Diminishing IS Impact:
The Marginalization of Information Systems in Business Schools

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The tenure decision is accompanied by great anticipation. Faculty being evaluated, their family and friends, administrators, and evaluating colleagues all suffer stress and anxiety from the tenure process. One would hope that the tenure decision would be made with sufficient information and a clearly defined decision model, especially for information systems (IS) faculty who consider decision making and information processing their avocation. But, this may be wishful thinking. Considering the question of tenure decisions within the IS field as a small component of a larger system, this commentary argues that IS is discriminated against to the extent that we believe the future of IS is at serious risk in American business schools.

A Crisis in Information Systems?

As evident by discussions on the ISWorld listserv, some believe there is a crisis in the Information Systems field because of reduced enrollment. In this commentary we share our belief that the IS field indeed is in the middle of a crisis, but for reasons not previously discussed. With a simple model and some evidence, a significant problem that constitutes a vicious cycle for the IS field in business schools is discussed. Not since the early and fragile days of IS has the field's very existence in business schools been threatened the way it is today. While this threat is currently focused at top-tier Business Schools, it affects the prosperity of the whole field.

The IS-crisis Spiral

While there are many factors that decide the extent to which an academic field is

successful, we focus on a small set of factors that we believe are related and especially

important (see Figure 1).

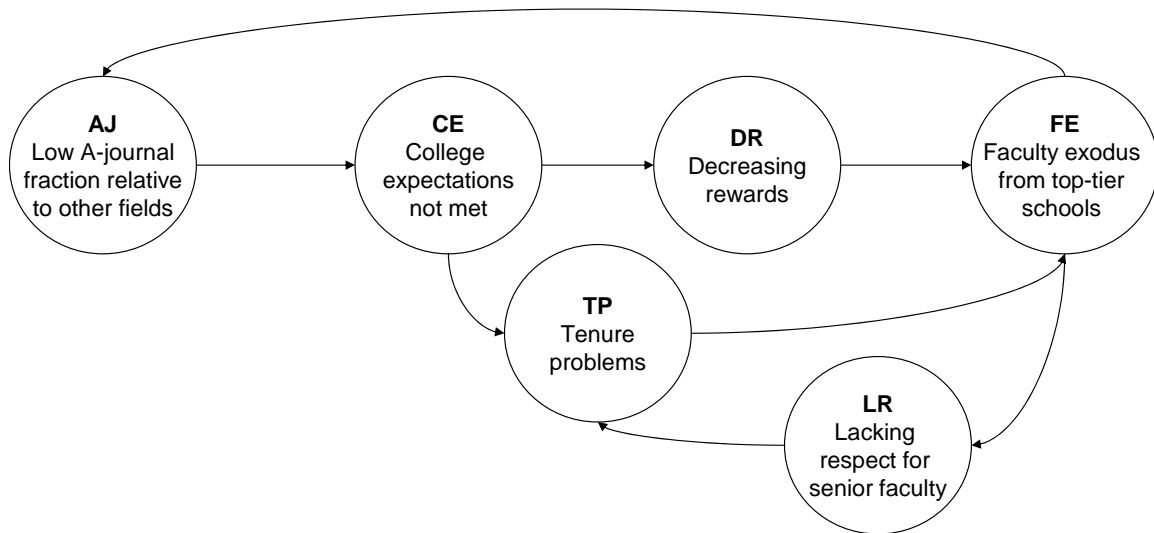**Figure 1. The IS-crisis Spiral[1]**

Figure 1 contains a relationship diagram of some important factors currently affecting the

prosperity of IS in business schools. The arrows represent relationships or flows between

the important factors. For example, as IS faculty receive *decreasing rewards* for their

work, faculty are more likely to go on the job-market, leading to *faculty exodus from top-*

tier schools. Clearly, the relationship between these two factors builds on assumptions to

be covered when each factor or relationship is discussed.

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[1] Circles are used to distinguish the diagram from some common model conventions in IS research. This diagram is different in that it contains two feedback loops. Over time, feedback loops will strongly increase the effect-size of a relationship.

The first factor, *low A-journal article fraction relative to other fields*, (AJ) is the most complex component of the model. By dividing the number of articles published in a field's A-journals in a year by the number of people in the field, a proxy of the difficulty of publishing in a specific field is derived. Given that what passes for an A-journal will vary between colleges, such numbers can be derived for each academic field in a specific college. The IS field number may then be divided by the average number for the other fields or compared to a specific field to obtain a relative index. A number below 1.00 would indicate a disadvantaged field within a school.

To examine the situation for the IS field, we compare IS and Marketing at one school. This is not an attack on Marketing, but rather an exposition of IS's precarious situation. In the school in question, the administration recognized two IS A-journals; MIS Quarterly and Information Systems Research, an increasingly common configuration according to an informal examination by the authors as well as an article by Trieschmann, et al (2000).

In comparison, the administration at the same school recognized four Marketing A-journals. By examining the number of research articles each year in the six A-journals in question from 1995 to 2001, it was found that in the same six year period (a normal pre-tenure period), the two A-journals in IS published a average of 43.8 research articles each year whereas the four A-journals in Marketing published an average of 123.3 research articles each year. These numbers, of course, mean nothing without a fair way to assess the relative number of faculty in each field. Recent data from the AACSB on the size of

disciplines should provide a reasonable proxy of size[2]. According to such data, IS has

grown to host 2685 faculty members[3] whereas the Marketing field has 3051 faculty

members[4]. This leaves 1.63 articles available per 100 faculty members every year in IS

and 4.04 articles per 100 faculty members in Marketing[5]. It should be noted that

examining the number of publications in IS and Marketing in 2001 exposes an explosive

growth of published articles in Marketing and a marked decline in number of published

articles in IS. Continuing with the above numbers, it is clear that faculty members in

Marketing have access to on average 2.48 times as many articles each year compared to

their IS faculty colleagues

College expectations not met (CE) denotes a situation where IS faculty do not reach the

expectation level set by Deans or colleagues in combined business areas. An informal

review of IS faculty at the top-tier business schools revealed that most such faculty

resided in departments with more than one discipline. Common combinations were IS

and Accounting, IS and Operations Research, as well as IS and Management. As these

combinations become more common, the evaluation of the IS research publication

productivity will increasingly be out of the field's control. Even for pure IS departments,

it is our belief that productivity standards are quite commonly set in relation to

expectations in other academic disciplines in a business school. Many business school

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[2] In fact, the IS data may under-represent the IS researcher population as many Information Science researchers focus on IS journals. In fact, the most prolific researcher in the IS field according to Claver et al. (2000) was an Information Scientist. Information Scientists also have won a best paper award in MIS Quarterly (see Majchrzak et al. 2000).
[3] This number includes 64 faculty members listed as belonging in "E-business (includes E-commerce)"
[4] The numbers used by Trieschmann et al.'s (2000) 1998 AACSB data indicated that IS had 1627 faculty members versus 2432 in Marketing.
[5] The average number of authors on each paper was checked to see if one field had clear advantages in that more people could claim each paper. It was found that the average number of authors per paper was 2.25 in Marketing and 2.29.

administrators advocate using straight A-journal "hits" to allocate the often "fixed pie" of rewards between researchers in their schools without considering that there may be greater opportunities to publish in some fields. The result is that college administrator expectations will be met less frequently by IS faculty than by Marketing faculty. Because AJ for the IS field is below 1.00 in this example, IS faculty performance is likely to be perceived as below expectations. This, in spite of the fact that one article in an IS A-journal will increase the relative ranking of the IS department 2.48 times more than one article in a Marketing A-journal would increase the relative ranking of the Marketing department.

Decreasing rewards (DR) denotes the situation where IS faculty receives a decreasing part of the usually "fixed pie" of the college salary and support budget. The decreasing rewards are a result of not meeting college expectations. Since the perception of low productivity often follows AJ, the fields where opportunities to publish are more limited will be at a disadvantage when rewards such as salaries, tenure, increased recruitment/growth, and political power are allocated[6]. As will be noted later, political power becomes important in another place in the model.

If tenure evaluators simply count A-journal articles when assistant professors go up for tenure, the average Marketing faculty record should include 2.48 times as many A-journal hits as that of an average IS faculty member. This means that when an IS faculty member with two A-journal hits goes up for tenure, he or she should be considered

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[6] In a recent editorial, Weber stated that "the prestige afforded to scholars, and thus their formal and informal power, often depends significantly on their publication records" (2002, p. iv).

equivalent to a Marketing faculty member with 5 A-journal hits. However, it is not likely that an administrator would see the two tenure candidates as equivalent. Most likely, the IS faculty member would have a harder time getting tenure than the Marketing faculty member.

Another unpleasant side-effect of not meeting college expectations, *tenure problems,* represent the cases where assistant professors have a hard time getting tenure at their college. These tenure problems include diminished self-esteem and reduced confidence. Most tenured faculty in the field have seen first-hand the devastating effect on someone who received negative feedback on tenure decisions. Many may also have observed such effects on people they believed to be strong candidates by IS standards.

Recognizing that there is no agreed-upon way to define what constitutes a top-tier school, and that such measures are, at best, relative, *faculty exodus from top-tier schools* (FE) considers the extent to which a field is able to retain a strong presence of faculty in the best business schools in the country. In essence, are the top IS publishers at the top business schools? In this commentary, we consider schools with a strong presence in most or all academic fields to be the top-tier schools. In that sense, the definition should be taken to be close to a Dean's point of view. Decreasing rewards and tenure problems lead to higher FE. Those factors could explain what for the last few years has seemed like a flight of research faculty in the IS field to lower-ranked schools as well as to non-business programs such as information science[7]. While one may hope that such hot-beds

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[7] While faculty may move to better IS departments, such moves are usually to schools considered lower-ranked by administrators. At least part of the reason for this may be that when attempting to secure a job in

of IS research will emerge as the top-ranked schools of tomorrow, this seems unlikely to happen unless such schools have received large endowments that they have invested in all academic fields, not just IS. Even in those cases, it will likely be many years before the perceptions of quality among administrators will catch up with the actual quality of such schools (the reputations of the University of Chicago, Stanford, and Columbia will live on)[8].

Lacking respect for senior faculty (LR) represents a critical problem for the IS field. This factor contains two important aspects, internal and external support. Internal support denotes the case where senior IS faculty go "out on a limb" for their junior faculty and use their power and respect on behalf of a junior colleague. External support focuses on external letters during the tenure process, an integral part of the tenure process at most business schools. There are two elements that define the extent to which a letter is considered helpful: (1.) the actual letter must contain a positive assessment of the candidate and (2.) the letter must come from a respected faculty member at a school perceived by tenure evaluators to be as good or better than the school of the tenure candidate. In terms of internal support, because DR will often have left internal senior faculty members with less respect and power than their records might merit, such support, on average, may not be as impactful as the internal support received by a senior faculty member in such a field such as Marketing.

a similarly-ranked school, the same over-inflated expectations of what constitutes good productivity in a business school prevails. As one faculty member asked about a recent move from a top-tier school to a low-ranked (but strong IS) school, "sometimes there is no correlation between being at a 'famous' school and having a great job."

[8] It should be noted that the IS field is already at a disadvantage in terms of placing faculty. Many of the top-tier schools are graduate schools only, and given the current belief that at most one or two IS classes are needed for MBA students, there is little incentive to establish an IS department at such schools. This makes it very important to establish strong IS presences at top-tier schools with undergraduate programs.

As the number of IS faculty in top ranked schools decreases, finding faculty members at schools that administrators respect to write external letters of support for their tenure cases becomes more difficult. The faculty remaining at top-ranked research schools will likely experience a higher rate of requests for such letters, increasing the likelihood that they will decide not to honor as many requests[9]. Tenure candidates asked to suggest external reviewers are then left with the decision of asking for external letters from over-worked and under-appreciated faculty at schools their administrators respect or requesting letters from some of the best researchers in the field that reside at schools their administrators consider sub-par[10]. To illustrate this point, it should be noted that administrators generally welcome external letters from top-ranked schools such as Columbia, Stanford, and Chicago. However, these schools do not have active IS programs. All these problems in attaining helpful external letters will lead to a lower proportion of assistant professors getting tenure, continuing the vicious cycle in which we believe the IS field currently finds itself.

Finally, the relationship between FE to AJ completes an important feedback loop. One may ask why the IS field has started to move towards using only two A-journals for reward and promotion purposes? One answer may simply be that the institutional

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[9] Some administrators actually consider denied requests for letters a negative factor in the tenure process.
[10] Given that such researchers have high standards, a luke-warm letter may result. Given that administrators may not recognize the excellence of such researchers, a luke-warm letter may constitute a serious problem for a tenure case.

affiliation of editors and editorial boards on IS journals may not be as impressive as those of other business school fields[11].

Research productivity in IS

The IS field has published a number of studies examining the productivity IS researchers. Most of these studies by default focus on full professors because of their high publication volume (e.g., Claver et al. 2000). Presenting the productivity of such researchers does little to establish a standard for untenured professors. A research productivity standard for tenure is needed. Of course, this will depend on a specific school and its focus and support of research. However, for schools focusing on a select list of A-journals and with aspiration of becoming a top-25 business school, it is not uncommon to hear that the expected number is *five* A-journal publications during the pre-tenure period. Similarly, it is not uncommon for top-50 schools to expect *three* or *four* A-journal publications before rewarding tenure.

To examine whether these are reasonable expectations for IS researchers, we ranked all IS researchers by the total number of publications in the *MIS Quarterly* and *Information Systems Research* from 1997 to 2002. This compares with a typical pre-tenure time period. We then removed full professors to clarify the picture.

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[11] In fact, focusing on MIS Quarterly and Information Systems Research, even those journals do not have editorial boards that impress administrators. We expect this problem to become worse as the faculty exodus from top-tier schools continue. In fact, because of MIS Quarterly's focus on behavioral and organizational topics, an informal survey of top-20 school faculty (based on US News and World Report rankings) showed that even MIS Quarterly is becoming more marginalized at combined departments.

	Number of publications		
	2	3	4
Associate Profs.	27	5	3
Assistant Profs.	12	3	1

Table 1. Research productivity of Assistant and Associate Professors[12]

Table 1 contains data on the most prolific Assistant and Associate IS professors in the world based on publications in the two leading journals. The most active researchers in the field were authors or co-authors on no more than four studies during the six years examined. There was only one Assistant Professor who reached this level, and that person received his Ph.D. more than 10 years ago[13]. Five Associate and three Assistant Professors authored or co-authored three articles. Finally, 27 Associate and 12 Assistant Professors authored two articles, and the rest of the field authored or co-authored one or zero publications. While many administrators use the normal-count approach (Chua et al. 2002), and simply count the number of A-journal publications regardless of the number of co-authors, some may go deeper and examine the number of co-authors on a paper. For example, some articles in our sample were co-authored by six researchers. Using the adjusted-count approach (Chua et al. 2002), assigning a score to the researcher that divides an article by the number of authors may give a better sense of how productive a researcher can be in six years. For example, what is the value of 1 ½ articles (one single authored and one co-authored with one other researcher)? Table 2 outlines the numbers for the six-year sample and clearly shows that among the assistant professors, only one researcher reached the 2.01-2.25 articles level (the same person

[12] Because of the work-intensive nature of ascertaining the current job-title of a researcher, this data was only collected for researchers with two or more A-journal hits.
[13] This faculty member did not receive tenure on his/her first attempt.

mentioned above) and only two assistant professors reached the 1.26-1.50 articles level.

In all, only five Assistant Professors had published *above* the 1.00 article level.

| | Number of publications | | | | | | | |
	1.01 - 1.25	1.26 - 1.50	1.51 - 1.75	1.76 - 2.00	2.01 - 2.25	2.26 - 2.50	2.51 - 2.75	2.76 - 3.00
Associate Profs.	3	6	2	1	1	0	0	1
Assistant Profs.	2	2	0	0	1	0	0	0

Table 2. Fractional publication counts for Assistant and Associate Professors

One of the motivators for writing this article was a chance meeting with an Assistant

Professor at a recent academic conference. This professor was awaiting feedback on

whether his college would support his tenure case and seemed convinced that tenure was

out of reach given that his school, a top 25-50 Business School, was expecting five A-

journal hits and he was nowhere near this target. Moreover, he did not seem to think that

he deserved tenure because of his perceived lack of productivity. It is interesting to note

that after examining the data, he turned out to be one of the most prolific assistant

professors in the world. If being among the absolutely best is not enough for tenure at a

second-tier US Business School, the IS field has more to worry about than declining

enrollments.

While the above data points to a grim reality, there are clearly possibilities for IS

researchers to get tenure. Most schools with A-journal lists allow IS faculty to publish in

the A-journals of other fields such as Management, Accounting, Operations Research,

Finance, and Marketing. However, if IS researchers are *forced* to publish in such fields

to reach the numbers required for tenure, the IS field has lost the ability to stand as an

independent field. It is an indicator of lacking identity. Furthermore, suggesting that all

or most IS researchers be able to publish in two academic disciplines presents high

expectations for all but the most versatile researchers in the field.

While researchers at second- and third-tier schools may think this issue does not concern

them, this is a complex problem with many interrelationships, and it is our belief that it

affects all business school IS programs. Given that administrators in second- and third-

tier business schools often mimic top-tier schools to increase their rankings, and

assuming that IS continues on its path towards eradication in the top-tier business

schools, what incentive will second- and third-tier administrators have to invest in IS?[14]

We call upon our professional organizations, especially the Association of Information

Systems (AIS) to study this problem and work towards long-term solutions. While one

solution may be to continue work on turning the Journal of the AIS into a highly

respected A-journal, other solutions include communicating to administrators that an A-

journal article in the IS field should be rewarded above the level of an A-journal article in

another field[15]. A continuously updated Website where administrators or IS faculty may

select which A-journals their different disciplines work toward and get numbers on the

relative value of a published article should go a long way towards helping IS. In other

words, to turn the spiral around, focus must be on IS's low A-journal article fraction

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[14] In fact, we are already seeing results of IS being marginalized, as well as IS's attempts to fight the fires (Ives et al. 2002).
[15] When an Assistant Professor receives an A-level acceptance s/he goes from "zero to hero (heroine)."
Until the field can change this dynamic, administrators must be made to understand reality.

compared to other fields and on ways to create reasonable expectations within our

business schools.

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