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The academic field of Information Systems in Europe

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Abstract

This paper presents and discusses the institutional and cognitive profile of the Information Systems (IS) field in Europe, using the results of a survey of IS academics in 18 European countries. The emerging picture suggests that the study of IS in European academia is dispersed in small units with various names, which are hosted in various disciplines across the science / social science spectrum. Our survey confirms the widespread view that the IS field is concerned with the study of a wide range of themes, from developing technologies *per se*, to assessing the social impact of new information and communication technologies. Moreover, a variety of research perspectives and approaches is found to be pursued, drawing from both the positivist and interpretative epistemological traditions. However, the survey suggests regional biases of research themes and perspectives, and a pattern of consistent differences among regions emerges from the data.

Reflecting upon the survey findings, we argue that while the institutional dispersion is a weakness that requires remedying action, the cognitive diversity should not be considered as a characteristic of immaturity. In Europe, the diversity of themes and research perspectives probably manifests more fundamental differences of the socio-economic context which gives rise to, and sustains, IS research in different countries.

Introduction

The field of Information Systems (IS) studies phenomena associated with the utilisation of information and communication technologies, primarily in the context of business organisations. As these technologies proliferate and organisations learn how to exploit the new technological potential within a world-wide economy, IS academics are faced with a broad range of challenging intellectual questions and a

need for applicable answers. Despite such timeliness - or perhaps because of it - the academic field of IS remains ill-defined, often facing problems of recognition and legitimacy.

The first academic programmes on IS appeared in the 1960's. Since then the most significant landmarks in the creation of IS as an internationally identified academic field have been the publication of its major research journals – *MIS Quarterly* in 1977, and *Information Systems Research* (ISR) in 1987 - the launching of the International Conference of Information Systems (ICIS) in 1980 (Benbasat & Weber, 1996) and the establishment of the Association for Information Systems (AIS) in 1995.

The core journals of the field, ICIS, and the AIS continue to provide an international image of the academic field of IS. Nevertheless the international institutions of the field do not accommodate truly the variety of intellectual and social features of the academic IS communities outside North America. The AIS was created primarily as a response to marginalisation threats faced by IS academics in US Business Schools, and the vast majority of both AIS members and officers are North American. So far the programme executives of ICIS have been drawn predominantly from North America, and in the journals most widely considered to represent the field, by far most of the editors and authors have been from North American universities. It is unclear to what extent the dominant concerns of the field convey the aspirations, outcomes, and worries of the IS communities in other localities.

Indeed, there have been various indications that the IS field in Europe is different from the prevalent North American field, both in terms of institutional setting and research themes and approaches. To begin with, there is already awareness that, unlike North America where most IS is located in business schools, in Europe IS academics can be found in other schools, too (Frank, 1997; Markus, 1998). In research, Europeans have been seen as challengers of the objectivist empirical research approaches, and advocates of interpretative methods (Benbasat & Weber, 1996). Some countries or sub-regions have for long been associated with fostering particular streams of thought - such as the Scandinavian countries' reputation as pioneers of socio-technical and humanitarian approaches to the development and use of technology.

More recently, the distinct character of IS studies in Germany came to the attention of the international community. German IS researchers organised panels at the European Conference of Information Systems (ECIS) in 1995, and at ICIS in 1997 where they presented the ways the German version of IS, the field of 'Wirtschaftsinformatik' (WI), differs from the North American IS field, and discussed their relative strengths. WI is located in business schools, but – it was explained - its objective is to provide technologies enabling business excellence. Under the socio-economic circumstances of that country, such as high labour costs, this mission results in a very particular combination of technology and business concerns. While the stated vision of WI is 'total automation in the firms', WI research is concerned also with the understanding and reform of the business context (Mertens, 1997). The development of integrated software applications, such as SAP, was suggested as an indication of the strengths of the German WI approach.

Such indications suggest that the study of IS in Europe is institutionally and cognitively different from IS in North America. However, country differences of language, academic norms, and career structures make it particularly difficult to form an overall picture of the IS field in Europe. Yet, the task is not meaningless. European academics have been actively supporting regional scholarly initiatives. The European IS conference (ECIS) attained the status of the most representative IS forum of the region within a few years since its launch in 1993. Institutionally, the European Union constitutes a major influence of research policy and a significant source of funding, facilitating alliances among universities, research centres and industry across countries.

In this paper we present the findings of a survey of IS academics in Europe, we sketch the profile of the IS field in this region, and discuss its main institutional and cognitive features. The picture that emerges shows a field that is institutionally dispersed, cognitively diverse and methodologically pluralistic. We argue that the institutional dispersion is a weakness that requires remedying action, but that the cognitive diversity we found should not be interpreted as a weakness that requires rectification.

Diversity has been repeatedly discussed in the literature of the field, often as a cause for concern (Adam & Fitzgerald, 1996; Benbasat & Weber, 1996; Robey, 1996).

Banville and Landry's (1992) characterisation of the field as 'fragmented adhocracy' according to Whitley's analysis of scientific fields (Whitley, 1984) is generally seen as a problematic state that many believe requires initiatives to be overcome. However, the diversity found in IS in Europe is not necessarily an indicator of lack of technical coherence or conceptual grounding. At closer examination we find systematic differences of research perspectives among country regions, probably related to socio-economic factors.

The survey

The trigger for this survey was the difficulty faced by the regional council of the AIS to decide on initiatives that could promote the interests of IS academics in Europe. Such difficulties stemmed mainly from the lack of understanding of the IS community in this region. In 1996, in order to address this problem, two of the authors of this paper who were serving as AIS officers at that time started an effort to map the IS field and to understand the concerns and aspirations of IS academics in the region.

We began our research with three general questions: What is the position of IS within the discipline structure of universities? What is its cognitive orientation? What opportunities and threats is it faced with? The fundamental problem we faced was how to determine the population of our study and how to capture the variety of their features and circumstances. As we were beginning with a very partial understanding of the relevant issues to be explored, a two-phased study was carried out: a preliminary survey, which invited knowledgeable individuals to provide reports of factual information as well as their opinions about the status of the IS field in their country; and a questionnaire survey aimed at capturing data from IS academics in Europe.

Preliminary survey

In the preliminary survey we asked for information and opinions on the following aspects of IS studies in each country:

- major higher education institutions conducting IS research, and offering teaching programmes;
- streams of IS work (research and teaching) in which the country is a significant contribution to the IS field;

- predominant areas of research focus, for example business focus, technology development, policy of technology, social impact of IT;
- methodological research biases;
- major strengths and weaknesses of IS studies;
- main IS journals used and their value;
- main 'societies' or 'associations' addressing concerns of IS academics;
- main sponsors of IS research;
- recognition of the IS field in the country's academia;
- other names used for the IS field, and other academic fields overlapping with the cognitive field of IS;
- future prospects for the development or evolution of the field.

We collected reports from 18 countries, 11 of them European[1]. They varied considerably in terms of level of detail and, as expected, were impressionistic in style. While generally lacking in accuracy - although some of them provided lists of relevant data - collectively they provided an adequate basis to articulate relevant survey questions about the features of the IS field in the region.

They suggested significant variation in the development of the IS field. In none of the reported countries the IS field is recognised as an academic discipline in its own right, with IS expertise being scattered in a variety of faculties, such as computer science, business administration, accounting and finance, economics. A variety of terms were reported to be used to denote the IS field, or as overlapping with the IS area, including 'information technology', 'applied telematics', ' 'informatics', 'business information systems', 'business systems', 'management information systems'.

Most reports positioned the field of IS in terms of its association with technology and management but they suggested variations among countries in terms of their orientation towards these subjects.

Many reports indicated a prevalence of qualitative research approaches. As far as journals are concerned, most reports mentioned the commonly known international

[1] The preliminary study was addressed to countries from region 2 of the AIS, which includes Europe, Africa and Middle East.

journals such as MIS Quarterly and Communications of the ACM, but added also national publications as highly valued within their country.

Overall the reports conveyed a sense of reserved optimism. A number of strengths were indicated such as support from industry and opportunities to combine academic work with practical experience. Predictions for the future development of the field were positive with a discernible confidence that the field of IS will evolve into a separate discipline. Nevertheless, a variety of weaknesses were listed such as the lack of clear overall identity, recognition by other disciplines, theoretical foundation, standard terminology, and resources. Some suggested a need to define the field better for teaching and research purposes.

Following the indications obtained from the preliminary study and two consultation workshops - the first with country 'representatives' who contributed the reports, and the second with a smaller group of 'experts' on the European research – we identified two main patterns to study further with a questionnaire survey. The first relates to the distinction between engineering and management as the institutional location of IS researchers and as thematic research focus. The second is the contradiction between local and international institutional allegiances such as professional associations and publication outlets.

Thus, the survey we undertook next included questions on: the institutional characteristics of the work place of IS academics; their academic background and position; other related professional activities and involvement in professional societies; their research, and publications; their collaboration in research; and their views about the strengths and weaknesses of the IS field. The location of IS along the spectrum of Engineering – Management, and the orientation of the work of IS academics towards local or international audiences and reputational mechanisms were explicitly addressed with relevant questions as well as deducted in the analysis of the responses to a number of questions.

The questionnaire survey

The main difficulty faced in planning the questionnaire survey was the determination of the population whose features we were aiming to capture. Who should be the recipients of our questionnaire, and what questions were relevant to their circumstances? A possible solution would have been to address the questionnaire to

the regional members of the AIS, as the only institution exclusively representing IS academics. However, AIS membership is very low in this region, and we were aware of the reluctance of many IS academics to join the AIS, partly because they consider it as a predominantly American institution. AIS membership would give us a small and biased sample. Similar risks of bias were associated with the lists of attendees of the ECIS conferences. There is no firm basis of knowing the extent to which ECIS is a forum representing all the work done in this field.

Instead we decided to invite responses from anybody who perceives him/herself as an IS academic. Such a population is listed in the European directory of IS academics, which has been compiled without *a priori* criteria of who an IS specialist is, and thus reflects self-perceptions of individuals.

Another major difficulty was the phrasing of questions that would make sense in the different institutional and cognitive circumstances of the various countries. We sought consultation for some questions and from some countries, for example for the academic grades in Germany and France. But we soon met our limitations to provide closed questions capturing all possible circumstances. Thus, on the questionnaire we added the option for respondents to indicate their different circumstances under the 'other' category, if they could not - or chose not to - match their answer with any of the indicated categories.

We sent the questionnaire to 902 academics in 18 countries. We received 373 responses, a response rate of 41%. Of these, 13 either declared no country of work or, a country outside Europe and therefore we had a final data set of 360 cases.

Our data are most probably biased towards the most internationally oriented academics. Our questionnaire being written in English excluded the IS academics who are not fluent in English, and therefore are confined to local activities and intellectual influences. Moreover, we can assume that those who don't have international exposure and whose academic work is primarily driven by national norms did not have an incentive to respond. As a consequence, the country biases detected in our survey are probably stronger, and there may be more country-distinct features which we were not able to detect.

	Questionnaires sent	Responses received		Questionnaires sent	Responses received
Austria	55	24	**Netherlands**	106	33
Belgium	14	4	**Norway**	20	10
Denmark	60	32	**Poland**	12	8
Finland	60	23	**Portugal**	16	6
France	37	10	**Slovenia**	31	12
Germany	120	48	**Spain**	38	11
Greece	7	4	**Sweden**	60	18
Ireland	10	4	**Switzerland**	22	8
Italy	34	10	**UK**	200	95

Table 1. Country distribution of survey data

The emerging sketch

The sizes of the data we collected from each country vary significantly (Table 1). The response rate varied from 65% from Poland to 29% from Spain, with 48% from Germany, 47% from the UK, 53% from Denmark. But the difference in the number of cases collected by this survey reflects mainly differences in the numbers of directory entries. European countries with large academic populations, such as France and Spain, have relatively few entries in the directory. This pattern, though, is not dissimilar from nationality patterns in ECIS participation. The participation of France and Spain in the programme of ECIS ’97 was very similar to the proportion of data we collected from these countries: in ECIS ‘97 proceedings only 3.7% of the European contributors were French and 3.2% were Spanish. In our data set 2.7% are French, and 3.1% Spanish.

In the following presentation and discussion we provide an insight into particular European geographical areas (where the quantity of the data allows us to do so) and an overall picture of the state of IS in Europe as a whole. Accordingly, the countries are grouped into the following clusters: the German speaking countries, Austria, Germany, and Switzerland; the English speaking isles, Britain and Ireland; the four Scandinavian countries, Denmark, Finland, Norway and Sweden; and the Benelux countries (although there is no data available from Luxembourg). Finally, the European cluster combines the data from all European countries that participated in the survey.

Region	Cases	Region	Cases
UK, Ireland	99	**Other European**	61
Ger., Aust., Swi.	80	**Not known**	13
Scandinavia	83	**Total**	373
Benelux	37		

Table 2. Sample size by region

Institutional status

It is widely recognised in contemporary sociology of science that scientific work is an intertwined process of intellectual and institutional aspects (see for example Ravetz, 1971). Institutional development is a battle on two fronts: the organisational hierarchies of universities and other authorities or markets which control resources for higher education and research, and the mechanisms which determine the reputation of academic outcomes. Whitley (1984) has argued convincingly that the latter front is particularly important in the academic world, where professionals compete publicly for influence and control of the work of others through elaborate mechanisms of reputation and publication, mainly so far in journals and conferences.

In most countries such institutional development efforts for new academic fields are further complicated because the competition for both resources and intellectual reputation is international as well as local. IS academics working within different national academic contexts have different pressures and available options to build their professional reputation and progress in an academic career. They have to win a position within a university or research centre, and secure autonomy to pursue the academic tasks of their field. To do that they are required to satisfy the local quality criteria of competence in science, which may or may not be the same as those of the emerging international community of the IS field. They have different possibilities of funding from their employer, the state, the industry, or regional authorities such as the European Union. These varying possibilities also affect the orientation of their research and teaching.

We can form a view of the status attained by the IS field in the academic organisations of a country by looking at a) the position of IS within the formal structure of universities in terms of autonomy and size, b) the degrees and

qualifications taught by IS academics, and c) the academic qualifications and professional grades of IS academics.

The position of IS within university structures

A high percentage of IS academics work in small concentrations of IS specialists. 34% work in units with fewer than 5 full-time IS staff, and 30% work in units with 5 to 10 full-time IS staff. Only 29% of the units where IS academics are located bear the name 'Information Systems'. The remaining 71% are scattered in units with over 30 different names. 25.3% are units which bear names that 'combine' IS with another discipline. Some names suggest a focus clearly related to IS topics, such as Information Management, and Business Informatics. In some countries, notably in the Scandinavian and Central East European regions, substantial numbers of respondents work in units called 'Informatics', a term with an unclear overlapping with the field of Information Systems in its prevailing 'international' content. Also, IS academics are hosted in 'remote' fields, such as Law, Marketing, Statistics, and Operational Research. Even though part of this variety is undoubtedly the result of arbitrary translation from the national language into English, the overall picture is one of dispersion.

Table 3 presents the frequencies of IS and Informatics units, along with the variety of other names of units classified in the domains of 'Science/Engineering' and 'Management/Social Science'. The Science/Engineering category includes: computer science, electrical engineering, computer engineering, computing, IT, telecommunications, multimedia and mathematics. The Management/Social science category includes: business administration, economics, management, accounting, public administration, organisation theory, marketing and operational research. This grouping leaves the following unit names under 'other': science technology policy, human science and advanced technology, statistics and law.

Degrees taught

Another indicator of institutional status of a field within academia is the degree qualifications it produces. Overall our data suggest that, as a specialised degree, IS is taught more at the postgraduate rather than the undergraduate level.

With a notable exception of Scandinavia, the university units of most IS academics do not offer undergraduate IS degree programmes, and they do more teaching of IS subjects within undergraduate degrees of a different specialisation. Also more respondents' units teach courses to students from other departments (service teaching) than undergraduate IS degrees.

In postgraduate degrees the difference between the proportions of teaching within IS degrees and teaching IS components within other degrees is considerably narrower (Table 4).

Not surprisingly those located in IS departments are more likely to teach specialised IS degrees. Still, only 39.2% of those in IS units replied that they offer an undergraduate IS degree, although 48.4% of them offer a postgraduate degree in IS.

Career progression

Our data suggest significant differences of career structures within the IS academic community (Table 5). Each country has its own system of university career grades. Moreover, many countries have more than one type of higher education institutions, with variations of titles and career paths. For example, in the UK, where until 1992 the higher education system was divided into 'universities' - which were more oriented towards a combination of research and academic education - and 'polytechnics' - which were more oriented to a combination of academic education and vocational training, with less emphasis on research - there are still two scales of grades, while the two 'elite' British academic institutions, Cambridge and Oxford maintain their distinct scales of grades.

The questionnaire included the grades of the most typical UK, German, French and American universities, and asked respondents to indicate their position accordingly, allowing for the option to state their position on the grade of their country if they could not relate to the suggested categories. For purposes of comparison, in our analysis we classified data into three general categories of position: senior, middle, and lower. 'Senior' includes all senior professors such as the UK and American Professors, the Ord. Professor in Germany and the French Professeur. 'Middle' includes the UK Senior Lecturer, Principal Lecturer, Reader, and Senior Research Fellow, the American Associate Professor and the German Privatdozent. 'Lower' includes the UK Lecturer, Research Assistant, and Research Fellow, the American

Assistant Professor, the French Maitre de Conference, the German Wissenschaftliche Assistent.

This grouping of data does not imply correspondence among the grades of different countries; it provides, however, a way of looking at the distribution of IS academics according to locally meaningful scales of seniority. Our data suggest significant variations in the distribution of IS academics over the seniority ladder. This may indicate that there are indeed different career paths in different regions. It may, for example, take a shorter period for a German academic to climb up to a senior position in comparison to a Scandinavian or a British academic. However, another interpretation could be that there are different incentives for academics in the lower or middle positions in different regions to be internationally oriented, if their promotion criteria are restricted to locally meaningful contributions, such as teaching and involvement in local policy, research, and industrial activities. To the extent that this is the case, our data are probably skewed towards those possessing more senior grades, who can overcome the practical career pressures and adopt a more international orientation.

Involvement in mechanisms that determine academic reputation in the IS field

Another aspect of the institutional status of IS in Europe is the extent to which the academics of this region are involved in the professional bodies which determine the policies and shape the content and the cognitive output of the field. We used two indicators to that end: membership in professional societies; and participation in editorial boards of journals and the organisation committees of conferences (Tables 6, 7, 8). These indicators reflect the effort put by the IS academics of the region into such institutional bodies, in particular the share of effort between local and international societies, journals, and conferences.

In most regions involvement in national professional societies is higher than in international ones (Table 6). No overwhelming bias towards engineering or management oriented societies is noticed. However, IFIP working group membership provides some indication of special interests. WG 8.2 has the highest participation in most regions (Table 7).

Membership requirements differ among societies and among IFIP working groups in particular, and therefore the membership percentages cannot be used to compare

biases of interest in the work of the society or the group. For example, figures from a region showing higher percentage of membership in IEEE than IFIP 8.2 should not be interpreted as more IS academics in this region specialising in the type of engineering orientated work IEEE fosters, than organisation oriented research mostly presented in the IFIP 8.2 conferences. They may, however, indicate differences among regions. It is very likely that differences of membership in IEEE, IFIP WG 8.2 for organisational implications of IT, and IFIP TC 9 for social implications of computers between Germanic and Scandinavian countries, reflect a difference of research orientation between the academic IS communities of these two regions.

In most countries there is more involvement in editorial boards of international journals and conference programme committees than in local ones. Also an IS academic is more likely to be involved in conference programme committees (either international or local) than in journal editorial boards (Table 8).

Funding

Most IS academics receive some form of funding for their research, although from our data we cannot say what proportion of individuals' research is done by funded projects (Table 9). A fair number of academics (13.7%) ticked 'no funding', as well as several categories of funding, indicating that part of their research is not funded. In most regions, the most frequent source of funding is the university and the national government, followed by industry and consultancy, and lastly by European Union sources.

Cognitive aspects

There is no straightforward way to determine the knowledge produced in the IS field. The lack of clear definition of IS as a cognitive field has been the subject of a great deal of concern and debate (Adam & Fitzgerald, 1996; Banville & Landry, 1992; Keen, 1991; King, 1993). Our search for the cognitive characteristics of the IS field examined its themes and research approaches.

Themes

The most common way of identifying the knowledge produced by IS researchers is in terms of the themes researched and taught. Nevertheless, referring to themes studied by individual IS researchers is neither unambiguous, nor adequate for understanding the knowledge areas included in the IS field in Europe.

The first difficulty is the compilation of a comprehensive list of themes. There is prior research on IS themes. For example, Swanson and Ramiller (Swanson & Ramiller, 1993) produced a list of IS research thematics by examining the submissions to the *Information Systems Research* journal during the first 5 years of its publication, 1987-1992. The list that resulted from that research, though, could be of little use to our research because it was biased by the editorial policy of the journal, and limited to a particular period of time in the past. Moreover, the intention of our research was to discover the range of themes studied in Europe, and to detect cognitive orientation and characteristics, rather than to test whether IS research fits in some particular norms. Thus, we included in the questionnaire a list of the most common IS subjects across a spectrum ranging from technologies through management to policy, and invited respondents to indicate additional themes that were not listed.

Regarding teaching, our questionnaire listed a broad range of subjects and asked respondents to indicate those subjects they have taught in the last three years. Table 10 shows the teaching of the various subjects, grouped in the following categories: technologies, systems development process, applications, IS management, and ethics, impact and policy.

Technologies includes computer and programming concepts, software and hardware architectures, databases, networks and distributed processing, internet, telecommunications, and neural networks. *Systems development* includes software engineering, information systems development methods, and HCI. *Applications* includes decision support systems and executive information systems, IKBS and expert systems, computer graphics, simulation, and accounting systems. *IS Management* includes management of information systems, systems quality and management, logistics of IS/IT, and IS security. *Impact, ethics and policy* includes IS professionalism and ethics, socio-economic impact of IT, and IT policy.

Regarding research, we asked respondents to indicate on a list of topics whether they had done research on a topic in the past five years, whether they were currently doing

research, or whether they intended to carry out research on the topic in the future; respondents were given the opportunity to specify their research field if not listed. Table 11 classifies in broad areas of research the themes that were suggested on the questionnaire and those added by respondents as follows: *Technologies* includes databases, software development, web/internet technology, and intranet; *applications* includes computer and network applications, decision support systems, and executive information systems, IKBS, geographic information systems; *systems development* includes IS development methods, the nature of the IS development process, cultural differences among IS professionals; *IS management* includes management of information systems, alignment of IS with business strategy, and IS security; *organisational change* includes BPR, IS and organisational change, organisational implications of IT; *impact of IT and ethic*s includes impact on individuals, societal effects of IT, economic effects of IT, ethical aspects, globalisation effects of IT. Table 11 shows percentages of those who have been doing research in each area, or who are planning to do such research in the future.

There are several areas of teaching and research which don't fit easily within the conventional major areas of information systems of technologies, applications, systems development process, IS management, and impact of IT. Table 12 shows teaching and research on the relatively new subjects of inter-organisational information systems and computer supported collaborative work (CSCW), and table 13 on the theoretical foundations of information systems, which includes conceptual foundations of IS, theories relevant for the study of IS, and research methods.

The survey confirms the large thematic diversity of the IS field in Europe. Aggregately within Europe teaching is spread uniformly across the technologies and management spectrum, with less emphasis on aspects of impact, ethics and policy. Research effort, however, tends to be made more on management and organisational themes, than on technology themes, and less on the impact and theoretical foundations of information systems.

Individual academics do teaching and research across the spectrum of subject areas, although the degree of mixing subjects in teaching and research varies significantly from region to region. In the German speaking region 41.3% of academics teach subjects in all three areas of technologies, systems development and IS management.

In the English speaking region there tends to be more specialisation, with 25.3% teaching of subjects in all three areas of technologies, systems development and IS management, although 45.5% teach subjects in both systems development and IS management. The Scandinavian countries have the highest degree of specialisation, with only 15.5% teaching of subjects in all three areas of technologies, systems development and IS management, and 25% teaching of subjects in both Systems development and IS management.

There are differences of emphasis to different areas of teaching and research among country regions. Teaching and research of the technology part of the subjects spectrum is significantly higher in the German speaking regions than in the English speaking region. Similarly, in the German speaking region much more effort is directed into the relatively new subjects of inter-organisational and group information systems than in the English speaking region. In contrast, the English speaking region devotes considerably more effort in subjects studying social, and human implications of IT.

Research focus

The names of themes alone are not an accurate indicator of the knowledge studied in the European IS field. The study of each of the IS themes can be approached from very different angles, resulting in different kinds of knowledge. We can assume with some certainty that the themes of databases, software development, and network applications are concerned with the development of technology applications or with advancing theory and good practice for the development of technology applications. Themes such as alignment of IS with business strategy or IS and organisational change are most likely concerned with management rather than engineering questions. However, themes such as decision support systems, knowledge based systems, IS security could have either engineering or management orientation. Electronic commerce can be studied in terms of technologies required, new business challenges, management issues, emerging new organisational forms, or social and macro-economic implications. Some themes apparently of an engineering orientation, such as IS development methods may be researched from a management rather than an engineering perspective, and vice versa.

In order to shed light on such facets of the nature of the field we asked respondents to locate their most frequent mode of research along three scales: the focus of analysis, ranging from the individual to the world economy or society; their perspective along the spectrum of the management / engineering, and along the spectrum of the human / technology.

The survey confirms that the field of IS focuses mostly onto the level of the organisation, rather than the individual or broad society. However, the results in table 14 merit some more careful attention. First, IS research has multiple focal units. Although the organisation, sub-organisation, and clusters of organisations is the most frequent level of focus, considerable amount of research concerns the 'individual', and the 'industry'. Individual researchers focus their studies at more than one levels. This implies links with varying disciplines of science, and varying methodological allegiances. Second, there is significantly less research of a broad national and global economic or social orientation. IS research in Europe is only marginally addressing issues concerning the macro-economy and society.

Overall, IS appears to address more issues concerning organisations and management than issues of engineering of technology. However, there are significant differences here among country regions. Table 15 confirms the biases of effort discernible by the categorisations of research themes on table 11: IS research in the German speaking region involves much more effort for the engineering of technologies than in the English speaking region. Issues of systems development method are more prominent in IS research in the Scandinavian countries than in other regions.

However, the study of the processes of the development of technology-based systems can be concerned either with technology or human behavioural aspects. Table 16 suggests that there is a significant difference of perspective between the Scandinavian and the German speaking regions.

Indeed, the sharpest differences between regions are manifested in relation to research orientation towards human or technology issues. Again the biggest gap is between the German speaking and the English speaking and Scandinavian regions. Table 16 confirms the claim of German IS academics that German IS research is mostly concerned with providing 'companies with the most modern functions and processes by using information systems as an enabler and by canning the best management

procedures into the application software packages' and much less with behavioural aspects concerning the development and use of information systems (Mertens, 1997).

Research methods

The sketching of the research profile of an academic field requires identification of its research method: the systematic ways of inquiry through which it seeks to develop trust-worthy knowledge. Our survey confirms the impression that IS research in Europe is methodologically pluralistic. Table 17 shows the frequencies of use of the most typical research methods used in the IS field. The first number in each cell corresponds to 'sometimes', the second number corresponds to 'often', and the third number to 'always' in relation to using the indicated method.

Generally in Europe qualitative methods, namely case study, action research, and secondary qualitative data analysis are more prevalent than the empirical methods of surveys, secondary quantitative data analysis, and experiments. Moreover, a great deal of research is done by methods that are not given attention at the methodological debates of the field. 35% of researchers in German speaking countries often do technology development and testing, and 11% do so 'always'; 16% often do theory proof, 41% 'often', and 15% 'always' do model building.

Although a high percentage of respondents indicated that they use 'common sense' in their research, only one from the 360 respondents uses common sense and no research method. Therefore the figures on 'common sense' on table 17 mean that researchers complement their formal research method with common sense, rather than using no formal method.

Publications

We also examined what IS academics publish and how much; what journals they read, and what types of publication they consider important for their career.

Of particular significance to our study is the question of language and the distinction between international and local exposure. Thus, in our questionnaire we asked respondents to indicate separately their publications by international publishers or conference proceedings in English, and their publications in their local language by international or local publishers and conferences.

On tables 18, 19, 20, 21 the numbers show the frequencies of each type of publication in the last 5 years. The most frequent type of publication is papers in refereed conferences: 31.2% have more than 5 such papers. The second most frequent type of publication is papers in refereed journals. It is perhaps more surprising that 24% have authored at least one book in English by international publisher, and 39% have authored at least one book in their local language.

In some regions the 'book culture' is stronger than others: in the German speaking countries 21% have authored at least one book in English, and 76% in German. In Scandinavian countries, 21% at least one book in English, and 41% in local language. Yet, refereed journal papers are the highest valued type of publication in all regions (table 22).

Electronic publishing is still insignificant, and alternative means of ideas dissemination, such as articles in magazines and television or radio interviews are employed only modestly.

Value of journals

We asked respondents to judge the value of international journals. We listed 41 journals and encouraged respondents to add any other IS journals they find of high value for their research. The most surprising finding is the high number of respondents who ticked 'don't know' to even the most prestigious international journals of the field. Tables 23, 24, 25, 26 show only journals that are known by more than 50% of respondents.

Here too there are significant country differences. In the English speaking region, 7 more journals, in comparison to Europe's aggregate data, are known by more than 50% of respondents, 5 of which have chief editors in British Universities.

A much shorter list of journals results from the responses in the German speaking region. The most interesting variation is that the Information Systems Research journal is not much known in this region; 57% responded either that they don't know it, or they don't know its value. Also, less known are the MIS Quarterly, Harvard Business Review, and Sloan Management Review, while better known and more valued are the ACM and IBM journals.

It is perhaps a good indication of the degree of differentiation of the IS community from the 'international' IS field that 23% of respondents ticked 'don't know' about the value of MIS Quarterly (31% in the German speaking region), and 44% ticked 'don't know' for ISR.

Perceived strengths, weaknesses, opportunities, threats and mission.

The survey included questions on people's views about the state of the field (tables 27, 28, 29, 30). A high number of respondents from all regions consider the interdisciplinary nature of IS to be a strength, nevertheless many are concerned that the field lacks theory and is fragmented. Again, differences of opinion emerge in different regions: 60% of respondents from the German speaking countries, view the concern of the IS field with modern technology as a major strength, while only 22.2% from the English speaking region do so. Respondents from the UK and Ireland attach more positive significance to the role of the field in meeting business challenges.

Marginalisation of IS within academia is widely considered to be a threat in the UK, while in most countries there is concern that the field may be absorbed by more established disciplines. Difficulty in obtaining funds appears to be perceived as the major threat in the German speaking region and to a lesser, nevertheless significant, degree in the English speaking and the Scandinavian cluster of countries.

The table showing perceptions of opportunities suggests clearly that European academics see their field primarily as making an impact on industry (table 30). This is compatible with the responses to the question about primary beneficiaries of IS studies (table 31). In all regions the primary mission perceived is to provide knowledge to managers and IT professionals. Clearly IS is seen as a field with a mission to inform practice.

Discussion

Our survey suggests that in Europe IS academics are dispersed mostly in small units with various names, hosted in a great variety of disciplines across the science / social science spectrum; they study a large range of themes from developing technologies *per se* to the social impact of new technologies; they adopt a variety of perspectives

and research approaches from both the positivist and interpretative epistemological traditions. Two features of the emerging picture of the IS field need further discussion at this point: its institutional dispersion and the significance of country differences.

Institutional dispersion

The dispersion of the field in small units of different faculties makes it institutionally very weak. This has implications for the visibility of the field and the knowledge it produces, and consequently the availability of resources. For example, in the UK IS units decide opportunistically under which discipline they wish to be judged at the government's Research Assessment Exercise which determines the research reputation and consequently the research funding of universities every four years. Given the cognitive diversity of the field, any decision entails the risk that part of the units' research output will be judged by totally inappropriate assessors.

Very frequently we meet academics of other fields who don't know the existence of the IS field, or who understand it as synonymous with computer science. The implications of such confusion are serious when these are people of power, such as university chancellors, or European Union Research Programme officials. For example, at an informal conversation following a panel session on European Union research funding in ECIS'97, the panellist who had presented the European Union's R & D policy and procedures whispered his ignorance: 'but who are you? I did not know, until I was invited to come here, that there is a field of Information Systems'.

The visibility and power of the field varies from country to country significantly. The survey suggests that the field is quite strong in Germany, and the Netherlands, somewhat less strong in Scandinavian countries, much less in the UK and Ireland, and is very marginal within academia in France, the South European and the East European countries.

The European IS is also weak within the international IS field. Although our survey suggests considerable involvement in international societies, journals, and conferences, it is common knowledge that few Europeans have been in positions of power there. For example, only one of the seven senior editorial members of the MISQ at the time of the survey was European.

We believe the weak institutional position of the field requires remedying efforts both within individual countries – at least where there are significant numbers of IS specialists – and at a pan-European level. Many IS academics feel that the institutional status of the field is not an important issue. They rightly argue that the IS field exists so long as there are relevant objects of inquiry. These may be transitory (King, 1993), and IS research may become gradually irrelevant or be redirected towards other objects of inquiry (Lytinnen, 1996). Moreover, some feel that it is unnecessary, and perhaps risky, to abandon or weaken allegiances with the host disciplines, such as management and computer science. The problem however is that while IS constitutes the main academic identity of a large number of academics, the weak institutional position of the field implies uncertainty, losses of resources, and often poor work conditions in conflictual and non-appreciative environments. Raising the profile and recognition of the field can improve the conditions for IS research and teaching significantly. The ECIS has been useful to that end. Similarly, the AIS could be an effective institution if there were higher membership from Europe.

The significance of country differences

Our survey sought to explore to what extent, and in what ways IS research varies in different countries. We found consistent differences of thematic specialisation, whereby certain countries do more research in certain themes than others. There are also biases of research perspective. A research perspective involves not only a particular choice of themes - such as electronic commerce – but also what questions about a theme are worth while studying – e.g. the technical and managerial facilitation of the spread of electronic commerce applications, the investigation of the implications of electronic commerce for the business organisation, or the study of the changes implied by the development of electronic commerce to individuals, social or economic systems.

Such different research perspectives reflect research missions which are meaningful within the historical context of the society the researcher is embedded into. This is plainly explained by Mertens, stating his confidence in the mission of the IS field in Germany to contribute to the country's economic growth by supplying the business organisation with sophisticated technologies (Mertens, 1997). It is this ideological position that makes his claim that 'the German WI is closer to Business

Administration than the American IS' and his judgment that finding out 'the underlying mechanism of success and failure of information systems in companies' is a research area of minor importance are perfectly compatible and meaningful.

Similarly, the research orientation of Scandinavian countries confirms their tendency towards human focused study of information systems development, that since the 1970's has been related to the strong concerns of industrial democracy in that part of the world (tables 15, 16)

Country differences of research orientation have been largely ignored in the debates about the state of the field. There is a tendency in the IS field to consider thematic diversity and methodological pluralism as signs of amateurism and cognitive immaturity. Many believe that initiatives need to be taken to articulate the core of the field (Benbasat & Weber, 1996), to model or consolidate its conceptual basis (Checkland & Holwell, 1998; Falkenberg, Hesse, & Olive, 1995).

Interventions to rationalise the diversity of cognitive aspects of the field would at best be futile and probably destructive, if indeed as suggested by our analysis diversity results from responsiveness to the socio-economic and cognitive traditions of its context. As in many other areas the challenge for Europeans is to build on their diversity creatively, rather than to suppress it with mechanisms of rationalisation and control.

Conclusions

In this research we set out to explore the institutional and cognitive features of IS in Europe: to describe and make sense of a complex collective effort to understand, develop and exploit the immense potential of IT in a region renown for its cultural and socio-economic diversity. In working out the questionnaire for this survey we realised that the task was more demanding than positioning IS expertise in relation to management or engineering, as our preliminary study had suggested. Not only IS research in Europe addresses a very broad range of topics beyond engineering and management, the same topics are addressed from different perspectives, exploring different facets of the evolving complex phenomena associated with IT use.

From those who responded to this survey the European IS academic community appears to be widely involved in the international IS academic community. At a first

glance European IS academics combine the local requirements of their career with the requirements of international IS institutions: they participate in both local and international institutions, and they publish in both local and international journals and conferences. However, the country differences emerging from this survey suggest that the local orientation is present in a more substantial way than institutional involvement. It takes the form of prevalent research perspectives that can only be explained in relation to the local socio-economic conditions that gives rise and sustains them.

This is an issue which is hardly addressed by the IS community. While reflexive about its epistemological merits and institutional effectiveness, it has dismissed its cognitive diversity as a weakness which, at best, should be tolerated. The diversity of the IS field found among European countries suggests the need for further research to understand the way different IS research agendas and perspectives emerge under different socio-economic contexts. It seems only appropriate for a field debating the situated and emergent nature of information systems and organisational change to study its own relationship to social context.

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	IS and IS & other discipline	Informatics	Science/ Engineering	Managemen t/ Social Sc	Other
UK, Ireland	53.4%	3%	15.1%	21.2%	7.3%
Scandinavia	57.7%	20.5%	12%	9.6%	.2%
Ger., Aust., Swi.	61.7%	8.8%	7.6%	12.7%	9.2%
Benelux	59.4%	0%	10.8%	21.6%	8.2%
Total Europe	54.3%	10.2%	11.3%	15.6%	8.6%

Table 3. Focus of study suggested by the names of institutional units where IS academics work

	Undergraduate		Post-graduate		Other IS teaching		
	IS degree	IS comp in other degree	IS degree	IS comp in other degree	Short courses	Executive program.	Students from other departm.
UK, Ireland	33.3%	59.6%	50.5%	60.6%	30.3%	27.3%	43.4%
Scandinavia	54.2%	57.8%	59.0%	48.2%	43.4%	20.5%	36.8%
Ger., Aust., Swi.	34.2%	70.9%	40.5%	73.4%	21.5	11.4%	48.1%
Benelux	32.4%	67.6%	29.7%	64.9%	43.2%	40.5%	54.1%
Total Europe	39.2%	61.6%	48.4%	59.9%	33.6%	23.7%	43.0%

Table 4 Teaching of degrees (%)

	Lower grades	Middle grades	Senior grades
UK, Ireland	29.6%	40.8%	29.6%
Scandinavia	30.9%	43.2%	25.9%
Ger., Aust., Swi.	22.4%	6.6%	71.0%
Benelux	42.8%	28.6%	28.6%
Total Europe	31.5%	28.1%	40.4%

Table 5. Career status of IS academics (%)

	National IS	National Com. Soc.	AIS	IEEE	ACM	INFORMS
UK, Ireland	46.5%	41.4%	32.3%	17.2%	20.2%	8.1%
Scandinavia	30.1%	25.3%	31.3%	18.1%	30.1%	8.4%
Ger., Aust., Swi.	53.8%	60.0%	21.3%	25.0%	36.3%	6.3%
Benelux	43.2%	29.7%	16.2%	16.2%	29.7%	18.9%
Total Europe	43.4%	38.1%	29.2%	19.0%	28.2%	8.6%

Table 6. Membership in professional societies

	IFIP TC 8	IFIP WG 8.2	IFIP TC 9
UK, Ireland	12.1%	12.1%	4.0%
Scandinavia	27.7%	14.4%	7.2%
Ger., Aust., Swi.	10%	2.5%	3.7%
Benelux	18.9%	8.1%	-
Total Europe	15.5%	8.6%	3.8%

Table 7. The most frequent IFIP membership

	Local journals	International journals	Local conferences	International conferences
UK, Ireland	26.7%	40.2%	34.1%	52.2%
Scandinavia	1.4%	35.5%	32.1%	62.5%
Ger., Aust., Swi.	37.8%	48.6%	64.9%	70.3%
Benelux	34.4%	19.4%	41.9%	53.1%
Total Europe	27.0%	37.0%	46.2%	61.4%

Table 8. Involvement in journal editorial boards, and conference programme committees (% of those being involved in at least one journal and those involved in at least one conference per year)

	University	National Government	Industry	Consultancy	EU Research Funding	No funding
UK, Ireland	47.5%	54.5%	39.4%	42.5%	27.3%	13.1%
Scandinavia	65.3%	69.9%	43.4%	28.9%	21.7%	1.2%
Ger., Aust., Swi.	50.0%	67.5%	63.8%	46.3%	35.0%	2.5%
Benelux	64.9%	45.9%	59.5%	45.9%	21.6%	11%
Total Europe	**55.8%**	**60.6%**	**49.6%**	**39.9%**	**30.3%**	**5.9%**

Table 9. Funding sources for IS research (% of academics getting funds from each source)

	Technologies	Applications	Systems Dev.	IS Management	Impact, ethics and policy
UK, Ireland	40.4%	40.4%	58.6%	66.7%	41.4%
Scandinavia	47.0%	30.1%	62.7	42.2%	30.1%
Ger., Aust., Swi.	73.8%	48.8%	65.0%	62.5%	22.5%
Benelux	48.6%	40.5%	56.8%	54.1%	37.8%
Total Europe	**53.1%**	**41.6%**	**62.5%**	**57.1%**	**30.0%**

Table 10. Teaching of IS subjects

	Technologies	Applications	Systems development	IS management	Organisational change	Impact and ethics
UK, Ireland	29.3%	40.4%	58.6%	51.5%	68.7%	38.4%
Scandinavia	33.7%	30.1%	62.7%	41.0%	65.1%	31.3%
Ger., Aust., Swi.	63.8%	48.8%	65%	58.8%	66.3%	31.3%
Benelux	32.4%	40.5%	56.8%	37.8%	64.9%	40.5%
Total Europe	**39.9%**	**41.6%**	**62.5%**	**50.9%**	**66.0%**	**35.1%**

Table 11. Themes of research (%)

	Teaching	Research

	Inter-organisational systems	CSCW	Inter-organisational systems	CSCW
UK, Ireland	32.3%	15.2%	27.3%	21.2%
Scandinavia	38.6%	21.7%	26.5%	27.7%
Ger., Aust., Swi.	50.0%	27.5%	41.2%	45.0%
Benelux	37.8%	21.6%	29.7%	21.6%
Total Europe	**41.0%**	**19.6%**	**30.6%**	**27.6**

Table 12. Teaching and research of Inter-organisational IS and CSCW (%)

(Inter-organisational systems includes electronic commerce)

	Teaching of Theoretical foundations	Research on theoretical foundations
UK, Ireland	50.5%	38.6%
Scandinavia	65.1%	40.8%
Ger., Aust., Swi.	57.5%	26.1%
Benelux	64.9%	42.4%
Total Europe	**60.1%**	**34.5%**

Table 13. Teaching and research on theoretical foundations of IS (%)

	Individual	Group	Process	Organisation	Cluster of organis.	Industry	National society	World society
UK, Ireland	33.3%	45.5%	40.4%	79.8%	27.3%	19.2%	14.1%	11.1%
Scandinavia	34.9%	56.6%	59.0%	67.5%	26.5%	14.5%	7.2%	6.0%
Ger., Aust., Swi.	28.8%	43.8%	57.5%	57.5%	40.0%	27.5%	12.5%	8.8%
Benelux	37.8%	37.8%	32.4%	54.1%	35.1%	21.6%	16.2%	5.4%
Total Europe	**33.0%**	**48.3 %**	**47.2%**	**68.4%**	**29.2%**	**20.1%**	**12.3%**	**7.5%**

Table 14. Level of research focus along the individual – society spectrum.

	Organisational issues	Management issues	Organisational aspects of IS development and use	Systems development	Technology innovation
UK, Ireland	49.5%	60.6%	46.5%	37.4%	23.2%
Scandinavia	39.3%	45.8%	42.2%	61.4%	31.3%
Ger., Aust., Swi.	48.8%	46.3%	42.5%	56.3%	42.5%
Benelux	54.1%	54.1%	35.1%	35.1%	16.2%
Total Europe	**46.9%**	**51.2%**	**44.2**	**49.9**	**26.8%**

Table 15. Focus of research along the management – engineering spectrum

	Human or social issues	Predominantly human or social issues	Balanced focus	Predominantly technology	Purely technology
UK, Ireland	28.3%	49.5%	33.3%	18.2%	13.1%
Scandinavia	19.3%	37.3%	45.8%	13.3%	13.3%
Ger., Aust., Swi.	3.8%	20.0%	27.5%	25.0%	31.3%
Benelux	16.2%	21.6%	48.6%	21.6%	16.2%
Total Europe	**18.2%**	**34.6%**	**35.1%**	**19%**	**18.5%**

Table 16. Focus of research along the Human – Technology spectrum

	UK, Ireland	Scandinavia	Ger., Aust., Swi.	Benelux	Europe
Laboratory experiment	15 7 1	19 10 -	30 16 1	24 30 -	**21 13 1**
Simulation	15 10 1	18 10 -	41 13 -	19 19 8	**24 13 1**
Technology development & testing	16 14 3	16 13 6	22 35 13	30 16 8	**21 20 6**
Question. survey	53 23 2	39 25 1	49 18 1	32 32 3	**44 25 2**
Secondary data: quantitative	21 21 2	27 19 -	39 15 -	27 16 -	**28 18 5**
Secondary data: qualitative	23 31 7	25 29 2	35 15 1	24 16 -	**27 24 3**
Theorem proof	5 3 -	8 4 1	14 16 3	8 5 3	**9 8 1**
Model building	20 22 6	24 25 6	28 41 15	16 35 11	**23 31 9**
Case study	19 47 11	22 49 8	44 31 1	24 41 11	**27 45 7**
Action research	37 18 5	19 24 6	10 19 3	22 11 8	**23 19 5**
Ethno-graphy	21 9 2	16 1 7	- 1 -	14 3 -	**12 5 1**
Polemic	14 4 2	15 2 1	9 1 -	- - -	**12 2 1**
Common sense	13 11 26	21 10 12	21 15 10	19 14 8	**17 13 16**

Table 17. Research method (%) The first number in each cell corresponds to ‘sometimes’, the second number to ‘often’, and the third number to ‘always’ in relation to using the method of the correspondent row.

	Authored books		Edited books and conference proceedings	
	In English, international publisher	In local language, intern. or national publisher	In English, international publisher	In local language, intern. or national publisher
UK, Ireland	36 6 1	5 2 -	36 12 3	9 3 -
Scandinavia	18 1 2	30 6 5	35 10 4	12 12 5
Ger., Aust., Swi.	20 1 -	58 13 5	26 10 6	40 16 6
Benelux	19 3 -	14 3 -	16 14 14	32 3 3
Total Europe	**22 2 1**	**28 9 3**	**29 12 5**	**21 10 4**

Table 18. Publication of books (%) The first figure shows frequencies of 1-2 publications, the second 3-5 publications, and the third more than 5 publications in the last five years

	International academic journals	National academic journals	International professional journals	National professional journals	Electronic journals
UK, Ireland	25 52	23 22	12 2	9 9	8 -
Scandinavia	28 42	10 8	4 5	8 8	- -
Ger., Aust., Swi.	28 41	18 50	10 5	13 23	9 -
Benelux	27 37	19 22	5 5	16 16	3 -
Total Europe	**25 40**	**18 27**	**10 4**	**11 15**	**4 -**

Table 19. Publications in refereed journals (%) The first figure shows frequencies of 1-2 publications, the second more than 3 publications in the last five years.

	Chapters in books		Papers in conference proceedings	
	In English, international publisher	In local language, national or international publisher	In English, international conference	In local language, national or international conference
UK, Ireland	30 25	1 1	25 60	17 10
Scandinavia	39 8	5 10	16 61	17 14
Ger., Aust., Swi.	14 23	21 28	19 54	29 44
Benelux	16 16	8 11	24 51	11 22
Total Europe	**25 17**	**8 12**	**21 55**	**21 24**

Table 20. Book chapters and papers in conference proceedings (%) The first figure shows frequencies of 1-2 publications, the second more than 3 publications in the last five years.

	Articles in newspapers and magazines		Television	Radio
	International	National		
UK, Ireland	10 10	13 8	4 5	11 5
Scandinavia	4 -	18 19	4 1	11 1
Ger., Aust., Swi.	5 6	14 24	14 2	13 7
Benelux	3 5	16 22	14 3	11 5
Total Europe	**6 6**	**16 18**	**7 4**	**12 4**

Table 21. Articles in newspapers and magazines, and broadcasting (%). The first figure shows frequencies of 1-2 publications, the second more than 3 publications in the last five years.

	Books by internat. publishers	Books by local publishers	Refereed internat. journals	Refereed national journals	Internat. conferences	Local conferences	Journals for practitioners
UK, Ireland	82	53	98	78	78	24	30
Scandinavia	82	44	96	37	89	18	25
Ger., Aust., Swi.	77	69	90	83	85	49	24
Benelux	67	33	97	42	88	33	31
Total Europe	**81**	**55**	**95**	**64**	**83**	**31**	**27**

Table 22. Types of publications (% significant or very significant)

	Don't know	No value	Low value	High value
ACM Computing Surveys	43	9	24	24
ACM Transactions of Inf. Systems	36	5	27	32
Communications of the ACM	18	2	20	60
Data Base	47	18	23	12
Decision Support Systems	44	15	21	20
European Journal of IS	39	4	17	40
Harvard Business Review	27	7	23	43
IBM Systems Journal	36	14	35	15
Information and Management	35	5	25	35
Information Systems	38	6	23	33
Information Systems Research	44	5	15	36
Journal of the ACM	45	13	25	17
Journal of Information Systems	44	6	19	31
Management Science	41	10	23	26
MIS Quarterly	23	2	19	56
Sloan Management Review	41	6	17	35

Table 23. Judgement of the value of journals in Europe (%)

	Don't know	No value	Low value	High value
Accounting, Management and IT	38	14	22	26
ACM Computing Surveys	41	15	24	20
ACM Transactions of Inf. Systems	38	8	30	24
Communications of the ACM	17	4	25	54
Computer journal	36	22	33	9
Data Base	48	25	22	5
Decision Support Systems	49	15	25	11
European Journal of IS	26	2	11	61
Harvard Business Review	15	6	26	53
IBM Systems Journal	39	20	28	13
Information and Management	29	3	33	35
Information Systems	40	9	15	36
Information Systems Research	34	4	20	42
Information Technology and People	47	6	18	29
Interfaces	46	11	30	13
International Journal of Inf. Mgt	40	8	26	26
Journal of the ACM	42	18	23	17
Journal of Information Systems	27	5	19	49
Journal of Information Technology	27	5	23	45
Journal of Management IS	49	10	18	23
Journal of Strategic Inf. Systems	33	5	23	39
Management Science	36	12	30	22
MIS Quarterly	18	2	22	58
Sloan Management Review	28	8	21	43

Table 24. Judgement of the value of journals in English speaking countries (%)

	Don't know	No value	Low value	High value
ACM Computing Surveys	38	4	27	31
ACM SIGOIS Bulletin	49	10	25	16
ACM Transactions of Inf. Systems	23	2	27	38
Communications of the ACM	11	1	20	68
Computer Journal	49	11	32	8
Decision Support Systems	38	14	20	27
Harvard Business Review	31	10	23	36
IBM Systems Journal	30	15	43	12
Information and Management	41	7	25	27
Information Systems	34	4	27	35
Journal of the ACM	36	7	34	22
Management Science	40	9	20	31
MIS Quarterly	31	3	25	41
Sloan Management Review	49	4	22	25

Table 25. Judgement of the value of journals in German speaking countries (%)

	Don't know	No value	Low value	High value
Accounting Management and IT	47	16	17	20
ACM Computing Surveys	37	12	28	23
ACM Transactions of Inf. Systems	29	8	34	29
Communications of the ACM	15	2	17	66
Data Base	36	24	24	16
Decision Support Systems	43	24	19	14
European Journal of IS	35	1	24	40
Harvard Business Review	30	7	27	36
IBM Systems Journal	29	18	36	17
Information and Management	34	5	27	35
Information Systems	34	10	32	24
Information Systems Research	37	5	15	43
Information Technology and People	46	5	25	24
Intern. Journ. of Human-Comp. St	48	14	22	16
Journal of the ACM	46	19	20	15
Journal of Information Systems	42	9	19	30
Journal of Management IS	48	8	13	31
Management Science	40	10	24	26
MIS Quarterly	21	2	17	60
Scandinavian Journal of IS	31	5	25	39
Sloan Management Review	40	10	17	33

Table 26. Judgement of the value of journals in Scandinavian countries (%)

Strengths	UK, Ireland	Scandinav	Ger., Aust., Swi.	Benelux	Total Europe
IS's concern with modern techn.	22.2	39.8	60	40.5	41.3
Inter-disciplinary character	58.6	53.1	45.1	48.6	51.5
Prov. of useful knowl. for manag.	37.3	27.7	31.4	16.2	31.5
Meeting business challenges	65.6	26.5	52.6	45.9	41.5
Applied and practically useful	36.4	44.6	45.1	32.4	38.3
Influence on government policy	6.1	7.2	6.3	10.8	7.6
Intellectually challenging	26.3	36.1	25.1	29.7	28.5
Crit. voice for the use of techn.	30.3	26.5	6.3	16.2	22.3

Table 27. Opinions on the strengths of the field of information systems (%)

Weaknesses	UK, Ireland	Scandinav	Ger., Aust., Swi.	Benelux	Total Europe
Unclear subject of study	33	27.7	20	32.4	28.7
Lack of funding	28.2	24.1	40.1	40.5	29.2
Too mush bias on technology	25.5	26.5	21.3	32.4	24.9
Too much bias on hum. and soc. aspects	4	9.6	5.1	2.7	5.9
Research agenda too broad	9.1	20.5	30.1	13.5	17.1
Too fragmented research field	24.2	48.1	38.8	51.4	38.6
Lack of theory	32.3	38.9	41.3	21.6	33.5
Fails to build a cum. research tradition	19.1	26.5	23.8	32.4	23.5
Lack of methodological rigour	28.2	18.1	30.1	24.3	22.7
Lack of recognition within academia	37.4	22.9	11.3	10.8	24.8
Lack of recognition by industry	20.1	19.9	13.8	10.8	15.5
No influence on national or EU policy	19.2	13.2	12.5	8.1	14.5

Table 28. Opinions on the weaknesses of the field of IS (%)

Threats	UK, Ireland	Scandin.	Ger., Aust., Swi.	Benelux	Total Europe
Diminishing demand for systems development professional skills	2	13.3	15	8.1	14.2
Absorption by related better established disciplines	43.4	49.4	36.3	54.1	46.1
Marginalisation within academia	65.6	45.7	32.5	59.5	52
Difficulty in obtaining funds	55.6	44.5	52.5	21.6	32.7
Loss of intellectual credibility	44.4	38.5	31.3	48.6	41.5

Table 29. Opinions on the threats of the field of IS (%)

Opportunities	UK, Ireland	Scandin.	Ger., Aust., Swi.	Benelux	Total Europe
To make an impact on industry	62.6	73.5	76.3	67.6	71.3
To make an impact on policy	37.5	20.5	27.5	56.8	35.6
To make an impact on society	47.4	54.2	46.3	45.9	48.8
To become a discipline in its own right	48.5	43.3	50	37.8	47.8
To develop an intellectual foundation for a new phenomenon	42.4	59	45.1	40.5	48.2

Table 30. Opinions on the opportunities of the field of IS (%)

	Managers	End users	IT professionals	People in general	Policy makers
UK, Ireland	58.2	23.5	44.9	5.3	22.7
Scandinavia	43.9	34.1	66.3	6.2	9.9
Ger., Aust., Swi.	62.0	29.1	53.8	3.9	14.1
Benelux	56.8	25	41.7	36.1	27.0
Total Europe	**54.5**	**27.8**	**53**	**5.3**	**17.8**

Table 31. Perception of field's primary beneficiaries (%)