2004

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Abstract

Despite the considerable growth of Information Systems (IS) outsourcing in recent years, this trend is still the object of strong criticism. This study has as its aim to show the main risks computer outsourcing entails for the largest Spanish firms. In order to achieve that aim, we have reviewed the previous literature on this topic and later analysed the results of a survey covering 5,000 firms.

According to the firms under analysis, the main concern in relation to IS outsourcing is the excessive dependence on the provider this type of contract may generate. Nevertheless, some characteristics of firms (mainly their size) somehow determine what risks are seen as the most relevant. The conclusions also suggest that total outsourcing can turn out to be a very dangerous strategy, mainly due to the dependence it creates. This is why IS managers should consider other alternatives such as having multiple providers or resorting to selective outsourcing.

Keywords: Management of IS, Outsourcing, Risks, Survey.

1 INTRODUCTION

Information Systems (IS) outsourcing has experienced a remarkable growth in recent years (Baldwing, Irani and Love, 2001:16; Currie, 2000:241; Kern, Willcocks and Van Heck, 2002:47; Lacity and Willcocks, 1998:363; Marchand and Jacobsen, 2001:315; McLellan, Marcolin and Beamish, 1995:300; Palvia, 1995:265; Shepherd, 1999:64; Udo, 2000:422); some authors even suggest we find ourselves in the Outsourcing Era (King, 2001:15) and, judging by the forecast data offered by some computer market analysts, this growth will continue in the near future (The Yankee Group, 2003).

These services are not only growing, but also spreading geographically, from North America, the United Kingdom and Australia to Western Europe, South America and some countries in Southeast Asia, like Japan (Moran, 1999:1). What is more, the scope and range of services being outsourced are increasing too (Currie, 1998:169), as is shown by the promotion of BPO (Business Process Outsourcing), ASP (Applications Service Providers), Global Outsourcing, Web and E-business Outsourcing.

However, the unique nature of Information Technology (IT) places customers in a position of disadvantage with respect to IS outsourcing providers (Lacity and Willcocks; 1995:226-228). Customers often lack experience in the signature of outsourcing contracts. This is not the case for providers (Ketler and Walstrom; 1993:457), who enjoy a much better position due to this information asymmetry.

This is why the present paper seeks to identify the risks perceived to be the most relevant in IS outsourcing, from the customer's point of view. With that aim in mind, we will firstly review the literature on IS outsourcing risks, after which we will show the methodology, the main results and the conclusions of an empirical piece of work based on a survey carried out among the IS managers of the largest Spanish firms. The results will not only tell us the level of importance of the said risks in the firms under analysis, but also will help us to try and determine whether or not those risks are conditioned by the outsourcing level or the diverse characteristics of firms (like sector and size) and their IS departments.

2 OUTSOURCING RISKS IN INFORMATION SYSTEMS LITERATURE

IS outsourcing is a managerial decision that entails various risks and problems, so much so that numerous authors have identified an associated risk for each advantage suggested. Firstly, we can encounter problems derived from the *dependence* this service generates. The dependence results from the fact that, in practice, firms find it difficult to quantify and define the information services they need, and besides, those services tend to evolve over time. Therefore, if these services had not been agreed in the original contract, they would have to be charged with an additional rate, thus increasing the total costs (Fowler and Jeffs, 1998:121); or internal improvements in the customer firm's IS might be neglected (Glass, 1996:90). This is why Lacity and Hirschheim (1993b:76) state that external providers are not strategic partners, as the interest in profits is not shared; in other words, when the customer's costs increase, the same happens to the provider's profits. Along the same lines, Guterl (1996:80) suggests that providers would rather customers had more additional costs, not fewer.

The *loss of critical skills and competences* is another relevant problem. When a service is outsourced, the customer loses his understanding of the service over time. Even though the provider supplies innovative services to the customer, a large part of the new knowledge required remains in the hands of the provider and cannot be transferred to the customer. Worse than that, the firm can lose its capacity to be up to date with technological breakthroughs (Clark, Zmud and McCray, 1995:231). Therefore, the customer needs to retain certain know-how and internal capacities in both technical and managerial areas so as to be able to handle the outsourcing relationship properly (Willcocks and Lacity, 1999:177). Retaining these capacities is the best way to identify and evaluate potential outsourcing risks and also to perform practices that can mitigate those risks (Willcocks, Lacity and Kern, 1999:310).

An additional difficulty has to do with the *qualification of the provider's staff's.* Although in theory outsourcing provides access to technical knowledge and IS specialists' expertise, what very often happens in practice is that the firm which outsources is supported by the same staff as before (Fowler and Jeffs, 1998:122; Glass, 1996:89), as these staff have been transferred from the customer firm to the service providing firm. Lacity and Hirschheim (1993b:78) warn that many of the outsourcing firms feel they have suffered losses in business knowledge and experience, because providers send their most qualified workers to get new customers from other firms in the sector once they have achieved the contract. Besides, providers hardly ever take the initiative when it comes to business strategies; they prefer to follow specific instructions instead.

The provider's lack of compliance with the contract is another possible risk. This problem is inherent to any contract: whenever an agent performs tasks for a principal, the principal always runs the risk of the agent not completing the task as expected or of being less vigilant than the principal would be (Clark, Zmud and McCray, 1995:230). Besides, in the case of IS outsourcing, customers' needs may not be properly met, and an inadequate task priority may be established, above all because the provider does not fully understand what the business is all about (Martinsons, 1993:21; Glass, 1996:90).

What is more, an *unclear cost-benefit relationship* may exist within IS outsourcing; after all, performing a cost/benefit analysis for outsourcing is no easy matter. Taking into account all relevant factors and translating them into monetary values is not easy either. For example, some issues include determining how to compare and translate the potentially better service of an outsourcing vendor with the service provided by the internal IS department and deciding how to measure in economic terms the consequences of an outsourcing vendor failing to deliver products or delivering unacceptable products (Gupta and Gupta, 1992:49). Before these difficulties, many firms admit that their decision to outsource is only based on the costs of outsourcing, and not on its benefits (Clark, Zmud and McCray, 1995:230), seeing as costs exclusively those fixed in the contract.

Although one of the main theoretical objectives of outsourcing is to control IS costs or flexibilise them by making them become variable, outsourcing may have *hidden costs*, such as those derived from dismissing or transferring staff, the transfer of licences by software vendors, etc. These costs are mainly due to ambiguities in the contract, i.e. failing to define present and future IT requirements; applying poor recruitment practices; not allowing providers to obtain reasonable profits and being unable to create mechanisms that protect prices in case of contingency (Willcocks, Lacity and Fitzgerald, 1995:339). Summing up, the hidden costs of outsourcing could be the following (Barthélemy; 2001:61-66): *a)* vendor search and contracting - many enterprises underestimate the expense associated with identifying and evaluating suitable IT vendors, selecting a finalist, and negotiating as well as drafting the contract, *b)* transitioning to the vendor – it can take months before the vendor knows as much as the internal IT department, *c)* costs related to provider management - which imply, amongst other things, verifying that IT vendors fulfil their contractual obligations, bargaining with them, and finally, negotiating any contract changes required, and *d)* transition costs after outsourcing – these costs come from switching vendors or resuming IT activities internally.

We should mention possible *security issues*, above all when a provider has to serve several direct competitors, which means having to keep confidentiality about the information corresponding to all of them (Grover, Cheon and Teng, 1994:38; Lacity and Hirschheim, 1993a:24). The security of the IS services outsourced will depend on the providing firm, which is why policies and procedures must be negotiated within the outsourcing contract to ensure that IS security objectives (effectiveness, efficiency, adequacy, integrity, validity, authorisation, privacy) continue to be fulfilled (Fink, 1994:5).

Another risk is the oft-mentioned *irreversibility of the outsourcing decision* (Fink, 1994:5), especially if the user has got rid of the technical and human infrastructure needed to reconstruct his IS *in house* (Barthélemy, 2001:67; Fowler and Jeffs, 1998:121). There are three main reasons for this irreversibility: the high costs involved in reconstructing the IS department, the difficulty to attract the necessary staff and the amount of time required (Clark, Zmud and McCray, 1995:231).

Outsourcing generates various staff-related problems; the customer firm will therefore meet the *possible opposition of the IS staff*, who see outsourcing as a threat to their working position. IS staff may find themselves before a dismissal, a retraining period, or a transfer to the service providing firm (Grover, Cheon and Teng, 1994:38). This uncertain situation creates anxiety and a feeling of insecurity, which may result in a decrease of employees' productivity during the period prior to the signature of the contract or even after the contract has been signed (Palvia, 1995:270).

When only some staff members are transferred from the customer firm to the provider firm, it has been checked that problems related to lack of motivation arise among those staying in the customer firm. These professionals probably feel offended because they think they are not good enough to belong to a specialist firm like the computer service provider (Willcocks and Fitzgerald, 1996:287). On the other hand, those who are transferred from one firm to another may suffer various changes that can go from their seniority or any other favourable condition to the need to adapt to a new corporate culture. The status of the IT executives who remain in the customer firm usually improves (Martinsons, 1993:21), but they must reorient their competence (Corbett; 1994:20-21), focussing on external relationships management and dedicating much less time to operations management.

Finally, we can refer to the *inability to adapt to new technologies*. In theory, access to leading-edge technology is a persuasive argument in support of IS outsourcing, as a firm can enjoy the latest technology without the lead time that is customary for in-house development (Palvia, 1995:269). Outsourcing vendors can quickly adapt to machine upgrades and new software releases (Lacity and Hirschheim, 1993.a:20). In practice, though, if providers do not find benefits in the adoption of new technologies, they could become reluctant to adopt them, in an attempt to make the service they offer as profitable as possible. What is more, if the outsourcing contract does not include a clause relative to the future technological evolution, that evolution will not be completed (Glass, 1996:90).

All these risks will become greater if customers opt for total outsourcing. Therefore, IS managers should consider other alternatives such as resorting to selective outsourcing or outsourcing with multiple providers (Currie, 1998:171). With selective outsourcing, firms can retain the internal knowledge required to handle the outsourcing provider or even to revert the outsourcing process. With the option of multiple providers, the customer firm can negotiate outsourcing contracts with multiple providers differentiated by competence, experience and market position (Cross, 1995:96), thus making the different providers' skills complementary. However, even these strategies have their risks; Cross (1995:96), for instance, points out that it is difficult to manage and coordinate the work of several providers. In turn, Loh and Venkatraman (1992:11) suggest that it is not easy to specify each provider's responsibilities either, especially when the outsourced processes are interdependent. Finally, Currie and Willcocks (1998:141) reminds us that the management and coordination of multiple contracts are very time-consuming.

Other practices that would surely help to reduce risks have to do with fully understanding the nature of the work outsourced, signing short-term contracts, demanding up-to-date documentation about those contracts and also with the customer's ability to retain the skills and competences needed to ensure that contracts add value to profits (Earl, 1996:24; Currie, 1998:179, Hurst and Hanessian; 1995:107).

3 RESEARCH METHODOLOGY

After identifying IS outsourcing risks in the literature, we will explore how these risks apply to the largest Spanish firms. The reason why we decided that our target population should be formed by the largest firms was that, in the absence of previous data about IS outsourcing in Spain, those large firms could be expected to have accumulated more knowledge and experience in this field. This reason is similar to the one provided by Fink and Shoeib (2003:305) in their paper. In order to identify the largest firms, we used the directory *Las 5.000 mayores empresas* (The 5,000 largest firms) of *Actualidad Económica* magazine, which has been collated with other databases largely used in business studies like Duns and Bradstreet's *50.000 Principales Empresas Españolas* (the 50,000 main Spanish firms). Among the 5,000 Spanish firms with the highest sales, we looked up on the list of the first database those which shared the same telephone number and address, as this was a symptom

revealing that both the IS manager and the structure itself could coincide. Once that information was known to us, we decided to send the questionnaire only to the firm which, having the same telephone number and address as others, had the highest sales.

In this way, we eliminated 584 firms, after which our final database consisted of 4,416 firms, to which was sent a questionnaire along with a stamped addressed envelope for the questionnaire to be returned. We had to face the handicap that field studies based on surveys about IS outsourcing do not proliferate, case studies being more common (Aubert, Rivard and Patry; 1996; Baldwing, Irani and Love, 2001; Huber, 1993; Kern and Willcocks, 2000; 2002; Lacity and Hirschheim, 1993a; 1993b; Lacity and Willcocks, 1997; Lacity, Willcocks and Feeny, 1996; Loebbecke and Jelassi, 1999; McLellan, Marcolin and Beamish, 1995; Palvia, 1995; Willcocks and Choi, 1995; Willcocks, Fitzgerald and Lacity, 1996; Willcocks, Lacity and Kern, 1999). However, on the basis of the previous literature about this matter, we prepared a questionnaire draft, which was later subjected to a pilot test and a pre-test. 5 out of the 19 questions in the final questionnaire were used in this study, as this paper is part of a larger empirical study dealing with a wide range of aspects related to IS outsourcing. The questionnaire's addressees were the IS managers of the firms included in the final database.

The information obtained through the questionnaire was later elaborated on using the statistical program SPSS for Windows and then treated with univariant and multivariant statistical methods. Table 1 shows the study specifications, where we can see that 357 valid answers were obtained, i.e. an 8%. This percentage is acceptable if we bear in mind that obtaining answers in surveys carried out among IS executives is problematic. This is due to the fact that the rapid technological change, the considerable investments firms have made on IT, and the great interest aroused by outsourcing have made these executives become the target of many surveys (Poppo and Zenger, 1998:862).

Scope	Spain
Population	4,416 largest Spanish businesses (by sales)
Sample size	357 valid answers (8%)
Sampling error	5%
Survey date	June-October, 2001

Table 1. Study technical specifications.

4 RESULTS

As for the presentation of the results obtained in the empirical study, we will firstly refer to some general features of firms, such as their outsourcing level or the size and characteristics of their IS department. This will allow us to check, in the following subsection, what risks are involved in outsourcing, and whether or not those risks are influenced by the said features.

4.1 General characteristics of firms

IS outsourcing is undoubtedly a widespread phenomenon, since only 14.3% of the interviewed firms have outsourced no IS services (Table 2). The outsourcing level variable will help us to check if the higher or lower outsourcing level of firms conditions their decision to outsource IS services. An even distribution of firms with outsourcing levels above and below the mean is possible thanks to the way in which this variable was designed.

The size of a firm can be measured by the number of employees and its sales. Table 2 shows that the interviewed firms are large with respect to these two variables, since the lowest percentages are found in the smallest firms (only 6.2 % of them have between 0 and 50 employees and 10.1% turn over up to 5 billion pesetas, ca. 30 million €.). Most of the interviewed firms belong to the Industrial sector (58.8%), followed by the Service sector with one third of the firms. We have detected that 8.1% of the answers came from firms belonging to the Financial and Insurance Institutions sector.

		N	%
Outsourcing	No	51	14.3
	Yes	306	85.7
Outsourcing Level	Below the mean	175	49.0
	Above the mean	182	51.0
Staff	0-50	22	6.2
	51-500	202	56.6
	More than 500	132	36.9
	Lost	1	0.3
Sales (billion pesetas*)	Up to 5	36	10.1
	More than 5 up to 50	227	63.6
	More than 50	93	26.0
	Lost	1	0.3
Sector	Industry	210	58.8
	Services	118	33.1
	Financial and insurance institutions	29	8.1
IS Staff	1-10 Employees	240	67.2
	11-100 Employees	96	26.9
	101-400 Employees	5	1.4
	Lost	16	4.5
Budget Percentage allocated to IS	0-4	133	37.2
	5-10	61	17.1
	11-30	18	5.1
	Lost	145	40.6

* 1€ is 166.386 pesetas

Table 2. General characteristics of firms.

Despite the size of firms, IS departments do not have a large staff volume. As is shown in Table 2, most firms have between 1 and 10 employees, and only very few have IS departments with more than 100 employees. The percentage of their total budget allocated by firms to IS tends to be quite low too: most firms dedicate between 0 and 4% of their budgets to IS, and only very few dedicate more than to 11% to this department, the maximum budget percentage allocated to IS being 30% (we must point out that the question referring to the percentage of the budget dedicated to IS was the least answered one in the whole survey, which means that answers or results regarding this aspect must be treated with caution). In short, both the IS department staff size and the budget percentage dedicated to this function prove that, regardless of firm size, only few human and/or financial resources are assigned to these areas.

4.2 Outsourcing risks

Table 3 shows the risks involved in IS outsourcing. We must say that, in the corresponding question, and following the lines of previous studies (Collins and Millen, 1995:9), interviewees were asked to specify the three risks they considered to be the most important out of a list that had previously been given to them. That list was based on the review of the literature presented in section 2 of this paper[1]. Dichotomic variables consequently appeared, with a zero value when a specific risk was not mentioned and a one value when it was. N stands for the number of times interviewees placed a particular risk among the three most important ones.

The excessive dependence on the provider this contract may generate is very clearly identified as the main obstacle. Other relevant -although much less often mentioned- drawbacks are the possible loss of competence on the part of the customer and the dubious qualification level of the provider's staff. Curiously, the last problem in order of importance is the provider's inability to adapt to new

[1] The order in which we presented the said risks in section 2 is identical to the ranking shown in Table 3, which makes it easier to establish a relationship between the theoretical review and the results obtained.

technologies. In other words, doubts do not refer to technical aspects, but to the provider's personal (human) characteristics. Another relatively surprising result has to do with the fact that the potential opposition of the IS service staff is one of the least valued risks, even though the outsourcing contract may put those employees' jobs in danger.

Risks	N	% valid	Rank
An excessive dependence on the provider	189	61.8	1st
Loss of critical skills and competences	112	36.6	2nd
Qualification of the provider's staff	110	35.9	3rd
Provider's lack of compliance with the contract	101	33.0	4th
Unclear cost-benefit relationship	94	30.7	5th
Hidden costs in the contract	90	29.4	6th
Security issues	63	20.6	7th
Irreversibility of the outsourcing decision	30	9.8	8th
Possible IS staff opposition	22	7.2	9th
Inability to adapt to new technologies	19	6.2	10th

Table 3. Outsourcing risks.

We then carried out another series of tests which sought to clarify whether or not these risks were closely related to firm characteristics. In first place, and regarding the relationship between outsourcing level and outsourcing risks, we can identify three risks that are unarguably dependent on outsourcing level (see Table 4).

- The firms that outsource the most are also the ones that most fear the possible dependence on the provider generated by outsourcing.
- The firms that outsource the most are also the ones that most fear the IS staff's possible opposition.
- They are also the most concerned about the potential security problems outsourcing may generate.

		Outsourcing level				
		Below the mean	Above the mean	Total	Chi-square	Sign.
An excessive dependence on the provider	No	61 (52.1%)	56 (47.9%)	117 (100%)	10.601	0.001
	Yes	63 (33.3%)	126 (66.7%)	189 (100%)		
Possible IS staff opposition	No	123 (43.3%)	161 (56.7%)	284 (100%)	12.730	0.000
	Yes	1 (4.5%)	21 (95.5%)	22 (100%)		
Security issues	No	105 (43.2%)	138 (56.8%)	243 (100%)	3.536	0.060*
	Yes	19 (30.2%)	44 (69.8%)	63 (100%)		
Hidden costs in the contract					0.014	0.904
Provider's staff qualification					0.346	0.556
Provider's lack of compliance with the contract					1.489	0.222
Inability to adapt to new technologies					0.394	0.530
Irreversibility of the outsourcing decision					2.650	0.104
Loss of critical skills and competences					0.670	0.413
Unclear cost-benefit relationship					3.041	0.081

*P=0.060.

Table 4. Chi-square test: outsourcing level and outsourcing risks.

As for the influence of size on outsourcing risks, we firstly tried to see to what extent the number of employees in the firm has a bearing on the development of those risks. We detected quite a few statistical dependence relationships. Thus, firms with higher numbers of workers showed more concern about the qualification of the providing firm's staff, about the possible opposition to outsourcing of their IS department's staff, and finally about the unclear relationship between costs and benefits. In contrast, firms with fewer workers were above all concerned about dependence on the provider and potential security problems (see Table 5).

		Staff				
		Up to 500	From 500	Total	Chi-square	Sign.
Provider's staff qualification	No	132 (67.3%)	64 (32.7%)	196 (100%)	6.398	0.011
	Yes	58 (52.7%)	52 (47.3%)	110 (100%)		
An excessive dependence on the provider	No	58 (49.6%)	59 (50.4%)	117 (100%)	12.613	0.000
	Yes	132 (60.8%)	57 (30.2%)	189 (100%)		
Possible IS staff opposition	No	184 (64.8%)	100 (35.2%)	284 (100%)	12.209	0.000
	Yes	6 (27.3%)	16 (72.7%)	22 (100%)		
Security issues	No	144 (59.3%)	99 (40.7%)	243 (100%)	4.022	0.045
	Yes	46 (73.0%)	17 (27.0%)	63 (100%)		
Unclear cost-benefit relationship	No	144 (67.9%)	68 (32.1%)	212 (100%)	9.976	0.002
	Yes	46 (48.9%)	48 (51.1%)	94 (100%)		
Hidden costs in the contract					0.650	0.420
Provider's lack of compliance with the contract					0.679	0.410
Inability to adapt to new technologies					0.152	0.697
Irreversibility of the outsourcing decision					0.062	0.804
Loss of critical skills and competences					2.561	0.110

Table 5. Chi-square test: staff and outsourcing risks.

We also identified some dependence relationships between the most frequent outsourcing risks and firm sales (see Table 6). Firms with the highest sales are the ones which most fear the loss of critical skills and competences, as well as the potential opposition of their staff. Instead, those with lower sales are mostly concerned about the hidden costs of outsourcing contracts and the excessive dependence on the provider. Therefore, the group of smaller firms (in terms of staff volume and sales) especially fear excessive dependence on the provider, while greater firms show reluctance to outsource due to their staff's opposition.

		Sales				
		Up to 15*	From 15*	Total	Chi-square	Sign.
Hidden costs in the contract	No	89 (41.2%)	127 (58.8%)	216 (100%)	13.747	0.000
	Yes	58 (64.4%)	32 (35.6%)	90 (100%)		
An excessive dependence on the provider	No	47 (40.2%)	70 (59.8%)	117 (100%)	4.698	0.030
	Yes	100 (52.9%)	89 (47.1%)	189 (100%)		
Loss of critical skills and competences	No	103 (53.1%)	91 (46.9%)	194 (100%)	5.423	0.020
	Yes	44 (39.3%)	68 (60.7%)	112 (100%)		
Possible IS staff opposition	No	142 (50.0%)	142 (50.0%)	284 (100%)	6.084	0.014
	Yes	5 (22.7%)	17 (77.3%)	22 (100%)		
Provider's staff qualification					0.840	0.359
Provider's lack of compliance with the contract					0.130	0.719
Inability to adapt to new technologies					0.004	0.952
Irreversibility of the outsourcing decision					0.992	0.319
Security issues					0.043	0.835
Unclear cost-benefit relationship					1.636	0.201

*billion pesetas

Table 6. Chi-square test: sales and outsourcing risks.

Outsourcing risks are the same for the different firms, regardless of the sector they belong to, as we can see in Table 7. However, Table 8 shows that while firms with fewer staff in their IS department are the ones that most fear an excessive dependence on the provider, those with a higher number of

employees are above all worried about the risk of losing critical skills and competences in their IS department and about the unclear relationship between costs and benefits in IS outsourcing.

	Chi-square	Sing.
Hidden costs in the contract	2.286	0.319
Provider's staff qualification	0.975	0.614
An excessive dependence on the provider	0.181	0.914
Provider's lack of compliance with the contract	1.099	0.577
Inability to adapt to new technologies	0.198	0.906
Irreversibility of the outsourcing decision	1.765	0.414
Loss of critical skills and competences	2.227	0.328
Possible IS staff opposition	0.024	0.988
Security issues	1.320	0.517
Unclear cost-benefit relationship	4.679	0.096

Table 7. Chi-square test: sector and outsourcing risks.

		IS Staff				
		Up to 5	From 5	Total	Chi-square	Sign.
An excessive dependence on the provider	No	35 (31.0%)	78 (69.0%)	113 (100%)	8.609	0.003
	Yes	87 (48.3%)	93 (51.7%)	180 (100%)		
Loss of critical skills and competences	No	86 (46.0%)	101 (54.0%)	187 (100%)	4.027	0.045
	Yes	36 (34.0%)	70 (66.0%)	106 (100%)		
Unclear cost-benefit relationship	No	93 (45.8%)	110 (54.2%)	203 (100%)	4.739	0.029
	Yes	29 (32.2%)	61 (67.8%)	90 (100%)		
Hidden costs in the contract					1.364	0.243
Provider's staff qualification					0.765	0.382
Provider's lack of compliance with the contract					0.262	0.609
Inability to adapt to new technologies					0.275	0.600
Irreversibility of the outsourcing decision					0.584	0.445
Possible IS staff opposition					0.944	0.331
Security issues					0.303	0.582

Table 8. Chi-square test: IS staff and outsourcing risks.

Finally, after studying the relationships between outsourcing risks and the percentage of its total budget each firm allocates to IS, we checked that no statistical relationship exists; in other words, risks are not directly related to that budget percentage, as can be verified in Table 9.

	Chi-square	Sign.
Hidden costs in the contract	1.591	0.207
Provider's staff qualification	0.507	0.476
An excessive dependence on the provider	0.008	0.927
Provider's lack of compliance with the contract	0.685	0.408
Inability to adapt to new technologies	0.601	0.438
Irreversibility of the outsourcing decision	0.177	0.674
Loss of critical skills and competences	0.130	0.719
Possible IS staff opposition	1.593	0.207
Security issues	1.058	0.304
Unclear cost-benefit relationship	0.407	0.523

Table 9. Chi-square test: Budget percentage allocated to IS and outsourcing risks.

5 SUMMARY AND CONCLUSIONS

IS outsourcing has become a widespread phenomenon worldwide, and is also very common among large Spanish firms. Despite their large size (in terms of both sales and staff), and judging by the staff

volume of IS departments and the budget percentage allocated to IS activities, these firms do not dedicate many resources to IS services.

The main obstacle mentioned by the largest Spanish firms in relation to IS outsourcing is the excessive dependence on the provider this type of contract may generate. Other important fears, although less significant than the previous one, would be the loss of competence the customer may suffer and the dubious qualification of the provider's staff. Curiously enough, the risk ranked lowest in importance is the inability to adapt to new technologies, which suggests that doubts refer to providers' personal or human characteristics rather than to their technical skills. Another surprising result is the low ranking for possible IS staff opposition, which clearly contrasts with the importance given to this factor in the literature.

Nevertheless, we can find an explanation if we relate these risks to some of the characteristics of the interviewed firms and their IS departments. Thus, it can be seen that the most important problem involved in outsourcing (excessive dependence on the provider) is mainly associated with the firms that outsource the most, are smaller (both in terms of sales and staff) and have fewer IS staff, whereas larger firms outsourcing the most are particularly concerned about their own staff 's opposition to this type of contract. In the former case, it seems reasonable for smaller firms to have objections to this potential dependence, since they have not so many resources available to abandon the provider and look for other alternatives (like the internal reconstruction of their own IS department or the search for new providers). In the latter case, it could be argued that firms which outsource the most and are larger in size fear the opposition of their staff due to the large number of employees that might be affected by outsourcing.

As for the loss of skills and competences, the risk ranked second in importance, it is the most frequent among firms with more resources (in terms of sales and IS staff), which would mean that these firms' most important concern is their own incompetence after outsourcing is introduced. On the other hand, we can say that although there is clear evidence that outsourcing risks are determined by both outsourcing level and certain characteristics related to firm size (sales, number of employees and IS staff), it is also true that other characteristics, such as the activity sector or the budget percentage allocated to IS, do not condition those risks.

Finally, we must point out that the outsourcing risks described in this paper should be taken into account, both in business practice and in future theoretical developments, since all of them have found some support, at least in the firms we have analysed. In order to reduce those risks, IS managers should consider the possibility of not resorting to total outsourcing, choosing instead either selective outsourcing or a multiple-provider approach, or even both at the same time. Another interesting alternative would consist in the IS department's facing up to outsourcing providers' offers with a benchmarking study. In any case, firms must be aware of the need to retain some specific key knowledge *in house* if they really want the outsourcing relationship to work satisfactorily for the customer.

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