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Abstract—This paper reports on an international study of the key issues facing Information Systems researchers. A variant of the Delphi method was used to identify and rank the issues. The results identified a consistent and unified group of issues facing most researchers surveyed, regardless of location or research orientation. The results suggest that a reliable and valid instrument is available to measure key issues facing IS researchers. Further work to broaden the relevance to all regions is suggested.

Keywords: IS research, IS research issues, Delphi study

I. INTRODUCTION

The political and professional context of IS research has changed considerably in recent years. Outlets for research findings have increased, with a proliferation of conferences and journals. Concurrently, however, there are pressures for the IS researcher to be very selective about publication outlets targeted and there is recognition that a growing number of IS researchers seek to publish in a small and fixed number of top tier journals and conferences. In the aftermath of the post-2000 IT downturn, the effectiveness of IS researchers is being evaluated by employers in ways that may well change the priorities and concerns of these researchers. It is against this background of unprecedented scrutiny of the work of IS researchers that this study sought to establish the issues of greatest perceived importance to IS researchers.

This paper describes an investigation of the major issues facing Information Systems (IS) researchers. Four main research questions were posed:

1. Can a set of items be derived to create a reliable measure of issues facing IS researchers?
2. What are the most important issues facing IS researchers?
3. Are there prevalent themes across issues facing IS researchers?
4. Does the relative importance of issues vary by geographic region?

II. BACKGROUND

The study was stimulated initially by a desire to provide the Association for Information Systems (AIS) with an accurate picture of the concerns of IS researchers around the world. With this knowledge, AIS could consider mechanisms for helping IS researchers to address such issues as were amenable to intervention. As a consequence, in 2005 the Information Technology Professional Services Research Program located at the Queensland University of Technology (QUT) ran an initial survey of IS researchers on behalf of AIS. This study is the global extension of an initially Pacific Asia region study (AIS Region 3), titled ‘The IS Academic Discipline in Pacific Asia’ sponsored by AIS.

A. Questions that might be answered

It was anticipated that varying cultural and political environments might engender differences in the sorts of issues that would be of greatest concern to IS researchers in different parts of the world. For instances, there would be value in investigating whether differences in requirements for tenure and differences in expectations of doctoral education in different parts of the world might influence the perceived relative severity of issues.

III. REVIEW OF PREVIOUS RESEARCH

A search of the literature was conducted to look for any similar study that had already produced a framework, or which had identified relevant theory; we looked particularly for literature that might be relevant to our interpretation of the survey results, both for synthesizing a summary list of issues and for interpreting the final weights; further, we sought literature discussing the issues facing researchers generally. While there is a body of literature that discusses problems facing researchers, this most often focuses on a single issue or a small group of issues; for example, funding and support, or motivation. Literature specifically looking at IS research issues was also generally focused on a specific issue e.g. parochialism in IS research [1] and the gap between IS research and practice [2]. Relatively few earlier studies have attempted to canvass issues. An exception was Avgourel, Siemer and Bjorn-Andersen’s study of IS in Europe [3], which included a question on the major strengths and weaknesses of IS studies on that continent. The most comprehensive study of IS researcher issues was undertaken by Dalal, Singh and Lanis in 1999 [4]. In this study, a set of issues was compiled from the literature and other sources and respondents were asked to rate them in importance. We believed that it was time to look again at IS researcher issues and that by widely canvassing IS researchers a more comprehensive set of issues would be uncovered.
IV. RESEARCH METHOD

A variant of the Delphi method was used in this study. The Delphi method has become an accepted tool in information systems research. It is frequently used to identify and prioritize managerial issues, e.g. [5]. Delphi is a multi-step group process which utilizes questionnaires to solicit and aggregate the judgement of experts. It is particularly valuable for surfacing new issues and moving towards an evaluation of their significance. Our method consisted of: i) Delphi ROUND-1 – collect and store issues; ii) Synthesize, from the raw data, a “cleansed” master set of issues; iii) Delphi ROUND-2 - collect weights of importance for each issue; and iv) Classification and analysis of the results.

A. Round-One: Inventory Issues

The purpose of round one was to catalogue a comprehensive set of issues facing IS researchers. An open-ended question: “What are the major issues affecting you as an Information Systems researcher?” was asked in a first round of data collection. IS faculty listed in the MISRC-AIS Faculty Directory were emailed and asked to respond with a list of issues they faced as IS researchers. There were a total of 266 individual responses, articulating a total of 1241 issues. A small number of frivolous or inappropriate responses were removed e.g. responses that were research topics rather than research issues. Several processes were used to check and improve the validity of the data prior to analysis.

B. Sorting and classifying the issues

Common themes were identified across the issues, yielding a starting classification. Each issue was then coded to between one and three themes; most often two but sometimes three when there evolved large groups of issues with identifiable sub themes. The new classification themes (or sub-themes) identified were, in turn, informed by the literature, so that the derived classification of issues was the result of parallel top-down and bottom-up processes.

The derived classification was further validated by presenting it for comment to two other groups of IS researchers, one from inside QUT and one from outside.

Pattern analysis and inductive approaches were applied during synthesis of the Delphi study issues from round one. The process consisted of the following: the original 1241 issues were exported into an Excel spreadsheet and sorted; where respondents described several issues in a single-statement, the inherent issues were decomposed; two coders working individually then identified themes in the issues; three coders working together negotiated until agreement was reached on the themes; and, finally, items that could not be classified under the initial themes were clustered and additional themes identified.

A diary of the process has been kept to provide a clear decision trail of all key theoretical, methodological and analytical decisions made.

C. Classification categories of IS researcher issues

The major themes identified as classification headings, together with examples of sub themes, are listed below.

- Motivation
- Individual – e.g. methods, time
- Institutional – e.g. training, mentoring, culture
- Discipline – e.g. cumulative tradition, image
- Resources – e.g. evidence, funding
- Partnering – e.g. with academe, with industry
- Publishing – e.g. review process, discrimination,

D. Formulating the issue-statements

Having sorted and analyzed the raw data, a comparatively succinct set of 56 issue-statements was next synthesized for presentation to IS researchers in the second round of the study. The wording of each statement was iteratively re-worked to accord with the classification of issues, while trying to encapsulate the essence of the issues as expressed by the initial respondents. Much effort focused on achieving clarity and consistency in the statements.

E. Round-2: Issue Importance (Weights)

Pilot survey. A pilot paper and pencil survey employing the draft round 2 survey instrument (n=11) was run prior to the main study. Following the pilot survey, minor changes were made to the instrument, based on the feedback gained.

Survey distribution. The final round 2 survey instrument was distributed to a population of IS researchers (n=5000). An email invitation to participate in the weights round was again sent to IS faculty listed in the MISRC-AIS Faculty Directory, this time also canvassing the full membership of AIS in 2005. This email also contained a link to the online version of the survey. Respondents were assured that their individual responses would be kept confidential.

Survey structure. The web survey consisted of 14 demographic questions; the 56 issues to be scored and 3 other research related questions. Respondents were asked to rate the importance of each of the 56 issues using a seven point “strongly disagree” to “strongly agree” Likert scale. The survey included a comments section that asked: “Please include any comments you have on the survey, including issues you feel have been overlooked.”

After the data collection period closed, 833 completed surveys were received, representing a response rate of approximately 17%. After excluding surveys with missing data and invalid entries, 815 surveys were retained for analysis.

V. A PROFILE OF IS RESEARCHERS WHO RESPONDED

A range of profiling questions was asked. These sought: name, country, university, organizational area, faculty/school type, email address, research experience, year PhD was acquired, English competence, AIS membership, years as an academic, and size of organizational unit.
A. Nationality

Investigation of the state in which each researcher was employed indicated a predominance of English language states in the sample. The 10 best represented states (see Table I.) constitute almost 80% of the responses, with the most responses coming from researchers based in the USA, Australia, and Canada.

<table>
<thead>
<tr>
<th>State</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>379</td>
<td>46.50%</td>
</tr>
<tr>
<td>Australia</td>
<td>111</td>
<td>13.62%</td>
</tr>
<tr>
<td>Canada</td>
<td>32</td>
<td>3.93%</td>
</tr>
<tr>
<td>Germany</td>
<td>26</td>
<td>3.19%</td>
</tr>
<tr>
<td>UK</td>
<td>25</td>
<td>3.07%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>22</td>
<td>2.70%</td>
</tr>
<tr>
<td>Finland</td>
<td>15</td>
<td>1.84%</td>
</tr>
<tr>
<td>South Africa</td>
<td>14</td>
<td>1.72%</td>
</tr>
<tr>
<td>Taiwan</td>
<td>11</td>
<td>1.35%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>11</td>
<td>1.35%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>646</td>
<td><strong>79.26%</strong></td>
</tr>
</tbody>
</table>

B. Experience

Each respondent was asked the number of years he or she had been an Academic and was asked to rate their level of research experience. The number of years as an academic ranged from 0 to 40 years, with an average of approximately 12 years (standard deviation 8.9 years). When respondents were asked to indicate their research experience 357 (43.8%) indicated being ‘early-career’, 277 (34.1%) indicated being ‘experienced’ and 179 (22%) indicated being ‘established’. A comparison of the research experience categories using mean number of years as an academic revealed that the three groups are separated, one from the next, by approximately 8 years academic experience (see Table II).

<table>
<thead>
<tr>
<th>Self Categorised Research Experience</th>
<th>Early</th>
<th>Experienced</th>
<th>Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years as an Academic</td>
<td>5.69</td>
<td>13.85</td>
<td>22.11</td>
</tr>
</tbody>
</table>

C. Qualifications

The majority of respondents reported having a PhD. A smaller proportion, 147 respondents (17.6%), indicated having commenced a PhD with the prospect of completing in 2006 or beyond. Twenty-five (3%) respondents did not indicate having completed or having commenced a PhD.

D. Number of IS researchers in unit

In response to the question: “Number of IS researchers in your organizational unit” most researchers (n=501, 61.4%) reported conducting research on their own rather than as part of a unit, with smaller percentages indicating being part of a unit of 2-5 researchers (n=257, 31.5%) or units of greater than 5 researchers (n=55, 6.7%).

E. Demands on respondents’ time

The average distributions of demands on respondent time are presented in Table III. The distributions suggest that, on average, individuals would prefer less administration and teaching whilst preferring more research and service work. Results also suggested that as individuals progressed in their profession they became engaged in more administration and service whilst less engaged in research. In relation to teaching, a small increase, followed by a drop, was seen across the three groups. Across the three groups, the difference between current and ideal percentages was the largest for the Research category.

<table>
<thead>
<tr>
<th>Workload Category</th>
<th>Average</th>
<th>Ideal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Now</td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>18.76</td>
<td>9.85</td>
</tr>
<tr>
<td>Teaching</td>
<td>36.39</td>
<td>30.98</td>
</tr>
<tr>
<td>Research</td>
<td>32.76</td>
<td>46.55</td>
</tr>
<tr>
<td>Service</td>
<td>12.01</td>
<td>12.52</td>
</tr>
</tbody>
</table>

VI. Issues

The study provides the basis for extensive analysis of the data collected. Only some of these results are touched on in this report.

A. Data analysis

The round two survey results were entered into a database and then analyzed using SPSS 13. Analyses were split into univariate and multivariate analyses. From the initial analysis, a few details are reported here.

B. Top ten IS researcher issues

The highest scored items (based on means), in order, were:
1. Inadequate motivation to do research.
2. Maintaining independence when partnering with industry
3. Inadequate acceptance of research involving building IT artifacts
4. Finding a research mentor
5. Fairly sharing the benefits of research with industry research partners
6. Discipline service demands (e.g. reviewing, editing, conference organizing)
7. Regional differences in what is regarded as appropriate IS research
8. Fairly sharing the benefits of research with academic research partners
9. Disagreement within the IS community on what are the boundaries of IS
10. Subtle complexities with data analysis

C. Regional Top Issues

Taking into consideration the relative number of responses from each country, responses were grouped into five regions: USA & Canada; UK & Europe; Australia & New Zealand; Asia; and Other (Other including South America and Africa). “Inadequate motivation to do research” was the top issue in three regions: USA & Canada; UK & Europe; and Australia & New Zealand. “Maintaining independence when partnering with industry” was the top issue in the Asian region and Other.

D. Lowest ranked issues

The lowest mean scores were associated with the issues:

1. Keeping up with the literature in all areas relevant to my IS research interests
2. Lengthy journal review cycle times
3. Getting access to data for research (e.g., organizations, individuals, documents, etc.)

E. Limitations

It should be noted that respondents from non-English speaking countries constitute less than 20% of the study sample and therefore care should be taken generalizing results to non-English speaking countries. Having said this, multivariate analyses with and without non-English speaking countries, revealed almost no substantive differences in results (no significant differences). Based on this finding, all data was retained for the overall analyses. Since the questionnaire was in English, it by design would have excluded IS academics who are not fluent in English.

VII. Future research

The rich and high quality survey data is being further analyzed, this paper presenting only a synopsis. Also, with future iterations of the survey it is hoped to track the changing concerns of IS researchers in various regions of the world.

VIII. Conclusion

This study gives us some understanding of the challenges faced by IS researchers. The framework developed and the results have implications both for the discipline and for individual institutions.

IX. References