THE 2005 SURVEY OF INFORMATION SYSTEMS RESEARCH IN AUSTRALIA

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ABSTRACT

As part of a study to investigate the state of Information Systems research in Australia, a survey of the heads of all IS discipline groups in Australian universities was conducted in mid 2005. 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 identified the growing importance of industry relevance and collaboration.

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 investigates 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, and is based on an earlier study by Pervan and Cecez-Kecmanovic (2001). The study targeted the views of the heads of discipline from Australian IS groups and was conducted on behalf of the Australian Council of Professors and Heads of Information Systems (ACPHIS).

RESEARCH APPROACH

In order to investigate the state of IS research in Australia we conducted a survey in mid 2005. We focused on the "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 groups identified by the Information Systems Heads of Department (ISHoDs) mailing list. Based on the previous study by Avgerou et al. (1999) and aspects of paradigm and method from Neuman (2006), a number of dimensions of the schools' research activities were identified and incorporated into the original questionnaire. The survey had been conducted twice previously (in 2000 and 2004) and the questions had been progressively refined to the current instrument. The survey contained questions on:

- *People* – number, level and research activity of staff, number of enrolled and completing Ph.D. students
- *Structures* – school structural titles, actual names, and super-organisations
- *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 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 questionnaires were distributed electronically and, after some follow-up, 24 responses were received (estimated 60% response rate). There is a mix of titles (most commonly schools, but also departments and other titles), but hereafter the groupings will be referred to as schools. The discipline titles of these schools of the 24 respondents were 50% (12 respondents) Information Systems, 25% Information Technology, and 25% other titles. Furthermore, 14 of these schools were in a Business/Commerce faculty, 7 in an Information Technology faculty, and 3 in a mix of others. Their average school size (not including sessional staff) was 19.2 academic staff (median 17) of which 17.2 were continuing and 2.0 on contact. The academic levels represented were (on average) 1.4 professors, 1.7 associate professors, 5.3 senior lecturers, 7.9 lecturer Bs, 2.1 lecturer As, and 0.7 research fellows. The overall view is that there is a mix of names and locations for IS schools, 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.

On average 15.3 (80%) staff were regarded by their heads as being "research active", though only 6.3 (33%) were research active according to the strict DEST definition (*Research active staff* satisfy at least two of: (a) external research income at least $5,000, (b) refereed publications (weighted) at least 1.5, (c) supervised HDR to completion, over the previous 3 years). Almost half (average 9.3 per group) have PhDs and over 30% (average 5.2) are doing PhDs. On average, 6.2 (33%) are supervising higher degree by research students though only about a half of these (3.3) have

supervised a PhD to completion. There are, on average, 12.4 current FTE PhD students (8.2 full time, 8.4 part time), but there were only 1.6 graduations per school in the previous year.
Respondents were asked to indicate the topics of research interest in the past, present and future, and these are summarized in Table 1 below, sorted by future topic of interest. The results demonstrate the substantial interest in research on IS management and strategy and the organizational implications of IS and IT, IS adoption/diffusion, Electronic Commerce and Knowledge Management with almost all groups indicating an interest in these areas. In addition, interest is strong in topics such as IS development and business modeling, mobile commerce, and the theoretical underpinnings of IS. On the other hand, specific topics and technical issues such as computer and network applications and CSCW/groupware 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.

The respondents were also asked to indicate the usual unit of analysis of their research which was the organisation (22 responses), groups/teams (19), clusters of organisations (19), industry (16), processes/tasks (15), individuals (14), national economy/society (8), and world economy/society (3). Clearly, researchers focused most on organisations and the people within them, and significantly less on studying IS at the national or global levels. 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 globally. In terms of research paradigm, responses revealed dominance of a positivist paradigm (in 71% of schools), but the interpretivist paradigm was also often used (54%). The survey data confirmed a growing recognition that IS researchers in Australia do include research based on 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).

Topic	Past	Present	Future	Topic	Past	Present	Future
Organizational Implications of IS&T	19	21	20	Human-computer interaction	11	11	10
IS management/ strategy	17	17	16	Systems Development	13	10	9
Electronic commerce	19	18	16	Knowledge-based/ Expert Systems	11	12	9
IS adoption/diffusion	16	16	15	Economic effects of IS&T	5	8	8
Knowledge management	13	17	14	Databases	9	9	8
Theoretical underpinnings of IS	15	14	13	DSS/EIS/data warehousing	9	9	7
IS development methods	12	12	13	IS outsourcing/ offshoring	5	7	7
Mobile commerce	7	13	13	Legal/ethical aspects of IS&T	8	8	7
Business modeling	10	13	13	Computer & network applications	3	3	3
Societal Effects of IS&T	10	12	11	CSCW/Groupware	6	3	3
IS Security	8	9	10				

Table 1: IS Research Topics

When asked to indicate the specific research methods used, the responses reveal that the full range of research methods are being used (see Table 2 below sorted by most often used research method). The survey method is the most popular, but so are positivist and interpretivist case studies, and design science. 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	**Sometimes**	**Often**	**Always**
Survey	0	7	16	1
Interpretivist case study	2	7	15	0
Positivist case study	3	10	11	0
Design science	0	13	10	1
Literature meta analysis	5	13	2	4
Business modelling/simulation	7	11	4	2
Secondary data analysis	5	13	5	1
IS development	6	12	6	0
Action research	6	13	5	0
Conceptual study	4	16	3	1
Ethnography	10	11	3	0
Longitudinal case study	5	17	2	0
Laboratory experiment	11	11	2	0

Table 2: Research Methods Used

Respondents clearly indicated that the primary beneficiaries of their research were other IS academics (20), managers (17) and IS professionals (15 responses), followed distantly by end users/workers (7), policy makers (6), and people in general (0). 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 some 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 Australian Research Council Linkage grants).

Statistical analysis of school research output is shown in Table 3 (for 2004, the most recent reporting year). The average school generated about 43 publications, 29 of which were conference papers, 10 journal papers, and a small number of other types. The average publication output per academic staff member was about 2.3 papers p.a. and a small number of staff chaired conferences and were journal editors.

	2004 Average	**2004 Range**
Refereed journal papers	9.8	1-58
Refereed conference papers	29.1	4-65
Chapters in books	3.4	0-20
Authored books	0.4	0-2
Edited books/proceedings	0.5	0-4
Journal editorships	1.9	0-12
Conferences chaired	1.5	0-9

Table 3: Research Output

Research funding varied considerably with a few groups doing very well in gaining funds from external sources, but most having to depend on their own resources (see Table 4 below). This was confirmed by research income over averaging over $300,000 p.a. (about 50% coming from Australian Research Council (ARC) Linkage and Discovery), but with a very wide range. Generally, these figures compare poorly with other disciplines, including Computer Science and Computer Engineering.

	2004 Average	**2004 Range**
ARC Linkage	90.2	0-325
ARC Discovery	64.8	0-412
Internal University	47.6	0-240
CRC	46.5	0-540
Industry Contract	46.3	0-377
Consulting	9.6	0-108
International	4.8	0-100
Other	3.3	0-30

Table 4: Research Grants ($K)

The final part of the survey allowed each respondent to suggest the three main Strengths, Weaknesses, Opportunities and Threats (SWOT) for the IS discipline research and a summary of the most frequently cited issues is provided in Table 5. In total over 150 ideas were generated in the SWOT and the “top 5” in each category are presented here.

Strengths	**Weaknesses**
Industry relevance & links (10)	Lack of industry relevance (8)
Diversity of method (6)	Lack of identity of IS as a discipline (6)
Diversity of research undertaken (5)	Poor funding & recognition by funding bodies (6)
Feeling of community (ACIS, ACPHIS) (4)	Poor/variable research training (5)
Critical mass of quality IS researchers (3)	Conflicts of research focus (5)

Opportunities	**Threats**
Industry collaboration/linkage grants (13)	Falling student numbers/staffing (9)
Raising profile in industry & government (6)	Other fields claiming IS as their own (8)
Cooperative doctoral research training (4)	Lack of research funding (6)
Collaboration generally (3)	Nelson Higher Education policy/Research Quality Framework (6)
Improved quality & success (2)	Lack of industry relevance/recognition (4)

Table 5: Results from the SWOT Analysis

The respondents clearly believe there is strength in our diversity and relevance. 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 lack of relevance and identity, poor 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. These and other research focus and training issues need to be overcome.

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 industry collaboration was seen as an opportunity it may also be a threat if proper linkages are not built. Research impact will be critical in the research quality framework, and 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 falling numbers and excessive teaching loads in most schools and the career and financial opportunities outside academia.

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. It should be noted that, 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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