Pilot de Asistare Online, 2014)
At first glance, the impact of SMEs on the economy might seem insignificant, but, on a closer look at turnovers, statistics show that SMEs constitute 99% of enterprises at a global scale. In Romania, the share of SMEs goes up to 99.6%. SMEs have always been a means of generating IT projects. IT upgrading has become a priority within SMEs, but the ability of carrying out and sustaining large scale complex projects is not significant. Thus, we are facing a large market for IT projects with a small capacity of sustaining these IT projects on their own. It is to be noted that, European funds for upgrading and modernization, have been allocated, but the absorption rate is slim.
Considering the current trend for ergonomic solutions, which are environmentally friendly in what electricity usage is concerned, new methods must be found and adapted in order to keep performance high. The emphasis on sustainability is not to be disregarded. New options, available due to the progress of technology, ensure environmental benefits and also bring forth financial advantages more often than not. Eco-friendly systems are the most cost efficient option. Thus, environmental principles become very useful in designing a new age IT infrastructure. This is the background in which the need to implement small and medium projects for SMEs.

CASE STUDIES

We will further submit two case studies regarding small and medium IT projects within SMEs. We will note the steps and stages that each project underwent, in order to implement IT solutions, the expected results and the management processes used.

PROJECT FOR AN ADVERTISING COMPANY

The advertising company in question is a SME with 100 emplyees.
The activities of the employees usualy take place on the premises, in the offices. The work load includes office type tasks, comunication and creation using specialised software. Some of the emplyees travel to customer locations for presentations and business offers and they require a solution for enhancing portability.
Among the IT needs of the enterprise there is a high requirement for internet and mail

servcies, network strorage and sharing space for working with customers and suppliers, sharing printers, high network security for access within and outside the server networks. The project was analysed considering the criteria of Appendix A, Tabel No.1 and Appendix B, Tabel No.2. After the evaluation, we concluded that the project in hand is small and it has a medium level of complexity.
The implemented management processes and the summary of the project stages are shown in Appendix C Figure No.1
The project's results were:

- Migrating the e-mail services from a local exchange server to cloud services provided by Microsoft;
- Implementing the cloud storage solution for data transfer between the company, suplyers and customers;
- Optimising physical servers through virtualization and reallocation of tasks;

The cost-benefit analysis of the solutions available for this project has showed that:

- The cloud solution for e-mail, in this particular case, is 42% more cost efficient than any other available
- The cloud solution for file sharing is 28% cheaper than the ftp plan

PROJECT FOR OFFICE BUILDING ADMINISTRATION ENTERPRISE

The office building administration enterprise is a SME that employs 10 workers.
The studied company deals with the management of aprtment buildings, office or comercial spaces.
This type of activity involves maintaining business realtions with a large number of service suppliers, responding to site in case of malfunction or emergency situations and monitoring the custumer's locations. The IT seervices needed by this company are internet, e-mail, print solutions and file sharing. The project was evaluated considering the criteria from Appendix A, Tabel No.1 and Appendix B, Tabel No.2. After the evaluation, it was concluded that the project can be clasified as small and that it has a low rate of complexity.
The management proceses applied and the summary of the project's stages are shown in Appendix D Figure No.2
The results of the project were:

- Migrating the e-mail services in the cloud system;
- Using cloud storage for file sharing on portable devices
- Modernising the office infrastructure for better internet sharing via wirelss LAN and for implementing a device suited for data storage

The cost benefit analysis, ran for the project, has shown that:

- The e-mail cloud solution has a 30 Euro cost per month
- The file sharing cloud solution is included in the cost of e-mail cloud services.

CONCLUSIONS

Why should we make an effort for tailoring the processes from big size projects to small size projects? Because it is common for many companies to run small and medium sized projects without managing them. Sometimes, a project that is not controlled is more costly than a managed one.
The management proceses within small or medium project should not exceed the limits of an agreed upon minimum. Agreed upon minimum, referes to aplying all the necessary management processes, so that the project follows 4 limitations: purpose, time, money and quality.
We have submitted two case studies, very similar to each other, but it can be seen that the management proceses we aplied differ. For instance, in the second project, in the control and execution stage, no

importance was given to risk processes, because it was established that it involved a low complexity and risk point.

It is to be noted that in both case studies, all the project stages were addressed and filled out: initiation, elaboration, construction, tranzition. Following the logical steps of implementig a project is essential in finalising a successful small or medium project. In a lot of these types of projects, the importance of the anlisying step is underestimated, which leads to project failure. The analisys stage is the basis for establishing technical solutions and the requisits of implementation. (Petre, 2010)

The case studies presented follow the trends from the last few years, regarding modern technology implementation in SMEs.

Modern technologies have a strong impact on the SMEs. Correctly planned and implemented, they can completely transform the work methods, organize the steps for acomplishing office tasks and ease their completion.

Enterprises need to resort to specialized companies to recommend them an improved, modern system, according to the available software options, that also fits their needs.

There are many available software options, for affordable prices, which are not used because of the lack of trust in the on-line environment. Companies preffer to work with physical services, offered by other companies, along with the human factor. The fact that the data is stored on a server, at the headquarters of another company offers trust, although the storage service is similar to cloud, the only difference being the lower risk in case of the latter. Even if the data is not "palpable" for the user anymore, it is stored automatically in more copies. In case of a breakdown, they can be easily reverted. Companies that use cloud computing services stopped having redundancy issues because the systems they use regard this aspect. The need for back-ups no longer exists, avoiding confusion caused by different versions, that were usually ocuppying physical space, being saved on storage units (DVDs, memory sticks, external hard drives). Another important aspect in this matter is the reduced cost, compared to storing data on local servers, at the company's headquarters or a provider's. We have concluded in our research that, in what SMEs are concerned, these services are much more cost efficient. There are exceptional cases, determined by the field of activity, where this service would not be worth implementing. An exemple in this regard is a special concern about data safety and confidentially.

Free services are also an alternative worth considering. Usually these are viable and useful for small scale tasks, but they can be successfully implemented for the scale of company studied by us. Storage services or office type programmes can deliever to the enterprise's needs, if they are not used for the main object of activity and the workload is not very high.

A good manager must consider writing off of the investment and installation costs through the new found efficiency of tasks and saving made on consumables and electricity. A storage center will always be more efficient in what electricity is concerned, compared to a small data room of a SME. In a proffessional center, the IT architecture is carefully designed at a large scale, the temparature is properly maintained, and changes are planed for long term as opposed to small companies which cannot forsee the long term data volum fluxes. Where ever it's possible, it was noticed that chosing to invest in a monthly pay-plan IT technology is to be prefered. Depending on the number of users and user licenses aquired, the cost of purchasing complet IT solution can rapidly rise. Also, monthly plan options do not require maintenance, as this is usually provided, along with technical support and constant free updates to improve the service. For SMEs with few emplyees and without their own IT department, this is a

good aternative to reduce costs, as they are no longer required to use outsourced solutions for some of the services used. Another benefit in software monthly plans, is the consistent compatibility with new technologies which are evolving simultaneously.

The provider will always offer updates to ease access to new and modern devices. Purchasing new hardware is more difficult, it requires professional consultancy and implementing. Although the progress in technology is important and acceding to a new wave of inovations is beneficial, for a lot of fields of activity, implementation must be ajusted to the SME's means.

The user interface of cloud services is very friendly, versatile and most importantly intuitive, reducing the need to organise training sessions for the employees.

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Appendices

Appendix A,
Table No.1
Project dimensions

Category	Man days	Employee Turnover through Project Lifecycle	Employee Budget	Project Management Guidelines
Small	<50	Low to None	<$25,000	Low
Medium	51–199	Low	$25,000–$150,000	
Large	200 +	Medium	>$150,000	High

Note. The table is adapted from University of Saskatchewan in Project management – Size of the Project (University of Saskatchewan, 2009)

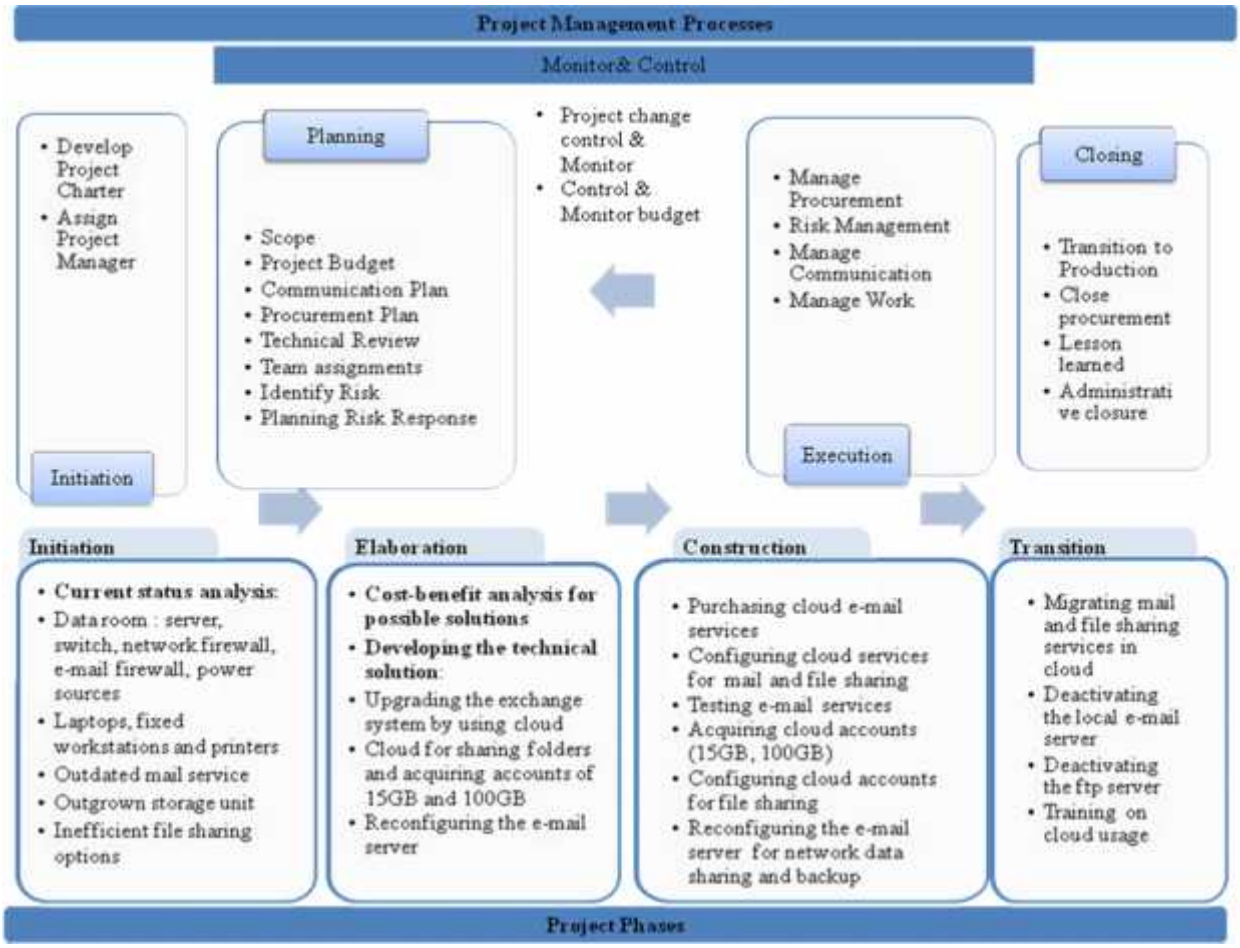
Appendix B,
Table No.2
Project dimensions with rating risk

Project Classification—Risk Matrix

Risk Factor	Low	Medium	High	Very High
Total Team Size	<5	5 – 9	10 – 14	>15
Workgroups Involved	1 – 2	3 – 4	5 – 6	>7
Technology/ Technique /Process	Expert	Familiar	New to UCSC	Breakthrough
Complexity	The solution is well defined and no problems are expected	The solution has identified problems	Multiple approaches to the project goal	The solution is only vaguely defined
Political Profile/Impact	**Unit/Department**	**Director Area**	**Dean Area**	**Enterprise-wide**
Deployment Impact	Unit/Dept	Director Area	Dean Area	Enterprise-wide
Risk Scoring	[0-10] Manageable – no change to classification [11-17] Moderate – increase class 1 level [18-25] High – increase class 2 levels			TOTAL

Note. The table is adapted from ITS Project Management Methodology (ITS Project Management Group, 2012)

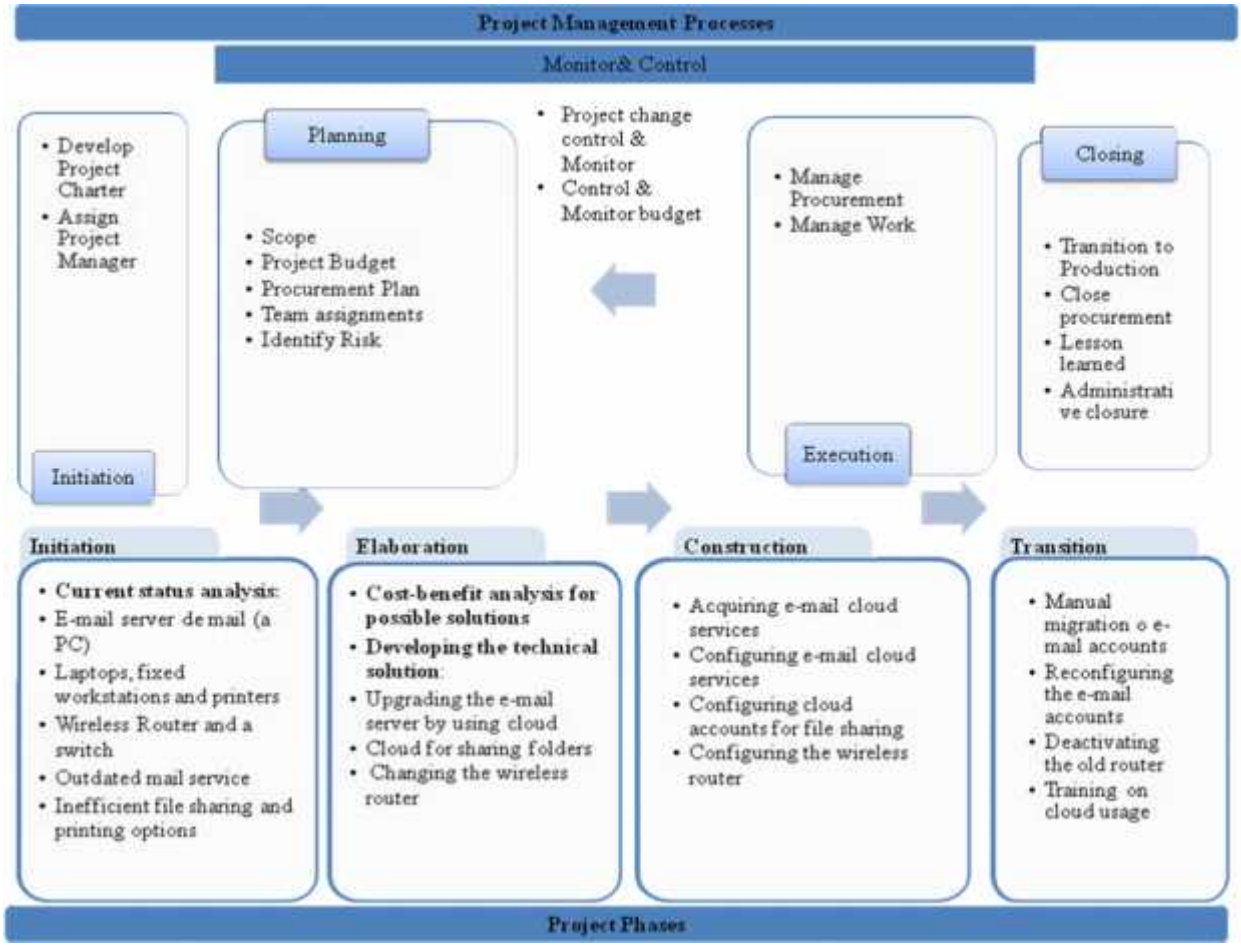
Appendix C,
Figure No.1
Project Advertising Company



Note. Figure adapted from Project Management Body of Knowledge and RUP Phases (Project Managemenet Institute, 2013)

Appendix D,
Figure No.2

Project for office building administration enterprise



Note. Figure adapted from Project Management Body of Knowledge and RUP Phases (Project Managemenet Institute, 2013)