Topics of interest in IS: evolution of themes and differences between research and practice

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Abstract

The information systems discipline has been criticized in the past for lack of secure foundations, frequent shifts in focus and lack of impact on practice. The study deals with two main issues— evolution of themes in IS research and practice over time and differences between research and practice in the IS area as evidenced by the publication process. More than 3000 articles published across five years in four IS journals and five magazines were examined and categorized by thematic areas. We find journals and magazines focusing on different themes with the former focusing on conceptual and abstract models while the latter devote attention to specific applications. Significantly, academic themes show more variance over time. Apparently, there is no significant increase in the richness of themes being addressed over time but there is evidence of conflicting contemporaneous trends in research and practice. © 1999 Elsevier Science B.V. All rights reserved.

Keywords: IS research issues; IS literature; IS journals; IS research; IS practice; Knowledge creation

1. Introduction

Information systems is a relatively new area, having evolved into an independent field of study in the early 1970s. It has been acknowledged to be an interdisciplinary field of endeavor. It has also been recognized that the IS discipline should draw from other disciplines and researchers should continually reflect about research and its intellectual roots [14]. Past research suggested that three fields—computer science, management science and organization science constitute the necessary foundations for this discipline [25]. A study of the emergence of MIS as a scholarly field in terms of its relationship to the foundation fields found that it was emerging as an independent discipline with its own cumulative tradition. It was hypothesized that as MIS becomes more established, we might witness a convergence of reference points or a break away from the foundational base. Culnan [8] assessed the intellectual development of MIS based on a co-citation analysis and identified five informal clusters of research activity. It was found that MIS may be emerging from the reference disciplines into an
independent and coherent field, based on citations to both MIS literature and reference disciplines.

However, in recent years there have been some concerns about the fact that there are few paradigms endogenous to the IS discipline, while theoretical paradigms from other discipline are continually being borrowed. Also, IS research has been characterized by trying to understand phenomena after they have occurred, moving from one management fad to another without building a cumulative tradition. The emergence of distinct research paradigms is considered as the sign of maturation of a discipline but this goal seems to have eluded IS. Banville and Landry [2] argue that “...the field of MIS is largely open to an educated public, reputations are fluid, coalitions are ephemeral and leadership is often of a charismatic nature.” Adapting Whitley’s [27] view on the sociology of knowledge, Banville and Landry classified the management information systems (MIS) discipline as a fragmented adhocracy characterized by research that is rather personal, weakly coordinated in the field as a whole, with weak entry barriers from one fragment to the other and common sense language dominating the communication system. Culnan and Swanson [7] also agree that there is no evidence that a consensus has emerged as to the body of MIS work considered to be integral to the field. Another study using diversity in methods used and phenomena studied found little evidence of change in maturity over a 10 year period [5]. The lack of cumulative knowledge generation was also supported in a study that reviewed cognitive styles literature [12] and found that the results of the studies did not lead to operational design guidelines. Recent insightful debate over the diversity of IS research in ISR provides an interesting view for IS researchers to rethink of the value and risk of diversity in IS research [3, 20].

The main purpose of this paper is to investigate the nature of diversity from the perspectives of shift and emergence of themes in IS research.

2. Evolution of themes

“...The Information Technology trade press—Computerworld, Datamation, CIO Magazine and others—have been writing about ‘Client/Server’ for a couple of years. First they were full of ‘silver bullet’ stories, usually based on reports from technology salesmen about the successes of projects which were (supposedly) nearing completion. More recently, they have been filled with the horror stories of projects gone wrong through choice of technology vendor/product and lack of common sense management ... now even the business press is clearly on the bandwagon ... It’s difficult to know what the reality of Client/Server computing really is, in large part because that reality is constantly shifting ...” [17]

This comment captures one of the common critiques of the information systems discipline—the lack of secure foundations or paradigms.

2.1. Shifting paradigms

The phenomenon of rapidly changing paradigms offered as panacea to managers has been recognized in literature. Abrahamson [1] has coined the term management fashion to connote this. Administrative techniques such as matrix structures, quality circles and job enrichment have been some of the solutions that have been offered to managers; they enjoyed their period of popularity and were then discarded for the next ‘hot’ innovation. The dramatic increase in the popularity of quality circles, for instance, in the early 1980s has been described as a fad that companies tried simply because it symbolized modern participative management and had been responsible for the competitiveness of Japanese products [16].

The information systems area has had its share of paradigms that have been fancied for some period to be replaced by new developments. Some examples of these are:

- Expert systems and artificial intelligence

The 1980s saw a great deal of expectations from this technology. However, there was a great deal of disillusionment when attacking problems of depth and complexity due to difficulties in capturing expert knowledge [13].

- Computer-aided software engineering (CASE) tools [23].

2.2. Theory of paradigm change—institutional perspective

One of the theoretical underpinnings of our research comes from institutional theory. We examine this perspective and propose an explanation for the observation of frequent paradigm changes.

Dimaggio and Powell [9] argued that structural change in organizations was driven less by considerations of efficiency as by the structuration of organizational fields. Institutionalization also refers to ‘to infuse with value beyond the technical requirements of the task at hand’ [21]. The latter view recognizes that organizations must compete for political power and institutional legitimacy to ensure their survival.

Institutionalization may not be necessarily inefficient as it does provide gains to the organization through reduced information processing needed due to stability of expectations and behavior. The institutional perspective offers insights about the emergence of transitory beliefs among information systems professionals. Information systems is an area where rational efficiency-based criteria for decision making may not be applied for the following reasons:

– Rapid changes in technology make it difficult for individuals to keep abreast of and rationally evaluate paradigms due to limited cognitive capabilities
– Uncertainty about future technological developments is very high and it is often not possible to speculate about the future
– Current decisions on adoption of paradigms are often affected by how things will take shape in the future
– IS decisions can seldom be translated accurately into financial terms. Hence, objectivity in decision-making may not be always possible.

Based on these, we can theorize about the emergence of transitory beliefs about ‘rational’ IS choices among information system professionals. Management fashions will proliferate in functions where clear rational decisions do not exist or performance cannot be clearly appraised. These will be adopted first by the dominant firms in the industry and then rapidly diffuse to the majority. Ritualized isomorphism is predicted for social systems penetrated by theorization—the formulation of causal relationships and constructs [22]. Also, interaction in such contexts is theorized to facilitate diffusion between interacting individuals. Information systems is an area where theorizing occurs to produce theoretical constructs or categories or relationships from real phenomena, and where professionalism of the discipline is prevalent.

In our view, the frequent paradigm changes we witness in the IS area are not necessarily detrimental to the advancement of the discipline. In fact, due to rapid technological advancement it is imperative for ideas about information system development and use to be attuned to these changes. The drawback of these frequent changes occurs if they are not driven by rational criteria and purposeful evaluation. Also, rapidly changing paradigms could lead to the undermining of a cumulative tradition in the area.

3. Differences between research and practice

There is some evidence to indicate that researcher interests do not match with issues that concern industry [6]. It is also noted that the evaluation of research work is done based on criteria that do not match user requirements. Duncan [10] found a high degree of disagreement among management teacher-researchers and practicing managers. While researchers valued practicability and usefulness as the most important criteria for evaluating management knowledge, managers chose profitability and application to specific situations.

Trauth et al. [26] have investigated the expectation gap between industry needs and academic preparation with the former focusing on long-term education while the latter desired short-term skills. At the same time there was considerable agreement between academic and business respondents on the importance of certain IS tasks and skills. Price [19] suggests that academics build theories of analysis while practitioners need better theories of action.

Narayan and Fahey [18] have proposed three subsystems that are central in the process of producing useful knowledge: a knowledge generation subsystem, a knowledge utilization subsystem and a resource controlling subsystem (Table 1).

Kilmann et al. [15] suggest that academics have greatly emphasized internal validity over external validity and other prerequisites of usefulness while pressures for short-term results and immediate
decision making and action taking result in practitioners being more concerned with usefulness rather than validity.

In the IS area new paradigms may be created at educational and research institutions or in the industry. They are then diffused to other companies and institutions. The role of IS literature in this process is quite important as it serves as one of the communication channels in this communication network. Journals, for instance, serve as channels of communication between academics while practitioner literature serves as a mode of communication between practitioners and sometimes serves as a bridge between these two communities. Thus, these media serve to connect individuals to the IS network and provide means for patterned flow of information.

Now taking on views presented in the sections above, we lead to the following speculative view on the emergence of IS themes in comparison with practitioners press.

- Published literature in the IS area is a communication system for the diffusion of innovations through the social network of practitioners and academics and as such reflects key concerns of its audience.
- Themes in published literature will show evidence of cyclical adoption and decline of paradigms.
- The process of diffusion may be driven by ‘need to conform and imitate’ rather than just by rational decision making and technological progress.
- Publication of research on a specific theme in IS journals may lag expression in practitioner magazines.

4. Research propositions

Based on the above analysis we develop the following propositions:

<table>
<thead>
<tr>
<th>Objectives of inquiry</th>
<th>Knowledge generation</th>
<th>Knowledge utilization</th>
<th>Resource allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scientific validity</td>
<td>‘Pragmatic’ validity</td>
<td>‘Optimal’ allocation of resources</td>
</tr>
<tr>
<td>Time horizon</td>
<td>Limitless</td>
<td>Relatively time bound</td>
<td>Relatively intermediate</td>
</tr>
<tr>
<td>Dominant role</td>
<td>Researcher</td>
<td>User</td>
<td>Sponsor</td>
</tr>
</tbody>
</table>

Source: (Narayanan and Fahey, 1994).

P1 (Difference in perspectives): There is a difference between the practitioner and academic perspectives.

Practitioners tend to focus on usefulness as a criterion and focus on short-term issues that have greater practical impact. Academics focus on broader issues that can be analyzed with rigor.

Test: A difference in perspectives would be shown by systematic differences in academic and practitioner literature. We expect journals to focus on themes having long-term impact and that operate at abstract levels while magazines deal with more specific themes and short-term concerns.

P2 (Time trends): Practitioner concerns show greater change over time than academic concerns.

Since practitioners focus on immediate concerns they would tend to shift attention over time to a higher extent than academics.

Test: A higher variance in thematic content of magazines compared to journals.

P3a (IS research): There are areas of research receiving inadequate attention from IS scholars.

P3b: IS research has enhanced in richness of themes over time.

Past research has highlighted some areas that have not received attention. At the same time, there is concern that the discipline is a ‘fragmented adhocracy’.

Test: Whether themes emerging from IS journals cover the wide spectrum of IS issues.

Whether IS themes have become more varied over time.
P4a (Lag): The dissemination of results in IS journals lags the emergence of managerial interest in the same broad area.

P4b (Diffusion): The results of IS research diffuse to practitioners over time.

The journal communication process has been criticized on grounds of the time it takes for results to move from the formal to the informal domain. The issues of political game-playing and institutionalization processes at work that undermine emergent applications and innovative work have also been raised. The diffusion approach contends that academic research is the source of research that then gets disseminated to managers to apply.

Test: Whether themes in practitioner literature get reflected in journals after a time lag or whether magazines follow journals in looking at new themes.

5. Research method

The study is centered around a classification of IS publication categories. The categories for the classification were developed based on earlier work [24]. The dynamic nature of the IS discipline makes it difficult to pin down a classification scheme that we can use, though we recognize that many existing schemes are available, MISQ 1993 for example. This is because some of these lack applicability to our period of study and others focus largely on research issues and cannot be used for practitioner literature. For practical reasons, we found an iterative classification scheme to be the most suitable. An iterative classification scheme was used to develop the categories based on the original proposed in the Swanson and Ramiller’s study. Based on our analysis, we came up with 48 categories (Appendix A) corresponding to the range of article themes that were encountered.

Articles were assigned to the category that corresponded to the main research question being addressed or the theme that was the subject of analysis. In line with earlier research, we placed each article in a single category corresponding to the major issue to avoid complexity.

The classification was carried out by three researchers working with parts of the dataset. A five year period of analysis was specified and only articles published between 1 January 1991 and 31 December 1995 were included in the sample. It was felt that this period would be adequate for conclusions about thematic content comparisons to be made, though a larger time frame would be desirable for observing significant variation over time to be observed.

The data from the earlier study [24] based on single journal for 1987–1992 was re-classified as per our classification scheme for further comparisons over time.

The following journals publishing articles in various information systems areas were identified for the purpose of reviewing research in the discipline. The publications were chosen as they predominantly publish articles of general interest in the IS discipline and are highly regarded by IS researchers.
1. Communications of the ACM (CACM)
2. Information systems research (ISR)
3. Journal of MIS (JMIS)
4. MIS quarterly (MISQ)

From the various editorial charters it is apparent that the chosen journals seek to publish articles in a wide topical range and also lay special emphasis on relevance to IS practice.

The following magazines publishing articles of interest to information system professionals were identified. These were chosen because they publish articles of general interest in the information systems area and have a wide readership amongst practicing managers. ComputerWorld, CIO and Datamation specifically cater to information system managers while Business Week and Economist were chosen for wide readership, prestige and attention to information system issues.
1. Business Week
2. CIO
3. ComputerWorld
4. Datamation
5. The Economist

Since these magazines publish numerous articles related to news and current developments, we analyzed specific columns or stories that were relevant to an understanding of academic perspectives. For example, for ComputerWorld magazine specific columns titled ‘commentary’, ‘management’, ‘viewpoint’ and
‘application development’ were included in the analysis. We excluded outlets like Harvard Business Review and Sloan Business Review from consideration since we were interested in contrasting archetypal research and practitioner perspectives.

Since, the number of articles for each source is different, simply adding up the numbers corresponding to each could lead to biased measures reflecting editorial policies and views of the dominating periodicals. To avoid excessively large or small influence of a journal or a year, we weighted each journal and magazine in each year equally by calculating percentage of topics for each journal and magazine separately and averaging them. In this research, we used these weighted percentages as the data for proposition tests and other investigations. Table 2 shows that number of articles for each journals and magazines from 1991 through 1995 we identified.

5.1. Reliability and validity issues

Great care was taken to ensure consistency of classification across time and across researchers.

1. A pilot sample derived from all the publications was first used. All researchers classified the same articles and a comparison of ratings was made. In this phase, an 82% inter-rater reliability was found. This stage was followed by further discussion to resolve discrepancies. Some ground rules for classification were laid out and the classification categories were refined.

2. The second stage of checking for reliability was performed after the completion of all coding. A sample data-set was selected that contained articles reviewed by the three researchers separately. The raters each reclassified their own articles and cross-classified the articles reviewed by other raters. A 96% consistency in self-classification and a 92% consistency in inter-rater classification was found at this stage.

The aim of our research was to cover a significant portion of literature. The 3010 published articles that were categorized do not represent a complete set, but, in our view, represent the major ‘share of voice’ in our field. The researchers took special care to ensure that they went beyond the use of specific terminology and captured the focus (theme) of the article. We recognize that there is a need for qualitative data to supplement this data-set, especially for practitioner views. The external validity of the findings needs to be assessed by an examination of a longer time period.

6. Result

6.1. The evolution of themes

There appear to be thematic differences among different journals (Table 3). For example, IT usage and user modeling issues are the most important for MISQ, system design and advanced techniques for CACM, decision support and groupware for JMIS and groupware and IS research/modeling issues for ISR.

One issue of interest is whether journals have increased in the richness of themes over time. First of all, we investigated how the distribution of numbers

Table 2
Number of articles

<table>
<thead>
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</thead>
<tbody>
<tr>
<td><strong>Journals</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>ISR</td>
<td>12</td>
<td>16</td>
<td>13</td>
<td>20</td>
<td>12</td>
<td>73</td>
</tr>
<tr>
<td>JMIS</td>
<td>27</td>
<td>32</td>
<td>35</td>
<td>25</td>
<td>33</td>
<td>152</td>
</tr>
<tr>
<td>CACM</td>
<td>57</td>
<td>84</td>
<td>51</td>
<td>68</td>
<td>58</td>
<td>318</td>
</tr>
<tr>
<td>MISQ</td>
<td>30</td>
<td>30</td>
<td>26</td>
<td>31</td>
<td>26</td>
<td>143</td>
</tr>
<tr>
<td><strong>Magazines</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer World</td>
<td>84</td>
<td>184</td>
<td>209</td>
<td>282</td>
<td>272</td>
<td>1031</td>
</tr>
<tr>
<td>Datamation</td>
<td>52</td>
<td>65</td>
<td>68</td>
<td>67</td>
<td>62</td>
<td>314</td>
</tr>
<tr>
<td>Economist</td>
<td>20</td>
<td>33</td>
<td>37</td>
<td>50</td>
<td>46</td>
<td>186</td>
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<tr>
<td>CIO</td>
<td>75</td>
<td>114</td>
<td>101</td>
<td>104</td>
<td>98</td>
<td>492</td>
</tr>
<tr>
<td>Business Week</td>
<td>60</td>
<td>62</td>
<td>60</td>
<td>65</td>
<td>54</td>
<td>301</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>322</td>
<td>473</td>
<td>563</td>
<td>662</td>
<td>615</td>
<td>3010</td>
</tr>
</tbody>
</table>
Table 3

<table>
<thead>
<tr>
<th>ISR</th>
<th>JMIS</th>
<th>CACM</th>
<th>MISQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CSCW</td>
<td>1. DSS/EIS</td>
<td>1. System design, development</td>
<td>1. IT usage and user modeling/adopt</td>
</tr>
<tr>
<td>2. IS research</td>
<td>2. CSCW</td>
<td>2. Advanced techniques</td>
<td>2. User satisfaction, involvement</td>
</tr>
<tr>
<td>5. Expert system/NLP</td>
<td>5. Inter-organizational system</td>
<td>5. Object oriented techniques</td>
<td>5. IS personnel issues</td>
</tr>
<tr>
<td>6. IT usage and user modeling/adoption</td>
<td>6. IT usage and user modeling/adoption</td>
<td>6. Specific-use system</td>
<td>6. IS strategy/IT company strategy</td>
</tr>
<tr>
<td>7. Advanced techniques</td>
<td>7. IS research</td>
<td>7. Security issues</td>
<td>7. CSCW</td>
</tr>
</tbody>
</table>

a Ranked order.
of themes has changed over the years. If IS research converges to certain themes so that small number of themes take a large portion of articles, we would expect that standard deviation of number of each theme over 48 categories will increase over the time period. An examination of Table 4 indicates that this does not appear to be the case, though there is a marginal increase in the number of themes in 1994–1995. Over the years of the study, the standard deviation remained the same and have not shown an increase even when compare the numbers in 91 and 95. Compared to magazines, journals showed a relatively higher dispersion in numbers in themes, indicating that journals tend to concentrate on a more limited number of themes.

Now, we investigated the number of themes constituting the top 50% of articles. Basically, we counted how many themes constituted the top 50% of all journal articles for each year. Here again, it is expected that the number will decrease if IS research converges to certain themes. The results in Table 5 showed that the number has not decreased, if not increased over the time. In comparison with Swanson’s previous results and our own 1991 results, the number of themes constituting top 50% of articles in 1994 and 1995 has increased.

Finally, we counted how many changes in the top 10 themes occurred for the next consecutive year in both magazines and journals. As was shown in the Table 6, the numbers have recently increased, indicating that top 10 themes change more frequently these days than early years. While these trends are consistent in both journals and magazines, journals showed more frequent changes than magazines.

In combination with the results about the variance in top IS topics over time, number of themes constituting the top 50% of articles and number of changes in the top 10 themes, we are led to the conclusion that IS research has been more diverse over the years, publishing on various topics.

6.2. Comparison in themes between journals and magazines

The difference in the topics of focus is clear if we analyze the differences between the proportion of articles dealing with specific themes (Table 7). It is apparent that issues dealt with in journals are more related to paradigm and concept development while magazines focus on application oriented themes. The rejuvenation of interest in expert systems, natural language processing and agents could reflect the use of these concepts in areas like WWW searching, large database interfaces and user interfaces.

We find that academic literature is deficient compared to magazines in the extent of coverage devoted to applied topics such as tools and techniques for system development, marketing, multi-media and standards and client–server technology.

Table 7
Major differences in proportion of articles for specific themes

<table>
<thead>
<tr>
<th>More frequent in journals</th>
<th>More frequent in magazines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. System design, development and methodology</td>
<td>1. IT marketing</td>
</tr>
<tr>
<td>2. Advanced techniques</td>
<td>2. IS strategy/IT company strategy</td>
</tr>
<tr>
<td>3. CSCW</td>
<td>3. IT applications</td>
</tr>
<tr>
<td>4. IT usage and user models/ adoption</td>
<td>4. Client–server technology</td>
</tr>
<tr>
<td>5. Expert systems/Agents/NLP</td>
<td>5. Standards/open system/quality issues</td>
</tr>
<tr>
<td>6. DSS/EIS</td>
<td>6. Commercial products</td>
</tr>
<tr>
<td>7. IS research</td>
<td>7. Tools and techniques</td>
</tr>
</tbody>
</table>

*Topics which showed difference >3% between journals and magazines (ranked order).
We computed the correlations between the extent of coverage devoted to specific topics in journals and magazines (Table 8).

We find that journals and magazines have high correlations within themselves and lower correlations across each other. This leads to the inference that they have been focusing on their own topics and have different perspectives as was consistent with our expectation and previous empirical results of differences in frequent topics.

One interesting observation from the matrix is that the correlation among journals are smaller than among magazines. Combined with the result in Table 6 showing that the number of changes in top 10 themes is higher in journals, we might conclude that IS journals have tended to be more varied in thematic content across time. One explanation is that since IS is a new research area where paradigm development has not advanced and which is influenced by many reference disciplines, a concrete cumulative tradition of research has not yet emerged. Another possible explanation is that we expect more changes in journal content across the years because we have a relatively smaller sample size for journal articles.

Finally, we investigate whether there is a consistency in trends between journals and magazines. Some of the interesting trends in specific thematic areas are shown in Fig. 1(a)–(d). These plots show conflicting trends in the prominence of certain themes in journals and magazines. For instance, organization issues as a theme shows a strong declining trend in journals, while it declined and then picked up again in magazines. The expert systems and NLP theme declined and then strongly picked up in journals while it has not surged up as strongly in magazines. Reengineering as a theme shows a stabilizing trend towards the end of the time period in the case of magazines while it shows a strong upward trend for journals. It is apparent that we cannot isolate research or practice as the forebearers of ideas from the available data, but there is some evidence that thematic trends may conflict for the two.

The thematic time trends for journals versus magazines are shown in the Fig. 2. In this graph, the X-axis represents the changes of proportions, that is (percentage in 1995–percentage in 1991), in journal while Y-axis represents changes in magazine.

The graph can be divide into four sections and the characteristics of each quadrant are shown in Table 9.

The upper right quadrant depicts the area of consensus. Both journals and magazines have identified these as areas of importance. Areas like inter-organizational systems, user training and reengineering figure in this quadrant. The lower-left quadrant represents the areas where both journals and magazines have cut back on focus. Areas like human computer interaction and managerial decision making fall in this region. The upper left quadrant represents themes where magazines have increased focus while journals have reduced focus. These are areas such as databases, CSCW and organizational issues. The lower right quadrant represents areas where journals

### Table 8

Correlation between journal and magazine themes

<table>
<thead>
<tr>
<th></th>
<th>J91</th>
<th>J92</th>
<th>J93</th>
<th>J94</th>
<th>J95</th>
<th>M91</th>
<th>M92</th>
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<tr>
<td>J92</td>
<td>0.65b</td>
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<td>J93</td>
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<td></td>
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<tr>
<td>J94</td>
<td>0.52b</td>
<td>0.40a</td>
<td>0.47b</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>J95</td>
<td>0.26a</td>
<td>0.38b</td>
<td>0.46b</td>
<td>0.38a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M91</td>
<td>0.07</td>
<td>-0.08</td>
<td>-0.06</td>
<td>-0.24</td>
<td>-0.07</td>
<td></td>
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</tr>
<tr>
<td>M92</td>
<td>0.03</td>
<td>-0.04</td>
<td>-0.10</td>
<td>-0.22</td>
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<td>-0.77b</td>
<td></td>
<td></td>
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<tr>
<td>M93</td>
<td>0.09</td>
<td>0.00</td>
<td>-0.01</td>
<td>-0.10</td>
<td>-0.03</td>
<td>-0.71b</td>
<td>0.85b</td>
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<tr>
<td>M94</td>
<td>0.06</td>
<td>0.01</td>
<td>-0.13</td>
<td>0.03</td>
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<td>0.62b</td>
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<td>0.04</td>
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<td>0.10</td>
<td>0.07</td>
<td>0.42b</td>
<td>0.54b</td>
<td>0.62b</td>
<td>0.81b</td>
</tr>
</tbody>
</table>

No. of cases: 48.

* One-tailed significance: 0.01.
* One-tailed significance: 0.001.

Jyy: Journal in YY year, Myy: Magazines in yy years.
Fig. 1. Trend over time.

Fig. 2. Trend in journal vs. trend in magazine.
have somewhat increased focus over the five years while magazines have reduced focus.

6.3. Summary of results

P1 (Difference in perspectives): There is a difference between the practitioner and academic perspectives.

We find support for P1 with journals and magazines focusing on distinct themes. Journals do give prominence to generalized models while magazines give attention to specific applications.

P2 (Time trends): Practitioner concerns show greater change over time than academic concerns.

We find support for a position against this proposition, that is, academic themes show more variance over time. However, given the limited time range of our data there is no conclusive evidence.

P3a (IS research): There are areas of research receiving inadequate attention from IS scholars.

P3b: IS research has enhanced in richness of themes over time.

Past research had highlighted themes like inter-organizational issues, security issues, organization related issues and international issues among areas that needed further attention in IS research. We find the latter areas still underrepresented. We do not find any significant increase in the richness of themes being addressed over time.

P4a (Lag): The dissemination of results in IS journals lags the emergence of managerial interest in the same broad area.

P4b (Diffusion): The results of IS research diffuse to practitioners over time.

We do not find evidence to evaluate the diffusion or political perspectives. There is, however, evidence of conflicting contemporaneous trends in research and practice.

6.4. Implications

Based on the results presented earlier, it is apparent that there is a difference in journal and magazine themes and journals show more variance over time. One of the explanations for the delay could be ascribed to the lengthy review process for journal papers apart from the data collection and analysis. While part of the delay is obviously necessitated by the demand for stringent quality and need for ‘ground-breaking research’, the IS discipline can obviously take advan-

Table 9

<table>
<thead>
<tr>
<th>Quadrant</th>
<th>Topics</th>
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</table>
| Upper-right (Increases in both journal and magazine) | 1. Inter-organizational systems  
2. User training, support  
3. Expert systems/NLP  
4. Reengineering |
| Lower-left (Decreases in both journal and magazine) | 1. Human computer interaction  
2. Managerial decision making  
3. IS strategy |
| Upper-left (Increases in magazine and decreases in journal) | 1. Database and data management  
2. Organization issues  
3. CSCW |
| Lower-right (Decreases in magazine and increases in journal) | 1. IT impact  
2. IT marketing  
3. IT applications |
tage of information technology to speed up various parts of the research and publication process. The review process could be particularly improved by instituting the use of electronic communication and software support for routing and for ensuring timeliness.

There may also be a place for publication outlets that stem the gap between research and practice needs. Among the possible alternatives could be academic magazines that allow research results to be disseminated to a practitioner audience. Also, ‘practitioner tips’ or executive briefings could be offered as part of journal content. Such outlets could help to bring research closer to the practitioner audience and also open it to critical analysis by this constituency, in the process making it more responsive.

7. Limitation and future work

Our analysis of academic and practitioner literature is based on a study of US-based journals and magazines only. These may be biased towards the perspective of research institutions, businesses and individuals in this country. This may be more significant for practitioner literature as that does not draw much inputs from non-US sources.

We expect to see some inherent differences between journals and magazines due to the following reasons:

– Time to research, review, publish in journals is considerable and leads to delays
– Academic research may partly be driven by need to understand and explain rather than specific goals
– Classification is a subjective task and it is likely that alternate classification schemes could be proposed and justified.
– Numbers may reflect journal/magazine editorial policy
– Journals have constraints of space and quality while magazines may reflect stimuli of news, organizational and personal agendas.

This study could be extended further to include data over a longer time period and across a larger sample of literature. Classification schemes based on computer-aided content analysis techniques could be used to validate the results of this study. Qualitative research techniques could be fruitfully used to complement the results. It would be interesting to compare the themes emerging in this study with the key issues that emerge in the SIM surveys [4] which have surveyed SIM institutional members over time (1980, 1983, 1986, 1990 and 1994–1995). Data from this study may also be used to characterize journals and magazines, and to identify similarities and differences among them.

8. Conclusion

Our study finds support for the rapid shifting of themes in IS research, but we do not feel that this is necessarily bad. Information systems as a field studies phenomena that are multidimensional, complex and dynamic. Hence, there is a diversity of methods, viewpoints and variables needed for research in this area. At the same time, we urge that research should seek to accumulate knowledge gained from previous findings and build on that edifice. Also, we should look at practitioner concerns and make sure that our research does not lose relevance in the community whose needs we purport to serve. In the long term, we should avoid intellectual straitjackets but progress in the discipline will occur when there is convergence and a body of useful knowledge is created.

Acknowledgements

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Appendix A

List of thematic categories

1. User training/support
2. User satisfaction/involvement
3. User perception and attitudes
4. Tools and techniques
5. Technology—object oriented
6. Technology—media/communication
7. Technology—client–server
8. System platforms
9. System design, development and methodology
10. Standards/open systems/quality issues
11. Specific use systems
12. Specific characteristic systems
13. Software maintenance
14. Security issues
15. Reengineering
16. Productivity issues
17. Organizational learning and memory
18. Organization issues
19. Network pricing
20. Managerial decision making
21. Legal Issues/public issues/government
22. Legacy systems/legacy skills
23. Knowledge issues
24. IT usage and user models/adoption
25. IT spending/acquisition/budgeting
26. IT marketing
27. IT impact
28. IT diffusion
29. IT applications
30. IS strategy/IT company strategy
31. IS research
32. IS planning/IS infrastructure
33. IS personnel issues
34. IS performance evaluation
35. IS modeling
36. IS implementation/testing
37. IS function issues
38. Interorganizational systems
39. International issues
40. Innovation and IT
41. Information superhighway/networks
42. Human computer interaction
43. Expert systems/agents/nlp
44. DSS/EIS
45. Databases and data mgmt
46. Computer supported cooperative work
47. Commercial products
48. Advanced techniques

References


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