

INFORMATION SYSTEMS OFFSHORE OUTSOURCING: AN EXPLORATORY STUDY OF MOTIVATIONS AND RISKS IN LARGE SPANISH FIRMS

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ABSTRACT

Information systems offshore outsourcing is motivated by such factors as globalisation, technological development and the possibility to explore new markets. However, both the geographical and the cultural distance create more risks than in onshore outsourcing. The aim of this paper is to develop a typology of firms based on the specific motivations and risks associated with offshore outsourcing in large Spanish firms.

KEYWORDS

Information Systems Management, Offshore Outsourcing, Motivations, Risks, Spain

1. INTRODUCTION¹

Organisational and business models have recently undergone radical changes due to the trend toward globalisation and to the disintegration of enterprise value chains linked to providers and/or customers. The changes have been compounded by a vast number of technological developments (Clott, 2007). One result of these changes has been the outsourcing of Information Systems (IS), not only nationally (onshore outsourcing) but also internationally (offshore outsourcing) (Kumar, 2006). Indeed, while outsourcing information technologies (IT) represents a growing worldwide phenomenon in the new millennium, the growth of offshore outsourcing has been particularly remarkable (Koong, Liu and Wang, 2007). For instance, the IT market moved over 185 billion € around the world in 2005 (IDATE Foundation, 2005). Forrester estimates that the world's IT and applications outsourcing market is now worth around \$120 billion per year (Takahashi and Sayer, 2007) and forecasts that European firms will increase their IT outsourcing expenditure in 2008. The Gartner Group expects the global IT outsourcing market to grow from \$180.5 billion in revenues in 2003 to \$253.1 billion in 2008 (Forrester, 2004). Eighty-seven percent of the companies interviewed by KPMG plan to maintain or increase their outsourcing levels (ZDNet, 2007) and International Data Corporation has forecast that IT service dealers will make \$29.4 billion USD worldwide by 2010, with few visible signs of potential decline in this market (ZDNet, 2006). Although the numerical predictions vary from one source to another, the favourable prospects and expectations for growth in the coming years are undeniable.

IT offshore outsourcing brings problems similar to those associated with *onshore* or national outsourcing (Harland, Knight, Lamming and Walker, 2005; Paisittan and Olson, 2006; Yang, Kim, Nam and Min, 2007) and is attractive for similar reasons. It also has comparable

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potential risks (Lin, Pervan and McDermid, 2007; Taylor, 2006-2007; Osei-Bryson and Ngwenyama, 2006). IS offshore outsourcing, however, has a number of challenges which are specific to it and differ from those found in onshore outsourcing. Firms must contend with differences in languages, culture, and time zones. Offshore efforts are likely to require more changes within the IS organisation than domestic outsourcing. Offshoring involves such risks as loss of core knowledge and vendor opportunism, data security, privacy problems and complying with foreign laws and regulations. Problems such as possible layoffs and loss of human capital are more likely with offshore outsourcing than with onshore outsourcing (Carmel, 2006; Oshri, Kotlarsky and Willcocks, 2007; Ranganathan and Balaji, 2007; Rottman and Lacity, 2004).

Studies examining the risks in offshore outsourcing are numerous (i.e. Apte et al, 1997; Khan et al, 2003; Kliem, 2004; Ramarapu, Parzinger and Lado, 1997). We have taken a more holistic perspective by looking simultaneously at the perceptions of motivation and risk, which is somewhat unusual². This paper seeks to understand the motivations and risks in offshore outsourcing by conducting an exploratory field survey in the largest Spanish firms and establishing a typology of firms involved in offshore outsourcing. We first examine the position of Spanish firms in connection with onshore as well as offshore outsourcing. We then describe determining factors for offshore outsourcing with a special focus on the motivations and the risks linked to it. Next we present our methodology along with results and conclusions.

2. INFORMATION SYSTEMS OFFSHORE OUTSOURCING: MOTIVATIONS AND RISKS

2.1. Information Systems Offshore Outsourcing

² We must mention the seminal paper by Carmel and Agarwal (2002), who researched into the offshore outsourcing driving factors and impediments.

What do we mean by IS offshore outsourcing? The term implies contracting all or part of an enterprise's IT functions with a provider located abroad (Rao, 2004) that will provide tangible or intangible, human or non-human, resources (Kumar and Palvia, 2002). We must draw a clear distinction between offshore outsourcing and parallel business relationships. For example, *offshoring* is when a foreign division or subsidiary of the parent company performs IT functions (Pai and Basu, 2007). The expression *offshore insourcers* refers to multinationals such as GE, IBM and SAP that have the means to set up regional branch centres to lower costs and other resource-related advantages in different countries (Shao and David, 2007). *Cosourcing* represents an evolutionary step in offshore outsourcing that arises after the client-vendor relationship has existed for a reasonable period of time. The outsourcer and client meld their human resources to complete the client's work (Kaiser and Hawk, 2004).

The factors underlying the emergence and growth of IS offshore outsourcing in recent years are varied and intertwined (Gonzalez, Gasco and Llopis, 2006). Economic and market globalisation is one factor since offshore outsourcing is yet another aspect of the globalisation and delocalisation process (Kliem, 2004). The shortage of qualified labour both in the US and in Europe during the late 1990s clearly encouraged offshore outsourcing (Arber and Sayed-Ahmed, 2005; Tafti, 2005). Firms are making significant efforts to offset labour deficits in developing areas such as India, Southeast Asia and Eastern Europe through investments in science, math and engineering education, consequently graduating large numbers of technically skilled students to work in offshore projects (Gupta and Chaudhari, 2006). The need to shorten the development time cycle of IS projects is another relevant factor (Sobol and Apte, 1995); IT products and services have an increasingly short life cycle and this has increased the demand for more flexibility at IT enterprises.

The main offshore outsourcing strengths come from the technological and economic dimensions, though. Developments in networking, digitalisation and storage technologies are

transforming IT operations, particularly routine tasks, into utility-like services that an organisation can provide and manage from anywhere at any time. When communication networks like the Internet are ubiquitous and reliable and operate at almost zero latency, it makes little difference if IT services originate in the same firm, in the same city, or elsewhere in the world (Shao and David, 2007). In economic terms, cost savings are one of the most important factors. For instance, a programmer who earns up to \$100,000 USD in California earns \$30,000 or less in India (Menon, 2005).

2.2. Offshore Outsourcing: Motivations and Risks

Several theories have been put forth in the past 15 years to explain IS outsourcing, both offshore and onshore, including outsourcing motivations and risks. We examine offshore outsourcing motivations and risks which are related with factors like costs, technology and infrastructure, time, quality, and also international and employment factors (see Appendix A – Table 1).

The 'Cost Saving' Motivation. According to the transaction cost theory, (Williamson, 1975, 1979), we must consider two main costs in the production of goods or services: *production costs* (work, capital and materials); and *coordination costs* (derived from managing and controlling employees). If the firm goes to the market instead of performing all activities in-house, coordination costs turn into *transaction costs*, which arise from the need to negotiate, monitor and enforce contracts and coordinate activities beyond the borders of the organisation (Wang, 2002). This theory suggests that offshore outsourcing is more efficient than performing IS activities in-house or than onshore outsourcing when production costs are lower. Firms are attracted to offshore providers by economies of scale which can benefit the customer through lower prices (Apte et al, 1997; Grover, Cheon and Teng, 1994). But the

biggest attraction of offshore outsourcing is the difference in salary between staff in the home country and in the provider country (Ravichandran and Ahmed, 1993).

The 'Hidden Costs' Risk. In contrast with these savings, the hidden costs of offshore outsourcing may be higher than those of IS outsourcing in general (Barthélemy, 2001). These hidden costs can be explained by the agency theory, which sees the firm as a link in contracts between principals and agents. This theory assumes the existence of asymmetric information and different perceptions of risk between principal and agent, as well as uncertainty (Dibbern et al., 2004); the principal transfers decision rights to the agent and, to make sure that the latter behaves in the former's best interest, the principal sets incentives. The anticipated costs of controlling the agent come into play when calculating the nature of these incentives. Cheon, Grover and Teng (1995) maintain that *agency costs* depend on five factors -outcome uncertainty, risk aversion, programmability, outcome measurability and length of the relationship- two of which are related to the hidden cost risk. The 'uncertainty' is due to government policies, the economic climate, technological change, competitors' actions and so on. 'Programmability' refers to how much one can specify appropriate behaviour of the outsourcing provider in advance. The hidden costs risk is linked to uncertainty and programmability since, when these risks appear, *agency costs* become higher. We should also consider the importance of the transaction cost theory to explain these hidden costs. This theory posits that the critical dimensions of a transaction are the specificity of the asset that is the object of transaction; the frequency with which this transaction takes place; and the uncertainty associated with this transaction. From this third characteristic derives the uncertainty and/or lack of knowledge about the provider, another factor for hidden costs. Hidden costs include (Barthélemy, 2001) the coordination costs the firms must incur while getting to know the providers as well as their labour legislation and culture, the costs of the

transfer of know-how from customer to provider, the costs resulting from the adoption of opportunistic behaviour by the provider which can increase with distance, and even the costs of uncertainty about fluctuations in currency exchange rates (Kliem, 2004; Khan et al., 2003).

The 'Technical Feasibility' Motivation. Loh and Venkatraman (1992) and Hu, Saunders and Gebelt (1997) characterise IS outsourcing as an *administrative innovation* which can apply to IS offshore outsourcing. This approach starts from the implicit assumption that decisions related to outsourcing, whether onshore or offshore, have to do with the influence that outside agents have on the decision-makers within the organisation. Thus, the more widespread the offshore outsourcing practice is and the more information about this type of strategy, the greater the likelihood of adopting this decision. Both the academic and the economic press have acted as external agents in these decisions, repeatedly highlighting the technical feasibility of offshore outsourcing, from which the “technical feasibility” motivation stems. This advantage has already appeared as a factor driving offshore outsourcing, since telecommunications, and above all the Internet, make possible a rapid connection with practically every corner of the planet (Menon, 2005; Misra, 2004).

The 'Poor Infrastructure' Risk. Transaction cost theory shows us that transaction cost depends on the specificity of the assets, the frequency of the transactions and the uncertainty of the transaction (Williamson, 1975, 1979). The uncertainty due to the lack of knowledge about the infrastructure of the offshore firm makes us realize that despite the previous advantage, many developing countries, which are frequently the main outsourcing destinations, have inadequate telecommunications infrastructures and even lack more basic infrastructures such as the electricity supply (Carmel, 2003).

The 'Flexibility and Speed' Motivation. Relational exchange theory focuses on cooperation, interaction, and social and economic exchange as major factors in relationships among organisations, and more specifically on interactions among parties that join together to accomplish their objectives (Klepper, 1995). The partners assume that the benefits of the outcome exceed those they could achieve on their own. This theory is the basis for the “flexibility and speed motivation”, which arise from the joint action of client and provider in the offshore relationship thanks to their complementary time and resources. Quickness has become a priority for the IT industry. For instance, externalising part of the systems development process means that executing a project can take place 24 hours a day because, at least in theory, when the working day begins in some time zones, it ends in others – this is the ‘managing around the clock’ effect – (Khan et al., 2003; Pfannenstein and Tsai, 2004).

The 'Different Time Zones' Risk. (Williamson, 1975, 1979)) *Transaction costs* include those arising from coordinating *activities* across the borders of the organisation (Wang, 2002). The *coordination* between client and provider can become problematic due to different time zones which may hinder client-provider communication in real time. The motivation to offshore outsource might become a problem if one considers how difficult it is for the customer and the provider of offshoring services to coordinate their operations (Carmel, 2006). Although this might seem a minor drawback, it is not. Many firms look for providers in nearby time zones because it allows the members of a ‘distributed team’ to work in the same time zone (Apte et al, 1997; Rao, 2004).

The 'Improved Quality' Motivation. *Resource-based theory* views a firm as a collection of productive resources (those inputs which enable it to perform a particular task) and capacities (those abilities and skills the firm needs to coordinate and exploit the resources to meet an

objective) (Watjatrakul, 2005). From this theoretical point of view, we can see offshore outsourcing as a mechanism that fills the gaps between a firm's own resources and capabilities and the resources and capabilities that the firm needs. Cheon, Grover and Teng (1995) argue that IS outsourcing is a strategic decision that can help bridge the gaps (the difference between the desired resources and capabilities and the actual ones) in the IS resources and capabilities of firms. The authors use the example of information quality and staff quality to explain several of the resources or capabilities that result from outsourcing. The same holds true for offshore outsourcing because it covers shortages of internal resources and capabilities and/or onshore resources and capabilities. In conclusion, this theory allows us to identify the "improved quality" motivation, where the customer's outcome goals for outsourcing evolve. Initially, cost reduction was the prime goal, but buyers' expectations are moving beyond low-cost solutions (Chitale, 2006). Firms currently adopt offshore outsourcing in the hope that it will improve their business results. This means that outsourcing no longer constitutes a tactical solution of a technical nature but a strategic solution that creates and defends the firm's competitive advantage (Erber and Sayed-Ahmed, 2005; Pai and Basu, 2007). We should take into account access to high levels of expertise (Mahnke, Wareham and Bjorn-Andersen, 2008) and the positive impact on IS service quality.

The 'Deficient Quality' Risk. One of the biggest risks in offshore outsourcing is when the services delivered do not reach the quality level required. This happens if the provider's staff has not received enough training and does not know the customer's language well enough, which may hinder customer-provider communication. Problems may also arise from lack of knowledge about managerial tasks as well as project management and implementation skills, which has occurred with some offshore providers (Zatolyuk and Allgood, 2004). Transaction cost theory can explain these risks, as the uncertainty related to transaction costs can imply a

lack of knowledge about the quality of the provider's services. Agency theory also explains these risks. Cheon, Grover and Teng (1995) argue that *agency costs* relate to five factors, two of which are uncertainty and programmability. In conditions of high uncertainty and low programmability (typical in many offshore contracts) the "deficient quality" risk may arise.

The 'Access to International Markets' Motivation. Strategic management theories, including the *competitive strategy theory* and the *competitive advantage theory*, have been often used to explain how IT can contribute to competitive advantage (Porter and Millar, 1985). These theories state that firms have long-term goals and thus plan and allocate resources to achieve these goals. Porter and Millar (1985) explain that we must observe the added value chain and ask how IT can change the scope of competence. One of the questions they address specifically is whether these technologies allow expanding the business internationally. A similar discussion has emerged in the offshore outsourcing area, as some firms adopt offshore outsourcing because of access to international markets". For many companies, offshore outsourcing represents a way not only to find providers, but also to acquire a better knowledge of other countries and explore their potential as future markets (Ravichandran and Ahmed, 1993; Sobol and Apte, 1995). This is relevant considering that many countries providing offshore IT services, such as China or Russia, have an enormous potential due to their large populations and their economic growth expectations (Rottman and Lacity, 2006).

Risks related to Language, Cultural, Political and Legal Problems. Offshore outsourcing faces many difficulties linked to culture, language, politics and law. Hofstede's study on *National Cultures* (1991, 2001), now a key part of research on global work and international business relationships (David et al.; 2008), says there is no universal management method equally applicable to all countries. It is impossible to separate management from other

processes that exist in each society. Managers in charge of offshore projects must be able to incorporate cultural variations from different nations. The concept of national cultures and their implications for management helps to explain the “cultural problems” risk, as the lack of cultural congruence between customer and provider may generate communication problems, especially when a language barrier exists (Kim, Meso and Kim, 2005). Culture has effects on the way managers interact with their employees, how they perceive the importance of authority or teamwork, and how they respond to gender issues or quality of life issues (Krishna, Sashay and Walsham, 2004; Mahnke, Wareham and Bjorn-Andersen, 2008; Rao, 2004). Risk occurs also when political instability or poor relations exist between the customer’s country and the provider’s (Hemphill, 2004). Legal factors can also influence the outsourcing relationship, including (Pai and Basu, 2007) the legislation that will govern the outsourcing contract; solving problems related to software use licenses and permits; analysing legislation on data protection; adhering to laws on intellectual property; and understanding the negative effects that local laws can have on the outsourcing relationship. Some countries competing for leadership in offshore outsourcing, for example, have no guarantees for intellectual property and other basic protections (Menon, 2005; Oshri, Kotlarsky and Willcocks, 2007; Ranganathan and Balaji, 2007; Rottman and Lacity, 2006). Political and legal problems in foreign countries are connected to uncertainty about transaction costs and agency costs, so *transaction cost theory* and *agency theory* may also help to explain these risks.

The ‘Improved Cost/Benefit Ratio’ Motivation. The *resource-based theory* sees offshore outsourcing as a way to fill the gaps between the firm’s resources and capabilities and the resources and capabilities it needs. Cheon, Grover and Teng (1995) said that cost effectiveness could be one of the targets of IS outsourcing. The potential cost effectiveness

implies an increased level of efficiency by the offshore outsourcing customer firm and, consequently, an improved cost/benefit ratio. This advantage not only affects offshore outsourcing customers directly but also has broader consequences because, in theory, customers outsource to the most efficient provider, which makes the IT service more efficient at the same time (Misra, 2004).

The 'Increased Unemployment Rate' Risk. In a media-driven society like ours, concern about the reputation effects of firms' behaviours and corporate social responsibility become more important in all the organisation' actions (Midttun et al, 2007). Corporate social responsibility refers to activities aimed at providing social contributions that ultimately yield economic returns to investors (Doh; 2005). This view of corporate social responsibility reveals a new problem in offshore outsourcing: the "increased unemployment rate" risk. Bruce and Martz (2007) noted that IT employees are potentially affected by offshore outsourcing, and event students (future employees) could be affected also, as their job opportunities could be impacted by offshoring. This could have serious consequences, but the main focus of this paper is the effect of this risk on the morale, productivity and behaviour of the offshore client's staff. Offshore outsourcing implies greater risks for the IT workers of developed countries (the customers) than onshore outsourcing. National (onshore) outsourcing often involves the transfer of workers from the customer firm to the service provider, and as a result the staff may benefit from improved career opportunities. Nevertheless, offshore outsourcing may cause problems ranging from occupational stress (Brooks, 2006) to labour hazards and possible salary reductions (Shao and David, 2007). Hence the great concern among associations of IT professionals about the negative effects of offshore outsourcing (Brigham, 2005; Hirscheim, 2006; IEEE, 2004; Pfannenstein and Tsai, 2004) justifies why both governments and firms, and even workers, have to take measures to minimise those harmful

impacts (Gupta and Chaudhari, 2006). Despite the frequent mention of this risk in papers, there are no conclusive data supporting it (Rottman and Lacity, 2004) and, according to the ILO (OIT, 2005), the proportion of the unemployment figures that one can directly attribute to offshore outsourcing is not especially high³.

3. METHODOLOGY

Based on the assumption that larger-sized firms are the most likely to outsource (Lee, Miranda and Kim, 2004), we distributed a questionnaire to the largest Spanish enterprises. The ‘5,000 Largest Firms’ Directory of the *Actualidad Económica* magazine—later collated with other databases such as Duns and Bradstreet’s ‘*The 50,000 Most Important Spanish Firms*’—established the target population for the study. We removed 893 of the 5,000 firms with higher turnovers included in the first database because their address and telephone coincided with those of others, which suggested that they were subsidiary or affiliate companies.

The remaining 4,107 firms received questionnaires along with a stamped self-addressed envelope. The questionnaire derives from a previous one prepared by the same authors and constructed, like this one, from the literature on the topic as a reference. Additionally, some experts in IS management analysed the questionnaire⁴. We included only eight of the 26 questions in the final questionnaire in the present paper, as this is part of a larger study which deals with a wide range of issues related to IS outsourcing (see appendix B). Of those eight questions, one pertains to the extent of outsourcing, both nationally or globally; five pertain to the general profile of the firms in the study as well as their IS departments and managers; and

³Although some of the motivations and risks mentioned could have consequences at a macroeconomic or general level, our interest in them lies at an organisational level (i.e., the poor infrastructures of a country could prevent a potential client from offshoring to specific providers in that country; the growth of the unemployment rate in a “client” country could affect the morale and motivation of the IT staff of a client organisation operating in that country).

⁴ The collaboration provided by Mr. Juan Manuel Aparicio and Mr. Ramón Andarías deserves a special mention at this stage.

two questions deal with offshore outsourcing motivations and risks. Table 2 shows the measurements for the main variables analysed in the study.

INSERT TABLE 2

The questionnaire addressee was the IS manager of the selected firms. Unfortunately, no lists of these managers are available in Spain, leaving the identity of the questionnaire addressee unknown. We later elaborated upon the questionnaire using the statistical program SPSS for Windows, and treated it with univariant and multivariant methods. Table 3 shows the technical specifications of the empirical work.

INSERT TABLE 3

329 valid questionnaires were received, which represents an eight percent response rate. This ratio may seem low, but it is actually similar or even superior to others in comparable studies of IT outsourcing (Bahli and Rivard, 2005; Ma, Pearson and Tadisina, 2005; Shi, Kunnathur and Ragu-Nathan, 2005). It is also difficult to obtain responses to surveys carried out among executives, especially IS executives, because rapid technological change, considerable IT-related investments by firms and the great interest in outsourcing have made these executives the target of many surveys (Poppo and Zenger, 1998). The firms that answered the questionnaire reflect the total population in terms of size (sales and number of employees) and sector. A T-test verified the possible differences in the number-of-employees mean both for firms which answered the survey and for those which did not, with T having a value of -1.080 with a 0.280 significance level. In the case of sales, we used a non-parametric test —Mann-Whitney’s U-test— with a value of 444732.5 and a 0.338 significance level. A Chi-square test helped to check the possible connection between the industrial sector and the response or lack of response by firms. The Chi value was 2.802 and the significance level 0.246. These results imply the existence of a non-response bias in relation to these three variables⁵.

⁵ Test to show independence: firms which answered the survey and firms which did not

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Because —as discussed in the next section— most of the interviewed firms did not use offshore outsourcing, the number of answers about offshore outsourcing motivations and risks was low. A total of 177 firms answered these questions, of which only 54 (30.5%) also use offshore outsourcing while the remaining 123 (69.5%) do not. Even so, their opinions about the motivations and risks perceived by firms are relevant for the present study.

4. RESULTS

4.1. General characteristics of firms and offshore outsourcing

INSERT TABLE 4

Table 4 shows the general features of the interviewed firms and of their IS departments and managers. We identified possible differences between firms which practice offshore outsourcing and those that do not. The study confirms that IT outsourcing has become a widespread phenomenon on a national scale, as 83.6% of the interviewed firms outsource some of their IS activities to a national provider, and only 54 firms (16.4%) do not. Global outsourcing continues to be an isolated phenomenon in Spain, though, since only 54 of the firms analysed (16.4%) look for IS providers abroad. A significant dependence relationship exists with respect to whether firms outsource inside or outside their country (the chi-square statistic detects dependence between both variables with a 0.000 significance level). Only one firm uses international outsourcing without national outsourcing. The rest of the firms that use offshore outsourcing have national providers too.

Going back to Table 4 on the general characteristics of the firm and its activity sector, the firms analysed have considerable size. Only 8.7% of the firms have fewer than 50 workers and only 9.6% have an annual turnover below 30 million euros, most of the firms being at

No. of Employees	F= 1.737	Sig.= 0.188	T= -1.080	Sig= 0.280
Sales	F= 66.824	Sig.= 0.000	U= 444732.5	Sig.= 0.338
Sector	N.A.	N.A.	Chi-square= 2.802	Sig.= 0.246

N.A. = Not applicable

higher levels in terms of both employee numbers and sales. Just over half of the firms belong to the industrial sector (57.4%), while the rest are either in the general service sector service (31%) or in ICT-intensive service sectors (e.g. financial and insurance institutions, along with enterprises in the tourist, legal and publishing sectors, for example). The latter group (11.6% of the sample) includes firms that depend more than the rest on their ICT, due to the type of products/goods/services they offer and its elaboration process. The only dependence relationship between the general features of the firm and its adoption or non-adoption of offshore outsourcing appears in the case of sales. Indeed, firms with higher sales show a greater tendency to offshore outsourcing.

Despite the size of these firms, their IS departments are small: the majority of firms (77.6%) have 10 or fewer employees in this department. Neither do they allocate a large proportion of the budget to it, as many organisations (66.7%) dedicate only 4% of their overall budget, or even less, to IS. Although these firms are relatively large, they allocate few financial and human resources to their IS departments. No dependence relationship between the characteristics of the IS department and the adoption or non-adoption of offshore outsourcing by the firm is apparent either.

The IS manager is almost always male (91.6% of the cases). Most of the interviewees report directly to general management (62.6%), while reporting to finance/administration is less common (26.5%). Interestingly, when a woman heads the IS department (as measured with the chi-square statistic), the firm is more likely to use offshore outsourcing.

4.2. Offshore outsourcing motivations and risks

INSERT TABLE 5

Table 5 shows the motivations to adopt offshore outsourcing by decreasing order of importance. It is evident that technical feasibility heads the list of reasons to outsource

offshore, i.e. the fact that the technology is available to establish international connections and achieve fluent communications between provider and customer has encouraged the latter to look for foreign providers. Firms equally seek efficiency through improving the cost/benefit ratio in these offshore outsourcing contracts, and the fact that flexibility and speed in IT projects can improve is another important factor. However, firms are not convinced that international services will mean more quality, and they assign little importance to whether outsourcing may become a way to access foreign markets. Neither are reduced costs the main reason for offshore outsourcing.

INSERT TABLE 6

Table 6 shows the risks of offshore outsourcing by decreasing order of importance, according to the interviewees' perceptions. Language, cultural, political and legal problems head the list, the rest of the risks lagging far behind. The different time zones associated with physical distance are a serious problem in the interviewees' opinion, despite asynchronous means of communication that could solve these difficulties. The fear of incurring greater costs than in onshore outsourcing is also a relevant factor. This physical and cultural distance reflects a certain degree of opportunism on the part of the service provider. Other problems, such as the quality of the provider or poor infrastructures are considered less important. In fact, technical feasibility is among the most significant motivations, and problems related to infrastructures or technology do not represent insurmountable barriers for offshore outsourcing. Finally, the macroeconomic consequences of offshore outsourcing, e.g. the possible increase in unemployment among IT professionals, does not concern the interviewees.

4.3. The typology of firms

The objective is to identify a typology of enterprises according to what they think the main motivations and risks associated with offshore outsourcing are. With this aim, we initially

carried out a principal components factor analysis to summarise the information about outsourcing motivations. First we verified the appropriateness of the analysis, as indicated in Table 7, where the Correlation Matrix Determinant is close to zero, the Kaiser-Meyer-Olkin approaches one —although it is not one— and Bartlett’s test of sphericity is significant.

INSERT TABLE 7

Determining the number of factors to extract is probably rather subjective in factor analysis (Hu, 2006). The Kaiser’s criterion, the percentage of variance explained and the scree plot test are all useful criteria to help determine the number of factors to extract. Kaiser’s criterion suggested the need to extract a single factor (as there was only one eigenvalue above 1 —see Table 8). However, the eigenvalue for the second factor is 0.927, very close to 1. So we could also choose to extract two factors. What is more, the extraction of one factor only explains 49.068% of the variance of the original variables, and the scree plot test indicates that the extraction of two factors is suitable also (see Figure 1 in the appendix C). We consequently decided to extract two factors that account for 64.525% of the information about the original variables related to offshore outsourcing motivations (which is satisfactory, as it exceeds 50%). A Varimax rotation helped to improve the interpretation of the results, and Table 8 shows both factors and the initial items that form them (the information concerning the higher values is in bold for clarity). One item (*more quality than in onshore outsourcing*) makes a nearly identical contribution to both factors, so we excluded it in the interpretation of factors.

INSERT TABLE 8

We can call Factor 1 *Improvement Motivations*. It groups together the factors that, as the unidimensional analysis above showed, are more relevant to offshore outsourcing (technical feasibility, improved cost/benefit ratio and greater flexibility as well as speed in projects). The motivations underlying this factor contribute more directly to the improvement of the IS services. This first factor is the most important, since it explains 37.161% of the variance. The

second factor explains the remaining 27.363% and has less relevance, in keeping with the opinions of the interviewees (who assigned less importance to lower offshore outsourcing costs compared to onshore outsourcing and to access to international markets). We call this second factor *Cost and Expansion motivations*.

We next conducted a new principal components factor analysis of offshore outsourcing risks. Table 9 reveals that this analysis was pertinent, too, as it examined the values of the Correlation Matrix Determinant near zero, the KMO index close to one, and a significant Bartlett's test of sphericity.

INSERT TABLE 9 AND 10

We followed Kaiser's method in extracting as many factors as eigenvalues above 1 exist, since there were precisely two eigenvalues above one which accounted for 69.892% of the information concerning the initial items (see also Figure 2 in relation to the scree plot – appendix C). After extracting these two factors, we catalogued the first as *cost-related and secondary problems* because, as shown in the univariate analysis, these problems (e.g. hidden costs, difficulties with infrastructures or an increased national unemployment rate) seemed less important to the interviewees. Instead, the second factor summarises the information referring to the problems identified as the most relevant (those related to language, cultural, political and legal issues, different time zones, and lower quality than in onshore outsourcing). We term these *cultural and quality problems*.

The four factors obtained for global outsourcing motivations and risks served as the basis for a cluster analysis to classify enterprises according to their views about those motivations and risks. We used two steps in the cluster analysis, following previous studies of cluster formulation in the IS area (Malhotra et al., 2005). First, a hierarchical cluster technique decided the number of clusters to find, and, second, a non-hierarchical cluster method helped us define those clusters.

During the first stage, we standardised the aggregate scores for each of the constructs, squared Euclidean distances acted as a similarity measure, and Ward's minimum variance method was useful at cluster formation. We studied the dendrogram⁶ produced by the Ward method and the agglomeration coefficient and we saw the biggest percentage coefficient change with two clusters, concluding that the use of two clusters was pertinent (Table 11).

INSERT TABLE 11

Afterwards, we carried out a non-hierarchical conglomerate analysis with the K-means method to generate two clusters, with the four factors mentioned above (motivations and risks), validating the result with the ANOVA analysis. We confirmed that the analysis was pertinent because all the variables were significant (see Table 12).

INSERT TABLE 12

The two resulting clusters had 85 and 83 cases respectively. We interpreted each one of them next, determining how they differ. Table 13 offers the equality of means test of the groups.

INSERT TABLE 13

The first cluster includes enterprises that can be described as *realistic about offshore outsourcing*, which includes firms that assign more importance to the motivations that contribute most to the improved IS services, namely technical feasibility; flexibility and speed; and an improved cost/benefit ratio. This cluster does not assign the same importance to cost and expansion motivations. Firms in this cluster consider all risk factors in general very relevant and are more aware of them than those firms in Cluster 2.

Enterprises in the second cluster do not attach so much significance to outsourcing risks and, instead, pay more attention to cost and expansion motivations. We call these firms '*optimistic though disinformed*' because they cannot see the risks but value the motivations which, as the univariant study demonstrates, are not the most important element.

⁶ Readers could apply for the dendogram graphic to the corresponding author.

The first cluster is the most populous, though only slightly more than the second. We can thus state that the interviewed firms have a realistic attitude toward international outsourcing, are aware of its risks, and understand its main advantages. The number of firms in the second cluster suggests that many of the largest Spanish firms are still unaware of the risks associated with offshore outsourcing, perhaps because they do not practise it. Their only concern is the secondary or less important advantages of lower cost and access to international markets.

The next step was to verify the potential identification of the clusters obtained with certain characteristics of the enterprises that could act as control variables; i.e. size (by sales volume and number of workers), sector, and IS department size (in terms of staff and budget percentage allocated). Unfortunately, we could not find any statistically significant relationship between the clusters and these variables, but we did find a very interesting link between the clusters and the adoption (or non-adoption) of offshore outsourcing (Table 14). The firms that engage in more offshore outsourcing are predominantly in cluster one (realistic about offshore outsourcing), while firms doing less offshore outsourcing more often belong to the second cluster (optimistic though disinformed).

5. CONCLUSIONS AND IMPLICATIONS

Despite the rise of offshore outsourcing, Spanish enterprises show some delay in adopting this practice, not a surprising result since it confirms conclusions drawn from previous studies (Doldan, Luna, Martínez and Piñeiro, 2006). Kakabadse and Kakabadse (2002) showed that IS outsourcing is more mature in the United States than in Europe. Waarts and Van Everdinge (2005) confirm that, within Europe, the Nordic countries are more responsive to innovation than the Mediterranean ones (including Spain), which are more likely to avoid uncertainty. Since outsourcing can be considered an innovation (Hoecht and Trott, 2006), Spain's low offshore outsourcing level is consistent.

This paper has explored the validity of both the risks and the motivations of offshore outsourcing through the interviewed firms. All the interviewees supported the motivations, except for the 'higher quality of international outsourcing' reason. The questions on risk have mostly ranked as *very* or *relatively important* with the exception of the 'increased national unemployment rate' risk. Therefore, both managers and researchers should consider the motivations and risks discussed in later studies about offshore outsourcing theories and practice.

The most significant motivations to use offshore outsourcing include its technical feasibility, improved efficiency or cost/benefit ratio, and the greater flexibility and speed that this type of outsourcing affords. Supply clearly drives demand in this case and not the other way round, i.e. the existence of rapid, remote connections between customers and providers, even if distances are considerable, encourages offshore outsourcing. The advantages of lower costs are important, but not the prime factor behind the practice. This conclusion seems relevant since the advantage derived from lower salaries in countries such as India cannot be a sustainable long-term competitive advantage and, in fact, these offshore providers are looking for alternative strategies that can allow them to deliver services with higher quality levels and/or more added-value (King, 2005). Some data exist to confirm that, although the cost advantages of offshore outsourcing will continue to be important for quite a few years, their relevance is gradually starting to decline (Perelman, 2007).

Among the most significant risks are language, cultural, political and legal problems, along with the different time zones and the potential hidden costs of offshore outsourcing. In short, the most relevant risks or problems linked to offshore outsourcing have to do with the human factor rather than with technology. This supports the results obtained in other studies (KPMG, 2007) which conclude that only 12% of customers believe that offshore outsourcing problems

only have to do with technology, while 60% of customers think that the problems stem from the ‘human factor’.

This research has identified two typologies of firms: *realistic about offshore outsourcing* or *optimistic though disinformed*. The former are good at identifying the main motivations to outsource, such as the improvement in IS services, and are equally aware of the risks. These firms engage in substantial offshore outsourcing and guide themselves by motivations which initially do not appear as priorities in practice, such as ‘access to international markets’ and ‘lower costs of offshore outsourcing’. Firms with low levels of offshore outsourcing do not pay much attention to offshore outsourcing risks in general. The first cluster is more numerous, which suggests that most of the interviewed firms are aware of both the main motivations and the main risks associated with offshore outsourcing.

We can establish some connections between the clusters obtained in this study and those identified by Carmel and Agarwal (2002). *Optimistic though disinformed* firms do not practice offshore outsourcing to a large extent and are similar to the firms Carmel and Agarwal call *offshore bystanders* in their paper. There are some differences, though. In our group, although many of the firms do not offshore and are unaware of the risks entailed, they still value the advantages of this strategy. Among our cluster managers, even those who do not practise offshore outsourcing see these options.

Similarly, even they are not exactly the same, we find resemblances between the cluster ‘*realistic about offshore outsourcing*’ and the group Carmel and Agarwal call *proactive strategy focus*. Our cluster includes the firms which practise offshore more often and value the most important motivations, those with a strategic rather than a cost focus. The cluster also includes those firms showing a greater level of awareness about offshore outsourcing risks.

Consequently, after analysing the typology presented in our paper, we can say that managers in the largest Spanish firms tend to recognise the importance of offshore outsourcing even when their organisations do not practise it and though this strategy is not common in Spain.

The bandwagon effect (Lacity and Hirschheim, 1993) is reaching offshore outsourcing practices, although the effect is slower in Spanish firms than in the rest of Europe and the US. Offshore outsourcing seems to be an unstoppable global phenomenon with an array of challenges to top executives and IS managers. The feasibility of IS offshore services give managers an opportunity to improve the IS services in their firms. So although economic motivations are relevant, managers should also take into account that they are not the first movers nor the unique in their decision to offshore outsource. On the other side cultural problems, those related with behaviours, are restringing the generalization of offshore practice, especially in the Spanish firms. We think that it is necessary to invest in staff training and education (both on the client and on the supplier side) to overcome cultural barriers and other obstacles

The present study is not without limitations, including a low response rate. However, we should recall that this ratio is similar to those obtained in others studies about IS outsourcing. Due to this response rate, it has been statistically impossible to analyse separately the answers of “domestic cases” (firms doing outsourcing only in their country) and “offshore cases” (firms doing offshore). Anyway, as we have stated before, the paper is focused on studying “perceptions” of motivations and risks, we are analysing “opinions”. So it’s also interesting to know the opinions of firms not doing offshoring, and to verify that they are more identified with one of the clusters. The survey focuses on Spain, and results may not apply to other countries, but we think the study adds value because, to the best of our knowledge, there are few studies on the topic in Spain. The present study could represent an innovative contribution. Other limitations derive from the fact that the study addresses offshore

outsourcing in the largest firms. We think that it is not difficult to suppose that if largest firms have modest positions in offshore outsourcing, small and medium sized firms have an even smaller commitment, although future studies should verify this. Other methodologies should be used to triangulate results; case studies could complement data from questionnaires in order to gain a richer perspective on offshore outsourcing practices and their underlying motivations and risks. Today globalization is a fact and IS offshore outsourcing is one of its facets. Academics and practitioners have a wide area to continue exploring.

6. REFERENCES

- Alpar, P. and Saharia, A.N. (1995) "Outsourcing Information Systems Functions: and Organization Economics Perspective". *Journal of Organizational Computing*. Vol. 5, No. 3, pp. 197-217.
- Apte, U.M.; Sobol, M.G.; Hanaoka, S.; Shimada, T.; Saarinen, T.; Salmela, T. and Vepsalainen, A.P.J. (1997) "IS Outsourcing Practices in USA, Japan and Finland: A Comparative Study". *Journal of Information Technology*. Vol. 12, No. 4, pp. 289-304.
- Bahli, B. and Rivard, S. (2005) "Validating Measures of Information Technology Outsourcing Risks Factors". *Omega*. Vol. 33, No. 2, pp.175-187.
- Barthélemy, J. (2001) "The Hidden Cost of IT Outsourcing". *MIT Sloan Management Review*. Vol. 42, No. 3, pp. 60-69.
- Brigham, N. (2005) "Outsourcing High-Tech Jobs: Why Benign Neglect Isn't Working". Internet document: <http://cpsr.org/pubs/workingpapers/Brigham.pdf>
- Brooks, N. (2006) "Understanding IT Outsourcing and its Potential Effects on IT Workers and Their Environment". *The Journal of Computer Information Systems*. Vol. 46, No. 4, pp. 46-53.
- Bruce, D.J. and Martz, W.M.B. (2007) "Information Systems Offshoring: Differing Perspectives of the Value Statement". *The Journal of Computer Information Systems*. Vol. 47, No. 3, pp. 17-23.
- Carmel, E. (2003) "The New Software Exporting Nations: Success Factors". *The Electronic Journal of Information Systems in Developing Countries*. Vol. 13, No. 4, pp. 1-12.
- Carmel, E. (2006) "Building your Information Systems from the Other Side of the World: How Infosys Manages Time Zone Differences". *MIS Quarterly Executive*. Vol. 5, No. 1, pp. 43-53.
- Carmel, E. and Agarwal, R. (2002) "The maturation of Offshore Sourcing of Information Technology Work". *MIS Quarterly Executive*. Vol. 1, No. 2, pp. 65-77.
- Cheon, M.J.; Grover, V. and Teng, J.T.C. (1995) "Theoretical perspectives on the Outsourcing of Information Systems", *Journal of Information Technology*. Vol. 10, pp. 209-219.
- Chitale, S. 2006. "Seven Trends in Offshore Outsourcing for 2007 and Why They Matter". Internet document: http://www.offshoringtimes.com/Pages/2006/offshore_news1329.html
- Clott, Ch. (2007) "An Uncertain Future: A Preliminary Study of Offshore Outsourcing from the Manager's Perspective". *Management Research News*. Vol. 30, No. 7, pp. 476-494.
- David, G.C.; Chand, D.; Newell, S and Resende-Santos, J. (2008) "Integrated Collaboration across Distributed Sites: the Perils of Process and the Promise of Practice". *Journal of Information Technology*. Vol. 23, No. 1, pp. 44-54.
- Dibbern, J.; Goles, T.; Hirschheim, R. and Jayatilaka, B. (2004) "Information Systems Outsourcing: A Survey and Analysis of the Literature". *Database for Advances in Information Systems*. Vol. 35, No. 4, pp. 6-102.
- Doh, J.P. (2005) "Offshore Outsourcing: Implications for International Business and Strategic Management Theory and Practice". *Journal of Management Studies*. Vol. 42, No. 3. pp. 695-704.
- Doldan, F.R.; Luna, P.; Martínez, F.J. and Piñeiro, C. (2006) "Information Systems/Information Technology Outsourcing in Spain: A critical Analysis", in Kehal, H.S. and Singh (editors) *Outsourcing and Offshoring in the 21st Century. A Socio-Economic Perspective*. Idea Group Publishing. Hershey. pp. 372-402.
- Erber, G. and Sayed-Ahmed, A (2005) "Offshore Outsourcing. A Global Shift in the present IT Industry". *Intereconomics*. Vol. 40, No. 2, pp. 100-112.

Forrester. (2004) "Europe's IT services spending will grow by 57 percent from 2003 to 2008". Internet document: http://www.t-systems.com/ipl2/statistics/923/downloads/press_kits/.

Gonzalez, R.; Gasco, J. and Llopis, J. (2006) "Information Systems Offshore Outsourcing: A Descriptive Analysis". *Industrial Management & Data Systems*. Vol. 106, N. 9, pp. 1233-1248.

Grover, V.; Cheon, M.J. and Teng, T.C. (1994) "A Descriptive Study on the Outsourcing of Information Systems Functions". *Information & Management*. Vol. 27, No. 1, pp. 33-44.

Gupta, S, and Chaudhari, N.S. (2006) "Information Technology Offshore Outsourcing: A perspective of Advanced Countries", in Kehal, H.S. and Singh (editors) *Outsourcing and Offshoring in the 21st Century. A Socio-Economic Perspective*. Idea Group Publishing. Hershey, pp. 122-139

Harland, Ch.; Knight, L.; Lamming, R. and Walker, H. (2005) "Outsourcing: Assessing the Risk and Benefits for Organisations, Sectors and Nations". *International Journal of Operations & Production Management*. Vol. 25, No. 9/10; pp. 831-850.

Hemphill, T.A. (2004) "Global outsourcing: effective functional strategy or deficient corporate governance?" *Corporate Governance*. Vol. 4, No. 4, pp. 62-68.

Hirschheim, R. (2006) "The Future of the IS Discipline: Further Reflections". Working Paper. Department of Information Systems. Louisiana State University.

Hoecht, A. and Trott, P. (2006) "Innovation Risks of Strategic Outsourcing". *Technovation*. Vol. 24, No. 12, pp. 672-681.

Hofstede, G. (1991) "Cultures and Organizations: Software of the Mind". Sage Publications. London.

Hofstede, G. (2001) "Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations across Nations". Sage. Thousand Oaks. CA.

Hu, Q.; Saunders, C. and Gebelt, M (1997) "Research Report: Diffusion of Information Systems Outsourcing: a Reevaluation of Influence Sources". *Information Systems Research*. Vol. 8, No. 3, pp. 288-301.

IDATE Foundation (2005) "Digiworld 2005. Los retos del mundo digital" IDATE-ENTER, Montpellier, France. Internet document: <http://enter.es/enter/file/espanol/texto/digiworld.2005.pdf>

IEEE (2004) "Outsourcing Engineering Development Offshore" HotChips Conference. Rochester Institute of Technology. August 23.

Jarvenpaa, S.L. and Mao, J-Y. (2008) "Operational Capabilities Development in Mediated Offshore Software Services Models". *Journal of Information Technology*. Vol. 23, No. 1, pp. 3-17.

Kaiser, K.M. and Hawk, S. (2004) "Evolution of Offshore Software Development: from Outsourcing to Cosourcing". *MIS Quarterly Executive*. Vol. 3, No. 2, pp. 69-81.

Kakabadse, A. and Kakabadse, N. (2002) "Trends in Outsourcing: Contrasting USA and Europe". *European Management Journal*. Vol. 20, No. 2. pp. 189-198.

Kearney (2005) "Making offshore Decisions. A.T. Kearney's 2004 Offshore Location Attractiveness Index", Internet document: http://www.atkearney.com/shared_res/pdf/Making_offshore_S.pdf

Khan, N.; Currie, W.; Weerakkody, V. and Desai, B. (2003) "Evaluating Offshore IT Outsourcing in India: Supplier and Customer Scenarios". Proceedings of the 36th Hawaii International Conference on Systems Sciences (HICSS'03).

Kim, J.W.; Meso, P. and Kim, D-G. (2005) "Cultural effects on Offshore-Outsourced Systems Development", 13th Annual Cross-Cultural Meeting in Information Systems, Las Vegas, December.

King, W.R. (2005) "Outsourcing becomes more complex". *Information Systems Management*. Vol. 22, No. 2, pp. 89-90.

Klepper, R. (1995) "The Management of Partnering Development in I/S Outsourcing". *Journal of Information Technology*. Vol. 10, No. 4, pp. 249-258

Kliem, R. (2004) "Managing the Risk of Offshore IT Development Projects". *Information Systems Management*. Vol. 21, No. 3, pp. 22-27.

Koong, K.S., Liu, L.C. and Wang, Y.J. (2007) "Taxonomy Development and Assessment of Global Information Technology Outsourcing Decisions". *Industrial Management & Data Systems*. Vol. 107, No. 3, pp. 397-414.

KPMG (2007) "Strategic Evolution. A global Survey on Sourcing Today". Internet document: http://www.kpmg.com.au/Portals/0/rasita_strategic-evolution200701.pdf

Krishna, S.; Sahay, S. and Walsham, G. (2004) "Managing Cross-Cultural Issues in Global Software Outsourcing". *Communications of the ACM*. Vol. 47, No. 4, pp. 62-66.

Kumar, N. and Palvia, P. (2002) "A framework for Global IT outsourcing management: key influence factors and strategies". *Journal of Information Technology Cases and Applications*. Q1, pp. 56-75.

Kumar, S. (2006) "A Comparative Analysis of Key Information Technology Players". *Technovation*. Vol. 26, No. 7, pp. 836-846.

Lacity, M.C. and Hirschheim, R. (1993) "The Information Systems Outsourcing Bandwagon". *Sloan Management Review*. Vol. 35, No 1, pp. 73-86.

- Lacity, M.C. and Willcocks, L.P. (1995) "Interpreting Information Technology Sourcing Decisions from a Transaction Costs Perspective: Findings and Critique". *Accounting, Management & Information Technology*. Vol. 5, No. ¾, pp. 203-244.
- Lee, J-N.; Miranda, S-M. and Kim, Y-M. (2004) "IT Outsourcing Strategies: Universalistic, Contingency, and Configurational Explanations of Success". *Information Systems Research*. Vol. 15, No. 2, pp. 110-131.
- Lin, Ch.; Pervan, G. and McDermid, D. (2007) "Issues and recommendations in Evaluating and Managing the benefits of Public Sector IS/IT Outsourcing". *Information Technology & People*. Vol. 20, No. 2, pp. 161-183.
- Loh, L. and Venkatraman, N. (1992) "Diffusion of Information Technology Outsourcing: Influence Sources and the Kodak Effect". *Information Systems Research*. Vol. 3, No. 4, pp. 334-358.
- Ma, Q.; Pearson, J.M. and Tadisina, S. (2005) "An Exploratory Study into Factors of Service Quality for Application Service Providers". *Information & Management*. Vol. 42, No. 4, pp. 1067-1080.
- Mahnke, V.; Wareham, J. and Bjorn-Andersen, N. (2008) "Offshore Middleman: Transnational Intermediation in Technology Sourcing". *Journal of Information Technology*. Vol. 23, No. 1, pp. 18-30.
- Malhotra, A.; Gosain, S. and El Sawy, O. (2005) "Absorptive Capacity Configurations in Supply Chains: Gearing for Partner-Enabled Market Knowledge Creation". *MIS Quarterly*. Vol. 29, No. 1, pp. 145-187.
- Menon, M.K. (2005) "A Strategic Decision Framework for Offshoring IT Services". *Journal of Global Business*. Vol. 16, No. 31, pp. 89-95.
- Midttun, A.; Dirdal, T.; Gautesen, K.; Omland, T. and Wenstøn, S. (2007) "Integrating Corporate Social Responsibility and Other Strategic Foci in a Distributed Production Systems: a Transaction Cost Perspective on the North Sea Offshore Petroleum Industry". *Corporate Governance*. Vol. 7, No. 2, pp. 194-208.
- Misra, R. B. (2004) "Global IT Outsourcing: Metrics for Success of All Parties". *Journal of Information Technologies Cases and Applications*. Vol. 6, No. 3, pp. 21-34.
- Nwenyama, O.K. and Bryson, N. (1999) "Making the Information Systems Outsourcing Decision: a Transaction Cost Approach to Analyzing Outsourcing Decision Problems". *European Journal of Operational Research*. Vol. 115, No. 2, pp. 351-367.
- OIT (2005) "Informe sobre el empleo en el mundo 2004-2005. Empleo, productividad y reducción de la pobreza", International Labour Organisation. Geneva. Internet document: <http://www.ilo.org/public/english/employment/strat/wer2004.htm>
- Osei-Bryson, K-M. and Ngwenyama, O. K. (2006) "Managing risks in information systems outsourcing: An approach to analyzing outsourcing risks and structuring incentive contracts". *European Journal of Operational Research*. Vol. 174, No. 1, pp. 245-264.
- Oshri, I.; Kotlarsky, J. and Willcocks, L. (2007) "Managing Dispersed Expertise in IT Offshore Outsourcing: Lessons from Tata Consultancy Services". *MIS Quarterly Executive*. Vol. 6, No. 2, pp. 53-65.
- Pai, A.K. and Basu, S. (2007) "Offshore Technology Outsourcing: Overview of Management and Legal Issues". *Business Process Management*. Vol. 13, No. 1, pp. 21-46.
- Paisittanand, S. and Olson, D.L. (2006) "A Simulation Study of IT Outsourcing in the Credit Card Business". *European Journal of Operational Research*. Vol. 175, No. 2, pp. 1248-1261.
- Perelman, D. (2007) "Report: Offshoring's Cost Advantage Slips". *EWeek.com*. Internet document: <http://www.eweek.com>
- Pfannenstien, L.L. and Tsai, R.J. (2004) "Offshore Outsourcing: Current and Future Effects on American IT Industry". *Information Systems Management*. Vol. 21, No. 4, pp. 72-80.
- Poppo, L. and Zenger, T. (1998) "Testing alternative theories of the firm: transaction cost, knowledge-based, and measurement explanations for make-or-buy decisions in information services". *Strategic Management Journal*. Vol. 19, No. 9, pp.853-877.
- Porter, M.E. and Millar, V. (1985) "How Information Gives you Competitive Advantage", *Harvard Business Review*. Vol. 65, No. 4, pp. 149-160.
- Ramarapu, N.; Parzinger, M.J. and Lado, A.A. (1997) "Issues in foreign outsourcing: Focus on applications development and support". *Information Systems Management*. Vol. 14, No. 2, pp 27-31.
- Ranganathan, C. and Balaji, S. (2007) "Critical Capabilities for Offshore Outsourcing of Information Systems". *MIS Quarterly Executive*. Vol. 6, No. 3, pp. 147-164.
- Rao, M.T. (2004) "Key Issues for Global IT Sourcing: Country and Individual Factors". *Information Systems Management*. Vol. 21, No. 3, pp. 16-21.
- Ravichandran, R. and Ahmed, N. U. (1993) "Offshore systems development". *Information & Management*, Vol. 24, No. 1, pp. 33-40.
- Rottman, J.W. and Lacity, M.C. (2004) "Twenty Practices for Offshore Sourcing". *MIS Quarterly Executive*. Vol. 3, No. 3, pp. 117-130.
- Rottman, J.W. and Lacity, M.C. (2006) "Proven Practices for Effectively Offshoring IT Work". *MIT Sloan Management Review*. Vol. 47, No. 3, pp. 56-63.
- Shao, B.B.M. and David, J.S. (2007) "The Impact of Offshore Outsourcing on IT Workers in Developed Countries". *Communications of the ACM*. Vol. 50, No. 2, pp. 89-94.

- Shi, Z.; Kunnathur, A.S. and Ragu-Nathan, T.S. (2005) "IS Outsourcing Management Competence Dimensions: Instrument Development and Relationship Exploration". *Information & Management*. Vol. 42, No. 6, pp. 901-919.
- Sobol, M.G. and Apte, U. (1995) "Domestic and global outsourcing practices of America's most effective IS users". *Journal of Information Technology*, Vol. 10, pp. 269-280.
- Tafti, M.H.A. (2005) "Risks factors associated with offshore IT outsourcing". *Industrial Management & Data Systems*. Vol 105, No. 5, pp. 549-560.
- Takahashi, S. and Sayer, P. (2007) "European IT/Telecom Converged Service Delivery Outsourcing Deals: H1 2006. The Battle Rages Between IT And Telecom Service Providers". Internet document: <http://www.forrester.com/rb/search/results.jsp?No=25&N=50174>
- Taylor, H. (2006) "Critical risks in outsourced IT projects; the intractable and the unforeseen". *Communications of the ACM*. Vol. 49, No. 11, p. 74-79.
- Taylor, H. (2007) "Outsourced IT Projects from the Vendor Perspective: Different Goals, Different Risks". *Journal of Global Information Management*. 2007. Vol. 15, No. 2, pp. 1-22.
- Waarts, E. and Van Everdingen, Y. (2005) "The Influence of national Culture on the adoption status of innovations: An Empirical study of Firms across Europe". *European Management Journal*. Vol. 23, No. 6, pp. 601-610.
- Wang, E.T.G. (2002) "Transaction Attributes and Software Outsourcing Success: an Empirical Investigation of Transaction Cost Theory". *Information Systems Journal*. Vol. 12, No. 2, pp. 153-181.
- Watjatrakul, B. (2005) "Determinant of IS Sourcing Decisions: A Comparative Study of Transaction Cost Theory versus Resource-based view". *Journal of Strategic Information Systems*. Vol. 14, No. 4, pp. 389-415.
- Yang, D-H.; Kim, S.; Nam, Ch. and Min, J-W. (2007) "Developing a Decision Model for Business Process Outsourcing". *Computers & Operations Research*. Vol. 34, No. 12, pp. 3769-3778.
- Zatolyuk, S. and Allgood, B. (2004) "Evaluating a Country for Offshore Outsourcing: Software Development Providers in the Ukraine". *Information Systems Management*. Vol. 21, No. 3, pp. 28-33.
- ZDNet (2006) "IT Offshore Spending to Reach \$29.4 Bln by 2010". Internet document: <http://blogs.zdnet.com/ITFacts/index.php?cat=29>
- ZDNet (2007) "87% of Outsourcing Buyers to Continue Outsourcing". Internet document. <http://blogs.zdnet.com/ITFacts/index.php?cat=29>

**APPENDIX A: TABLE 1
INSERT TABLE 1**

APPENDIX B: Questionnaire

1. What proportion (%) of the following activities is carried out through outsourcing? (onshore and offshore)

Onshore	Offshore		Onshore	Offshore	
%	%	Applications Analysis	%	%	Systems Operations
%	%	Support to end users	%	%	Systems Processing
%	%	Data Entry	%	%	Programming
%	%	Staff and/or user training	%	%	Security
%	%	Systems Implementation	%	%	Network Service
%	%	Hardware Maintenance	%	%	Customer Support by Telephone
%	%	Software Maintenance	%	%	E-business Solutions
			%	%	Others (specify)

2. Give a value to the specific motivations for offshore outsourcing.

Not important at all

1	2	3	4	5	6	7	Very Important
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Technical Feasibility (Global Internet connections)	1 2 3 4 5 6 7	Access to international markets	1 2 3 4 5 6 7
More flexibility and speed in IT projects	1 2 3 4 5 6 7	Lower costs than onshore	1 2 3 4 5 6 7
Improved cost/benefit ratio in outsourcing	1 2 3 4 5 6 7	More quality than onshore	1 2 3 4 5 6 7
		Others (specify)	1 2 3 4 5 6 7

3. Give a value to the specific risks for offshore outsourcing.

Not important at all

1	2	3	4	5	6	7	Very Important
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Less quality than onshore outsourcing	1 2 3 4 5 6 7	Scarce infrastructures in the provider's country	1 2 3 4 5 6 7
Different time-zones between client and provider	1 2 3 4 5 6 7	Bigger Hidden Costs than onshore	1 2 3 4 5 6 7
Problems related to language, culture, different laws and/or uncertainty in the provider's country	1 2 3 4 5 6 7	Increased Unemployment Rate onshore	1 2 3 4 5 6 7
		Others (specify)	1 2 3 4 5 6 7

The organisation's profile and the Information Systems Department's profile

4. The organisation size and its age (year 2005).

Staff	Sales (millions of €)	Date of Creation
<input type="checkbox"/> 0-50	<input type="checkbox"/> Up to 30	<input type="text"/>
<input type="checkbox"/> 51-100	<input type="checkbox"/> More than 30 and up to 60	
<input type="checkbox"/> 101-500	<input type="checkbox"/> More than 60 and up to 90	
<input type="checkbox"/> 501-1,000	<input type="checkbox"/> More than 90 and up to 150	
<input type="checkbox"/> 1,001-25,000	<input type="checkbox"/> More than 150 and up to 300	
<input type="checkbox"/> More than 25,000	<input type="checkbox"/> More than 300 and up to 600	
	<input type="checkbox"/> More than 600	

5. Sector

6. Profile of the Information Systems Department/Service (year 2005)

IS department's staff number: Date of Creation:

Department's name:

Percentage of the budget allocated to IS in relation to the organisation's total budget: %

APPENDIX C: FIGURES 1 AND 2

INSERT FIGURE 1 AND 2

Table 1: Theories to explain Offshore Outsourcing Motivations and Risks

Theory	Motivations	Risks
<i>Transaction Cost Theory</i>	Cost Saving Improved Cost/Benefit Ratio	Hidden Costs Poor Infrastructures Different Time-Zones Deficient Quality Language, Cultural, Political and Legal Problems
<i>Innovation Theories</i>	Technical Feasibility	
<i>Relational Exchange Theory</i>	Flexibility and Speed	
<i>Resource-Based Theory</i>	Improved Quality Improved Cost/Benefit Ratio	
<i>Agency Theory</i>		Hidden Costs Deficient Quality Language, Cultural, Political and Legal Problems
<i>Strategic Management Theories</i>	Access to International Markets	
<i>Hofstede's Study (National Cultures)</i>		Cultural Problems
<i>Corporate Social Responsibility</i>		Increased Unemployment Rate

Table 2: Variable and reliability measurements

Construct	Source	Measurement	Reliability (Cronbach's α)
Offshore Outsourcing motivations	Gonzalez, Gasco and Llopis (2006) and own materials	6 items measured with a 1-7 Likert scale	0.772
Offshore Outsourcing risks	Idem	Idem	0.808

Table 3: Study Technical Specifications

<i>Scope</i>	Spain
<i>Population</i>	4,107 of the largest Spanish firms
<i>Sample size</i>	329 valid answers (8.02%)
<i>Sampling error</i>	5%
<i>Survey date</i>	September-December, 2006

Table 4: Profile of firms according to whether or not they apply Offshore Outsourcing

		Offshore Outsourcing		Total N. (%)	Chi- square	Sign.
		Yes N. (%)	No N. (%)			
<i>National (Onshore) Outsourcing</i>	Yes	53 (98.2)	222 (80.7)	275 (83.6)	9.985	0.000
	No	1 (1.8)	53 (19.3)	54 (16.4)		
<i>No. of workers</i>	0-50	6 (11.5)	22 (8.1)	28 (8.7)	0.792	0.673
	51-500	33 (63.4)	185 (68.5)	218 (67.7)		
	More than 500	13 (25.0)	63 (23.3)	76 (23.6)		
<i>Sales (millions of €)</i>	Up to 30	8 (15.4)	23 (8.5)	31 (9.6)	8.916	0.029
	Between 31 and 60	14 (26.9)	132 (48.9)	146 (45.3)		
	Between 61 and 300	24 (46.1)	91 (33.7)	115 (35.7)		
	More than 300	6 (11.5)	24 (8.8)	30 (9.3)		
<i>Sector</i>	Industry	33 (61.1)	156 (56.7)	189 (57.4)	1.116	0.572
	Services	17 (31.5)	85 (30.9)	102 (31.0)		
	ICT-intensive services	4 (7.4)	34 (12.4)	38 (11.6)		
<i>IS staff</i>	1-10 employees	36 (70.6)	214 (79.0)	250 (77.6)	2.503	0.286
	11-100 employees	13 (25.5)	53 (19.6)	66 (20.5)		
	101-250 employees	2 (3.9)	4 (1.5)	6 (1.9)		
<i>Budget percentage allocated to IS</i>	0-4	22 (62.9)	116 (67.4)	138 (66.7)	0.411	0.814
	5-10	11 (31.4)	45 (26.2)	56 (27.1)		
	11-56	2 (5.7)	11 (6.4)	13 (6.3)		
<i>IS manager</i>	Female	8 (15.7)	19 (7.0)	27 (8.4)	5.960	0.051
	Male	43 (84.3)	250 (93.0)	293 (91.6)		
<i>IS manager's superior's working post</i>	General Management	26 (53.1)	168 (64.4)	194 (62.6)	4.633	0.201
	Finance/Administration	15 (30.6)	67 (25.7)	82 (26.5)		
	IS Corporate Director	8 (16.3)	22 (8.4)	30 (9.7)		
	Organisation/Planning/ Engineering	0 (0.0)	4 (100.0)	4 (1.3)		

Table 5: Offshore Outsourcing Motivations

Not important at all

1	2	3	4	5	6	7
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 Very important

	Mean	Median	Mode
Technical feasibility	5.55	6	7
Improved cost/benefit ratio	4.59	5	6
More flexibility and speed	4.17	5	6
Lower costs than Onshore	3.97	4	4
Access to international markets	3.56	4	5
More quality than Onshore	1.96	2	1

Table 6: Offshore Outsourcing Risks

Not important at all

1	2	3	4	5	6	7
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 Very important

	Mean	Median	Mode
Cultural, language, political and legal problems	5.78	6	7
Different time-zones	4.65	5	6
Higher hidden costs	4.09	5	5
Lower quality	3.95	4	2
Poor infrastructures at the provider's country	3.77	4	4
Increased national unemployment rate	2.29	2	3

Table 7: Offshore Outsourcing Motivations: Factor Analysis Pertinence

Correlation Matrix Determinant	0.145
Kaiser-Meyer-Olkin Index	0.666
Bartlett's Test of Sphericity	334.539
Significance	0.000

Table 8: Offshore Outsourcing Motivations: Total Variance Explained and Rotated Factor Matrix

Total variance explained							Rotated Factor Matrix			
Factor	Initial Eigenvalues			Rotation Sum of Squared Loadings			Variable	Factor		
	Total	% of the variance	Cumulative %	Total	% of the variance	Cumulative %		1	2	
1	2.944	49.068	49.068	2.230	37.161	37.161	Technical feasibility	0.799	0.191	
2	0.927	15.457	64.525	1.642	27.363	64.525	Improved cost/benefit ratio	0.692	0.335	
3	0.879	14.654	79.179				More flexibility and speed	0.882	0.071	
4	0.549	9.151	88.330				Lower costs than Onshore	0.141	0.860	
5	0.463	7.711	96.041				Access to international markets	0.162	0.682	
6	0.238	3.959	100.000				More quality than Onshore	<i>0.536</i>	<i>0.532</i>	

Table 9: Offshore Outsourcing risks: Factor Analysis Pertinence

Correlation Matrix Determinant	0.106
Kaiser-Meyer-Olkin Index	0.776
Bartlett's Test of Sphericity	378.090
Significance	0.000

Table 10: Offshore Outsourcing Risks: Total Variance Explained and Rotated Factor Matrix

Total variance explained							Rotated Factor Matrix			
Factor	Initial Eigenvalues			Squared Rotation Saturation Sum			Variable	Factor		
	Total	% of the variance	Cumulative %	Total	% of the variance	Cumulative %		1	2	
1	3.173	52.876	52.876	2.397	39.947	39.947	Lang., cult., pol. and legal problems	0.309	0.816	
2	1.021	17.016	69.892	1.797	29.945	69.892	Different time-zones	0.535	0.612	
3	0.704	11.733	81.624				Lower quality	0.025	0.809	
4	0.469	7.824	89.448				Higher hidden costs	0.863	0.150	
5	0.356	5.936	95.384				Poor infrastr. at the provider's country	0.780	0.244	
6	0.277	4.616	100.000				Increased national unemploy. rate	0.812	0.138	

Table 11: The Agglomeration Coefficient

No. of Groups	Agglomeration Coefficient	Percent Coefficient Changes
10	199.616	8.43
9	216.453	8.26
8	234.342	13.15
7	265.167	15.42
6	306.068	14.12
5	349.288	15.21
4	402.421	17.08
3	471.171	15.83
2	545.776	22.69
1	669.661	-

Table 12: Offshore Outsourcing Motivations and Risks Analysis Validation

Variable (Factor)	F	Sign.
'Offshore outsourcing main motivations'	76.409	0.000
'Offshore outsourcing secondary motivations'	29.690	0.000
'Offshore outsourcing cost-related and secondary problems'	33.237	0.000
'Offshore outsourcing cultural and quality problems'	12.594	0.001

Table 13: Equality of Means Test for Offshore Outsourcing Motivations and Risks according to the Affiliation Cluster

		Means	Levene		Statistic	Sign.
			F	Sign.		
‘Main motivations’ factor	Group 1 (n=85) Group 2 (n=83)	0.535 -0.593	6.969	0.009	1156.0(1)	0.000
‘Secondary motivations’ factor	Group 1 (n=85) Group 2 (n=83)	-0.389 0.382	1.468	0.227	-5.449(2)	0.000
‘Cost-related and secondary problems’ factor	Group 1 (n=85) Group 2 (n=83)	0.400 -0.421	0.041	0.840	5.765(2)	0.000
‘Cultural and quality problems’ factor	Group 1 (n=85) Group 2 (n=83)	0.274 -0.251	10.373	0.001	2475.0(1)	0.001

(1) Non-parametric Mann-Whitney’s U-Test

(2) Student’s T-statistic

Table 14: Chi-square to test independence

		Clusters		Chi-square	Sign.
		Cluster 1: <i>Realistic before Offshore Out.</i>	Cluster 2: <i>Optimistic though disinformed</i>		
Offshore Outsourcing	No	53 (46.5%)	61 (53.5%)	2.390	0.084
	Yes	32 (59.3%)	22 (40.7%)		
No. of workers				0.363	0.619
Sales				0.026	0.879
Sector				2.105	0.349
IS staff				0.406	0.539
Budget percentage allocated to IS				0.001	0.550

Figure 1: Scree Plot for Offshore Outsourcing Motivations Factor Analysis

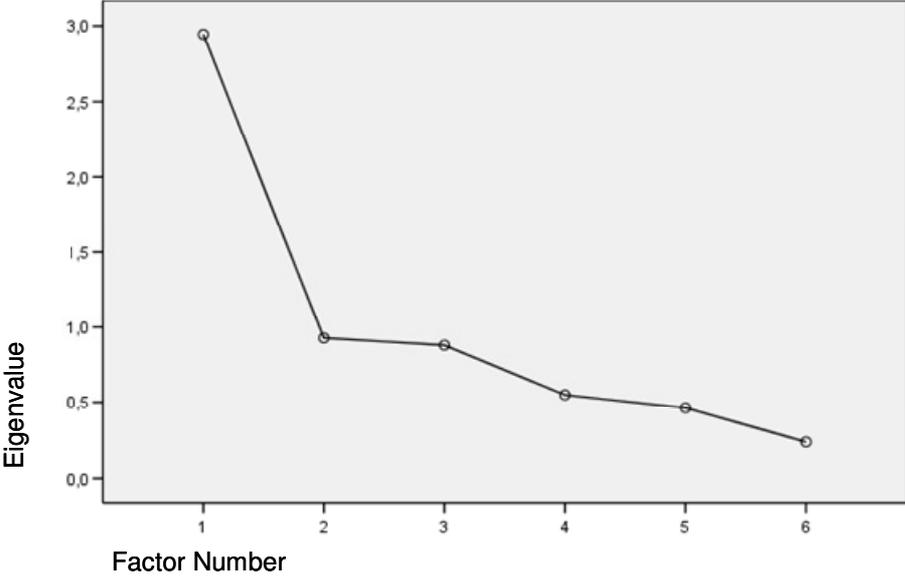


Figure 2: Scree Plot for Offshore Outsourcing Risks Factor Analysis

