Information systems outsourcing in large companies: evidences from 20 Ireland companies

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ABSTRACT

Information systems outsourcing is an indispensable tool in the management of information systems. The set of services contracted to outside suppliers, originally more limited to services of an operational nature, has expanded over the past two decades, and today there is a wide range of services subject to outsourcing. Among them are: the hiring of software development; maintenance of applications; services and communications networks; security of information systems; and many others. Depending on the nature of the services contracted and on the range that the contracting of services has on departments of information systems, the issues involved in project management vary considerably. This article presents the results of a survey conducted among large companies in the Republic of Ireland to characterize, among other things, the range of services that are most often outsourced. The results are relevant in the sense that not only do they enable a better understanding of the reality of information systems departments of large Irish companies, but also enable the management to focus attention on specific services.

Keywords: Outsourcing; information systems; management; CIO; big companies.

INTRODUCTION

Few trends in management in recent years have attracted so much interest as outsourcing. A few decades ago outsourcing was viewed as a solution adopted only by companies that had no financial capacity to hold the services internally. Today outsourcing is an indispensable tool in the management of information systems.

As the outsourcing services of information systems has evolved in organizations, the set of services contracted to outside suppliers, initially more limited to services of an operational nature, such as development and maintenance of applications, has expanded over the past two decades, and nowadays there is a wide range of services subject to outsourcing. These range from operational services (traditionally outsourced), to services of a more strategic nature.

Among the services typically subcontracted, one can find software development, maintenance of applications, services and communications networks, information technology professional consulting services, user training, help desk, project management and security of information systems.

Depending on the nature of the services contracted and on the importance that the contracting of services has on departments of information systems, the issues involved in project management vary considerably. For example, a department of information systems in which the number of contracted services is small, the issues related to the setting, conclusion and renewal of contracts are very different when compared to departments where external suppliers significantly support services.

This paper presents the results of a survey conducted in large companies based in the Republic of Ireland that characterize, among other issues, the range of services that are most often outsourced. The results are relevant in the sense that not only enable a better understanding of the reality of information systems departments of large Irish companies, but also enables management to focus its effort in managing IS/IT services according to the sourcing practices.

The paper is organized as follows. Section 2 is the literature overview of outsourcing services. Section 3 presents the method followed in gathering the data. In section 4 are presented the results from the data analysis. Finally, a summary of the paper is presented in section 5.

BACKGROUND

Around 1990, outsourcing evolved to a model of Application Service Provider (ASP). However, more recently it has been evolving and diversifying to a pure services model (Vassiliadis et al., 2006).

Outsourcing is not a new concept and has existed, in one way or another, already many years (Nam et al., 1995), but in last two decades gained

prominence in the last decade, with broader horizons and new perspectives to offer.

Outsourcing describes the use of external resources to execute operational tasks (Grover et al., 1994). In the past, the corporate activities which were the subject of outsourcing constituted mechanical activities, or processes with low added value, however, currently many business processes are outsourced (Hoecht & Trott, 2006). The two main actors of outsourcing processes are the "outsourced" and the "outsourcer" (Saunders & Gebelt, 1997). The first, i.e. the "customer", outsources his processes, while the second, the enterprise, delivers outsourced services.

The benefits of outsourcing outlined in the literature are various: economies of scale (Zineldin & Bredenlow, 2003), reduction of operational costs (Lacity & Hirschheim, 1993), access to a skilled workforce (Kakabadse & Kakabadse, 2002), shorter lead times, in-creased flexibility and cost efficiency (Nieminen & Takala, 2006), and the ability to transform fixed costs into variable costs (Alexander & Young, 1996). On the other hand, there are other works that show risks: hidden costs (Barthelemy, 2001), supplier dependency (Alexander & Young, 1996) and loss of know-how (Doig et al., 2001), to cite the most significant ones. In this scenario, outsourcing represents an opportunity as well as a challenge to many organizations (Barden-Fuller et al., 2005).

Information systems (IS) outsourcing can be defined as the significant contribution made by external providers of physical and/or human resources, associated either with all components or with IT infrastructure specific components in the user's organization (Loh & Venkatraman, 1992). The literature situates the beginning of outsourcing in 1991, subsequent to the success achieved by Eastman Kodak with the outsourcing of its IS (Applegate & Montealegre, 1991), followed by other cases such as Continental Bank (Huber, 1993), and BP (Cross, 1995).

According to (Faisal & Banwet, 2009), the most important reason for IS outsourcing is the organizations' focus on their core competence while other reasons include controlling investments, attaining technological flexibility, reducing staffing problems, and coping with the fast pace of growth in information and communications technologies. In this sense, and given that flexibility represents a challenge in project management, outsourcing can be seen as a flexibility enabler policy (Olson, 2008). Outsourcing can also help a company get better, more state of the art services than it could afford internally, and this is a commonly stated reason for outsourcing information technology (McDougall, 2004). Due to these affirmations, the reasons for the adoption of outsourcing during its almost 20 years of existence have been various. (Gonzalez et al., 2005) present a background to the literature for outsourcing reasons.

The outsourcing can also be called offshoring, when the outsourcing of services is made with organizations in other countries (Click & Duening, 2005). One of the most usual in the process of offshore outsourcing is the development of software (Beulen et al., 2005; Xiong et al., 2008), being a process used around the world.

The principal advantages are lower costs, expanded markets and lower prices for consumers (Aron & Singh, 2005). It is evident that the capacities of offshoring are currently undergoing a paradigm shift due to the increasing abilities provided by IT (Fifarek et al., 2008). Research and development in general are becoming more knowledge intensive (Lai et al., 2009). This is accompanied by the traditional cost difference, due to the shortage of workers in western countries (Morello et al., 2007).

Today, outsourcing presents itself as a strategic option for organizations (IDC, 2009) and has gained more credibility as a means to obtain IS services (Bahli & Rivard, 2003).

One of the major motivations of outsourcing is the focus on core business (Liston et al., 2007). With a focus on core business, there is an optimization of the organization, improving performance, thus providing a better service customers and the requirements more valued (Bucki, 2008).

Research on IS outsourcing has evolved in the last decade, reflecting some changes in its practice and a better understanding of the impact of its use on the business of organizations. The most discussed topics today are the motivations for the adoption, the risks, the relationship between the customer and the supplier and the study of outsourcing from the viewpoint of economic theories (Gonzalez et al., 2006).

The hiring of IS services is constantly changing. Organizations need to consider how best to obtain the services of IS with a better quality and lower cost (Dibbern et al., 2004).

According to a study conducted by (Reid, 1996) among the IS services, in the 1990s, most subject to outsourcing were:

- Systems and software applications, tools and equipment;
- Systems integration;
- Development of new programs and systems;
- Security of data and programs, and recovery from failures;
- Typing of data;

- Maintenance of networks and applications;
- Maintenance of Personal Computers (PCs);
- Technical Support (help desk).

In addition to the services mentioned above, there are other very important (Frost & Sullivan, 2005; Varajão, 2001):

- Training of human resources;
- Management of data centers;
- Installation of data communication networks;
- Configuration management;
- Access to external databases;
- Equipment installation and maintenance;
- Systems migration;
- Project Management;
- Internet Services.

The main services outsourcing contract by organizations may vary from the simple hosting of a Web page, through the outsourcing of business process and may even get to the outsourcing of the entire area of IS (Vassiliadis et al., 2006).

Some of these services, at times, overlap. When organizations are small, they rarely have a wide variety of services IS in-house. As organizations grow, their IS departments become larger, with a greater number of services.

An organization may use outsourcing in a wide range of IS services, which may be contracted, either individually or together, to the same supplier or to different suppliers (CMI, 1997). One of the key issues to be raised when the outsourcing is considered is to know which services of the Information Systems Function (ISF) are likely to be contracted to external entities (Khosrowpour et al., 1995).

In order to analyze and understand the outsourcing, it is essential to examine the various forms that it can take, ranging from the full spectrum of IS activities to just a few.

At one extreme, we have contracts involving billions of USD dollars and nearly all IS services, celebrated by large organizations such as Kodak, McDonnell Douglas and General Dynamics. At the other extreme are organizations that have opted for outsourcing of only one or two IS services (Klepper, 1995).

Outsourcing of operational services are generally more attractive and the ones that create more value rather than for longer term strategic reasons (Beasley et al., 2009). Indeed, organizations tend to rarely outsource their proprietary or strategic systems (Brandon, 2006; Romney & Steinbart, 2005). The greater the effort to maintain the portfolio of development systems or the number of highly structured projects, the more the portfolio is a candidate outsourcing (CMI, 1997).

Today an agreement for outsourcing is a contractual relationship with many complex aspects to be considered. There is a clear trend for the celebration of innovative agreements such as the establishment of consortia of providers, each contributing in concrete areas of their expertise (IBM Corporation, 2007; Jarvlepp, 1995). The success of outsourcing contracts, requires a careful analysis of the needs of the business, a clear definition of objectives, careful evaluation and selection of a supplier with the suitable competencies to the needs of the client. These competencies, according to (Koskinen, 2008), must be integrated throughout the project team members in order to reach the success of 'managing competencies', thus, including client and service provider organizations.

METHOD

Like in previous studies conducted in other countries (CIOMAG, 2006, 2007; Varajão et al., 2007a, 2007b; Varajão et al., 2009), a survey was conducted to investigate several aspects of the IT/IS reality in Irish large companies. Specifically for this study, the survey aimed to determine which IT/IS services are mainly outsourced to vendors. The general methodology involved a questionnaire that was sent to Chief Information Officers (CIOs) of large Irish companies, that were randomly selected and categorized according to their gross revenue (Times, 2007). The questionnaire (see Appendix A for selected portions) was sent by e-mail to the subjects in February 2008 and 20 usable questionnaires were received.

The structure of the questionnaire, partly based on earlier surveys (CIOMAG, 2006, 2007; Varajão et al., 2007a, 2007b; Varajão et al., 2009), addressed several key aspects of IT departments with nominal scale, Likert scale, ordinal scale and ratio scale. The questionnaire was divided into several sections, each one with well defined objectives.

A briefing letter was sent to the CIOs regarding the scope and goals of the study, including a link to an Internet home page, which allowed the completion of the questionnaire online.

Table 1 shows the characteristics of the respondents. The companies of the responding CIOs represent a broad range of companies in terms of their characteristics. The participant companies are from the sectors: agriculture and agro-industry (1); building and construction (3); car trade (1); cellulose and paper (1); commerce (1); electronic and electronic commerce (1); food distribution (3); fuel distribution (1); medical and pharmaceutical products

(2); services (4); transport equipment (1); and utilities (1).

It is important to note that, although it is true that large organizations generally provide leadership in using information technology, differences do exist between small and large businesses (Liu & Arnett, 2000). Careful use of the results should be made, especially regarding their applicability to small businesses. Nevertheless, the obtained results can also be useful to small companies, since they could better understand their sourcing alternatives and benefit from the practices identified.

Characteristics	Respondents	%
Total number of employees		
<200	10	50
201-500	6	30
501-2000	3	15
>2000	1	5
Annual sales (million Euros)		
Less than 10	2	10
10 to below 50	3	15
50 to below 250	7	35
Greater than 250	6	30
No answer	2	10
International presence (number of countries)		
0	6	30
1	4	20
2	0	0
3-4	1	5
5-20	3	15
>20	4	20
No answer	2	10

Table 1: Characteristics of respondents' companies.

The majority of CIOs that answered the survey were male (75%) with a Bachelor's degree (75%), in their thirties. They have an average tenure within their organization of 7 years and an average tenure in their current position of 4 years.

DATA ANALYSIS AND RESULTS

Outsourcing can take many forms, from only the programming contracts, to the transfer of data centers, human resources and services of applications development (Gonzalez et al., 2005; Vassiliadis et al., 2006). Based on several sources (Beulen et al., 2005; CIOMAG, 2006, 2007; Frost & Sullivan, 2005; Gonzalez et al., 2005; Varajão et al., 2007b; Varajão et al., 2009) it is possible to identify the following services as those most commonly subject to outsourcing, which were examined in the major Irish companies:

- Application development;
- Application maintenance;
- System integration;
- Network management;
- Security management;
- Fault tolerance and data recovery;
- Telephony platforms and services;
- Services Web;
- E-mail and messaging services;
- Data center;
- Management of microcomputer;
- IT professional consulting services;
- Help desk;
- User training;
- IT staff training;
- Project management.

Figures 1 and 2 are rankings of services most subject to outsourcing in Irish large companies. At the top of the list, by quite a margin, we find a first group of services that includes application development, IT staff training, IT Professional consulting services, services Web, and telephony services. In a second group, are the services of application maintenance and system integration. In another group, with values close to 50% of the services to be outsourced, are the data center services, user training and network management. Below 50%, there is a first group with the services fault tolerance and data recovery, help desk, management of microcomputer and security management. Finally, in the group of least outsourced services, we have e-mail and messaging services and project management.

Figure 1 – IT/IS outsourcing in Ireland's large companies

Figure 2 - Ranking of IT/IS outsourcing in Ireland's large companies

The development of software applications, along with the maintenance of applications, has traditionally been part of the more popular range of services outsourced (Beulen et al., 2005) due to the pressure of reducing IT operating costs and the desire to have internal IT focus more heavily on strategic tasks (Aberdeen Group, 2009). Over time, many common IT functions such as the maintenance and supply of routine software applications become

commodity items that can be purchased as if they were mass produced (Tho, 2005).

Through the results obtained in the study it is possible to verify, especially in the first case, that large Irish companies do not diverge from this, since the external suppliers outsource approximately 66% of its needs for services of software development. On average, departments of information systems of large Irish companies outsource to external suppliers approximately 41% of its needs for services of information systems, which is in line with the reality of companies from other countries (CIOMAG, 2006, 2007; Varajão et al., 2009).

Project management appears in last position, as the least outsourced service, which comes as no surprise since this is typically a sensitive activity, which managers worry about losing the precise control and oversight that successful project management requires, as well as the ability to turn on a dime if circumstances demand a sudden change in tactics (Edwards, 2009).

Indeed, tremendous responsibility lies with the project manager, who must take the organization's vision of itself and translate it into systems that support the organization's strategic direction (Forsberg & Packendorff, 2001). The project manager must also understand the environment, e.g. the organizational culture, and the people, e.g. the motivation factors and their needs. Given the high level of services subcontracted to external parties (in services, for example, application development and user training), project managers need to bring strong skills in contract management and administration of heterogeneous teams (since they often need to manage teams of internal human resources and human resources providers). Not in vain, project managers' skills definition is a very relevant research field (e.g. Bassellier, Horner Reich & Benbasat, 2001; Rose et al., 2007; Ruano-Mayoral et al., 2010; Sukhoo et al., 2005)

Today, many organizations are actively following outsourcing because they feel the need to focus on their core business activities and are therefore looking to outsource their non-core tasks (KPMG, 2007). Even in business where information plays a central role (such as banking, insurance and retail) and are traditionally known for keeping the information processing and management of IS internally, there is a real commitment to outsourcing.

CONCLUSION

On one hand, the adoption of outsourcing is a fundamental change in how organizations manage there IS infrastructure. First, it represents a shift in the management, control and traditional hierarchical coordination, a new hybrid mode, involving close relationships with suppliers. Second, it represents significant changes in internal processes of organizations, the redistribution of responsibilities in design, development, maintenance and operation of IT infrastructures and new mechanisms of decision making, allocation of resources and criteria for assessing the performance. Third, it involves a significant change in the procedures used to deal with the external environment, from a relationship with suppliers more aggressive, to agreements based on mutual trust and joint decision-making (IBM Corporation, 2007; Loh & Venkatraman, 1992), which can lead to a partnership-type link in which the services hired acquire more added value (Gonzalez et al., 2008). Since the studied Irish companies in overall reveal a high level of outsourcing, it would be important to study deepen in further works the particular changes in project management.

On the other hand, the fact that an organization transfers part of its services of information systems to an external entity does not remove the responsibility of managing the department of information systems. The maintenance of an internal team with strong leadership is one critical factor of success for the whole process (Varajão, 2002), which also justifies the low percentage of outsourcing found in project management. Moreover and taking into account that current project leadership research is found to focus exclusively on individuals and their leadership competencies, rather than the leadership practices in project settings and does not fully use the perspectives in current distributed leadership (Lindgren, 2009), such new distributed leadership must be seen as a challenge and an opportunity for IS outsourcing environments.

For these and other reasons it is of great importance to understand the level of outsourcing practiced by the companies and identify the number of contracted services to be possible to establish a proper management of information systems.

In this article, we identified the key services that are subject to outsourcing in Irish large companies based on data obtained by a study conducted with the participation of 20 managers of information systems of large companies. Note that the reality of the number of outsourced services is similar to the situation identified in other countries (for example, the development of software typically appears at the top of outsourced services (CIOMAG, 2006, 2007; Varajão et al., 2009)).

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APPENDIX A - Questionnaire

Please choose the appropriate response for each question.
1) Company caracterization
a) Number of employees (please choose only one of the following):
- ○ 1 to 200

- ○ 201 to 500
- ○ 501 to 2000
- ○ 2001 to 5000
- ○ More than 5000
- ○ Do not know/Do not answer

b) Business volume (please choose only one of the following):

- ○ Less than 5 000 000 euros
- ○ 5 000 000 to 10 000 000 euros
- ○ 10 000 001 to 50 000 000 euros
- ○ 50 000 001 to 250 000 000 euros
- ○ 250 000 001 to 500 000 000 euros
- ○ More than 500 000 000 euros
- ○ Don't know / Don't answer

c) International presence (number of countries excluding your own)? ____

d) Sector of activity (please choose only one of the following):

- ○ Agriculture and agro-industry
- ○ Utilities
- ○ Cellulose and paper
- ○ Commerce
- ○ Car trade
- ○ Electric and electronic commerce
- ○ Building and construction
- ○ Food distribution
- ○ Fuel distribution
- ○ Artwork, DTP, publishing
- ○ Transportation equipment
- ○ Sanity and cleaning
- ○ Hotels and restaurants
- ○ Wood, cork and furniture
- ○ Electric and precision equipment
- ○ Metalworking and machinery
- ○ Metallic and non-metallic minerals
- ○ Medical and pharmaceutical products
- ○ Chemistry
- ○ Services
- ○ Telecommunications
- ○ Textiles
- ○ Transports and distribution
- ○ Footwear and leather
- ○ Other _____

2) IT/IS services

a) What percent of your IT/IS services are outsourced (for example, a service that is totally supplied by an external entity will be 100% outsourcing)?

	0%	1-25%	26-50%	51-75%	76-99%	100%
Application development	○	○	○	○	○	○
Application maintenance	○	○	○	○	○	○
System integration	○	○	○	○	○	○
Network management	○	○	○	○	○	○
Security management	○	○	○	○	○	○
Fault tolerance and data recovery	○	○	○	○	○	○
Telephony platforms and services	○	○	○	○	○	○
Services Web	○	○	○	○	○	○
E-mail and messaging services	○	○	○	○	○	○
Data center	○	○	○	○	○	○
Management of microcomputer	○	○	○	○	○	○

IT professional consulting services	○	○	○	○	○	○
Help desk	○	○	○	○	○	○
User training	○	○	○	○	○	○
IT staff training	○	○	○	○	○	○
Project management	○	○	○	○	○	○

b) Are there any other services that apply?

_____

3) IS manager profile

a) Sex (of the respondent):

- ○ Female
- ○ Male

b) Age (please choose only one of the following):

- ○ Less than 30
- ○ 31 to 35
- ○ 36 to 40
- ○ 41 to 45
- ○ More than 45
- ○ I do not know/ I do not answer

c) Academic education and/or professional formation (please choose only one of the following):

- ○ High school
- ○ Bachelor's
- ○ Post-Graduation
- ○ MBA Master's
- ○ PhD
- ○ Other

d) How long have you been in your current position (years)? ____

e) How long have you worked in the company (years)? ____