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Are IS Candidates Supplying the Teaching and Research Skills that Universities Need Most?

Andrea Everard
University of Delaware, aeverard@udel.edu

Brian M. Jones
Tennessee Technological College, bjones@tntech.edu

Scott McCoy
College of William and Mary, Scott.McCoy@business.wm.edu

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ARE IS CANDIDATES SUPPLYING THE TEACHING AND RESEARCH SKILLS THAT UNIVERSITIES NEED MOST?

Andrea Everard
Lerner College of Business and Economics
University of Delaware
everarda@lerner.udel.edu

Brian M. Jones
College of Business
Tennessee Technological University

Scott McCoy
School of Business
College of William & Mary

ABSTRACT

This longitudinal research study investigates the teaching and research expectations for potential IS professors. Most university departments advertise for specific job skills and qualifications when they attempt to recruit faculty members. This study examines over 400 IS placement advertisements for the academic recruiting years 2001-2002, 2002-2003 and 2003-2004. Top teaching and research areas that universities are interested in for their new hires are identified. The study then investigates whether the interests of candidates seeking appointments are similar. Over 400 IS candidate doctorates' résumés are content analyzed and their teaching and research preferences are identified. By looking at the teaching and research needs of the universities and the preferences of IS candidates, it is then possible to identify if a gap exists between the two. Lists of (1) most required and (2) most desired IS teaching and research areas over the three year period are shown. The results report that in terms of teaching, what the universities are looking for is being well matched with what candidates are offering. With respect to research, while there is some match between demand and supply, there is a noticeable lack of demand by universities for e-Commerce, HCI, and ERP.

Keywords: IS teaching needs, IS research needs, IS career, IS faculty, content analysis, doctoral student teaching and research interests

I. INTRODUCTION

In the past, the demand for information systems (IS) faculty far exceeded the supply of IS doctoral candidates [Jarvenpaa, Ives, and Davis, 1991; Freeman, Jarvenpaa, and Wheeler, 2000]. For example, in the 1998-1999 recruiting year the Association for Information Systems (AIS) and International Conference on Information Systems (ICIS) placement system registered 247 tenure-track IS faculty positions and 105 candidates. In the 1999-2000 recruiting year, the

respective numbers were 395 positions and 145 candidates [Freeman et al. 2000]. This trend held during the 2001-2002 (194 hiring universities, 143 candidates) and 2002-2003 (142 hiring universities, 120 candidates) recruiting years but was reversed in the 2003-2004 recruiting year (105 hiring universities, 151 candidates) (Table 1). Though numbers for the latest recruiting year (2004-2005) are not available, if more positions are available than candidates, a cycle of supply and demand in the IS doctoral production may indeed exist as suggested by Freeman et al. [2000]. Freeman and his colleagues report that there was a great imbalance between supply and demand in 1986 which then disappeared over the three-year period from 1992-1995. In 1995-1996 the demand for IS faculty increased once again, and an imbalance was re-created.

Table 1. Recruiting Data

Recruiting Period	Hiring Universities	Candidates
1998-1999	247	105
1999-2000	395	145
2001-2002	194	143
2002-2003	142	120
2003-2004	105	151

Note: data for recruiting period 2000-2001 is missing. Data for 1998-1999 and 1999-2000 was provided by Freeman et al. (2000); our data collection covers recruiting periods 2001-2002, 2002-2003 and 2003-2004 and was taken from the AIS Recruiting Website.

IS candidates are increasingly facing an uncertain job future. Universities, looking to fill IS academic positions, are bound to seek candidates who most closely fit their needs. Hence, it would be helpful for IS candidates to get some idea of what will be required of them in terms of teaching and research. Matching a doctoral candidate's teaching and research interests to hiring universities is an important consideration in the job search and screening process [Lai and Chen, 1997; Myers and Beise, 1999]. A candidate's teaching and research interests serve as a signal to the hiring schools about how the candidate can contribute to the department and existing faculty.

II. PRIOR RESEARCH

Extensive previous research examines the knowledge, skills, and abilities of IS professionals (e.g., systems analysts, programmers, IT managers, and webmasters) [Cappel, 2001; Cheney, Hale, and Kasper, 1990; Maier, Clark, and Remington, 1998; Todd, McKeen, and Gallupe, 1995; Yen, Lee, and Koh, 2001; Wade and Parent, 2001] and the match between industry requirements and academic preparation for IS jobs [Lee, Trauth, and Farwell, 1995; Nelson, 1991]. Most research examining the IS job market looked either at critical factors and key issues that IS managers will need to be aware of in the future [e.g., Brancheau and Wetherbe, 1987; Dickson et al., 1984] or at skills that are most likely to be required by future IS professionals [e.g., Leitheiser, 1992; Couger et al., 1995]. However, we found no research about the knowledge and skills required of IS doctoral candidates in the IS academic marketplace, especially teaching and research area requirements.

The job skills, knowledge and abilities required by IS professionals are researched extensively and periodically updated as the set of required skills changes over the years [Cheney et al., 1990; Lee et al., 1995; Todd et al., 1995]. It is recognized that the IS profession is a changing one and hence the skills required by those within the profession must also change. The preparation, be it academic- or industry-based, of future IS professionals is closely monitored in order to provide properly trained, educated and employable IS professionals.

The shortage of IS faculty was studied by Jarvenpaa et al. [1991] and Freeman et al. [2000]. Without looking at which particular teaching and research areas were being supplied by the IS candidates and which areas were being sought after by the universities, Jarvenpaa and her

colleagues writing in 1991 and nine years later Freeman and his fellow researchers considered the imbalance between the demand and supply of IS doctorates. Both suggest strategies to ensure the long-term survival of the IS discipline. Freeman et al. [2000] stress the importance of finding a long-term resolution to the supply and demand imbalance, rather than merely attempting to solve the issue in the short-term. The following recommendations were made:

1. increasing the number or size of doctoral programs should only be undertaken with a concomitant increase in resources to be able to train high quality IS doctorates;
2. create inter-institutional courses to boost networking opportunities;
3. provide continuing education opportunities for faculty;
4. increase home-country opportunities for IS doctorates in non-North American institutions;
5. support AIS efforts to improve the visibility and resources to the IS field; and
6. encourage interaction with other disciplines to expand interdisciplinary activities between IS and other academic fields.

Agarwal and Yochum [2000] investigated the effect of accreditation status on the starting salaries for new doctorates in full-time tenure-track positions at business schools in Accounting, Economics, Management, Marketing, Management Information Systems, and Finance. These authors demonstrate higher salaries for faculty working at accredited universities. Their finding is corroborated for the MIS field by our review of the AIS MIS Faculty Survey (Galletta, 2004) that shows that starting salaries for new doctorates were at least 40% higher for AACSB accredited business schools than for non-accredited schools.

Myers and Beise [1999] proposed that recruiters and applicants alike would benefit from more information about patterns in IS demand. They identified salaries, numbers of openings, numbers of applicants, numbers of offers, and areas of interest over time as of special interest. This paper responds to this suggestion by examining longitudinal IS recruiting data and presenting current trends in the IS academic market.

III. RESEARCH STUDY

This study explores the expectations by universities for their potential IS professors. Universities wishing to hire faculty must be careful in attracting those individuals who can teach and conduct research in the areas needed and are matched to the universities specific expectations whether they be teaching or research [Myers and Beise, 1999]. Knowing what teaching and research areas are most in demand could help a doctoral student in deciding where to focus and what skills to obtain before entering the job market. Increasingly, both teaching- and research-focused universities expect strong performance in both research and teaching [Whitman, Hendrickson, and Townsend, 1999]. Equally important is the candidate's ability to teach and conduct research in the desired areas.

The research questions that this study explores are:

1. What are the teaching and research areas in which universities are recruiting?
2. What are the teaching and research areas in which candidates express an interest?
3. Is there a gap between the teaching and research needs of the universities and the preferences of the job candidates?

IV. METHODOLOGY

To answer the above research questions, the authors accessed the Association for Information Systems (AIS) placement service and printed each listing and candidate vita over the academic recruiting years 2001-2002, 2002-2003, and 2003-2004. Careful attention was taken to collect every posting and vita over these years by accessing the placement service on a regular basis and sorting by date posted. This procedure ensured that no posting or vita was missed.

To address the first research question, we content analyzed [Weber, 1990] 441 placement advertisements posted on the AIS Placement website for the academic recruiting years 2001-2002, 2002-2003, and 2003-2004 and identified the top skills and knowledge requirements that schools are interested in for their new hires. Todd et al. [1995] used such content analysis in a previous study in which they examined advertisements in newspapers for IS professionals job placements. We then categorized the placement advertisements based on the number of times the job skill was listed as a requirement. Two lists were drafted: one with the research skills and the other with the teaching skills sought.

To answer the second research question, we content analyzed the vitas of 414 IS candidates posted on the AIS Placement website for the academic recruiting years 2001-2002, 2002-2003, and 2003-2004 to identify the top listed skills and interests that the candidates possess. The candidates' interests were then sorted and the top teaching and research interests were identified.

To answer the final research question, we compared the needs of the universities and the preferences of the job candidates to determine whether a gap exists.

V. RESULTS AND DISCUSSION

For the most part we found a high correlation between the skills and abilities sought by universities and the skills and interests identified by candidates. Exceptions were identified and are discussed in more detail below.

We list all topics down to 10% for University teaching needs, Candidate teaching preferences, University research needs and Candidate research preferences in Tables 2 through 5, respectively.

Table 2. University Teaching Preferences

Ranking	**University 04**	**%**	**University 03**	**%**	**University 02**	**%**
	Open	53	Open	50	Open	33
1	MIS	29	e-Commerce	36*	MIS	41
2	System A/D	20	Telecommunications	36*	Telecommunications	37
3	Telecommunications	16	Data Management	35	e-Commerce	34
4	Data Management	13*	MIS	33	Data Management	27*
5	Programming Languages	13*	System A/D	31	Programming Languages	27*
6	e-Commerce	10	Programming Languages	27	System A/D	24
7			IS Strategy	16	IS Strategy	17
8			ESS/DSS/GDSS	10		

Notes: 02, 03, 04 refer to academic years 2001-2002, 2002-2003, and 2003-2004 respectively
Open refers to percentage with no preference given
* denotes tie between successive values

Table 3. Candidate Teaching Preferences

Ranking	Candidate 04	%	Candidate 03	%	Candidate 02	%
	Open	15	Open	18	Open	10
1	MIS	46	MIS	59	e-Commerce	57
2	Data Management	38	System A/D	52	Data Management	45
3	e-Commerce	36	e-Commerce	49*	System A/D	38
4	System A/D	35	Data Management	49*	Telecommunications	29
5	Programming Languages	25*	Programming Languages	33	MIS	28*
6	Telecommunications	25*	Telecommunications	28	IS Strategy	28*
7	IS Strategy	19	IS Strategy	26	Programming Languages	26
8	ESS/DSS/GDSS	12	Knowledge Management	18	Organizational Impacts	15
9	Software Engineering	11	ESS/DSS/GDSS	15	ESS/DSS/GDSS	13
10			Human-Computer Interaction	11	Knowledge Management	12

Table 4. University Research Preferences

Ranking	University 04	%	University 03	%	University 02	%
	Open	58	Open	60	Open	47
1	MIS	29	e-Commerce	30	e-Commerce	24
2	System A/D	16	MIS	27	MIS	23
3	Telecommunications	12	Data Management	23	Telecommunications	19
4	Data Management	11	System A/D	21*	Data Management	16*
5	Programming Languages	10	Telecommunications	21*	System A/D	16*
6			IS Strategy	16	Programming Languages	11
7			Programming Languages	14		
8			Knowledge Management	11*		
9			ESS/DSS/GDSS	11*		

Table 5. Candidate Research Preferences

Ranking	Candidate 04	%	Candidate 03	%	Candidate 02	%
	Open	10	Open	10	Open	13
1	e-Commerce	40*	e-Commerce	51	e-Commerce	59
2	MIS	40*	MIS	39	IS Strategy	29
3	Data Management	25	Knowledge Management	33	Organizational Impacts	27
4	HCI	17*	Organizational Impacts	25	Data Management	24*
5	ERP	17*	IS Strategy	22	MIS	24*
6	System A/D	14	Data Management	18*	Knowledge Management	20
7	ESS/DSS/GDSS	13	ESS/DSS/GDSS	18*	Technology and Innovation	13
8	Technology and Innovation	12	HCI	18*	HCI	11

9			System A/D	18*	Telecommunications	11*
10			Technology and Innovation	17	ESS/DSS/GDSS	10*
11			Global IT	14	Modeling/Simulation	10*
12			Artificial Intelligence / Expert Systems	11		
13			Economics of IS	10		

The tables highlight the results of our research. The percentages do not necessarily add up to 100 percent because universities and candidates listed multiple preferences.

QUESTION 1. UNIVERSITY PREFERENCES

Universities do not always specify their specific teaching or research requirements. Often in the placement advertisement universities will group teaching and research requirements together. In many cases, the 'no preference' option was chosen; in the tables below we report those as Open. The percentages of universities who did not specify preferences (Open category) were higher for research than for teaching across all periods. This difference may be the result of universities looking specifically for teaching abilities in given areas when they are short staffed or want to add courses. In these cases, they do not target specific research areas.

Teaching requirements remained stable over the three-year period with Data Management, e-Commerce, MIS, Programming Languages, System Analysis and Design, and Telecommunications placing in the top five in one or more years. Differences were found, however, in the rankings across the years. While 34% and 36% of universities stated e-Commerce as a teaching requirement in 2001-2002 and 2002-2003 recruiting years, respectively, only 10% of universities (ranked 6th) did so in 2003-2004. Telecommunications was specified by 16% of universities in 2003-2004, a 20% drop from the previous two recruiting years. Likewise, Data Management was specified as a teaching requirement b27% and 35% in 2001-2002 and 2002-2003, respectively. In 2003-2004, however, only 13% of universities specified that area, again more than a 20% drop from the previous years.

Table 2 on University teaching preferences shows that in 2003-2004 universities were much more specific in their requirements. For example, to reach 6th place e-Commerce required only 10% whereas 24% to 27% were required for 6th place in the previous two years. Similarly, in 2003-2004 to reach a 3rd place ranking took 16% while in 2001-2002 and 2002-2003 that same percentage placed 7th in rank order.

According to the stated preferences, over the last three recruiting years top research areas common to all recruiting periods were MIS, System Analysis and Design, Telecommunications, and Data Management.

While e-Commerce placed in the top five in 2001-2002 and 2002-2003, it did not place in the top five in 2003-2004. In the 2002-2003 recruiting year, universities stated an interest in research in IS Strategy, while in the other recruiting periods IS Strategy did not make it into the top 5.

QUESTION 2. CANDIDATE PREFERENCES

The second research question addressed the candidates' research and teaching interests over the three years. In terms of teaching, IS candidates' preferences remained relatively stable. The courses found in most MIS departments, and which are often the courses that doctoral students are asked to cover during their doctoral studies, figured in the top 5. These areas include MIS, Data Management, e-Commerce, System Analysis and Design, Programming Languages, and Telecommunications. While Telecommunications was in the top five in 2001-2002 (29%) and 2002-2003 (28%), it was not in the top five in 2003-2004. While in 2001-2002 Programming

Languages did not make it into the top 5, in 2002-2003 and 2003-2004, 33% and 25% of candidates, respectively, stated it as a teaching preference.

Candidates were more likely than universities to specify a teaching interest. Only 10%, 18%, and 15% of candidates failed to state teaching preferences over the three periods. These values are in contrast to 33%, 50%, and 53% of universities that did not specify teaching requirements.

In terms of research preferences, e-Commerce was by far the most frequently cited research interest (59%, 51%, and 40% in 2001-2002, 2002-2003, and 2003-2004 recruiting years, respectively) by candidates. However, many of the other research interests identified by the candidates failed to carry across all three recruiting periods. Recruiting years 2001-2002 and 2002-2003 showed less variability in research areas between them. As mentioned previously, e-Commerce was the top research area of interest. Other research areas common to both recruiting periods were MIS, Organizational Impacts, and IS Strategy. Three research areas (Knowledge Management, Human-computer Interaction (HCI), and Enterprise Resource Planning (ERP)) were in the top five in one of the years.

QUESTION 3. GAP ANALYSIS

The third research question looks at whether a gap exists between the teaching and research needs of the universities and the preferences of the job candidates. In terms of teaching, the match between what the universities are looking for and what the candidates are offering is relatively good. One exception seems to lie with e-Commerce for the most recent recruiting year (2003-2004). Thirty-six percent of candidates mentioned this area in their preferred teaching interests; it however does not figure in the universities' top 5 list (it is ranked 6th with 10%). In previous years, e-Commerce appeared in the top 5 for both universities and candidates. Another exception lies with Programming Languages in recruiting period 2001-2002. That subject area does not figure in the top five during that period, while for universities and candidates it appeared in the top 5 during the following two periods.

From the research perspective, there seems to be more disparity between universities and candidates. In the latest recruiting year, there is a match with MIS, System Analysis and Design, and Data Management. There is however a lack of concomitant interest on the part of universities with candidates' research interests in e-Commerce, HCI, and ERP. While Telecommunications was mentioned by universities in all years as a research preference, it did not figure highly in candidates' interests since 2001-2002. System Analysis and Design figured in the universities' research list in the top 5 in all years, while it did not reach that status for candidates' research interests until the most recent recruiting period. Research interest in Organizational Impacts was mentioned in 2001-2002 and 2002-2003 by candidates while it did not figure in universities' requirements.

Because the percentages reported in Tables 2 through 5 can mask large differences in actual numbers, we report those numbers in Tables 6 and 7. Table 6 provides teaching supply (by the candidates) and demand (from the universities) figures. Large disparities in the areas of Data Management, e-Commerce, ESS/DSS/GDSS, IS Strategy, MIS, and Telecommunications can be noted. In some cases, such as e-Commerce the supply figure is nearly five times that of the demand. What is interesting to note is the change in the level of demand from the universities, which is in some cases not reflected in a concomitant fluctuation in the supply of those areas. For example, the demand for Data Management was as follows: 53 in 2001-2002, 50 in 2002-2003, and 14 in 2003-2004. From the supply side, while the two first years were close to the demand figures (65 in 2001-2002 and 59 in 2002-2003), in 2003-2004 the supply did not drop as the demand did and remained high, at 57, creating a significant demand-supply gap. Similar patterns can be observed for ESS/DSS/GDSS, e-Commerce, IS Strategy and System Analysis and Design. In other cases, fluctuations in demand and supply mirror each other more closely (for example, Knowledge Management and Quantitative Methods). Finally, instances occur in which it would appear that the candidates are attempting to fill a demand expressed from the universities, although the demand is then not sustained. To illustrate, in 2001-2002 and 2002-2003

Table 6. Comparison of Number of Universities and Number of Candidates by Subject Area – Teaching

Subject Area	04 University Preferences	04 Candidate Preferences	03 University Preferences	03 Candidate Preferences	02 University Preferences	02 Candidate Preferences
Artificial Intelligence	0	3	2	8	5	2
Accounting IS	0	3	2	6	4	4
Data Management	14	57	50	59	53	65
ESS/DSS/GDSS	2	18	14	18	18	19
E-Commerce	11	54	51	59	66	82
Economics of IS	1	2	4	3	1	2
ERP	2	2	5	4	9	3
Global IT	2	1	2	7	3	4
Human Computer Interaction	0	12	3	13	3	8
IS Security	1	3	5	3	7	4
IS Strategy	9	29	23	31	33	40
Knowledge Management	1	0	12	22	13	17
End User Computing	1	3	3	0	0	2
MIS	30	69	47	71	79	40
Modeling/Simulation	0	1	5	5	2	6
Organizational Impacts	0	2	8	10	6	21
Operating Systems	2	2	6	0	4	0
Programming Languages	14	38	39	39	52	37
Quantitative Methods	2	1	5	6	2	6
Software Engineering	2	16	5	9	10	13
System Analysis and Design	21	53	44	62	47	54
Technology and Innovation	4	4	1	11	4	7
Telecommunications	17	37	51	33	71	41
Web Development	7	6	8	5	10	1

telecommunications was in greater demand than supply. However, in 2003-2004 although the supply figure for Telecommunications remained relatively stable, demand dropped drastically.

Tables 7 outlines research supply and demand figures. In several research areas candidates expressed an interest although universities do not demonstrate a similar interest or need. For example, the supply of e-Commerce for all years is greater than the demand with the most drastic demand-supply gap in 2003-2004. In that year, the supply was over six times that of demand. The data for Technology and Innovation illustrates a similar pattern. Conversely, and admittedly on a smaller scale, Telecommunications and Web Development were in demand more than in supply across all years.

While our data is not able to offer deep insight into the reasons for these types of disparities, further research might examine more fully supply and demand issues and attempt to identify predictors of demand so candidates might be able to target more effectively.

Table 7. Comparison of Number of Universities and Number of Candidates by Subject Area – Research

Subject Area	04 University Preferences	04 Candidate Preferences	03 University Preferences	03 Candidate Preferences	02 University Preferences	02 Candidate Preferences
Artificial Intelligence	0	11	3	13	0	12
Accounting IS	0	2	1	2	0	2
Data Management	12	38	33	22	32	35
ESS/DSS/GDSS	2	19	16	21	12	15
E-Commerce	9	60	43	61	46	85
Economics of IS	1	4	6	12	0	11
ERP	2	25	4	8	6	8
Global IT	3	11	4	17	4	9
HCI	0	26	5	21	1	16
IS Security	1	3	3	5	9	5
IS Strategy	8	6	23	26	18	42
Knowledge Management	1	2	15	40	9	28
End User Computing	1	2	3	4	1	4
MIS	30	60	38	47	45	34
Modeling/Simulation	0	4	4	7	5	15
Organizational Impacts	0	10	7	30	0	39
Operating Systems	2	2	4	0	0	0
Programming Languages	11	3	20	2	21	6
Quantitative Methods	2	4	1	2	2	3
Software Engineering	2	8	3	8	9	8
System Analysis and Design	17	21	30	21	32	9
Technology and Innovation	3	18	1	20	6	18
Telecommunications	13	10	30	11	36	16
Web Development	6	3	5	1	3	3

VI. SUMMARY AND CONCLUSION

Over the 3 years studied, candidates did quite well at matching their skills and interests to the areas in demand by universities. The top five areas show significant congruence, especially relating to teaching preferences. The noticeable exceptions are in the research areas of Telecommunications and Programming Languages. While these figure in the universities' research list, they do not in the candidates'.

We offer one possible explanation for the mismatch between the universities' Telecommunications needs and the apparent lack of ability to fulfill those requirements by the candidates. Telecommunications is considered one of the more technical classes of IS studies and is often taught by technically qualified adjuncts. Rare are PhD programs in IS that offer an emphasis in telecommunications. Those interested in pursuing studies in telecommunications most often do not apply to IS programs, and IS programs, not owning the required resources, do not offer telecommunication degrees.

It is possible that universities are operating on a shorter time line than candidates. That is, universities may be reacting on a year-to-year basis to teaching needs whereas doctoral candidates play a futures market. They select their fields of interests several years before they

enter the job market. As a result, the interests of the candidates may not reflect the more current needs of universities when those needs shift. Universities are also trying to respond to shifts in IS employer's requirements for new hires.

The results of this study should be beneficial to both academic institutions and to current and potential doctoral students. The schools may benefit from knowing whether a pool of qualified candidates exists and the candidates will be better prepared to meet the challenges they will encounter in their new academic teaching environment. In terms of teaching interests, there is an apparent match between what universities are asking for and what IS candidates are providing.

LIMITATIONS

While this study focuses on matching university teaching and research requirements with the candidates' research and teaching preferences, actual hiring involves a more complex process, which may include an assessment of the candidate's personality, collegiality, job fit, and like factors [Cascio, 1989]. In addition, we did not investigate the use of adjuncts in IS departments. Because adjuncts could be used to cover classes in which candidates are less interested, it is possible for universities to select the best overall candidate and not focus completely on whether or not specific courses are covered by the new hire.

Another limitation is that, due to an inability to obtain the required data for such analysis, we are not able compare the type of research methodology (e.g., field studies versus survey instruments versus models) in which candidates are trained and skilled and the type of methodologies that the universities seek.

A final possible limitation is that, while the data might offer some interesting observations, the sets of hiring universities and candidates change from year to year, making trend analysis difficult.

VII. FUTURE RESEARCH

CROSS CULTURAL STUDIES

While this study looked at US IS doctoral candidates, a similar study conducted in Europe and/or Asia may yield significantly different results. North American and European research with respect to theoretical bases and research methodologies differ [Evaristo and Karahanna, 1997]; differences in terms of teaching and research interests and requirements for IS candidates may also be dissimilar between continents.

PERIODIC DATA REFRESHING

Summaries of teaching and research requirements of doctoral candidates may prove helpful when deciding how best to prepare to enter the IS academic marketplace. Updates of such research, either bi- or tri- annually, could become a source of guidance for IS doctoral students wishing to be adequately and appropriately prepared to enter the marketplace in terms of the teaching and research requirements facing them.

CANDIDATE CHOICES

It might be interesting to explore this phenomenon more fully to establish the method of how candidates choose their areas of research and teaching preparation. Do candidates simply look at past university demand and make their decision on where to focus interest based on what hiring schools required in the last several years? If candidates simply react to university demand we would expect to see Telecommunications return to the candidates' top five lists for both research and teaching for the next placement season. Do they gauge the marketplace fully including future demand (forecasting) to make their decision? More data in future years could

help us answer this question. Perhaps candidates simply develop their own interests with no consideration of the market. A survey of PhD candidates could help answer this question.

Although, to some extent, it may be advisable for candidates to look at universities' needs and requirements, it is more often the case that good researchers tend to pursue issues in which they are interested, not those in which they are channeled for practical reasons. Good research and sound teaching most often stem from a passionate interest in the problem or material at hand.

UNIVERSITY INTENTIONS

Another stream of future research may be to examine the projected needs and requirements of universities over the next few years. Using a survey methodology it would be possible to estimate the academic positions for which universities expect to recruit. The survey would be directed at business school deans, heads of departments in which MIS is located and perhaps members of AIS (contactable through the ISWorld listserv). It would collect information on projected teaching and research positions for upcoming years. Data collected from such a survey would provide some degree of insight into future potential trends in MIS and enable new faculty members to tailor their educational and teacher training curriculums to meet the demands of the workplace they plan to enter more effectively[1].

NEEDS FORECAST

This study highlights the potential mismatch between candidates' interests and what universities seek. Although candidates may use this information to gain a comparative advantage over others entering the academic job market, they may wish to assess the direction in which the university needs are going (the survey described in the previous subsection may prove useful in this endeavor) and align their interests with those that will be required. Universities are also encouraged to improve their accuracy in predicting their potential needs and to communicate these needs clearly to soon-to-be IS doctorates.

TECHNICAL TRAINING

Another factor for future research is the technical training of the candidate. Although many areas of the IS field are more behavioral and can be closely related to one's research area, at times there are great differences between a person's research interest and his/her technical expertise in an area for teaching. For example, someone could be heavily interested in the use of databases and data warehouses in organizations, but this does not necessarily mean that s/he is an expert in designing databases, a skill needed in teaching a database design course. Because a PhD is a research degree, courses on the technical aspects of IS courses to be taught are not normally offered. Research into programs that have more technical training, as well as the

[1] We do not mean to imply that we advocate that people preparing for the job market should look only at the current demand for teaching and research skills. While that may make sense from a market perspective, it is the experience of many IS faculty that good research is done by researchers who pursue problems about which they are passionate. Doctoral candidates who are handed problems often (but not always) wind up not finishing or taking forever because they don't 'own' the problem. It is just a chore to be done, not something they believe in. It is also true that what hiring schools look for differs from one school to another, depending on who is working there. It changes over time. The key advice is to pick a topic that is of personal interest and to look at the people you want to work with. Then market yourself to those schools. Remember that when a person comes with, say, a systems analysis dissertation, he or she is viewed as that by their school. Changing research direction won't help and may even be looked upon negatively. To get back to the topic they love they would also have to retool to find out what happened while they were away writing their dissertation. The net effect is that they are doomed to perform the same research as their dissertation. They won't be happy with it and their colleagues will pick that up.

benefits and limitations of such training could provide important insight into how IS candidates can be better prepared for their new careers.

TEACHING ABILITY

Finally, although this paper emphasizes the teaching and research areas that are most in demand for IS doctorates, another important issue is that of doctorates' teaching ability and skills. Research provides evidence that simply being an expert in an area does not guarantee that you will be able to teach with any degree of competence [Arreola et al, 2001; Aleamoni, 1999]. The noticeable growth in executive MBA programs and other external educational programs in recent years will force hiring universities to take into account doctorates' teaching ability [Jarvenpaa et al., 1991; Myers and Beise, 1999]. It is important to look at whether doctorates are adequately prepared for university teaching requirements and whether there is a concomitant adequate preparation provided by doctoral programs. For example, do doctorate-granting schools offer or encourage their students the possibility of teaching during their final semesters before graduation [Lai and Chen, 1997] or offer teaching workshops? Universities hiring doctoral candidates may be able to put pressure on doctoral granting institutions to encourage them to develop a curriculum that incorporates teaching the required skills and knowledge. This approach will help ensure that their graduating students are fully prepared when they enter their new academic positions. The students will, in turn, be able to make sure that when they graduate they have the skills required of them even if they have to accumulate these skills on their own outside of the university setting through special certification courses or specialized training seminars.

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ABOUT THE AUTHORS

Andrea Everard is Assistant Professor of Management Information Systems at the Lerner College of Business and Economics at the University of Delaware. She received her PhD in MIS from the University of Pittsburgh. Her research interests are human-computer interaction, electronic commerce, trust, ethical issues in IT, outsourcing, cross cultural issues in IS and IT in the Arab world. Journals in which her work appears include *Communications of the ACM*, *Electronic Commerce Research and Applications, Electronic Journal of Knowledge Management, and Management Decision.*

Brian Jones is Assistant Professor of MIS in the College of Business at Tennessee Technological University. He received his PhD in MIS from the University of Pittsburgh. His research interests include international business applications (specifically Asia and the Pacific Rim), cross cultural issues in IS, human computer interaction, electronic commerce, and personal security and privacy issues with wireless systems. His work has been presented at several national and international conferences and appeared in leading academic journals including *Communications of the ACM*.

Scott McCoy is Assistant Professor of MIS in the School of Business at the College of William and Mary. He earned his PhD in MIS from the University of Pittsburgh. His research in cross cultural issues in IS, human-computer interaction, IT accessibility, and telecommunications policy has been presented in several national and international conferences. Journals in which his work appears include *International Journal of Cross Cultural Management*, *Communications of the ACM*, *Communication of the AIS*, *Information Technology and People*, and the *Journal of the Association for Information Systems*.

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