A Case Study of ICT Projects in Education: Project Management Outsourcing

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Abstract

The increasing demand for eGoverment services has created considerable challenges for public administration, not only in terms of expertise and experience that are required in order to run development projects, but also from organizational, cultural and legal perspectives. In fact, the ongoing modernization of public administration functions is realized through a large number of complex and technology intensive projects. Most of them are co-financed by the European Union within the framework of Community Development Programmes. The need for effective implementation of such projects in compliance with the EC directives and for the seamless integration of their outcomes into the organizational structure, has driven public administration officials to seek alternative means for enhancing the operational effectiveness of departments involved in project implementation and for supporting functions related to the utilization of project results and change management. This paper describes a certain case study on outsourcing practice in the Ministry of Education and Religious Affairs of Greece.

1. Introduction

The importance of new technologies for any modern public administration has been well established long time ago and various such technologies have been implemented and are already in operation for a large number of public administrations around the world. The added value is primarily due to the automation of business processes and the streamlining of organizational activities that are possible with the use of Information & Communication Technologies (ICT). However, beyond its obvious and well established importance nowadays, the use of ICT and the optimal utilization of the ICT resources in public administration has many practical challenges both in terms of human resources needed to run the systems and in terms of maintaining and enhancing the utilization of constantly evolving ICT.

In regard to the Ministry of Education and Religious Affairs of Greece (Greek initials: YPEPTH), the use of new technologies has evolved around two main directions: (a) to facilitate and streamline the administrative processes of its administrative units consisting of a central office, the local offices and the public schools all over the country, providing at the same time the necessary interconnection among them, and (b) to support and enhance the teaching and learning practices in schools through the utilization of ICT and the introduction of novel educational activities made possible by ICT. Along these lines, over the past years a large number of ICT-related projects have been designed and implemented either by YPEPTH itself or by organizations supervised by it and acting on its behalf. As a result, a vast computer and networking infrastructure has been developed covering the administrative units and schools throughout the country (about 15.000), specialized computer systems and applications have been developed to support its complex administrative procedures, and a large corpus of educational software and computer-based educational activities have been introduced in schools supported by large scale teacher training programs (more than 100.000 teachers have been trained).

During the last 8 years, emphasis has been put by YPEPTH on e-government related issues and on implementing ICT projects whose purpose is the facilitation and support of the citizens involved in the education affairs, giving access to relevant information and services. For example, candidate teachers can now apply electronically for a teaching job in a school through an information system operated by YPEPTH.

In addition, YPEPTH implements a large number of projects that are funded by the Operational Programmes of the Community Support Framework (OPCSF) of the European Commission (EC). Such projects include ICT projects (but not only), most of which are eligible for funding under these EC operational programmes.

The development and utilization of ICT by YPEPTH on the one hand and the design and implementation of many large-scale and complex

projects on the other, have created considerable challenges for YPEPTH and unprecedented needs for the following basic reasons: (i) The organizational structure of YPEPTH is adapted to its core functions1 that are related to education administration and it is not suitable for running projects or for providing ICT services, (ii) There is no adequate permanent personnel with the ICT project management skills and expertise required, neither is it desirable or feasible to create and maintain such expertise in-house.

In order to face such problems and enhance the performance and cost effectiveness of project related activities, the ministry decided to outsource a number of specific operations related to project implementation, including ICT projects, but also other projects as well. In this paper, we describe one such practice where the ministry enhanced the Special Programmes Directorate (a department of the ministry specifically created to run projects eligible for funding by the Community Framework Programmes) by outsourcing some of its services.

2. Literature Review

Many references exist in the literature concerning outsourcing worldwide [3]. Most of the papers in the literature deal with information systems (IS) outsourcing whereas other areas of outsourcing (like project management) are less covered. IS outsourcing has become a rather popular issue since companies like Ford or Kodak began to apply it. Nowadays, and after a long period of debate, IS outsourcing is considered as an acceptable way to deal with certain IS tasks. The main focus of outsourcing is on externalizing those organizational activities which are not directly related to the core competences of the organization [7].

At the beginning, IS outsourcing consisted of an external vendor providing a single basic function to the customer, exemplified by facilities management arrangements where the vendor assumed operational control over the customer's technology assets, typically a data center [2]. Outsourcing of information systems began to evolve in 1963 when Electronic Data Systems (EDS) signed an agreement with Blue Cross of Pennsylvania for the handling of its data processing activities. This was the first time a large business had turned over its entire data processing department to a third party. However, the real interest in outsourcing occurred during the mid-1980s when EDS signed contracts with Continental Airlines, First City Bank and Enron. Later on, outsourcing evolved from the one vendor – one

client arrangement where the vendor provides apparently all IS services to its client, to complex arrangements involving multiple vendors and multiple clients (see for example the 'cluster' deals entered into by Australia's Federal Government).

More recently, the industry has seen the growth of two new areas of IS outsourcing – web and e-Business outsourcing where vendors are contracted to provide web-based applications to enable a firm to enter the e-Business era. The latter practice is usually referred to as Application Service Provision (ASP) [4].

Public administration (PA) also started experimenting with IS outsourcing processes driven by market and political trends [3][9]. The UK's Compulsory Competitive Tendering (CTT) was probably the first relevant example, introduced during the 80's at the local administration level [6], while the USA's National Performance Review (NPR) employed IS outsourcing during the 90's [5]. Many other countries have followed these initial exemplars and some methodologies such as the "Euromethod" [11] have been devised to help with this process.

Currently, PAs are investing large amounts of money on IS and information technology in general. According to Gartner, the USA Federal Government spent $66 billion on IS/IT goods and services in 2006 and 11% of professional PCs worldwide were purchased by government agencies. The procurement of such systems and services is mainly done through market suppliers [6].

Outsourcing Project Management (PM) tasks is another, slightly different concept. When an organization or a public authority is aware of its weaknesses regarding project management, one solution is to outsource these activities to someone with the appropriate expertise. Outsourcing project management tasks [8] brings certain benefits, but also has its limitations. An experienced PM service provider could enrich project teams in a public organization by bringing along project tools and techniques that have been proven effective in practice and also by infusing a different project-oriented work culture. On the other hand, the effectiveness of outsourcing Project Management functions is highly related to a public organization's administrative structure and processes and their resistance to change. Indeed, public administrations have not yet implemented a PM culture. Introducing PM professionals into this environment requires strong support from the top management, otherwise results will be limited. Furthermore, the expectations should be realistic regarding how much a project could be improved by outsourcing the PM tasks: if the project lacks sponsors' support, or is not well defined, or resources are inadequate, then there is no tool or technique that will save it from problems.

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1 The ministry's core function is to provide educational services, to administer teachers and schools, to prepare curricula for the primary and secondary education and to supervise public universities throughout the country.

3. Outsourcing in the Ministry of Education in Greece

In this section, we describe a specific outsourcing practice of YPEPTH. The outsourcing refers to the functions of the Special Programmes Directorate (Greek initials: EYE) of YPEPTH covering a time period from November 2007 to the end of December 2008.

3.1. The need for outsourcing

Near the end of 2007, it became clear to YPEPTH officials that the performance of the projects under the responsibility of EYE were lagging behind expectations in terms of progress of implementation and absorption of budget and that the deadline for completion of all approved EC projects (end of December 2008) was fast approaching. So, it was critical to take immediate measures in order to enhance the performance of EYE and to speed up the process of implementation of all its projects (total budget of 630 million Euros).

The concept of project management and all the associated functions like scheduling, budgeting, deadlines, resource allocation, reporting, etc., do not fit well into the organizational structure of a public authority like YPEPTH neither it is its core business, especially for projects involving new technologies that are dynamic in nature. Additionally it does not have the culture and adequate expertise to implement projects. In fact, most of the ministry's professional staff are assigned jobs related to their primary domain expertise (i.e. educational experts), or they are involved in necessary administrative work. However, some of the staff (mostly school teachers dispatched to the ministry) has acquired some project management skills after years of involvement, but they are not permanent in such jobs (not permanent in the sense that there are no official placements with that job description) neither are they enough in number for the workload required. On the other hand, hiring additional permanent staff with the appropriate skills to run projects is not considered feasible due to lengthy and complicated hiring procedures in the public sector.

In regard to ICT expertise, there is a rather small number of employees of YPEPTH with certain ICT expertise who are mostly school teachers with specialty in informatics dispatched to the ministry. Primarily, such persons belong to the department of ICT infrastructure of YPEPTH and they are involved in monitoring the operation of some critical infrastructure of the ministry. A smaller number of them are assigned to other departments of the ministry including the Special Programmes Directorate specifically created to run projects (see below). However, there is no established systematic way of maintaining in house expertise on ICT products and services. So, the ministry needs very often external specialized ICT experts to solve its everyday problems.

For all the above reasons, outsourcing some activities related to project implementation has been considered by YPEPTH as absolutely necessary. The Research Academic Computer Technology Institute[2] (RACTI) has been selected by the ministry officials to perform such functions. RACTI has the legal credential to be assigned such a task as a private institution supervised by YPEPTH, while at the same time it has extensive expertise on PM issues. For this purpose, it was assigned some of the tasks of EYE, including the overall management of the directorate. Within this framework, RACTI created the Ministry of Education Support Office and staffed this office with a group of experienced personnel to carry out the job of supporting the functions of EYE. It was not the first time that such work assignments of YPEPTH to RACTI took place. In fact, for many years RACTI has been a technical consultant of YPEPTH undertaking the implementation of a large number of specific ICT projects on behalf and for the benefit of the ministry. However, such cooperation was basically on a yearly contract basis. This time, the ministry essentially created a strategic partnership with RACTI and delegated to it some of its non core functions related to project implementation.

3.2. Implementation and challenges

The Special Programmes Directorate (EYE) of the Greek ministry of education had been created in 2002 for the purpose of designing, monitoring, organizing, coordinating, supporting and evaluating projects funded by Operational Programmes of the Community Support Framework [10] and which are of interest to the ministry. For every project that EYE undertakes on behalf of the ministry, it has the responsibility to run all necessary operations for its implementation, from start to completion. It does so in close cooperation with the appropriate (for each project) department(s) of the ministry or the appropriate supervised (by the ministry) organization(s) that are the stakeholders and responsible for the utilization of the deliverables and/or the operation of the project. Furthermore, EYE is subject to audits performed by designated authorities during or after the end of each project.

Some examples of projects undertaken by EYE are:

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2 The Research Academic Computer Technology Institute (www.cti.gr) is a Non Profit Private Legal Entity ("NPID" under Greek Law), supervised by the the Greek Ministry of Education and Religious Affairs, and constitutes an independent institution at the financial, administrative and scientific level.

- Implementation of a Data Center as well as the appropriate applications for the administrative processes of YPEPTH. This infrastructure serves as a basis for main eGoverment services that YPEPTH will offer to the users.

- Digitization and archiving of books of the Public Libraries of Greece.

- Teacher training in ICT skills.

- Procurement and installation of ICT and special equipment at schools for students with special needs.

The first task of R.A.CTI's team was the overall assessment of the situation of each distinct project undertaken by EYE on behalf of YPEPTH. It is pointed out that there were 45 projects with a total budget of 630 million Euros and that the percentage of implementation (in regards to budget absorption) was quite low at less than 10% at the time the support office started its operation near the end of 2007. Furthermore, the schedules for all projects were very tight due to the fact that the official programmatic period was about to end in December 2008 and all EU funds of all projects should have been absorbed by that time, otherwise they would be lost.

Considering the work that had to be done for a successful completion of the projects, the human resource requirements were estimated per role and per project and a review of the available personnel at YPEPTH was conducted in terms of skills in project management and ICT. Based on this information, it was possible to some extent to rationalize the distribution of workload on people and make the right assignments of jobs to individuals, wherever that was legally and administratively possible.

The work of the members of the team can be categorized as follows:

- Codification and rationalization of administrative and technical procedures involved in the implementation of projects. Redesign and/or fine tuning of some projects.

- Definition and creation of a monitoring & Support scheme during the entire lifecycle of all projects concerning legal, financial, technical and administrative issues.

- Task management. Streamlining of tasks to the units of EYE and scheduling of activities. Specific task lists on a daily basis, assignments of tasks to persons.

- Communication management: Communication with appropriate authorities and stakeholders.

- Technical processing of calls for tender for consistency, soundness and compliance to rules and regulations.

- Resource management, including human resources management.

- Direct contribution to certain important projects of EYE.

Each project has its own complexities and peculiarities, schedule, budget and rules of eligibility for funding under the Community Support Framework Programme. Some projects are interconnected in the sense that the intermediate or final results of some are prerequisites and/or should provide input to others. All projects have to follow strict rules and procedures throughout their implementation dictated both by the specific eligibility requirements for funding, as set by the EC, and by the general procurement rules that should be applied for the assignment of all public projects to outside contractors. Adherence to the rules and procedures is a prerequisite for the eligibility for funding and is subject to multiple layers of controls and audits by the supervising authorities (both national and EC authorities) even after the end of a project and for a period of 5 years afterwards. Deviations from the rules at any time and for any action related to a project may render the entire project ineligible for funding by the EC and may result in financial damages for the ministry. In order to avoid such eventualities and enforce full compliance to the law, the ministry (like all public organizations implementing projects) has set up internal procedures requiring, among other things, that any decision taken in the course of the implementation of a project should pass through the regular chain of command of the ministry and be duly signed and dated by the appropriate officials each time.

On the other hand, there is a great variety of projects all of which are subject to the same rules and regulations. All projects have to be coordinated by the same pool of people, primarily by the staff of EYE. Due to human resource constraints it is neither feasible nor would it be practical and cost effective to have distinct project teams for each project. So, there must be overlaps and the same person may be involved in several project teams and in different positions in them according to his/her skills and the special needs of each project.

One major challenge for RACTI's team was the effective combination of two different requirements: (i) enforcement of efficiency, speed, deadlines and results in the work environment of a public organization, and (ii) full compliance with rules, regulations as well as with the internal procedures of YPEPTH in all phases of all projects under implementation. In order to achieve a workable combination of these factors, the team had also taken into consideration that for all actions within the framework of the implementation of projects, the staff of EYE and the ministry officials were legally

liable in the end, for any mistakes or omissions. So, all actions were carefully designed so as to avoid such situations while enforcing efficiency and speed.

The team utilized its expertise and experience in project management as well as its work culture to establish a working relationship and mutual trust with the people of EYE. A deep understanding of the work culture, the procedures, the rules and the existing administrative structure of YPEPTH and EYE was necessary so as to properly align and fine tune the initiatives of the team with the mechanism of EYE. A lot of effort on the part of the team had to do with finding appropriate trade-offs among the requirements for efficiency in project implementation, the rules and procedures that had to be followed at every step, the work culture of the people and the administrative structure. Cooperation, team spirit, smooth adaptation, continuity, efficiency, strict adherence to the rules and working within the system, were basic principles that were followed throughout this endeavor. As a result, an effective mechanism was created and is currently operational, that balances such factors sufficiently well and delivers projects on time and within budget.

4. Discussion

Outsourcing project management tasks appears to be necessary and beneficial for a public authority when complex and demanding development projects have to be implemented. The main reason is that the implementation of such projects is not a core business of a public organization; hence, its organizational structure and work environment are usually not appropriate for such endeavors. On the other hand, more often than not, there is a considerable resistance to change in a public organization. However, change and adaptation are key words for any such project and, also, the main objective and prerequisite in most cases.

In regard to the work presented here, one of the significant benefits of YPEPTH from outsourcing to RACTI certain project management tasks, was that RACTI's team, apart from its expertise, brought along certain project management tools and techniques that helped improve overall projects' results. So, a technology transfer to YPEPTH's staff regarding all these tools and techniques has taken place and continues on. On the other hand, the interaction among staff members of both organizations (that is absolutely necessary for any project and at any phase of its lifecycle), resulted in an infusion of certain work habits and culture of RACTI's staff (that is similar to the work culture of the private sector organizations) to YPEPTH's staff. It also resulted in the creation of a team spirit to the mutual benefit of both organizations. Such a

cooperation and work environment was to a certain extent necessary due to the requirements of the projects and the overall work that had to be done in a narrow time frame.

5. Conclusions

As far as results are concerned, during a period of a little more than one year (Nov. 2007 – Dec. 2008), there was an impressive improvement of the effectiveness of the directorate in terms of rates of progress in project implementation. In fact, in terms of budget absorption which is an easily measurable performance index, although it does not fully reflect the implementation project, the percentage was about 10% at the end of 2007 and increased to 80% by December 2008. In addition to the above, all audits that have been performed so far by the designated authorities for a variety of projects have been successful and no deviations from legal rules and procedures were detected whatsoever.

Finally, it should be pointed out that the overall outsourcing experience described here has given rise to a new mentality and know-how toward organizing the implementation and integration of large and complex projects into a public organization. It was the source of valuable experience for the creation of rules, procedures and methodologies that can potentially help the ministry of education handle its future challenges.

6. References

[1] K. Ketler, J. Willems, "A study of the outsourcing decision: Preliminary results", Proceeding of SIGCPR'99 (New Orleans, USA, April 1999), ACM Press, 182-189.

[2] J. Dibbern, T. Goles, R. Hirschheim, B. Jayatilaka, "Outsourcing: A Survey and Analysis of the Literature", The DATA BASE for Advances in Information Systems, Fall 2004 (Vol. 35, No. 4)

[3] J. M. Marco-Simó, R. Macau-Nadal, J. A. Pastor-Collado, "Information systems outsourcing in public administration: an emergent research topic", Proceedings of European and Mediterranean Conference on Information Systems 2007 (EMCIS2007), June 24-26 2007, Valencia, Spain

[4] Kern, T., Lacity, M. C. and Willcocks, L. Net Sourcing: Renting Business Applications and Services Over a Network, Upper Saddle River, NJ: Prentice-Hall, 2002.

[5] G. Beyah, M. Gallivan, "Knowledge management as a framework for understanding public sector outsourcing", Proceedings of the 34th International Conference on System Sciences, Hawaii, 2001.

[6] M. Hancox, R. Hackney. "Information technology outsourcing: Conceptualizing practice in the public and

private sector", Proceedings of the 32nd Annual, International Conference on System Sciences, Hawaii, 1999.

[7] J. Lee, M. Huynh, R. Kwok, S. Pi, "IT outsourcing evolution--past, present, and future". Communications of the ACM, 2003, 46(5; 5), 84-89.

[8] A.M. Rodriguez, "Trends in Argentina: Outsourcing Project Management". PM World Today, July '07, Vol IX, Issue VII.

[9] J. Sarivougioukas, A. Vagelatos, "IT outsourcing in the Healthcare sector: The case of a state general hospital", SIGCPR 2002 Conference, Kristiansand, Norway, May 2002.

[10] Cofinanced Development Programmes, Hellas, http://www.kps.gr/en_2000-2006.htm

[11] "Euromethod", http://en.wikipedia.org/wiki/Euromethod