

# Information Systems Outsourcing: a literature analysis<sup>1</sup>

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## Abstract:

Outsourcing has become one of the strategies adopted by businesses to manage their IS. During the last few years, the use of outsourcing has resulted in an increase in the volume of literature devoted to it. We decided therefore to analyse the literature with the aim of identifying the main topics, the methodologies most often applied and the authors and countries that have contributed most to the area of IS Outsourcing. We also intended to offer suggestions on improving research in this field. The paper thus provides a review of articles about IS Outsourcing published in the most prestigious journals of the IS area and journals of Management or Business.

## Keywords:

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Information Systems, Outsourcing, Literature Review.

## **1. Introduction**

Outsourcing has become a basic strategy of the IS field [3] and has experienced a considerable growth in recent years. According to some analysts, this growth will continue in the near future. Forrester, for example, forecasted that European enterprises will spend over 128 billion € on computer outsourcing in 2008 [56] and the Gartner group has estimated that the worldwide IT outsourcing market will grow from the \$180.5 billion revenues in 2003 to \$253.1 billion in 2008 at a compound annual growth rate of 7.2 %. Some of the largest IS outsourcing providers are IBM, EDS, CSC, Hewlett Packard, Oracle, General Electric, HSBC [61]. These *traditional* enterprises have been competing in recent years with new providers, including Tata Consulting, Infosys, Wipro, Satyam, HCL-Perot and Patni Computers [145] located in newly emerging countries and regions, such as India and South-East Asia.

The number of publications dedicated to outsourcing has increased in recent years and this was our reason to investigate and reflect on what is known about IS outsourcing. Studies have pursued a wide range of objectives. Many analysed the IS area as a whole [4, 40,177], or specific areas such as DSS [5, 53], or Expert Systems [188]; to focus on statistical or methodological problems related to this area [21, 71]; they also attempted to analyse the most influential journals in the study of IS [37, 82]; and many other topics, some as new as Electronic Commerce [174]. However, with the exception of the work of Dibbern, Goles, Hirschheim and Jayatilaka [46], no literature review on IS outsourcing has been performed.

IS outsourcing first appeared as a distinct area of *IS Management Issues* in the literature scheme designed by Barki, Rivart and Talbot [20]. The topic appeared again in the *General IS Management* area of the study by Claver, Gonzalez and Llopis [35]. Our aim was to analyse the IS outsourcing literature to answer questions such as: “What research methods are most commonly used?”, “What topics and areas are treated the most often in the IS outsourcing field?”, “What is the scope of these studies?” and “Which authors or

countries stand out in the research about this phenomenon?" Questions similar to these have already been raised with the objective: "To improve our knowledge of this booming field."

## **2. Data Collection**

We decided to focus our study on articles published in journals that enjoy high prestige in the IS area, not therefore including sources such as books or papers presented at conferences. This was based on the belief that practitioners and academics prefer using journals to acquire and disseminate new knowledge [49, 142]. Other means, such as books, are normally confined to the dissemination of previously established knowledge [74]. We would, however, like to note that certain books [80, 156] and conferences (e.g. ICIS, HICSS and ECIS) are of importance in this field. We did not consider work in the trade or popular press. We selected journals from lists of various authors [26, 101, 123, 146, 164].

The resulting list of journals can be found in Table 1. They are included in the ABI-Inform database, widely recognised in the Economics and Business Administration area, and used in other studies with similar objectives [85, 126]. Furthermore, all the journals were included in the Social Sciences Citation Index or the Science Citation Index in 2004. The journals belong both to the IS area and others related to Management or Business issues in which articles on IS are periodically published. We left out some relevant journals because they had published no articles on IS outsourcing. The *Sloan Management Review* changed its name to *MIT Sloan Management Review* in 2000; we carried out our study of articles published under both names.

TABLE 1 near here please

We searched the ABI database for articles with the terms *outsourcing* and *IT* or *Information Technology* or *IS* or *Information System* or *ICT* or *Systems Management*, without limiting the search date in their *abstracts* or *keywords* or *full text*. We realised that

many journals were not included on the database for all the years in which articles could be published and therefore decided to complete the search manually, focusing mainly on selected articles as well as reference works and looking at the manual indexes of the journals.

We obtained a total initial sample of 142 articles, four of which were removed from the study because they merely expressed an opinion of the editor or some expert in the topic and could not be regarded as scientific papers with an established methodology. We equally removed another article, a case study, because it was a classroom teaching text, not a research work. Another six articles had to be removed because they discussed other topics [32, 36]. A total of 131 articles therefore were retained in the final sample; these were read carefully and are among the References.

### **3. Results.**

#### **3.1. Period Covered and Journals Analysed**

Based on our work, articles on IS outsourcing have been published for 18 years, the earliest dating back to 1988 and the most modern ones being published in 2005. No articles on IS outsourcing were published between 1988, when one article was released, and 1992. However, since then, the number of publications has soared as a result of the Kodak effect<sup>3</sup> [121], after the Eastman Kodak Company outsourced its DP function to four vendors led by IBM and including DEC, Businessland and Anderson Consulting too. This deal signalled the start of IS outsourcing megadeals and also legitimised outsourcing. Prior to this, outsourcing had apparently raised little interest [77, 89]. It is interesting to note that the article published in 1988 [143] did not use the term outsourcing anywhere in the text but used *Facilities Management* instead. The term outsourcing can be traced back to the 1990s [170] and in 2005 the largest number of articles (19) was published.

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<sup>3</sup> In 1989.

In order to better analyse the growth, we divided the period under study into three blocks, each of which covered five years<sup>4</sup> as can be seen in Figure 1, where the number above each column is the number of articles published within each period. The growth in the number of articles shows that interest in the topic is increasing.

FIGURE 1 near here please

TABLE 2 near here please

It can be observed in Table 2 that JIT is the journal which has published the highest number of IS outsourcing articles (21), followed at some distance by I&M with 16. It can be seen that the journals that have published most articles are classified as IS journals. However SMR/MITSMR stands out both by the number of articles it has published, representing the 6.9% of all those analysed, and by their impact (important, oft-cited articles in this field [104, 107, 133] appeared in it).

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<sup>4</sup> This is so because, although the first block theoretically corresponds to the period comprised between 1988 and 1995, articles were only published in 5 of those 8 years, namely in 1988 and between 1992 and 1995.

### 3.2. Research Methodologies

Our analysis of the method used drew on the study by Claver, Gonzalez and Llopis, which was based on the work of Alavi and Carlson for the classification of theoretical studies and Van Horn [175] for classification of empirical studies.

**Theoretical** studies can be divided into *conceptual*, *illustrative* and *applied-concept* ones. They are mainly based on ideas, structures and speculations rather than on the systematic and direct observation of reality. Although this articles can contain some empirical data, they play a secondary support role; the emphasis is on ideas rather than on data.

- *Conceptual* studies describe structures, models or theories and provide explanations or reasons.
- *Illustrative* studies basically try to guide the practice, offer recommendations for action and explain stages to be fulfilled. They focus on the 'what' and the 'how' rather than on the 'why'.
- *Applied-concept* studies are a mixture of the two; they have both conceptual and explanatory elements.

Empirical studies have been divided into *case studies*, *field studies*, *field experiments* and *laboratory experiments*, but we found no examples of the last two in the articles analysed. Thus we decided to classify the articles into: *case studies*; *field studies*; *case and field studies*; and *others*.

- *Case studies* are becoming more and more widespread in the IS area. They analyse a phenomenon in its natural environment, obtaining data about it through direct observation; interviews; document analysis; etc. The problem with this basically qualitative data collection method is that, because it tends to focus on the analysis of one or a few cases, generalising the results is difficult [51, 190]. Case studies have been criticised for their lack of scientific rigour. However, this is because it has often been applied to works that only provide a mere set of anecdotes [110].

- A *field study* normally analyses several organisations using an experimental design but little experimental control; researchers collect information about uncontrolled situations. This characteristic is shared with the case study. However, a field study uses quantitative methods in analysing the information, which usually is obtained by interviewing personnel. This has the drawback that the information loses depth and richness.
- A good way to overcome the inconveniences and boost the advantages of field and case studies is to use them jointly. A large amount of data is required to isolate the effects of the many variables selected by the researcher [75].

TABLE 3 near here please

Table 3 shows that the majority of the articles in our review were empirical (63.4%). However, although the number of theoretical and empirical articles was nearly the same (17 versus 18) during the first five-year period, from then on, the percentage of empirical articles increased while the number of theoretical articles decreased. This might have been the result of the attempts to validate existing theories or construct new ones based on empirical data.

Among the theoretical methods, applied-concept studies were the most common, followed by illustrative ones and the conceptual ones. The field study stands out as the most often used among the empirical methods, followed by the case studies. These results are in keeping with the conclusions of previous works [e.g., 17], which showed the importance of qualitative methods in the IS area. We found 6 articles classified as empirical that used other methods: there was an article in which a review of the literature on ASP (Application Service Providers) was made; four more articles were devoted to the study of press advertisements or news items; and another analysed financial information about the enterprises.

FIGURE 2 near here please

Figure 2 shows the most commonly used methods; from this it can be inferred that the field study is most frequently used in the study of



outsourcing. We noted that IS journals show a much larger proportion of empirical articles (65.4%), whereas in generalist publications, with more empirical articles also, the difference in percentage with merely theoretical ones is smaller.

### **3.3. Topics and Scope**

An analysis of the most frequent outsourcing topics is presented in Table 4. Our main problem in making this analysis was that we had only a previous study by Dibbern, Goles, Hirschheim and Jayatilaka on IS outsourcing for guidance<sup>5</sup>, with two other articles which involved reviews of literature on ASP [161] and Global Outsourcing [162]. The topic classification we used was therefore based on our reading of the articles and previous knowledge of the topic. Also analysis of previous reviews of IS research gave us some insight. More precisely, we decided to use the keywords of the specific article being analysed as the basis for identification of the topic/s under which it should be classified. The resulting categories were neither mutually exclusive nor collectively exhaustive; so an article could be classified into one or more categories and more topics were found as the number of articles increased. Previous studies have used comparable approaches to classification, the similarities being based on:

- Not limiting or forcing categories or topics based on preconceptions;
- Allowing the emergence of more topics as more sources were found and analysed.
- Finishing when “saturation” occurred – when no more topics arose.

Table 4 shows the number of articles dealing with each topic and the percentage of the total that they represented. In our case the total

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<sup>5</sup> Most of the works analysed by Dibbern, Goles, Hirschheim and Jayatilaka have been analysed in our paper, but the first study is limited to the works published till 2000, and our paper analyses works till 2005. For this reason the study of Dibbern, Goles, Hirschheim and Jayatilaka analyses 84 works and our paper analyses 131. Whereas their work studies the objectives of the research in IS outsourcing field based on a predetermined model, we pretend to arrive to a model along the analysis of the topics on IS outsourcing literature. Finally, in the paper of Dibbern, Goles, Hirschheim and Jayatilaka there is not a study of the IS outsourcing literature along the time, and we pretend to study this evolution.

was 205, not 131, since articles were sometimes dealt with more than one topic.

TABLE 4 near here please

We next classified the topics into five broad areas:

1. Outsourcing from the Perspective of the Client;
2. Outsourcing from the Perspective of the Provider;
3. Outsourcing from the Perspective of the Relationship;
4. Outsourcing from the Perspective of Economic Theories;
5. Others.

**1. *Outsourcing from the Perspective of the Client***; this included general views of computer outsourcing, explaining how it arose, how it evolved, and how much it had grown [27]. It also included discussion of the decision-making process prior to the decision to outsource and afterwards [38] and the main determining factors behind the decision [68]. At the other end of the spectrum, the discussion of possible risks of outsourcing were explained too, along with the cost and inconvenience that outsourcing could generate. Finally, it dealt with articles discussing the factors required for the outsourcing relationship to be successful [114].

Broadly speaking, this area covers topics that give advice to potential IS outsourcing clients.

**2. *Outsourcing from the Perspective of the Provider***: this area focuses on the supply side of outsourcing; i.e., on provider firms and the services they deliver. Three specific topics can be found in this area: computer outsourcing services in general (evolution and transformation from focusing on consultancy, through hardware and software provision, to offering outsourcing services through *megadeals*). This was possible because of fusions and acquisitions and by specialisation in specific industries, such as the chemical, healthcare or financial industries [43]. Similarly, due to the obligation of public administration to put contracts out to public tender, many computer service providers have had to 'reinvent' themselves as specialists in strategic outsourcing services [150].

Another topic is that of ASP, the application providers that supply these services through telecommunications. The literature of this issue, though abundant, is also very recent.

Global or *Offshore Outsourcing* are recent operations led by computer service providers that operate on an international scale, e.g., in India or China, hiring a workforce in countries with low incomes but enough computer knowledge [25]. Data entry was one of the first activities to be contracted in this way, because it required a low level of knowledge and very limited relationship between provider and client [165].

In short, this area does not give advice to customers but seeks to supply information about providers.

**3. Outsourcing from the Perspective of the Relationship.** We grouped together the papers that analysed outsourcing on the basis of the links that exist between client and provider. One of the major links is the outsourcing contract; the providers often call themselves '*strategic partners*' with the customer, but the success of the relationship depends on a well-structured contract. A good relationship needs a detailed material developed by legal advisors [48].

Closely related to this is the method of assessing the quality of the outsourcing service, i.e. measurement of the value of the IS outsourcing versus its cost (assessing the fair price). This has not proved easy [79], since conventional methods for evaluating asset profitability cannot be applied [185].

The final topic focuses on the way that client-provider relationships must be established [90, 91].

**4. Outsourcing from the Perspective of Economic Theories.** Among the many articles dealing with the economics of outsourcing, they involve agency theory [18], transaction cost theory [10] and others such as the game theory [52], resource-based theory, and resource-dependence theory [31]. They are all topics repeatedly

found in most articles but in some it forms an essential part: these are the articles that we classified here.

**5. Others.** We included topics here dealing with such issues as nationality, when an attempt was made either to define national differences [12] or to analyse outsourcing for developing countries, such as Nigeria [1]. We also included here the topic which deals with the industrial problems involved in IS outsourcing, e.g. in the healthcare or financial industries, at universities, or in relation to the differences between the public and private sector [6, 122]. A final topic referred to computer staff, since outsourcing poses a potential threat to their jobs [9, 81, 129].

FIGURE 3 near here please

Figure 3 shows the topics that have been most frequently discussed in IS outsourcing: reasons for it clearly are important. It also shows the evolution of these topics over time. The reasons and the general view of the phenomenon are now less important. Much more attention has been paid, though, to the relationships between clients and providers and the use of the transaction cost theory. Also the number of articles devoted to the study of ASP has recently dominated the scene.

It is also worth mentioning the increase in the number of articles focusing on Offshore or Global Outsourcing. The use of cheaper communications technology, the Internet, economic globalisation, and easy access to IT professionals with lower salaries are some of the reasons for this [95].

FIGURE 4 near here please

A joint analysis of the general areas helps to explain this evolution (see Figure 4). The area most frequently found was the study of outsourcing from the perspective of the client, though this topic was less discussed in recent years.

It can be seen that, although the study of outsourcing from the perspective of the provider was less studied at first, it increased in interest, particularly after 2001.

The use of economic theories as an explanation of outsourcing strategy, has also started raising more interest: This may be a symptom of maturity in the area, introducing more rigour through the use of theories.

Finally, articles on both of the influence exerted by outsourcing on computer staff and of the national and/or industrial problems associated with outsourcing have increased.

Table 5 shows the scope of the IS activities outsourced: i.e. is it the entire IS function or only part of it?

TABLE 5 near here please

Most of the articles dealt with IS outsourcing in general (77.1%). In most cases, the papers provide no details about the type of activities that are or could be the object of outsourcing. Only some, mostly the empirical ones, specify these activities. Thus, Adeleye, Annansingh and Nunes dealt with: Training and education; software development; software maintenance; data communication networks; support operations; disaster recovery; telephone client support; development of a fully integrated system; data centre operation; etc. Instead, Jurison mentioned the following activities in his primarily theoretical work: data processing operation; telecommunications; applications development; and hardware maintenance.

13.7% of the articles focused on Software Development. Also, many of the articles dealt with the topic of Global Outsourcing [44], as software development is the task in which provider firms from emergent countries have specialised. A small number of articles (8.4%) were devoted to Applications rental services, mostly through ASP [58, 172]. Finally, only one article dealt with E-Commerce outsourcing [97].

### **3.4. Authors and Countries**

Other studies identified the authors who publish the most as well as their nationalities [e.g. 167]. Based on them, we present Table 6.

TABLE 6

The *nationality* corresponded to that of the university or other organisation for which the author was working when he/she published the article. A count was performed of the number of times each author made a contribution without making any distinctions in value (whether the researcher appeared as author or co-author of the article)<sup>6</sup>.

Although the most prolific author in this field was from United Kingdom, most came from the United States of America, with several other countries appearing also. A more in-depth analysis of the nationality of the authors can be found in Table 7, which shows countries that have contributed most.

TABLE 7 near here please

Value N stands for the number of times a researcher from a country has published an article. N consequently reveals how prolific a country is, either in articles or in researchers, or in both. A clear prevalence of the United States (N=154) over the rest of countries can be easily observed, the United Kingdom (N=54) ranking second. Although the number of articles published from other countries is smaller, we highlight the significance of Asian countries, especially South-East Asia, in which Global Outsourcing had a very strong presence.

When we analysed the number of articles published by one author or collectively by several authors, the overall result was largely in keeping with that obtained in other studies [140], only 24% of the articles analysed had one author, with 39% having two.

Although no statistic correlation exists between the number of authors and the time-period, the number of articles published by one author seems to have remained stable throughout the period covered, whereas the number of articles published by two or more has increased. This tendency toward co-authorship could suggest a degree of maturity in the creation and consolidation of research

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<sup>6</sup> For example, if the N that accompanies an author is 2, he/she may have published those two papers alone or with someone else.

teams. As Nath and Jackson point out, co-authorship is a step from 'little science' to 'big science'.

#### 4. Conclusions

Our analysis has shown that the study of outsourcing has progressively increased ever since its start in the 1960's. The articles were mainly empirical, a field study being the method preferred by researchers when they try to explain outsourcing. New topics have appeared in the last few years, among them its influence on computer staff and its threat to the jobs of Western computer specialists.

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Table 1: Journals analysed

	IS journal s	Non- IS journal s	ABI	SSCI SCI 2004	Koh [101]	Lowry, Romans and Curtis [123]	Peffer s and Ya [146]	Walstrom and Hardsgra ve [180]	Whitman, Hendrickso n and Townsend [183]
CACM	*		*	*	*	*	-	*	*
DSS	*		*	*	*	*	*	*	*
EJIS	*		*	*	-	*	*	*	-
IM&DS	*		*	*	-	-	*	-	-
I&M	*		*	*	*	*	*	*	*
ISR	*		*	*	*	*	*	*	*
IJIM	*		*	*	-	-	*	-	-
JIT	*		*	*	*	-	*	-	-
JMIS	*		*	*	-	*	-	*	*
MISQ	*		*	*	*	*	*	*	*
CMR		*	*	*	-	-	-	-	-
DS		*	*	*	*	-	*	*	*
HBR		*	*	*	*	*	-	*	*
LRP		*	*	*	-	-	-	-	-
MS		*	*	*	*	*	*	*	*
SMR/MITSM		*	*	*	*	-	-	*	*
R		*	*	*	*	-	*	*	*
OMEGA		*	*	*	*	*	*	-	-
OS									

CACM=Communications of the ACM; DSS=Decision Support Systems; EJIS=European Journal of Information Systems; IM&DS=Industrial Management and Data Systems; I&M=Information and Management; ISR=Information Systems Research; IJIM=International Journal of Information Management; JIT=Journal of Information Technology; JMIS= Journal of Management Information Systems; MISQ= Management Information Systems Quarterly; CMR=California Management Review; DS=Decision Sciences; HBR=Harvard Business Review; LRP= Long Range Planning; MS=Management Science; SMR/MITSMR=Sloan Management Review/MIT Sloan Management Review; OMEGA=OMEGA; OS=Organization Science.

Table 2: Number of articles on IS outsourcing in each journal

Journal	N	%
JIT	21	16.0
I&M	16	12.2
CACM, IJIM	12	9.2
IM&DS	11	8.4
EJIS	10	7.6
JMIS, SMR/MITSMR	9	6.9
ISR, MISQ	6	4.6
MS	5	3.8
HBR, LRP	3	2.3
CMR, DSS, OMEGA	2	1.5
DS, OS	1	0.8
<b>TOTAL</b>	<b>13</b>	<b>100.</b>
	<b>1</b>	<b>0</b>

Table 3. Research methodologies in IS outsourcing

	Until 1995 (%)	1996-2000 (%)	Since 2001 (%)	Total (%)
<i>Total</i>	17; 13.0	12; 9.2	19; 14.5	48; 36.6
<i>Theoretical</i>				
Conceptual	4; 3.1	1; 0.8	2; 1.5	7; 5.3
Illustrative	8; 6.1	3; 2.3	9; 6.9	20; 15.3
Applied-Concept	5; 3.8	8; 6.1	8; 6.1	21; 16.0
<i>Total Empirical</i>	18; 13.7	28; 21.4	37; 28.2	83; 63.4
Case studies	9; 6.9	11; 8.4	13; 9.9	33; 25.2
Field studies	8; 6.1	11; 8.4	18; 13.7	37; 28.2
Case & Field studies	0; 0.0	3; 2.3	4; 3.1	7; 5.3
Other empirical studies	1; 0.8	3; 2.3	2; 1.5	6; 4.6
<i>TOTAL</i>	35; 26.7	40; 30.5	56; 42.7	131; 100.0

Table 4: Topics in IS outsourcing

	Until 1995(%)	1996- 2000(%)	Since 2001(%)	Total(%)
<i>Outsourcing from the perspective of the client</i>	44; 21.4	31; 15.1	25; 12.1	100; 48.7
Success factors	0; 0.0	4; 1.9	4; 1.9	8; 3.9
Reasons	15; 7.3	9; 4.3	4; 1.9	28; 13.6
Risks	8; 3.9	4; 1.9	9; 4.3	21; 10.2
Decision-making	8; 3.9	6; 2.9	5; 2.4	19; 9.2
General view	13; 6.3	8; 3.9	3; 1.4	24; 11.7
<i>Outsourcing from the perspective of the provider</i>	4; 1.9	8; 3.9	21; 10.2	33; 16.0
ASP	0; 0.0	0; 0.0	12; 5.8	12; 5.8
Global Outsourcing	3; 1.4	3; 1.4	7; 3.4	13; 6.3
Providers	1; 0.4	5; 2.4	2; 0.9	8; 3.9
<i>Outsourcing from the perspective of the relationship</i>	8; 3.9	12; 5.8	15; 7.3	35; 17.0
Contract	4; 1.9	6; 2.9	4; 1.9	14; 6.8
Assessment, price	1; 0.4	2; 0.9	2; 0.9	4; 1.9
Client-provider relationship	3; 1.4	4; 1.9	9; 4.3	16; 7.8
<i>Outsourcing from the perspective of Economic Theories</i>	5; 2.4	4; 1.9	10; 4.8	19; 9.2
Agency Theory	1; 0.4	0; 0.0	2; 0.9	3; 1.4
Transaction Cost Theory	3; 1.4	3; 1.4	6; 2.9	12; 5.8
Other theories	1; 0.4	1; 0.4	2; 0.9	4; 1.9
<i>Others</i>	1; 0.4	6; 2.9	11; 5.3	18; 8.7
Nationality	0; 0.0	1; 0.4	3; 1.4	4; 1.9
IS staff	1; 0.4	2; 0.9	5; 2.4	8; 3.9
Industry	0; 0.0	3; 1.4	3; 1.4	6; 2.9
<i>TOTAL</i>	62; 30.2	61; 29.7	82; 40.0	205; 100.0

Table 5: Scope of the IS activities outsourced

	Until 1995 (%)	1996-2000 (%)	Since 2001 (%)	Total (%)
General	29; 22.1	36; 27.5	36; 27.5	101; 77.1
Soft. Development	6; 4.6	4; 3.1	8; 6.1	18; 13.7

Applications	0; 0.0	0; 0.0	11; 8.4	11; 8.4
E-Commerce	0; 0.0	0; 0.0	1; 0.8	1; 0.8
<i>TOTAL</i>	<i>35; 26.7</i>	<i>40; 30.5</i>	<i>56; 42.7</i>	<i>131; 100.0</i>

Table 6: Authors publishing the most articles on IS outsourcing

Author	N	Country	Author	N	Country
Willcocks, L.	1	United Kingdom	Lee, J-N.	4	China
Lacity, M.C.	8	USA	Apte, U.M.	3	USA
Ang, S.	6	Singapore	Aubert, B.A.	3	Canada
Cheon, M.J.	5	USA, Korea	Chaudhury, A.	3	USA
Feeny, D.	5	United Kingdom	Currie, W.L.	3	United Kingdom
Grover, V.	5	USA	Kishore, R.	3	USA
Kern, T.	5	The Netherlands	Nam, K.	3	Korea, Australia
Rao, H.R.	5	USA	Patry, M.	3	Canada
Rivard, S.	5	Canada	Smith, M.A.	3	USA
Teng, J.T.C.	5	USA	Smith, M.A.	3	USA
Fitzgerald, G.	4	United Kingdom	Straub, D.W.	3	USA
Hirschheim, R.	4	USA	Venkatraman, N.	3	USA

Table 7: Countries contributing the most to IS outsourcing research

Country	N	Country	N
USA	15	Finland	5
United Kingdom	54	Norway	5
Canada	18	Hong Kong	4
Australia	9	France	3
Singapore	8	Taiwan	3
Korea	7	India	2
Spain	6	Japan	2
The Netherlands	6	Ireland	1
China	5		

Figure 1: Number of articles on IS outsourcing

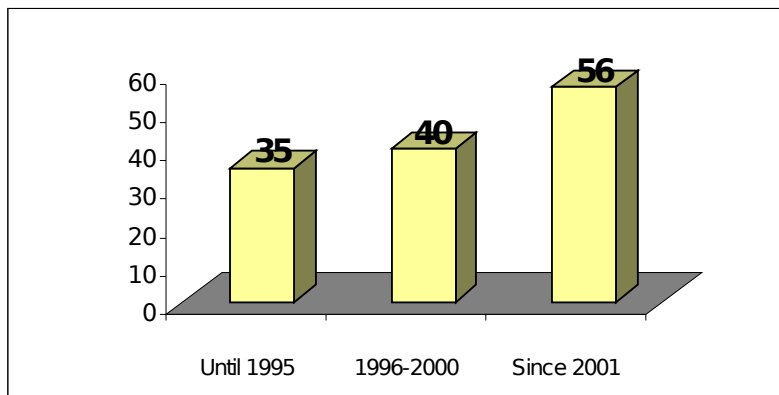


Figure 2: Research methodologies

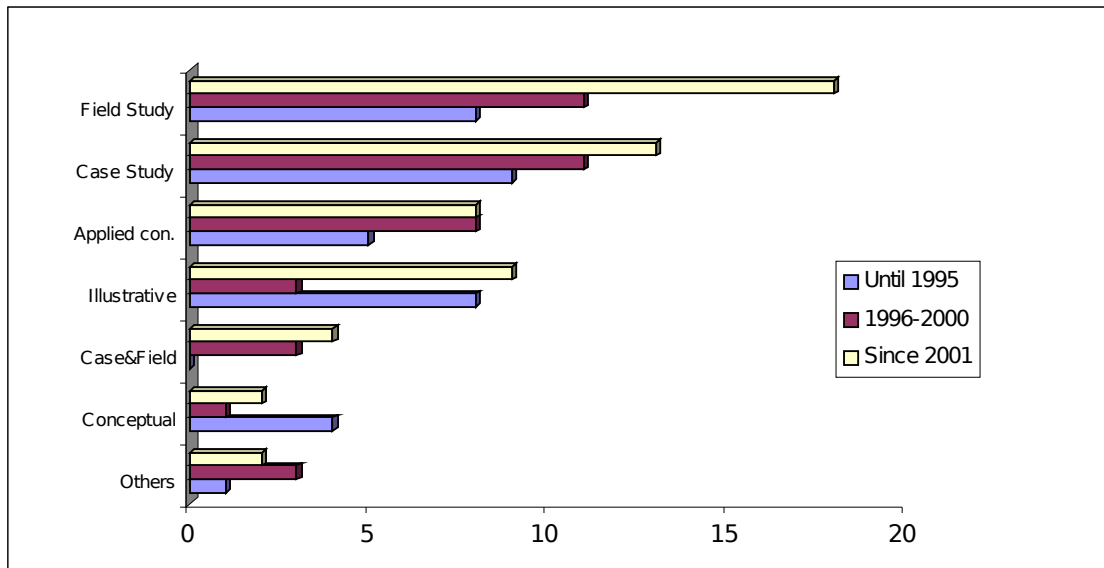


Figure 3: The most frequent topics in IS outsourcing

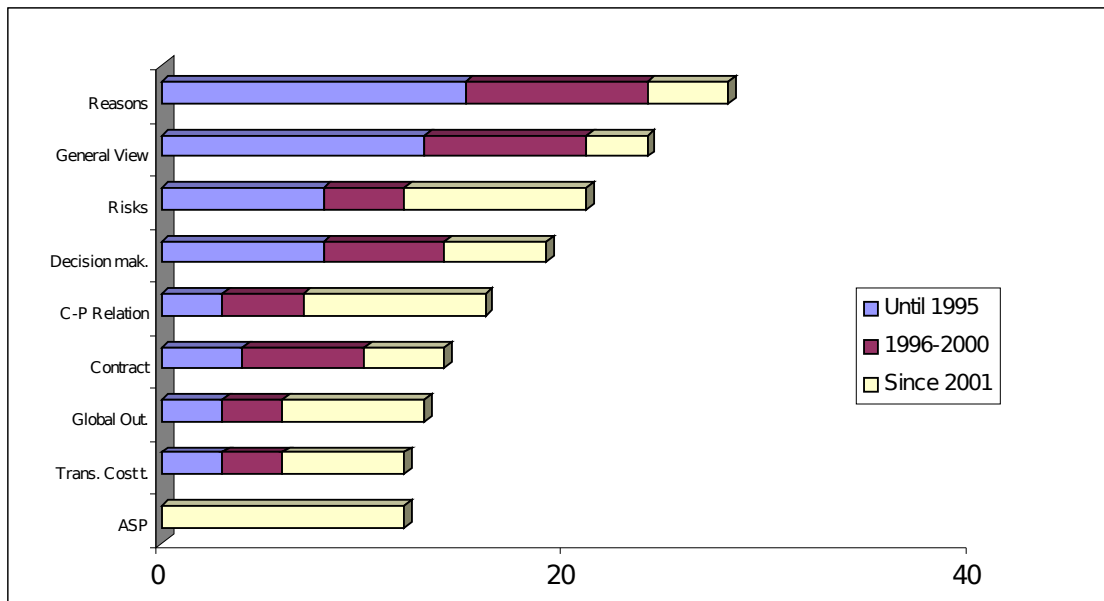


Figure 4: General areas in IS outsourcing

