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The Status of Information Systems Research in Australia: Preliminary Results

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Abstract

As the first stage of a study to investigate the status of Information Systems research in Australia, a survey of the heads of all IS discipline groups in Australian universities was conducted. The study revealed a wide range of topics researched (with rapid growth in Electronic Commerce and Knowledge Management), a range of foci, a balance between positivist and interpretivist research, survey was the most frequently used research method, and most research was directed at informing IS professionals. A SWOT analysis provided some further interesting results

INTRODUCTION

The first academic programs in Information Systems (IS) appeared in Australia in the late 1960s and have steadily grown to be available in almost all Australian universities. While the teaching of IS has grown, the growth of IS research has been slower and few studies have examined its progress. Ridley et al. (1998) studied publication performance over a seven-year period, but there has been no formal examination of the research profile of IS in Australian universities.

This paper reviews the Australian IS research field along lines similar to part of the study conducted by Avgerou et al. (1999) in Europe, except that it focuses only on research. The study targeted the views of the heads of discipline from 36 Australian IS groups and was conducted on behalf of the Australian Council of Professors and Heads of Information Systems (ACPHIS 2001), and is part of a larger program to capture similar information from all Australian IS researchers.

RESEARCH APPROACH

In order to obtain an overview of the profile of Australian IS research, it was decided to investigate at a “school” level (where “school” represents a group of people primarily focused on teaching and researching IS). The group of target respondents expected to represent these schools was the head of discipline for each of the 36 groups identified by the ISHoDs mailing list. The ideal method of data collection would have been structured interview, but limitations of time and financial resources meant that a survey was the only feasible mechanism and so a questionnaire was constructed. Based on the previous study by Avgerou et al. (1999) and aspects of paradigm and method from Neuman (2000), a number of dimensions of the schools’ research activities were identified and incorporated into a questionnaire. These included:

- *People* – number of staff and Ph.D. students
- *Structures* – school structural titles, actual names, and super-organizations
- *Foci* – topics of research interest, unit of analysis, human-technology spectrum, beneficiaries of the research
- *Paradigm* – positivist, interpretivist or critical
- *Methods* – survey, case study, action research, laboratory experiment, etc.
- *Performance* – publication output, research funds obtained, collaboration

In addition, a brief SWOT (strengths, weaknesses, opportunities, threats) analysis of Australian IS research was added to the questionnaire.

As indicated, the target group was the 36 groups on the ISHoDs mailing list (one response required from the head of discipline of each group) and the survey was distributed and received via email.

RESULTS

The 36 questionnaires were distributed electronically and, after some follow-up, some 21 responses were received (58% response rate). The academic groupings of the 21 respondents were 11 schools, 4 departments, 2 academic units, and 4 sub-departments, and while 12 had Information Systems in their name (5 exclusively), others included Information Technology, Computing and Multi-media. Further, 12 of these IS groups were in a Business/Commerce faculty, 5 in an Information Technology faculty, 2 in a mixed Business/IT, and 2 in Science. Their average size was 22.7 academic staff. The overall view is that there is a mix of names and locations for IS groups, but the majority are fairly large groups with IS in the name and reside in a Business/Commerce faculty where they can maintain a close association with the areas of application of information systems.

Respondents were asked to indicate the topics of research interest in the past, present and future, and these are summarized in Table 1 below. The results demonstrate the rapid growth of research in Electronic Commerce and Knowledge Management with almost all groups indicating an interest in these areas. The data also reveal a substantial interest in the management of IS and its relationship with the organization. IS development (both the nature of the process and the methods used), management of IS and organisational impacts remain high on the agenda in the IS academic community. On the other hand, specific topics and technical issues such as computer and network applications and BPR are relatively less popular. It should be pointed out, however, that the table reveals how many groups are interested in these topics and does not show how large these groups are. So, further research is needed at the individual researcher level.

Topic	Past	Present	Future	Topic	Past	Present	Future
Electronic Commerce	8	16	17	Knowledge-based/Expert Systems	10	9	9
Knowledge Management	6	12	15	Impact of IS/IT on Individuals	7	10	9
IS & Organizational Change	10	13	13	Societal Effects of IS/IT	5	7	9
Nature of IS Development Process	11	13	12	Software Development	8	8	8
Management of IS	14	14	11	CSCW/Groupware	8	9	7
Organizational Implications of IS&T	11	13	11	DSS & EIS	9	7	7
IS Development Methods	12	11	10	Databases	6	6	7
Alignment of IS with Bus. Strategy	9	11	10	Economic Effect of IS/IT	5	7	6
IS Security	8	9	10	Computer & Network Applications	3	3	4
Theoretical Underpinnings of IS	9	8	10	BPR	5	2	2

Table 1: IS Research Topics

The respondents were also asked to indicate the usual unit of analysis of their research which was the organization (15 responses), groups/teams (13), individuals (12), processes/tasks (10), clusters of organizations (8), industry (7), national economy/society (5), and world economy/society (3). Clearly, researchers focused most on organizations and the people within them, and significantly less on studying IS and the nation or the world. This may represent an opportunity to collaborate with other researchers (e.g., economists) to investigate the impact of IS and information technologies on Australia's economy, links with the region, and the world. Further questions on the focus on the research done in IS revealed a mix across the organization/engineering spectrum, and a balance in the human/technology spectrum, indicating that IS research tends to be integrative and indeed focuses on the nexus between people/organisation and technology.

In terms of research paradigm, responses revealed dominance of a positivist paradigm, but the interpretivist paradigm was also often used. The survey data confirmed a growing recognition that IS researchers in Australia are moving towards non-positivist research paradigms. Few mentioned any significant emphasis on research using a critical paradigm, which is also the case at the international level (Mingers, 2001). When asked to indicate the specific research methods used, the respondents claimed that the full range of research methods are being used, from survey to action research, to technology development and testing (Table 2 below). The survey method is most popular, but so are positivist and interpretivist case studies, qualitative secondary data analysis and action research. Again, this data is at a school level, so a study of individual researchers is needed to reveal the true extent of usage of the different methods.

	Never	Some times	Often	Always		Never	Some times	Often	Always
Lab experiment	8	8	4	1	Positivist case study	8	6	6	1
Simulation	12	9	0	0	Interpretivist case study	3	5	13	0
Survey	2	4	13	2	Longitudinal case study	5	12	4	0
Technology dev/testing	6	13	2	0	Action research	5	11	5	0
Quant. secondary data anal.	6	6	7	2	Ethnography	10	6	4	1
Qual. secondary data anal.	3	5	13	0	Polemic/setting trends	16	5	0	0
Theorem proof	15	6	0	0	Common sense	14	2	4	1
Model building	8	9	4	0					

Table 2: Research Methods Used

Respondents clearly indicated that the primary beneficiaries of their research were IS professionals (18 responses) and managers (15), followed by end users/workers (8), policy makers (5), and people in general (3). This may again show that we (IS researchers) are not taking up the opportunity to influence governments and society, and this may be a major reason for the apparent lack of recognition of IS as a discipline by the Australian Research Council and other government agencies. Respondents indicated that, where it occurred, most research collaboration occurred with IS colleagues within that particular academic group. Clearly, there is a need to widen the collaboration net nationally and internationally (which could help to increase quality) and with practitioners (which increases relevance and provides opportunities for funding, e.g., the ARC Linkage grants).

Statistics about school research performance over the previous 5 years focused on publications (books, conference papers and journal articles of various types) and research funding. On average, the groups generated 24 publications p.a., 14.8 of which were conference papers, 6.4 journal papers, and a small number of other types. The average publication output per academic staff member was 1.91 papers p.a. Research funding varied considerably with a few groups doing very well (one in particular) in gaining funds from external sources, but most having to depend on their own resources. This was confirmed by research income over 1999 and 2000 averaging over \$150,000 p.a., but with a median of only \$25,000 p.a. Generally, these figures compare poorly with other disciplines, including Computer Science and Computer Engineering.

The final part of the survey was to allow each respondent to suggest the three main strengths, weaknesses, opportunities and threats for the IS discipline research and a summary of the most frequently cited issues is provided in Table 3. In total over 100 ideas were generated in the SWOT and the "top 7" in each category are presented here.

The respondents clearly believe there is strength in our diversity. Diversity was indicated in types of research undertaken, the research approaches taken (and the underlying epistemology), and in the breadth of experience most IS researchers bring with them from their background in IS practice and their grounding in practitioner activity. These strengths in diversity and relevance need to be nurtured and exploited.

Key weaknesses are funding (poor relative to Computer Science/Computer Engineering), which is associated with other weaknesses such as a lack of research culture in Australian business and lack of recognition from funding agencies such as the ARC (though there is now an IS person on the ARC IT panel). These and other barriers such as lack of time and low number of trained researchers (including PhD students) need to be overcome, through education, training, and other means.

The respondents clearly recognized there are numerous opportunities of which we should attempt to take advantage. In this collaboration is the key (with industry, international colleagues, and other Australian universities). In addition and as indicated earlier, the opportunity exists for IS to increase its profile and recognition by conducting research on societal and economic issues which may influence government policy.

While e-commerce was seen as an opportunity it may also be a threat if proper linkages are not built with researchers from other business disciplines doing research e-commerce/e-business. Perhaps the greatest threats to IS research in Australian universities lie in lack of recognition of IS as a discipline and its location in the academic structure, the excessive teaching loads in most schools and the career and financial opportunities outside academia.

Strengths	Opportunities
Diversity of research undertaken (5)	Industry collaboration/industry based (9)
Range of approaches/ epistemologies (4)	E-commerce/Internet (6)
Grounding in practitioner activity (4)	Intern'l collaboration/Asian links (4)
Number of quality IS researchers (3)	SPIRT/Linkage grants (2)
Development of IS as a separate discipline (2)	Cross-institution collaboration (2)
Feeling of community (ACIS, ACPHIS) (2)	Cross-cultural research (2)
Diversity & breadth of experience (2)	Government/PS IT applications/policies (2)
Weaknesses	Threats
Lack of funding relative to CS/CE (8)	Lack of government support/funding (9)
Low number of trained researchers (4)	Brain drain to US/Europe (4)
Lack of Aust. business research culture (2)	CS/CE & ARC IT panel (3)
Lack of agreement on basic IS concepts (3)	Lack of agreement on basic IS concepts (3)
Lack of recognition by funding agencies (2)	Other fields claiming IS/EC as their own (3)
Lack of PhD & PG students (2)	Teaching loads (3)
Lack of time for research (2)	Above load teaching for extra \$ (2)

Table 3: Results from the SWOT Analysis

CONCLUSIONS AND FUTURE WORK

In this paper we have presented preliminary results of a survey of Australian IS 'heads of discipline' which shows something of the current 'state of the art' for Australian IS research. However, the data collected and presented do not necessarily represent the views of individual IS researchers. Future work is needed to obtain those views. However, the paper can and should be used to initiate discussion on where we are, where we want to be in the future, and how we aim to get there.

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