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An Anatomy of European Information Systems Research ECIS 1993 - 2002: Some Initial Findings

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AN ANATOMY OF EUROPEAN INFORMATION SYSTEMS RESEARCH ECIS 1993–ECIS 2002: SOME INITIAL FINDINGS

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ABSTRACT

This paper reflects on European research on information systems as presented during the first ten years of the European Conference on Information Systems (ECIS). Based on an analysis of all papers published in the ECIS proceedings during the period 1993–2002, the paper presents initial findings regarding key aspects of European IS research activity.

INTRODUCTION

The field of Information Systems research has been developing ever since the first commercial applications of information and communication technologies were developed in the early 1950s (see Caminer *et al.* (1998) for an account of the world's first business computer, LEO, developed in the UK in 1951). Arising initially from the field of computer science and developing through the application of concepts from cognate fields of study such as organisation science, operational research, management, strategy, psychology, systems thinking and the like (Buckingham*, et al.* 1987), interest in information systems soon gained momentum. Technological and application developments of information systems are traced in Somogyi & Galliers (1987) and are updated in Galliers *et al.* (1999 pp. 1–24).

Early US journals dealing with aspects of information systems included *Communications of the ACM* (first published in 1958), and as the academic field developed, *The Data Base for Advances in Information Systems* (1970), *MIS Quarterly* (1977), and more recently, the *Journal of Management Information Systems* (1984) and *Information Systems Research* (1990).

In Europe, the academic field was somewhat slower to develop in terms of journals, with *Information & Management* (1963) leading the way. In the UK, a number of journals emerged in the late 1980s and early 1990s, including *Journal of Information Technology* (first published in 1986), *Information Systems Journal* (known as *Journal of Information Systems* until 1994), *European Journal of Information Systems* and *Journal of Strategic Information Systems* (all appearing for the first time in 1991). Other important European based journals the German language Wirtschaftsinformatik and the Scandinavian Journal of Information Systems (Mylonopoulos and Theoharakis 2001).

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Mirroring the introduction of journals, the first specifically IS conference—the annual *Scandinavian IS Research Seminar (IRIS)*—took place in 1978. (The more broadly focussed *Hawaii International Conference on System Sciences* predates IRIS by some ten years, having celebrated its 35th anniversary in January 2002). The *International Conference on Information Systems (ICIS)* followed in 1980. More recently other regional conferences were also founded, including the *Australasian Conference on Information Systems (ACIS)*, the *Pacific Asia Conference on Information Systems (PACIS)* and, of course ECIS.

The origins of ECIS can be traced back to two parallel initiatives to launch a conference for European researchers in information systems. The first initiative was led by Professor Dan Remenyi, then at Henley Management College, with the second arising from discussions following the publication of the European Journal of Information Systems by the UK's Operational Research Society. The editors of EJIS were based at LSE and Edgar Whitley began working with the OR Society to organise a European Conference. Professor Frank Land learned of both initiatives and helped ensure that rather than duplicating work, the two initiatives merged and led to the First European Conference on Information Systems that was held at Henley Management College in 1993.

Frank Land was also closely involved in the formation of the ECIS standing committee (ECIS 2002), which has responsibility for selecting forthcoming ECIS venues and for ensuring the ongoing success of the ECIS conferences.

With the foundation of the *Association for Information Systems (AIS)* (AIS 2002) in 1994, PACIS and ECIS were recognised as regional AIS conferences and the *Americas Conference on Information Systems (AMCIS)* was established to complement these already existing conferences.

Despite this increase in activity within the European IS academy, very little was known about the range of research interests and favoured journals for European academics. This is in marked contrast to a long–standing tradition in the US of analysis of the quality, standing of and citations in *their* journals (e.g., (Hamilton and Ives 1980) (Hamilton and Ives 1982) (Nunamaker 1980) (Davis 1980) (Vogel and Wetherbe 1984) (Culnan 1986) (Culnan 1987) (Jackson and Nath 1989) (Gillenson and Stutz 1991) (Nord and Nord 1995) (Walstrom*, et al.* 1995) (Hardgrave and Walstrom 1997) (Im*, et al.* 1998a) (Im*, et al.* 1998b) (Walstrom and Leonard 2000).

Far less is known, however, about European information systems research. Are there particular characteristics that differentiate European IS research from that done elsewhere? Do European researchers have different publishing and citation preferences? Can European research be identified by its choice of research approaches or research topics? Which institutions are most active in research? Where are most IS researchers located? How many researchers exist in Europe? Until recently, there was very little published information about these questions. For example, the first survey of European IS academics took place in 1996 (Avgerou*, et al.* 1999) and followed a somewhat similar survey of the UK (Galliers*, et al.* 1997). Nurminen (1997) (1999) has analysed the contributions to the IRIS conference during its formative stages (i.e., 1978–1981 and 1982–1988) and Iivari & Lyytinen (1999) provide an account of research on IS development in Scandinavia.

Moreover, there is an important temporal element to any such understanding of IS research in Europe. As a relatively young field, there are likely to be lag–effects as new researchers join the field, as new conferences are formed and as new journals emerge with their own agendas. It is therefore important to appreciate the features of European IS research as they appear now, rather than as they were ten years ago. Thus, the claims by Evaristo and Karahanna (1997) that there are few differences between North American and European research in information systems may well be skewed by the fact that they draw on data taken from between 1985 and 1990.

Similar methodological concerns arise when drawing on the existing studies of North American publishing and citation preferences. Even assumptions about the most widespread and prestigious journals in the field (Claver*, et al.* 2000) (Nord and Nord 1995) may be problematic in the European context (see Avgerou *et al.* (1999) for details).

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Thus, and in celebration of the 10th anniversary of ECIS, we have analysed all the publications that have appeared in ECIS proceedings over the first ten years of ECIS[1] since the first ECIS, held in Henley, UK in 1993.

The database of resources used for the production of this paper will be made available to allow other researchers to undertake further studies of information systems research as it is practised in Europe.

The paper is structured as follows. Following this introductory section, we outline the research method used in the construction of the database and the subsequent analysis of these data. This is followed by the presentation of our key findings thus far which helps place European IS research in a global context and identifies further research that might usefully be carried out.

RESEARCH METHOD

This paper reports on all the publications included in the proceedings of the first ten years ECIS conferences. In addition to the copies of the proceedings themselves, two main databases of information were used. The first was an Endnote library containing full bibliographic details of all ECIS papers. This was creating using the Endnote libraries of ECIS proceedings made available by the ECIS standing committee (ECIS Endnote 2002). This Endnote library was used as to provide data for the second database, which recorded all the citation and institution data used in the analysis. The Endnote library was also used to identify the most frequent authors and key concepts in paper titles.

The second database was developed using Access and stored details of all ECIS papers, all the institutions (and their countries) associated with the papers. It also included a list of papers cited by the ECIS papers. Figure 1 gives an overview of the database structure.

ECIS Papers
*　ECIS Paper ID
　Author
　Year
　Title

Paper Institution Link　　　　　　　　　*Paper Citation Link*
　ECIS Paper ID　　　　　　　　　　　　　　ECIS Paper ID
　Institution ID　　　　　　　　　　　　　　Cited Paper ID

Institution　　　　　　　　　　　　　　　*Cited Papers*
*　Institution ID　　　　　　　　　　　　*　Cited Paper ID
　Institution Name　　　　　　　　　　　　First Author
　Country ID　　　　　　　　　　　　　　　Year
　　　　　　　　　　　　　　　　　　　　　Title
Country　　　　　　　　　　　　　　　　　Common Source ID
*　Country ID
　Country Name　　　　　　　　　　　　*Common Source*
　　　　　　　　　　　　　　　　　　　*　Common Source ID
　　　　　　　　　　　　　　　　　　　　Common Source Name
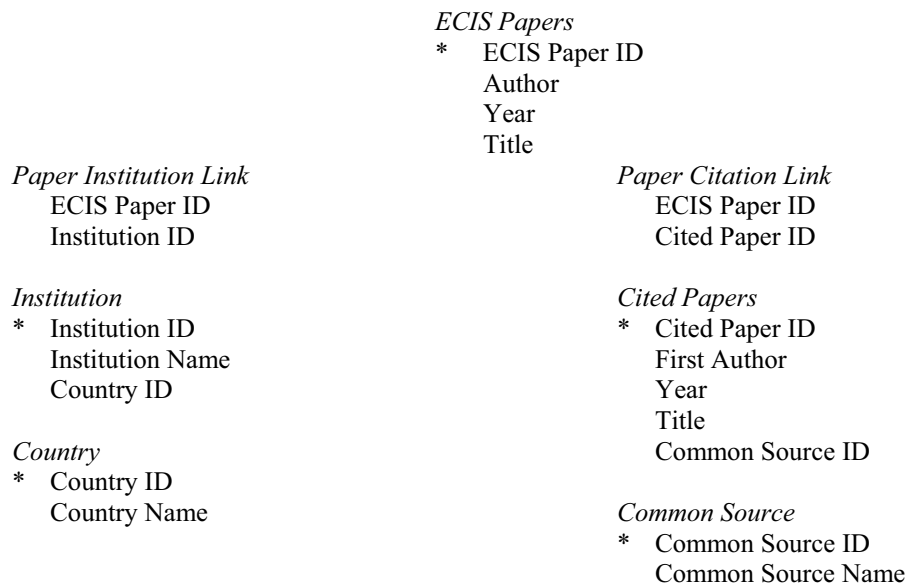
Figure 1: Database model

The *ECIS Papers* table was populated using data from the Endnote library described above. To reduce data entry, the *Cited Papers* table was also initially populated with data from other Endnote libraries including tables of contents from leading IS journals and conferences (Journal Endnote 2002). These

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[1] In order for this paper to be included in the proceedings of the conference, however, limited data entry and analysis has been undertaken of the papers from this year's ECIS. Updated results including all the data from this year's conference will be presented in Gdansk. The major trends identified in this paper, however, are unlikely to change significantly.

cited papers were marked to indicate the *Common Source* that they came from (e.g. ECIS, EJIS, MISQ etc.).

Data entry into the system was done through a web based (ASP) interface by a team of PhD and former MSc students and consisted of linking *ECIS Papers* with *Cited Papers*. If an ECIS paper cited a paper (or anything else) that was not already listed in the *Cited Papers* table, then it was necessary to add the paper to the system. To minimise this data entry, only the first author, year and (abbreviated) title was entered. If the paper came from a *Common Source* this was also indicated in the database. A similar process was implemented for linking *ECIS Papers* with *Institution* and again, any new institutions were added to the system when they first arose.

Although it should not be necessary to reenter *Cited Papers* or *Institutions* into the system, on occasion there was duplication of entries. Any duplicated entries were identified and replaced with a single, unique value.

Institutions were also linked *Country* which was taken as a proxy for nationality of the author (thus a Greek academic based in a Swedish institution when submitting a paper for ECIS would be listed as Swedish for that year for analysis purposes). For each paper, only one instance of an institution would be listed against that paper (thus a paper with three authors from InstitutionA and two from InstitutionB would be listed as being linked once to both InstitutionA and InstitutionB rather than having three links to InstitutionA and two to InstitutionB).

Analysis of the data was performed by running queries against the data and the use of the relational database allowed for checking specific hypotheses and trends.

In the next section, the basic profile of the ECIS papers is presented. This is followed by a more detailed analysis of the results and their implications for our understanding of European IS research.

RESULTS

Table 1 presents the locations of the first ten ECIS conferences and their dates. There is a clear pattern for ECIS conferences to be held around June although there is some variation according to the term dates of the hosting institutions and other important dates (e.g. Midsummer celebrations in Scandinavia).

Year	Location	Date	Organisers
1993	Henley–on–Thames, United Kingdom	March 29–30	Edgar Whitley, Dan Remenyi
1994	Nijenrode, The Netherlands	May 30–31	Walter Baets, Joop Volkers
1995	Athens, Greece	June 1–3	Georgios I. Doukidis, Robert D. Galliers, Tawfik Jelassi, Helmut Kcrmar, Frank Land
1996	Lisbon, Portugal	July 2–4	J. Dias Coelho, Tawfik Jelassi, Wolfgang König, Helmut Krcmar, Ramon O'Callaghan, Markku Sääksjärvi
1997	Cork, Ireland	June 19–21	Robert D. Galliers, Ciaran Murphy, Sven A. Carlsson, Claudia Loebbecke, Hans Robert Hansen, Ramon O'Callaghan

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Year	Location	Date	Organisers
1998	Aix–en–Provence, France	June 4–6	Jacques-Andre Bartoli, Jean-Louis Le Moigne, Niels Bjorn-Andersen, Hubert Oesterle, Georgios Doukidis, Leslie Willcocks, Tawfik Jelassi
1999	Copenhagen, Denmark	June 23–25	Jan Pries-Heje, Claudio U. Ciborra, Karlheinz Kautz, Josep Valor, Ellen Christiaanse, David Avison
2000	Vienna, Austria	July 3–5	Hans Robert Hansen, Martin Bichler, Harald Mahrer
2001	Bled, Slovenia	June 27–29	Joze Gričar, Steve Smithson, Stefan Klein, Georgios J. Doukidis, Dorothy Leidner, Kalle Lyytinen, Leslie Willcocks
2002	Gdansk, Poland	June 6–8	Stanisław Wrycza, Karlheinz Kautz, Marco de Marco, Robert D. Galliers, Karl Kurbel

Table 1: Location of ECIS Conferences

Table 2 presents the number of accepted papers in each of the ECIS conferences. As can be seen, once ECIS became 'established' (1995) there has been an average of 130 papers per conference.

Year	Number of papers
1993	45
1994	62
1995	106
1996	117
1997	121
1998	141
1999	82
2000	204
2001	127
2002	158
Total	1163

Table 2: Number of papers per conference

ECIS's claim to be the leading conference for European IS researchers can be supported by the data presented in Table 3, which shows that, at least for Western Europe, by ECIS 1995 papers had been accepted from all major countries in the area. Interestingly, the expansion into Central and Eastern Europe, which can be seen with the first papers from Hungary, Latvia, Lithuania and Slovakia has coincided with the hosting of ECIS in Central and Eastern Europe (2001 and 2002).

Year	First papers from
1993	Canada Germany Greece Hong Kong Netherlands New Zealand Poland Russia Singapore South Africa Switzerland UK USA
1994	Australia Belgium Denmark Finland France Ireland Norway Spain Sweden Taiwan
1995	Cyprus India Italy Portugal
1996	Austria Czech Republic Israel Slovenia
1997	Iran
1998	Tunisia
1999	Monaco
2000	Brazil Japan Korea
2001	
2002	Hungary Latvia Lithuania Slovakia Thailand

Table 3: First papers by country

There are few surprises when considering the number of authors per paper (see Table 4) with two authors per paper being the most common, nor with the fact that two thirds of all papers only have authors from one institution (although a quarter of the papers have authors from two institutions, see Table 5).

No of authors per paper	1	2	3	4	5	6
% of all papers	26%	41%	21%	7%	3%	1%

Table 4: Number of authors per paper

No of institutions per paper	1	2	3	4	5	6	7
% of all papers	66%	26%	5%	2%	1%	0%	0%

Table 5: Number of institutions per paper

Twenty six countries have had at least 10 papers published in ECIS over the first ten years, with the UK having by far the largest proportion of papers, see Table 6. Interestingly, the second largest contributors are Australia and the USA, both of which are outside the normal catchment area for ECIS. This trend can be partially explained by considering the data in Table 7 that presents the number of paper by country over the ten years of ECIS. From this it can be seen that whilst the UK has a consistently large number of papers per ECIS, for Australia and the USA the patterns are more varied. For example, Australian participation has been far higher in the last five years than it was in the first five years, whereas American participation seems to vary according to conference location with a marked drop in American participation in 1999 (Copenhagen).

Country Name	Percentage
UK	24%
Australia	9%
USA	9%
Germany	8%
Netherlands	6%
Denmark	4%
Finland	4%
Switzerland	3%
France	3%
Canada	3%
Sweden	3%
Ireland	3%
Greece	3%
Italy	2%
New Zealand	1%
South Africa	1%
Singapore	1%
Hong Kong	1%
Spain	1%
Austria	1%
Norway	1%
Portugal	1%
Slovenia	1%
Belgium	1%
Israel	1%

Table 6: The most frequent representation by country

Country Name	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total
Australia		2	5	5	12	20	15	37	30	27	153
Austria				2	1	3	1	6	1	3	17
Belgium		1	2	4	1	2		3			13
Brazil								2			2
Canada	1		6	5	10	11		4	3	9	49
Cyprus			1							1	2
Czech Republic				1							1

Country Name	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total
Denmark		5	3	7	5	6	16	4	10	9	65
Finland		3	8	5	12	10	4	8	4	11	65
France		1	2	12	7	13	4	5	2	4	50
Germany	1	3	11	14	11	11	9	45	7	22	134
Greece	2	2	3	2	4	5	3	6	10	6	43
Hong Kong	2	1	2	4		3	2	1	4	2	21
Hungary									1		1
India			1								1
Iran					1						1
Ireland		2	1	8	11	4	7	4	3	5	45
Israel				4			1	5			10
Italy			2	1	8	4	2	7	2	6	32
Japan								2	1		3
Korea								1			1
Latvia									1		1
Lithuania									1		1
Monaco							1				1
Netherlands	1	9	15	14	8	21	16	9	3	7	103
New Zealand	2	3	1	1	4	1		7	3	2	24
Norway		2		1	3	2	3	2	2	1	16
Poland	1			1						2	4
Portugal			2	7	2	1		2	1	1	16
Russia	1	1	3	1							6
Singapore	3		1	1		2		2	5	7	21
Slovakia									2		2
Slovenia				1		1		3	9		14
South Africa	7	1	1	5		2	3	3	1		23
Spain		1	1	1	3	2	1	3	1	7	20
Sweden		1	2	5	6	7	4	4	6	13	48
Switzerland	1	2	3	4	6	6	3	14	7	5	51
Taiwan		1			1						2
Thailand									1		1
Tunisia						1					1
UK	28	28	34	39	54	44	41	56	43	31	398
USA	3	3	11	11	16	17	5	35	21	21	143

Table 7: Papers by country over time

As Table 8 shows, there is considerable variation in the relationship between papers from a particular country and papers from particular institutions within a country. Thus, whilst Germany is fourth in the national rankings, no single German institution has more than 14 papers in ECIS, whereas Ireland, which is 12th overall, provides the third most frequent institution (UC Cork, host of ECIS 1997).

Institution Name	Country Name	Count
London School of Economics	UK	55
Warwick University	UK	39
University College Cork	Ireland	28
Copenhagen Business School	Denmark	25
University of Salford	UK	23
Brunel University	UK	21

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Institution Name	Country Name	Count
Aalborg University, Denmark	Denmark	18
Queensland University of Technology	Australia	18
University of Bath	UK	18
AUEB	Greece	17
Erasmus University,Netherlands	Netherlands	17
Monash University	Australia	17
University of St Gallen	Switzerland	17
Tilburg University	Netherlands	16
University of Melbourne	Australia	16
University of New South Wales	Australia	16
Edith Cowan University	Australia	15
National University of Singapore	Singapore	15

Table 8: Most frequent institutions

Thirty eight authors have published six or more papers in ECIS over the years (see Table 9), with none publishing a paper in every conference. An institutional / country analysis is not possible for this data, as many of these authors have changed institution over the period.

Author	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total	No of years
P. Powell	0	0	1	4	4	2	4	2	4	3	24	8/10
R. D. Galliers	0	1	2	2	3	2	2	3	3	3	21	9/10
C. Loebbecke	0	0	1	1	1	4	3	3	1	0	14	7/10
S. Newell	0	0	0	1	2	2	1	4	3	1	14	7/10
L. Willcocks	1	1	2	3	2	2	2	0	0	0	13	7/10
E. A. Whitley	1	1	1	1	1	2	1	2	0	1	11	9/10
H. Krcmar	0	0	3	1	2	0	0	4	0	1	11	5/10
P. Finnegan	0	0	0	1	1	2	2	2	1	2	11	7/10
E. Christiaanse	0	0	2	2	0	3	0	2	1	0	10	5/10
J. M. Burn	1	1	3	0	0	1	2	0	1	1	10	7/10
J. Swan	0	0	0	1	2	3	2	2	0	0	10	5/10
P. Beynon–Davies	0	0	1	1	1	1	1	3	1	0	9	7/10
F. Adam	0	1	1	1	1	1	0	0	1	2	8	7/10
G. I. Doukidis	0	2	1	1	2	0	0	2	0	0	8	5/10
T. Cornford	2	0	1	1	1	0	1	0	1	1	8	7/10
A. F. Farhoomand	0	0	1	2	0	3	1	0	0	0	7	4/10
B. T. Ward	0	0	0	1	2	1	0	1	1	1	7	6/10
J. C. Sipior	0	0	0	1	2	1	0	1	1	1	7	6/10
M. Robertson	0	0	0	1	2	2	1	1	0	0	7	5/10
R. J. Paul	1	0	1	0	2	2	0	1	0	0	7	5/10
S. A. Carlsson	0	1	1	1	1	0	1	1	1	0	7	7/10
A. Pouloudi	0	0	1	1	0	1	1	1	1	0	6	6/10
C. Murphy	0	1	2	1	0	1	1	0	0	0	6	5/10
D. G. Wastell	0	0	0	2	0	2	0	0	2	0	6	3/10
G. Dhillon	0	0	1	2	3	0	0	0	0	0	6	3/10
G. Fitzgerald	0	1	1	0	1	1	2	0	0	0	6	5/10
G. Hofstede	0	0	1	0	1	1	1	2	0	0	6	5/10
J. Damsgaard	0	0	0	1	0	0	3	0	2	0	6	3/10
K. Lyytinen	0	0	1	2	1	1	1	0	0	0	6	5/10
L. Mathiassen	0	0	1	2	0	1	2	0	0	0	6	4/10

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Author	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total	No of years
M. Levy	0	0	0	2	1	0	1	0	1	1	6	5/10
M. Newman	0	0	1	2	0	2	0	1	0	0	6	4/10
M. Smits	0	0	1	1	2	0	0	1	0	1	6	5/10
P. M. C. Swatman	0	0	2	1	1	0	1	1	0	0	6	5/10
P. Yetton	0	0	1	1	0	1	1	0	2	0	6	5/10
R. Hackney	0	0	0	1	1	1	0	1	2	0	6	5/10
S. L. Jarvenpaa	0	0	0	0	1	2	0	3	0	0	6	3/10
V. K. Tuunainen	0	0	0	1	1	1	1	1	0	1	6	6/10

Table 9: The most frequent authors, by year

One useful way of determining the characteristics of a research community is to consider its key citations. The analysis of the papers cited by ECIS papers shows some interesting patterns that strongly suggest that European researchers have a different research profile to those reported elsewhere ((Claver, *et al.* 2000) (Culnan 1986) (Culnan 1987) (Gillenson and Stutz 1991) (Nord and Nord 1995) (Walstrom and Leonard 2000)).

Table 10 presents the top cited items. Given the business oriented focus of much information systems research, it is perhaps unsurprising that over half are focussed on business / strategy issues. More unusually, and perhaps more significantly, the large number of citations to a text on a particular research method (Yin on case studies) would indicate a high profile for this particular research method in Europe. Other significant features include the large number of citations for leading European IS researchers (Checkland and Walsham) who have been particularly influential in European research on information systems.

Another distinctive feature is the citation of social theorist Anthony Giddens, and his work on the constitution of society. This book introduces structuration theory. It is also interesting to note the high proportion of books in the list.

First Author	Year	Title	Count
Porter	1985	How information gives you competitive advantage	55
Walsham	1993	Interpreting Information Systems in Organisations	53
Earl	1989	Management strategies for information technology	52
Checkland	1981	Systems thinking, systems practice	42
Davenport	1993	Process Innovation – Reengineering work through Information Technology	39
Malone	1987	Electronic markets and electronic hierarchies	36
Hammer	1990	Reengineering work: don't automate, obliterate	35
Champy	1993	Reengineering the corporation	33
Giddens	1990	The constitution of society	33
Yin	1994	Case Study Research	31
Cash	1985	IS redraws competitive boundaries	31

Table 10: The top cited articles (not including citations from ECIS 2002)

When looking at traditional sources for citations (i.e. leading journals and conferences), a further interesting pattern emerges as seen in Table 11.

Source	% of common sources
MISQ	35%
ECIS	13%
ISR	10%
JSIS	8%
JIT	8%

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Source	% of common sources
Org Sci	8%
EJIS	7%
ISJ	6%
ICIS	6%

Table 11: The top common sources (not including ECIS 2002)

Whilst MIS Quarterly is the by far the most popular of the common sources, the second most frequently cited source (from the list of common sources) is ECIS itself, with ISR coming third. The European based journals (JSIS, JIT, EJIS and ISJ) also appear in the list.

In terms of specific articles (Table 12) once again the mix of methodology (e.g. Benbasat, Orlikowski, Lee) and business issues (e.g. Delone, Nonaka, Johnston) is noticeable. Note also, that not even the most popular article from a common source is in the top list of cited items.

First Author	Year	Title	Source	Count
Delone	1992	Information Systems Success	ISR	25
Benbasat	1987	The case research strategy in studies of information systems	MISQ	24
Orlikowski	1992	The Duality of Technology – Rethinking the Concept of Technology in Organizations	Org Sci	23
Nonaka	1994	A Dynamic Theory of Organizational Knowledge Creation	Org Sci	20
Galliers	1991	Strategic information systems planning	EJIS	21
Orlikowski	1991	Studying Information Technology in Organisations: Research Approaches and Assumptions	ISR	20
Johnston	1988	Creating Competitive advantage with Interorganisational Information Systems	MISQ	18
Galliers	1991	Information systems management and strategy formulation	ISJ	17
Farbey	1992	Evaluating investments in IT	JIT	15
Niederman	1991	Information systems management issues for the 1990s	MISQ	14
Galliers	1990	Choosing appropriate information systems approaches	IFIP 8.2	13
Earl	1993	Experiences in strategic information systems planning	MISQ	12
Newman	1992	A social process model of user–analyst relationships	MISQ	12
Willcocks	1992	Evaluating Information Technology investment : research findings and reappraisal	ISJ	11
Eason	1988	Information Technology and Organisational Change	JIT	11
Swatman	1994	A model of EDI integration and strategic business reengineering	JSIS	11
Swatman	1992	EDI system integration: a definition and literature survey	TIS	11
Barrett	1982	Inter–organisational information sharing systems	MISQ	10
Lee	1989	A scientific methodology for MIS case studies	MISQ	10
Jarvenpaa	1991	Executive involvement and participation in the management of information technology	MISQ	10
Copeland	1988	Airlines reservations systems: Lessons from history	MISQ	10

Table 12: The most frequently cited articles from common sources (not including ECIS 2002)

CONCLUSIONS

From this brief presentation of results it is apparent that there are significant patterns to European IS research, as evidenced through papers presented in the first ten European Conferences on Information Systems. There is clearly much more to be discovered in the data including patterns of citation by institution and country, research approaches adopted etc. Many of these further results and their implications for our understanding of European research in information systems will be presented during the plenary session.

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