Outsourcing and Information Systems Managers: An Empirical Study

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ABSTRACT

Purpose- Information systems outsourcing has grown dramatically in recent years, however few studies have dealt with the influence of outsourcing on the role of IS managers. In attempting to fill the gap, this study presents and analyzes the results of a survey among large Spanish firms. Also the paper analyzes these results along time. So the main aim of the paper is to focus on the implications of outsourcing over IS managers and the evolution of these implications in recent years. Moreover we present a typology of firms according to how outsourcing has influence IS managers. **Design/Methodology/Approach-** A questionnaire was administered to the IS managers of the largest Spanish firms, so outsourcing influence is analysed from the point of view of the own managers affected by outsourcing.

Findings- The study concludes that outsourcing has benefited IS managers in the largest Spanish firms, enhancing their jobs and working as a valuable alternative to internal IS activity.

Originality/Value- An important contribution made by this paper is the presentation of a typology of enterprises according to how outsourcing has influenced the professional activities of IS managers.

Keywords:

Information systems outsourcing, IS managers, factor analysis, cluster analysis.

Outsourcing and Information Systems Managers: An Empirical Study[1]

1. INTRODUCTION

The search for higher efficiency levels along with cost control efforts has forced many companies to specialise in a number of key areas, focusing on their distinctive competences (Gilley, Greer and Rasheed, 2004). This process has become especially evident in the area of Information Systems and Technologies (IS/IT). In fact, the growth of IS outsourcing seems to be unstoppable, as shown by the fact that 89% of the organisations interviewed by the consultant KPMG plan to maintain or increase their current level of IT outsourcing (KPMG, 2007).

However, despite the growing proneness to outsourcing and the certainty that the practice will affect IS jobs in general and IS managers in particular (Brooks, 2006; Palvia, 1995), only a few studies have addressed the topic (Walden and Hoffman, 2007). A recent academic article on IS outsourcing (Gonzalez, Gasco and Llopis, 2006a) does not include any discussion directly related to this issue. The present paper seeks to fill this gap; in order to do it we conducted a survey among IS managers in large Spanish firms. A comparison between the data from this survey, finished in December 2006, and a previous one, conducted in 2001, verifies how much the view of IS managers about the effect of outsourcing on their jobs, has changed. So the main aim of the paper is to focus on the implications of outsourcing over IS managers and the evolution of these implications in recent years. Moreover we pretend to discover a typology of enterprises based on how IS managers feel outsourcing has affected them. With these aims in mind, the next section reviews the literature, followed by sections on methodology, results and conclusions.

[1] The authors would like to thank the editor and two anonymous reviewers for all their suggestions.

2. ANTECEDENTS

INSERT TABLE 1

Table 1 shows some of the studies on outsourcing and IS managers. The present paper focuses on three aspects of IS managers that could been affected by outsourcing, these factors were highlighted in the Corbett (1994) study:

a) The time required for IS managers to perform their jobs
b) The characteristics of the IS manager's working post
c) The type of knowledge and skills needed to carry out the IS manager's professional activities.

Form here we explain deeper these three aspects, showing the connections with studies presented in table 1.

a) The time required for IS managers to perform their jobs

Outsourcing liberates IS managers from part of their tasks, as it can change the content of their jobs, assigning more importance to some aspects and minimising the value of others (Gonzalez, Gasco and Llopis, 2006b). Corbett's study (1994) indicates that IS executives who use outsourcing are mainly interested in general management issues. He also concluded, like other authors (Byrd et al., 2006), that IS strategic planning and external relations management have become two important functions. According to Corbett (1994) the following activities should be studied to see if the time devoted to them has changed as a result of IS outsourcing:

- *Systems development and project management*: which refer to the ability to manage the new IS or applications implementation; this role has been studied by Karlsen and Gottschalk (2006) too.

- *External relationship management*: The IS manager's role in effectively managing relations with third parties; this role has been also analysed by Feeny and Willcocks (1998) in their framework, and revisited by Willcocks, Feeny and Olson (2006), who commented on the *contract facilitator, contract monitor* and *vendor developer* roles. McFarlan and Nolan (1995) point out that external relations management becomes very important in an outsourcing relationship. Gottschalk and Karlsen (2005) agree, especially when discussing the *liaison* role.
- *Staff management*: In an outsourcing project, the IS manager must assign key employees who have the required skills and knowledge to work with supplier staff (Koh, Ang and Straub, 2004).
- *Internal relationship management*: The IS manager has to manage relationships with end users and top management. A similar definition was given by Gottschalk and Karlsen (2005) to the *spokesman* role (where the IS manager contacts the rest of the organisation to promote acceptance of IS projects). In this sense, the IS manager is responsible for *managing change* (Useem and Harder, 2000), focusing especially on employees' misgivings about outsourcing.
- *Operations management*: The IS manager supervises daily IS operations. Sharma, Bhagwat and Dangayach (2008) have noted the importance of this function.
- *Information architecture planning:* The IS manager has to define the technology framework, standards and products. Willcoks, Feny and Olson (2006) identified the *informed buyer* role (analysis of the external market for IT/e-business services; selection of a sourcing strategy to meet business needs, and technology issues), which is related with this same activity. Moreover McFarlan and Nolan (1995) highlighted the relevance of information architecture planning and the study of

emergent technologies in advance of outsourcing. Karlsen and Gottschalk (2006) talked about the *monitor role* (keeping an eye on the environment in order to detect new ideas, technologies, etc.), which involved a similar function.

- *IS strategic planning:* The IS manager must develop short- and long-term plans to integrate technology into the business. In this sense Gottschalk and Karlsen (2005) suggested that the IS manager as *entrepreneur* was in charge of identifying users' needs and combining them with IT opportunities to strategically exploit them within the organisation.

b) The characteristics of the IS manager's working post.

We may assume that outsourcing generally enhances the characteristics of the IS manager's working post, with the exception of job stability (Palvia, 1995), as this practice represents a radical change in the way an enterprise manages its IS. According to Corbett (1994), these characteristics of the IS manager's working post should be considered to determine the influence of IS outsourcing:

- *Autonomy*: the possibility of making and implementing decisions with minimum opposition. Many researchers have pointed out that outsourcing clients feel dependent on the provider (Currie, 1998; Guterl, 1996), so the IS manager could lose autonomy with this kind of process.
- *Authority:* the financial, human and/or budget resources under the IS manager's control. There is no consensus on this topic, as some researchers say that authority may be reinforced with outsourcing, pointing out that, contrary to common assumptions, while top managers handle outsourcing decisions, IS executives often play a significant role as initiators and managers of these decisions (Apte et al.,

1997). Other researchers note that outsourcing represents a threat to IS managers because they may end up with not enough work to justify their continued employment (Leinfuss, 1991).

- *Demand*: the time, energy and pressures attached to the working post. Outsourcing often means greater demands, not fewer, because it broadens and redirects the IS manager's role toward a more strategic orientation (Clark, Zmud and McCray, 1995).
- *Prestige:* the prominence and influence attached to the working post. Although outsourcing can be more demanding, it can also enhance the status of IS executives (Clark, Zmud and McCray, 1995).
- *Satisfaction:* the enjoyment and the sense of competence in the job. Outsourcing may increase job satisfaction if it helps IS managers concentrate on more strategic activities while the providers handle the more routine tasks (Willcocks, Feeny and Olson, 2006; Grover, Cheon and Teng, 1996).
- *Added Value:* how the job contributes to business success. This is the more important challenge that IS managers have today (Peppard, 2007), and outsourcing may increase this added value.

c) The type of knowledge and skills required to perform the IS manager's professional activities

We next need to examine whether the knowledge and skills required for IS managers to perform their job are influenced by outsourcing. IS managers mention the importance of the knowledge they own when they outsource their IS (Scott, 2007), especially their general management knowledge or non-technology-based knowledge (Gonzalez, Gasco

and Llopis, 2006b). According to Corbett's study (1994), these skills and knowledge areas should be analysed to determine their importance for outsourcing:

- *Communication:* IS managers become coordinators between clients and suppliers, so they have to communicate to both parties to reach mutual agreements (Martinsons and Cheung, 2001). The necessity of this communication has been pointed out by other authors (Shi, Kunnathur and Ragu-Nathan, 2005).
- *Staff Management:* IS managers, like other managers in the organisation, are in charge of their staff, but the staff management knowledge is even more important after outsourcing. The Ho, Ang and Straub (2003) study insists on the relevance of the IS manager's recruitment knowledge because, without it, executives can feel overwhelmed by outsourcing and perceive that suppliers perform poorly.
- *Finance:* CEOs are expecting more from IS managers, who now must understand the financial implications of IS strategies (Mehler, 1997), including outsourcing.
- *Business Management*: this refers to the ability to manage toward bottom-line business outcomes (i.e. sales/revenues, profit/loss). In this sense Useem and Harder (2000) talked about the skills necessary for managers who negotiate outsourcing contracts, including strategic thinking. IS managers must understand how outsourcing can help the company achieve competitive advantages.
- *Project Management:* Since each outsourcing agreement is a new project, the IS manager must define a series of steps to sequence the timing and resources required to achieve objectives. Martinsons and Cheung (2001) discussed the need to monitor the work in the outsourcing relationship.

- *Negotiation:* IS managers must protect the interests of their firm when negotiating contracts. Useem and Harder (2000) call this skill, "*partnership governing"* and Shi, Kunnathur and Ragu-Nathan (2005) call it "*contract monitoring"*.
- *Information Technologies*: The IS manager acts as a monitor, keeping an eye on the environment for new ideas and technologies (Gottschalk and Karlsen, 2005).

3. METHODOLOGY

We have followed a similar methodology of previous IS outsourcing studies (Gonzalez, Gasco and Llopis; 2005a, 2005b, 2005c). Based on the assumption that the largest firms are the most likely to outsource (Lee, Miranda and Kim, 2004), we distributed the questionnaire to the largest Spanish firms. To determine the target population, we referred to the directory of "las 5.000 mayores empresas" (The 5,000 largest firms) in *Actualidad Económica* magazine, which we later collated with other databases widely used in business studies, including "Dun & Bradstreet's 50,000 Principales Empresas Españolas" (the 50,000 main Spanish firms). Among the 5,000 firms with the highest sales, an effort was made to find those included in the first database mentioned above that had the same telephone number and address, as this showed that the IS manager and the actual structure could coincide. Once that information was available, the questionnaire was sent only to the firms that had the same telephone number and address and the highest sales figure.

This procedure eliminated 893 firms so the final database consisted of 4,107 firms that received questionnaires along with a stamped addressed envelope. The questionnaire is essentially based on a previous one prepared by the same authors and also based on the literature on the topic. The questionnaire was reviewed by IS management experts.

Eight out of the 26 questions in the final questionnaire have been used here, as this paper is part of a larger empirical study dealing with a wide range of topics related to IS outsourcing. Table 2 shows the three main study variables, and the questionnaire can be found in the Appendix.

INSERT TABLE 2

The questionnaire's addressee was intended to be the IS manager of the firms included in the final database, but listings of these managers are not available in Spain, which means that the addressee's identity was unknown. The information obtained in the questionnaire was later expanded using the statistical program SPSS for Windows and treated with univariate and multivariant statistical methods. Table 3 shows the study specifications.

INSERT TABLE 3

We obtained 329 valid answers, representing an eight percent return. Though low, this ratio is similar or even superior to those obtained by other studies on IT outsourcing (Shi, Kunnathur and Ragu-Nathan, 2005; Bahli and Rivard, 2005; Gonzalez, Gasco and Llopis, 2005a; Ma, Pearson and Tadisina, 2005). The ratio is acceptable if one bears in mind that obtaining answers in surveys among executives is problematic, particularly so in surveys with IS executives. This is because rapid technological change, high investments firms have made in IT and the great interest in outsourcing have made these executives the target of many surveys (Poppo and Zenger, 1998). Since part of the present study involves comparing the answers given by the interviewees over a given time period about how outsourcing influences their jobs, Table 3 shows the basic characteristics not only of this survey but of the previous one, which served as a reference to compare one to the other. It is not possible to establish whether the

enterprises that answered the present and the past questionnaires are the same. Previous longitudinal studies (such as Casadesús and Karapetrovic, 2005) were addressed to the same population, although the sample does not necessarily coincide. The firms that answered the questionnaire represent the total population in terms of size (sales volume and number of employees) and sector.

4. RESULTS AND DISCUSSION

4.1. General characteristics of the enterprises, their IS departments and IS managers

Table 4 shows the general features of the interviewed enterprises, their IS departments and the individuals in charge of those departments, both in the present study and in the survey conducted in 2001. Clearly, outsourcing is a widespread phenomenon among the largest Spanish firms, as 83.6 percent of them outsource some IS function nationally. However, if a comparison is drawn with previous years, a certain degree of stagnation becomes visible since outsourcing volume has not increased lately. Spanish enterprises still play a modest role in global or international outsourcing, where the service supplier is not in the same country as the customer (IDC, 2005; Barcus and Montibeller, 2008; Chua and Pan, 2008; Gonzalez, Gasco and Llopis, 2006c; Kumar, 2006). The variable outsourcing level will be useful in determining if the behaviour of IS managers differs depending on whether firms outsource more or less (i.e., whether they are above- or below-average in this respect).

INSERT TABLE 4

Firm size can be measured by the number of workers or by the sales volume. Table 4 shows that the interviewed firms are large according to both variables, as the lowest percentages correspond to enterprises with the fewest employees (only 8.5 percent of

the firms have less than 50 workers) and with the lowest sales (9.4 percent of the firms have an annual turnover below 30 million euros, whereas 44.3 percent have a turnover between 30 and 60 million a year and another 35 percent, between 60 and 300 million). Most of the firms interviewed belong to the industrial sector (57.4 percent). Within the service sector, we differentiated between general services (31 percent) and IT-intensive ones (financial institutions and insurance companies, the tourism sector, attorneys and publishing companies, etc., representing 11.6 percent), because these types of firms have a much stronger dependence on IT than others due to the products/services they offer (Capaldo, Raffa and Zollo, 1995).

Despite the size of firms, their IS departments do not have a large staff — most (76 percent) have 10 employees or fewer in this department — and neither do they allocate a large budget to this area. A considerable group (41 percent) dedicates four percent or less of the firm's total budget to IS. Despite the size of these firms, few financial and human resources are allocated to IS departments. Many interviewees did not answer the question about the percentage of the budget dedicated to IS in 2006 (just as in 2001). This is common in other studies devoted to these issues (Lee, 2001).

Some characteristics of the IS manager (the interviewee) suggest that this executive has held his job for about eight years on average and is about 42 years old . This position continues to be occupied mostly by men. In terms of hierarchical level within the firm, more than half of the interviewees report directly to general management (59 percent), this being the ideal situation because it avoids dependence on a specific functional area and makes it possible to have a more general and impartial vision of the enterprise as a whole. A smaller but significant percentage of interviewees reports to finance and administration (24.9 percent).

4.2. Implications of outsourcing for IS managers

Influence of IS outsourcing on time commitment

Table 5 and Figure 1 show the influence that outsourcing has had on the amount of time IS managers dedicate to their various tasks. Figure 1 was obtained valuing scores between 1 and 3 as *it decreases*; the score 4 as *it does not change*; and those between 5 and 7 as *it increases*.

INSERT TABLE 5 AND FIGURE 1

As the mean and median, as well as the mode, are around 4, outsourcing has generally had no influence on the time IS managers need to carry out their activities, although a redistribution of that time has taken place -a t test has been used to contrast that the means of these items do not significantly differ from 4-. Indeed, it is easy to see that more time is needed for external relations - the *liaison role* introduced by Gottschalk and Karlsen (2005) - because the manager in charge of that department acts as the contact between the organisation and the outsourcing supplier (Wadhwa and Ravindran, 2007). Conversely, less time is needed for internal relations because the number of tasks coordinated within the firm itself and within the actual department is smaller. Activities such as IS strategic planning and IS architectural planning have a mean above 4, which indicates that outsourcing favours the allocation of more time to this type of strategic activities, which is in line with McFarlan and Nolan (1995) conclusions.

A principal components factor analysis was performed next with information on the items related to the influence of outsourcing on the time dedicated to the IS manager's activities. The objective of this factor analysis was to condense the information provided by the original items into a series of factors or constructs that underlie that information, and with a smaller number of items. Thus, each factor can be regarded as a

combination of several original items. Highlighting the underlying factors in each group avoids less important or redundant information. It has been demonstrated that this factor analysis was pertinent (Determinant of Correlation Matrix =0.021; Kaiser-Meyer-Olkin Index =0.859; Barlett Test of Sphericity =983.381; Significance = 0.0). Two factors have been extracted that account for 73.01 percent of the information about the original items (a satisfactory level because it exceeds 50 percent). We have extracted two factors based on: the "a priori criteria" in which the number of factors extracted is determined by the researcher, following the requirements of Parsimony (the number of factors extracted is less than the number of original items) and Interpretability (the factors extracted are interpretable). Also we have used criteria based on the percentage of variance explained in the analysis, as with two factors we explained 73.0% of the variance, while with one factor we only explained 61.4%.

A Varimax rotation was used to allow a better interpretation of the factors. Table 6 shows the results of this analysis (from which the lowest rotated factor matrix values have been excluded for the purpose of improving the interpretation).

INSERT TABLE 6

The first factor, which was given the name *Systems Management*, includes all the strategic IS activities that shape the information architecture and need a greater time commitment with outsourcing, as shown in the univariate analysis. The second factor is *Relations and Staff Management*. In this case the univariant analysis revealed that, with the notable exception of external relations, which are becoming more important, the other components of this factor lose importance with outsourcing.

The influence of outsourcing on the characteristics of the working post

INSERT TABLE 7 AND FIGURE 2

Table 7 shows how outsourcing has impacted the IS manager's working post. Figure 2, like Figure 1, is based on giving a negative value to scores between 1 and 3, a neutral value to 4, and a positive one to scores between 5 and 7. Outsourcing has had positive effects on the characteristics of the post. All the means are above 4 so in no case is outsourcing believed to have a negative influence. Managers feel that their job has acquired more added value because they have fewer internal tasks and believe that their work is more valuable. As a result, their satisfaction level increases also. They have a higher degree of autonomy, but this has not been so beneficial for their prestige (in contradiction with Clark, Zmud and McCray (1995) results) and authority - as concluded by Leinfuss (1991) -, although it has not been detrimental either.

Afterwards, a factor analysis was performed to determine the underlying factors in each question, after verifying the statistical pertinence of the analysis. (Determinant of Correlation Matrix =0.029; Kaiser-Meyer-Olkin Index =0.845; Barlett Test of Sphericity =898.716; Significance = 0.0). Once again, a principal components factor analysis was carried out and two factors were extracted; the new factors had to be interpreted with a Varimax rotation (Table 8).

INSERT TABLE 8

The first factor is the one formed by the items most positively affected by outsourcing, such as added value and satisfaction, and to a much lesser extent, prestige. (In fact, it can be seen in the table that prestige also has certain weight in Factor 2). This Factor 1 will be called *Basic Characteristics*. The second factor is essentially formed by the items least favoured by outsourcing, above all authority and demand. Because these

characteristics tend to be common at managerial posts, this second factor will be referred to as *Managerial Characteristics.*

The Influence of outsourcing on knowledge and skills

INSERT TABLE 9 AND FIGURE 3

We next examine the influence exerted by outsourcing on the IS manager's knowledge and skills, using Table 9 and Figure 3. As shown, the introduction of outsourcing does not mean that the IS manager needs knowledge and skills to a lesser extent; if anything, the IS manager needs them more in order to negotiate good contracts (Martinsons and Cheung, 2001). Except for finance-related knowledge (the mean of which is the only one below 4), outsourcing requires a greater amount of knowledge. It becomes especially obvious that IS managers need plenty of communication knowledge to serve as a bridge between their organisation and the supplier and to negotiate. Finally, IT knowledge cannot be neglected since awareness of the services and possibilities provided by IT is essential if managers are to know what is being contracted and what the chances for improvement are, as was pointed in Gottschalk and Karlsen (2005) study.

A third principal components factor analysis was conducted to summarise in a few factors the items dealt with in this section, for which the pertinence of the analysis was first confirmed (Determinant of Correlation Matrix =0.021; Kaiser-Meyer-Olkin Index =0.903; Barlett Test of Sphericity =979.693; Significance = 0.0). Once again, two factors have been extracted that account for 71.731 percent of the variance in the original items. A Varimax rotation has also been used to help in the interpretation of the results, as can be seen in Table 10.

INSERT TABLE 10

The first factor, which is also the most important, has been given the name *Strategic Managerial Skills*, as it refers to communication, staff management and negotiation skills and, to a lesser extent, project management skills. The second factor, which has less weight because it explains only 8.451 percent of the variance, is referred to as *Tactical Managerial Techniques* and has to do with routine skills which are less strategic than the preceding ones and also with skills related to finance, business management and IT knowledge.

4.3. Enterprise typology

The six factors extracted in the three factor analyses described in the previous section were used to perform a conglomerate analysis to determine if different types of enterprises can be identified according to how outsourcing has affected their IS managers. A hierarchical conglomerate analysis was carried out using the Ward method to find out how many conglomerates should be extracted. It was deduced that three conglomerates would be pertinent since the greatest difference between percentual agglomeration coefficient changes can be found there. A non-hierarchical conglomerate analysis with the k-means method was then performed with the above-mentioned factors, validating the result with the ANOVA analysis and confirming that this analysis is pertinent because all the variables included are significant.

The three resulting clusters had 104 cases in the first group, 111 in the second, and 42 in the third. Each of these clusters was interpreted to identify the differences among them. Table 11 offers the equality means test of the groups with respect to the factors which have formed them.

INSERT TABLE 11

The first cluster includes the firms that said outsourcing requires more managerial skills but less time dedicated to strategy-related activities, mainly long-term systems management activities. In short, the enterprises in this cluster find that *Outsourcing* is *Liberating.*

The second cluster is considered the most important because it has the largest number of cases, containing the enterprises which claim that after the introduction of outsourcing IS managers dedicate more time to systems management and to relations and staff management, which will positively influence the *Basic* and *Managerial Characteristics* of their working post. These enterprises also say that the knowledge related to *Tactical Managerial Techniques* will be necessary too. Thus, the enterprises located here find that *Outsourcing* is *Enriching* and *Demanding*.

The third cluster has fewer enterprises, only 42, and therefore is less important. The enterprises here report more negative characteristics to outsourcing and believe that less time is allocated to relations and staff management, which has a negative influence on *Managerial* and *Basic Characteristics* of the post. These enterprises also say that less knowledge linked both to strategic managerial skills and to tactical managerial techniques is needed. It can thus be said that this third cluster includes the firms that believe *Outsourcing* is *Impoverishing* for the IS manager's working post.

The next step was to verify the potential identification of the clusters with certain characteristics of the enterprise, e.g. outsourcing level, size (by sales volume and number of workers), IS department size (staff and budget percentage allocated), and the sector it belongs to. This led to the elaboration of Table 12 (categorization of sales, number of workers and IS staff in this table has been changed and differs from table 4, in order to do the results more comprehensible), from which we deduce the following:

INSERT TABLE 12

- Smaller firms in terms of number of workers and sales volume that also have a smaller IS department tend to coincide with cluster 1. Enterprises that are bigger with respect to the same variables and have more employees working in their IS departments normally belong to cluster 2. This makes sense, since the smaller ones see outsourcing as a way to liberate their IS managers, while the larger ones, which own more resources, seek to improve their IS. The focus for IS managers in the larger enterprises is to improve their performance rather than reduce their workload.
- Service sector enterprises are the most easily located in cluster 2; IT-intensive service sectors belong to cluster 1. The service sector and the IT-intensive service sector are the most sophisticated in terms of their IS, which is why they exploit the advantages of outsourcing either to liberate work or to enrich the job, but they never see outsourcing as an 'enemy' that might impoverish and damage the IS manager's working post.
- No significant relationships have been found between outsourcing levels and budget percentages allocated to IS and the different clusters.

4.4. A comparative View

INSERT TABLE 13

Table 13 describes the relationship between the variables in the 2006 and 2001 surveys (in order to compare these variables in the year 2006 and 2001, the variables in 2001 which had a 1 to 5 Likert scale, were converted into a 1 to 7 point scale in accordance with the Dawes (2008) methodology). This table shows the means of each variable and a test that shows no significant difference of means in the variables for the two periods (a T of Student test has been used when the Levene's test shows the existence of

homocedasticity, and a non parametric test (U-Man-Whitney), when Levene shows heterocedasticity). As for the influence of outsourcing in the time required by the IS manager, a subtle shift in the answering patterns of interviewees seems to have taken place over time. The amount of time dedicated to external relations has increased. Similarly, tasks such as IS strategic planning and information architecture planning, which were already important in 2001, have become even more important in 2006, thus reinforcing the trend. Finally, it is worth noting that staff management appears more relevant in 2006 than in 2001 and less significance has been assigned to internal relations in 2006 than in 2001.

No significant changes have occurred in the influence of outsourcing on the characteristics of the working post between these two dates, although, in general, the items which are more important at present (added value, satisfaction and autonomy) have improved considerably during these five years, while the less relevant items (prestige, demand and authority) have remained constant or decreased in the last few years. In other words, the data for 2006 do not significantly differ from those obtained in 2001. Nevertheless, the answers confirm that IS managers have a clearer perception of the positive influence on added value, satisfaction and autonomy and see a smaller influence (which never gets to be negative) on prestige, demand and authority.

With reference to the knowledge and skills that are more prevalent due to outsourcing, more importance is currently given to nearly all these types of knowledge when the time comes to implement outsourcing. With the passage of time, IS managers have realised that they need more and more knowledge to outsource, the only exceptions being financial knowledge, which receives less attention, and project management knowledge, which has lost some of its relevance, though not in a very significant way.

5. CONCLUSIONS

IS outsourcing is a widespread phenomenon, both internationally and specifically in large Spanish enterprises. Nevertheless, the IS outsourcing rate in Spanish firms seems to have decreased in recent years and Spain has clearly been left behind in the field of global outsourcing, which still has a limited presence in this country.

On the whole, IS outsourcing does not affect the time required for IS managers to perform their jobs, though time has indeed being redistributed. Thus, an increasing amount of time must be dedicated to the management of external relations with outsourcing suppliers. More time is also devoted to IS strategic activities, thanks to outsourcing. Outsourcing gives IS managers a more prominent role in strategic decision-making and reduces their concerns about everyday operations in their department.

Outsourcing has helped to improve the characteristics of the job of IS managers, who feel that their work provides more added value thanks to outsourcing and are more satisfied with it, apart from having become more autonomous (Mirchandani and Lederer, 2006). On the other hand, outsourcing requires an increasing amount of knowledge and skills from the IS manager. This is why communication skills and negotiation techniques, and even IT knowledge, are becoming more necessary. If IS managers want to avoid stagnation and dependence on their suppliers (Jiang, Reinhardt and Young; 2008), they will need to have enough knowledge, skills and ability to deal with those suppliers. IS managers must know exactly what they want, too.

A typology of enterprises has been developed on the basis of how outsourcing has influenced IS managers. Most of the firms find outsourcing *Enriching* and *Demanding* for there is managers (cluster 1). A smaller group of firms claims that outsourcing is

Liberating for these managers, as they can reduce their workload (cluster 2). A much smaller and therefore less representative group of enterprises thinks that outsourcing can be *Impoverishing* for the IS manager's job (cluster 3).

Curiously, smaller enterprises are mostly located in cluster 1. They consider outsourcing a way of liberating their IS managers, possibly due to their limited resources. Larger firms often appear in cluster 2, which means that outsourcing is useful to improve the working conditions of IS managers as well as their IS. Additionally, service sector and IT-intensive sector enterprises, which usually have more sophisticated IS than industrial ones, are also located in clusters 1 and 2. It is uncommon to find them in cluster 3, which implies that outsourcing is never seen as an enemy that can impoverish and damage the IS manager's working post.

This paper focus on IS managers and this is a relevant contribution, because most of the studies on IS outsourcing are developed at an organizational level, but studies at individual level are rare (Dibbern et al.; 2004). Another important contribution is the comparison of results at two points of time, as most of the studies on outsourcing tend to be snapshots taken at a single point in time. The longitudinal vision can provide a new approach (Dibbern et al.; 2004) that also makes it possible to state that IS managers' opinions about the way in which outsourcing affects their jobs have not changed substantially over time; they have actually been *reinforced* and even *radicalised*. This means that those aspects already considered as the most strongly influenced by outsourcing years ago have become more important. This implies that outsourcing will progressively become a tool that allows IS managers to concentrate on their most strategic tasks. Outsourcing will also help to improve the working post of IS managers in the future, but more knowledge and skills will be required for that.

5.1. Implications, limitations and future research

The paper has implications for IS managers and for researchers. In relation with the former the paper argues that if IS managers face the outsourcing decision with an unbiased attitude, that decision will be regarded more positively. The results of the present study show that outsourcing has been beneficial to IS managers, enhancing their jobs and becoming a worthy alternative to internal IS activity. As regards IS researchers, the paper present a typology of firms that could be used as a framework in future studies; it could be interesting to contrast if the typology is suitable to IS managers in different countries.

An implication for IS managers in advance of the outsourcing decision is the necessity of being prepared and upgrading their managerial and business skills. This way, outsourcing will have more positive influences on their working posts. However, the conclusions of the paper could be misleading if we generalize, thinking that IS outsourcing has only positive effects. Of course, outsourcing involves several drawbacks and risks for the firm (Currie, 1998), for IS managers and for IS staff (Martinsons and Cheung, 2001) although we haven't discuss them because they are not the focus of this paper.

The low response rate of eight percent could be a limitation of the study and could be problematic for generalizing results. However, it should be noted again that this ratio is similar to those obtained in others studies about IS outsourcing. Other limitations derive from the use of the questionnaire as the essential source of data; the qualitative information collected in a personal interview or through direct observation can obviously add value. Although this information could be subjective, as it represents the views of IS managers, many studies in IS outsourcing area focus on the perceptions,

views or attitudes of IS staff or IS managers (Martinsons and Cheung, 2001; Benamati and Rajkumar, 2008; Knapp, Sharma and King, 2007). In surveys, interviewees may give politically correct answers, which could be pointed as other limitation of the study. Some of these limitations could be addressed in the future by conducting personal interviews and case studies, which can be useful to complement and triangulate results. Also future research should collect factual data to complement the opinions of IS managers with real facts. Moreover, the influences of IS outsourcing not only over IS managers but also over the rest of IS staff and the IS department should be covered in future studies. Even there are some good papers in this line of research, we think that this question is mostly unexplored. As the outsourcing influence on IS managers has not been analysed extensively, much research remains to be done. We hope to have contributed to it with the present paper.

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APPENDIX: Questionnaire

1. Has IS Outsourcing affected the time required to carry out the following activities?

It has decreased significantly	1	2	3	4	5	6	7	It has increased significantly

Systems development and project management (To manage the new IS or applications implementation)	1 2 3 4 5 6 7
External relationship management (To manage the relations so that mutual advantages can be shared with third parties)	1 2 3 4 5 6 7
Staff management (IS staff management)	1 2 3 4 5 6 7
Internal relationship management (To manage IS relationships both with end users and with the Top Management)	1 2 3 4 5 6 7
Operations management (To manage the daily operations of the present IS)	1 2 3 4 5 6 7
Information architecture planning (To define the technology framework, standards and products)	1 2 3 4 5 6 7
IS strategic planning (Development of short- and long-term plans to integrate technology into the business)	1 2 3 4 5 6 7

2. How has IS Outsourcing affected your working post?

Very Negatively	1	2	3	4	5	6	7	Very Positively

Autonomy (To make decisions and implement them with minimum opposition)	1 2 3 4 5 6 7
Authority (Financial, human and/or budget under control)	1 2 3 4 5 6 7
Demand (The time, energy and pressures attached to the working post)	1 2 3 4 5 6 7
Prestige (Prominence and influence attached to the working post)	1 2 3 4 5 6 7
Satisfaction (To enjoy the job, sense of compliance)	1 2 3 4 5 6 7
Added Value (How the job contributes to business success)	1 2 3 4 5 6 7

3. How has outsourcing impacted on the IS manager's knowledge and skills?

They are less important	1	2	3	4	5	6	7	They are more important

Communication	1 2 3 4 5 6 7	Project management	1 2 3 4 5 6 7
Staff management	1 2 3 4 5 6 7	Negotiation	1 2 3 4 5 6 7
Finance	1 2 3 4 5 6 7	Information Technologies	1 2 3 4 5 6 7
Business management	1 2 3 4 5 6 7		

Table 1: Some studies about the influence of IS Outsourcing on the IS managers

Study	Methodology	Contribution
Leinfuss (1991)	No explicit methodology	Outsourcing generates career development opportunities for IS managers, whose job will change from being people managers to contract-signing managers. They will equally assume more general management responsibilities. However, while middle-level IS managers can see how their career is positively influenced by outsourcing, higher-level CIOs may find that the effects are negative for them, because the introduction of outsourcing may mean that there will not be enough responsibilities left in the IS department to complete the CIO's work.
Corbett (1994)	Survey among 100 IS managers	Outsourcing impacts on how IS managers use their working time; after the introduction of outsourcing, more time is devoted to integrating technology into the strategic plans of the enterprise and to external relations. Outsourcing also requires more knowledge, especially the one related to general management. Although outsourcing can bring back some instability to this working post, it may simultaneously enhance the value of the IS manager's work.
Clark, Zmud and McCray (1995)	Interviews to CIOs and other IS managers	On the positive side, outsourcing can raise the profile of IS managers, extending and redirecting their role within the organisation toward a more strategic and business-oriented approach. On the negative side, there is a need to coordinate the links with IS suppliers and control their execution, i.e. the responsibility of information services is replaced with the responsibility for the results offered by the supplier.
McFarlan and Nolan (1995)	No explicit methodology	CIOs must retain a very active, important role after the introduction of outsourcing; they must focus on the management of the outsourcing contract, handling it so that it can adapt to potential changes. They must plan the enterprise's information architecture and keep up to date with the emergent technologies, being aware of what there is in the market and also of the way it evolves. They must develop an internal atmosphere of ongoing learning to ensure that both the IS staff and the users are open to change.
Apte et al. (1997)	Survey with CIOs in three different countries comparing their outsourcing practices	Contrary to the common assumption that Top Managers (CEOs) are the ones who handle IS outsourcing decisions, it is CIOs that usually play a very significant role as initiators and managers of these decisions.
Useem and Harder (2000)	Interview with 25 Top (non-IS) managers	*Lateral leadership* represents a way of managing IT outsourcing contracts that is based on four concepts: *Strategic Thinking* (thinking strategically, i.e. determining how outsourcing can help the enterprise's strategy); *Deal-Making* (Signing agreements, that is, creating a network of relationships between suppliers and internal operations so that the necessary services required can be delivered inside the organisation; *Partnership Governing* (managing supplier-customer relationships and creating in both of them the desire not only to fulfil the contract obligations but also to enhance the quality of services and improve their shared financial profits); and *Managing Change*, focusing especially on employees' misgivings about outsourcing.
Martinsons and Cheung (2001)	Survey among 80 IS professionals (not occupying managerial posts)	Outsourcing can reduce the need for analysts and programmers, who see their jobs threatened. Additionally, many specialists believe that outsourcing can bring down their promotion expectations. The knowledge needed to monitor work and deal with outsourcing suppliers largely differs from that required to develop and implement an IS.
Ho, Ang and Straub, (2003)	Survey among 146 IT managers	The lack of recruitment knowledge among IS managers can cause problems, above all an excessive workload for those managers and an impression that suppliers provide very poor results.
Gottschalk and	Two surveys: one among 80 enterprises with no	Outsourcing enhances the importance of the following roles: *Liaison*, that is, communicating with the business environment,

Karlsen (2005)	specified addressee, the other among 84 IT project managers	establishing links with IT providers, customers, buyers, market analysts and the mass media; *Monitor*, i.e. keeping an eye on the environment in order to detect new ideas, new technologies; *Spokesman*, in this role, IS managers extend their contacts outside their jurisdiction and get in touch with the rest of the organisation for the purpose of promoting IS acceptance at all levels; and *Entrepreneur*, making sure that technology-related opportunities are understood, planned, implemented and strategically exploited inside the organisation.
Shi, Kunnathur and Ragu-Nathan (2005)	Survey among 205 IS managers	IS managers must develop 4 competences when it comes to handling an outsourcing contract: *Contract Facilitation*, i.e. developing the means required to coordinate and synchronise the services received by various suppliers and mediate in conflicts between users and suppliers; *Contract Monitoring*, that is, protecting the enterprise's contractual position, ensuring that contracts are enforced; *Informed Buying*; as informed buyers, IS managers must be able to analyse the possible external services and choose the right suppliers and services); and *Vendor Development*, in this respect, IS managers must identify the potential of suppliers in order to identify prospective long-term customer-supplier win-win relationships.

Table 2: Measures of variables and reliability

Construct	Source	Measure	Reliability (Cronbach's α)
Influence of outsourcing on the time required for IS managers to perform their job	Literature review, specially Corbett (1994) and 2001 questionnaire	7 items measured with a 1-to-7 Likert scale	0.894
How outsourcing has affected the IS Manager's working post	Literature review, specially Corbett (1994) and 2001 questionnaire	6 items measured with a 1-to-7 Likert scale	0.891
How outsourcing has impacted the IS Manager's knowledge and skills	Literature review, specially Corbett (1994) and 2001 questionnaire	7 items measured with a 1-to-7 Likert scale	0.900

Table 3: Study technical specifications

	Year 2001	Year 2006
Scope	Spain	Spain
Population	The 4,416 largest Spanish businesses (by sales)	The 4,107 largest Spanish businesses (by sales)
Sample size	357 valid answers (8.08%)	329 valid answers (8.01%)
Sampling error	5%	5%
Survey date	June-October, 2001	September-December, 2006

Table 4 : General Characteristics of the Firms

		2001		2006	
		N	%	N	%
National Outsourcing	No	51	14.3	54	16.4
	Yes	306	85.7	275	83.6
Global Outsourcing	No	-	-	275	83.6
	Yes	-	-	54	16.4
Outsourcing level	Below the mean	175	49.0	165	50.2
	Above the mean	182	51.0	164	49.8
No. of workers	0-50	22	6.2	28	8.5
	51-500	202	56.6	218	66.2
	More than 500	132	36.9	76	23.1
	Lost	1	0.3	7	2.1
Sales (million €)	Up to 30	36	10.1	31	9.4
	More than 30 and up to 60	227	63.6	146	44.3
	More than 60 and up to 300	38	10.6	115	35.0
	More than 300	55	15.4	30	9.2
	Lost	1	0.3	7	2.1
Sector	Industry	210	58.8	189	57.4
	Services	118	33.1	102	31.0
	IT-intensive services	29	8.1	38	11.6
IS Staff	1-10 Workers	240	67.2	250	76.0
	11-100 Workers	96	26.9	66	20.1
	101-250 Workers	5	1.4	6	1.8
	Lost	16	4.5	7	2.1
Budget percentage allocated to IS	0-4	133	37.2	138	41.9
	5-10	61	17.1	56	17.0
	11-56	18	5.1	13	4
	Lost	145	40.6	122	37.1
IS Manager's Gender	Male	321	89.9	293	89.0
	Female	25	7.0	27	8.2
	Lost	11	3.1	9	2.7
Working post of the IS Manager's direct superior	General Management	193	54.1	194	59.0
	Finance/Administration	101	28.3	82	24.9
	IS manager at the corporation	17	4.8	30	9.1
	Organisation/planning/engineering	20	5.6	4	1.2
	Lost	26	7.3	19	5.8
IS Manager's length of service	Mean	7.4		8.43	
	Median	5.0		6.0	
	Minimum	1.0		0.5	
	Maximum	30.0		35.0	
IS Manager's age	Mean	41.0		42.3	
	Median	40.0		42.0	
	Minimum	22.0		27.0	
	Maximum	60.0		62.0	

Table 5: Outsourcing influence on the time needed for IS managers to perform their job activities

A significant decrease 1 2 3 4 5 6 7 A significant increase

	Mean	Median	Mode
External relations management	5.00	5	5
IS strategic planning	4.35	4	4
Information architecture planning	4.31	4	4
Operations management	4.25	4	4
Systems development and project management	4.19	4	4
Staff management	3.98	4	4
Internal Relations management	3.37	3	3

Table 6: Total variance explained and rotated component matrix in the first factor analysis

Total Variance Explained							Rotated Component Matrix		
	Initial Eigenvalues			Rotation Sum of Squared Loadings			Variable	Component	
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %		1	2
1	4.3	61.430	61.430	4.300	61.430	61.430	Syst. Develo. Project Mana.	50.559	
2	0.811	11.584	73.014	0.811	11.584	73.014	Extern. Relati. Mana.		0.913
3	0.558	7.978	80.992				Staff Management		0.772
4	0.462	6.601	87.594				Inter. Relati. Mana.		0.619
5	0.330	4.708	92.302				Operations Management	0.704	
6	0.320	4.571	96.872				Inform. Archit. planning	0.899	
7	0.219	3.128	100.000				IS strategic planning	0.811	

Table 7 : Outsourcing influence on the IS Manager's job

Very Negative 1 2 3 4 5 6 7 Very Positive

	Mean	Median	Mode
Added Value	5.84	6	7
Satisfaction	5.62	6	7
Autonomy	4.69	5	5
Demand	4.57	4	4
Authority	4.35	4	4
Prestige	4.32	4	4

Table 8 : Total variance explained and rotated component matrix in the second factor analysis

Total Variance Explained							Rotated Component Matrix		
	Initial Eigenvalues			Rotation Sum of Squared Loadings			Variable	Component	
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %		1	2
1	3.909	65.149	65.149	2.396	39.934	39.934	Autonomy		0.626
2	0.712	11.868	77.017	2.225	37.083	77.017	Authority		0.872
3	0.527	8.783	85.800				Demand		0.802
4	0.399	6.658	92.457				Prestige	0.591	0.520
5	0.273	4.548	97.005				Satisfaction	0.886	
6	0.180	2.995	100.000				Added Value	0.903	

Table 9: Outsourcing influence on the IS Manager's knowledge and skills

Less important 1 2 3 4 5 6 7 More important

	Mean	Median	Mode
Communication	5.9	6	7
Negotiation	5.87	6	7
Information Technologies	4.93	5	6
Project Management	4.71	5	5
Business Management	4.58	5	5
Staff Management	4.54	5	5
Finances	3.54	4	3

Table 10: Total variance explained and rotated component matrix in the third factor analysis

Total Variance Explained							Rotated Component Matrix		
	Initial Eigenvalues			Rotation Sum of Squared Loadings			Variable	Component	
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %		1	2
1	4.430	63.279	63.279	4.430	63.279	63.279	Communication skills	0.795	
2	0.592	8.451	71.731	0.592	8.451	71.731	People management	0.795	
3	0.528	7.545	79.275				Financing		0.852
4	0.462	6.603	85.878				Enterprise management		0.778
5	0.429	6.131	92.009				Project manag. techniques	0.686	
6	0.318	4.538	96.548				Negotiation techniques	0.733	
7	0.242	3.452	100.000				Information technologies		0.683

Table 11 : Equality of Means test

			Levene			
		Means	F	Sign.	Statistic	Sign.
Time in Systems Management	Cluster 1 (n=104) Cluster 2 (n=111) Cluster 3 (n=42)	-0.519 0.636 -0.443	5.968	0.003	81.918(1)	0.000
Time in Relations and Staff Management	Cluster 1 (n=104) Cluster 2 (n=111) Cluster 3 (n=42)	0.102 0.344 -1.126	11.975	0.000	61.222(1)	0.000
Basic Characteristics of the Post	Cluster 1 (n=104) Cluster 2 (n=111) Cluster 3 (n=42)	-0.098 0.457 -0.965	10.449	0.000	57.811(1)	0.000
Managerial Characteristics of the Post	Cluster 1 (n=104) Cluster 2 (n=111) Cluster 3 (n=42)	-0.283 0.642 -0.995	2.184	0.115	75.959(2)	0.000
Strategic Managerial Skills	Cluster 1 (n=104) Cluster 2 (n=111) Cluster 3 (n=42)	0.337 0.217 -1.401	0.039	0.962	80.417(2)	0.000
Tactical Managerial Techniques	Cluster 1 (n=104) Cluster 2 (n=111) Cluster 3 (n=42)	-0.546 0.757 -0.665	2.156	0.118	100.566(2)	0.000

(1) Chi-squared from the Kruskall-Wallis test.
(2) F from the ANOVA test

Table 12: Chi-squared to test independence

		Clusters			Chi-squared	Sign.
		Cluster 1: *Outsourcing is Liberating*	Cluster 2: *Outsourcing is Enriching and Demanding*	Cluster 3: *Outsourcing is Impoverishing*		
Sales	Up to 90	64 (41.8%)	55 (35.9%)	34 (22.2%)	12.764	0.002
	More than 90	40 (38.5%)	56 (53.8%)	8 (7.7%)		
No. of Workers	Up to 500	77 (40.5%)	75 (39.5%)	38 (20.0%)	8.298	0.016
	More than 500	27 (40.3%)	36 (53.7%)	4 (6.0%)		
IS Staff	Up to 4	54 (40.6%)	45 (33.8%)	34 (25.6%)	19.931	0.000
	More than 4	50 (40.3%)	66 (53.2%)	8 (6.5%)		
Sector	Industry	59 (40.7%)	58 (40.0%)	28 (19.3%)	13.382	0.010
	Services	25 (31.3%)	41 (51.3%)	14 (17.5%)		
	IT-intens.Servic.	20 (62.5%)	12 (37.5%)	0 (0.0%)		
Budget proportion allocated to IS Outsourcing level					0.371 4.048	0.831 0.132

Table 13: Comparative 2006-2001 and Equality of Means test

			Levene			
Influence on the time		Mean	F	Sign.	Statistic	Sign.
External relationship management	2006	5.00	14.29	0.00	22319(2)	0.00
	2001	4.16				
IS Strategic planning	2006	4.35	8.56	0.00	31520(2)	0.02
	2001	4.09				
Information architecture planning	2006	4.31	4.74	0.00	30644(2)	0.01
	2001	3.97				
Operations management	2006	4.25	0.006	0.93	-4.45(1)	0.00
	2001	3.64				
Systems development and project management	2006	4.19	3.90	0.05	-3.83(1)	0.00
	2001	3.64				
Staff management	2006	3.98	9.70	0.00	31830(2)	0.05
	2001	3.74				
Internal relations management	2006	3.37	11.33	0.00	24152(2)	0.00
	2001	4.08				
Influence on the job		Mean	F	Sign.	Statistic	Sign.
Added Value	2006	5.84	3.10	0.07	-7.51(1)	0.00
	2001	5.08				
Satisfaction	2006	5.62	4.13	0.04	22074(2)	0.00
	2001	4.77				
Autonomy	2006	4.69	10.88	0.00	32546(2)	0.03
	2001	4.49				
Demand	2006	4.57	7.29	0.00	34839(2)	0.03
	2001	4.63				
Authority	2006	4.35	45.40	0.00	35661(2)	0.09
	2001	4.38				
Prestige	2006	4.32	25.65	0.00	35874(2)	0.08
	2001	4.35				
Influence on the knowledge and skills		Mean	F	Sign.	Statistic	Sign.
Communication	2006	5.90	100.51	0.00	28330(2)	0.00
	2001	5.28				
Negotiation	2006	5.87	76.29	0.00	34390(2)	0.04
	2001	5.77				
Information Technologies	2006	4.93	27.21	0.00	35548(2)	0.07
	2001	4.92				
Project Management	2006	4.71	39.61	0.00	28386(2)	0.00
	2001	5.33				
Business Management	2006	4.58	3.81	0.05	1.283(1)	0.02
	2001	4.47				
Staff Management	2006	4.54	0.794	0.37	1.219(1)	0.02
	2001	4.52				
Finances	2006	3.54	7.70	0.00	21439(2)	0.00
	2001	4.77				

(1) T student test
(2) Mann-Whitney's U test.

Figure 1: Outsourcing influence on the time dedicated to IS activities

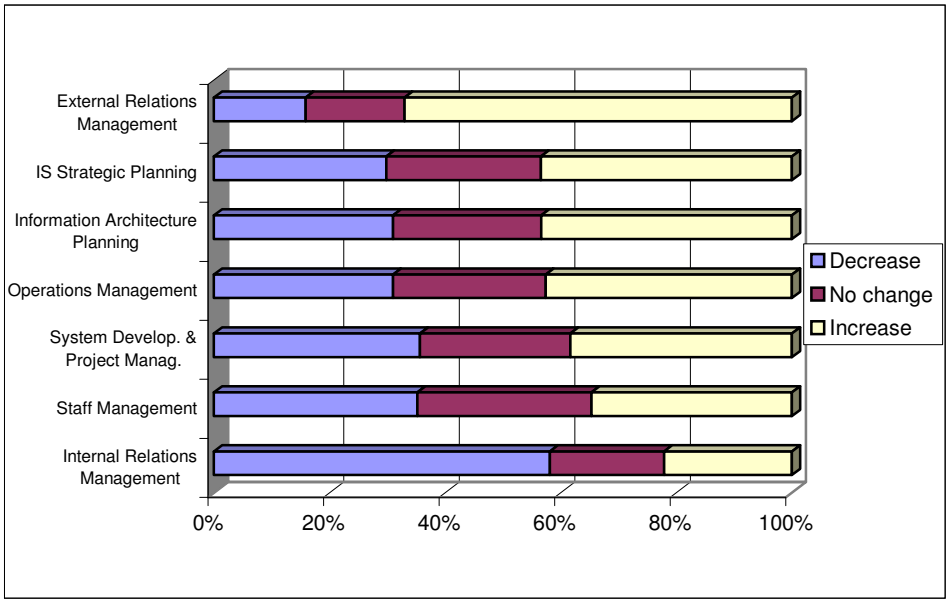

Figure 2: Outsourcing influence on the characteristics of the post

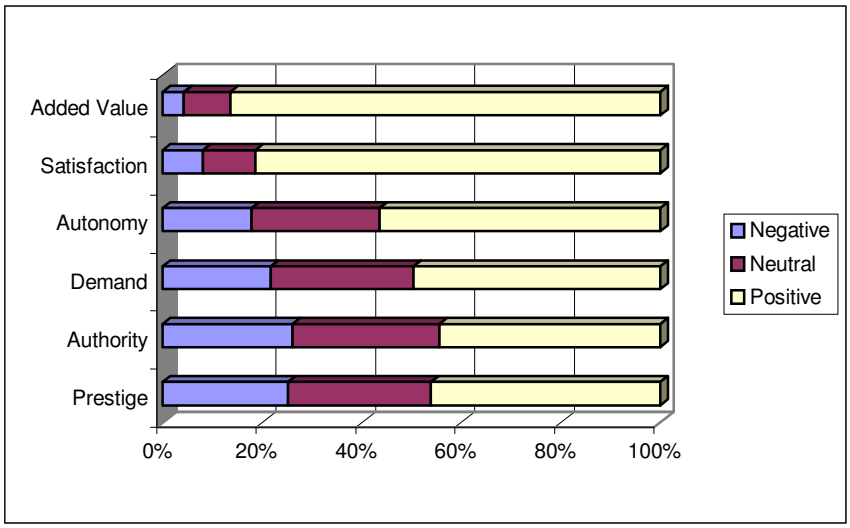

Figure 3: Outsourcing influence on the IS Manager's knowledge and skills