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Topics of Interest in IS: Comparing Academic Journals with the Practitioner Press

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Abstract

The information systems (IS) discipline has been criticized in the past for lack of secure foundations, frequent shifts in focus, and lack of impact on practice. This study examines differences in IS research and practice using institutionalization and diffusion perspectives. The study deals with two main issues: differences between research and practice in the IS area as evidenced by the publication process and evolution of themes in IS research and practice over time. More than 3,000 articles published over a five year period in four IS journals and five magazines were examined and categorized by thematic areas. The study found 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, the study found that academic themes show more variance over time. No significant increase in the richness of themes being addressed over time was found, but there is evidence of conflicting contemporaneous trends in research and practice.

Keywords: IS research issues, diffusion of IS research, IS literature, IS journals.

1. INTRODUCTION

The aim of this study is to explore the thematic content of information systems (IS) research and contrast it with the practitioner perspective on the IS discipline. The study looked at how articles are distributed across thematic areas and how these patterns change over time. *This view is based upon the assumption that popular magazines intended for IS managers do actually deal with issues that are regarded as significant by its audience and reflect contemporary concerns. At the same time, journal content is assumed to be representative of the concerns of the academic community.*

The IS discipline has been characterized as a fragmented adhocracy with a lack of major endogenous paradigms and foundations (Swanson and Ramiller 1993). This, it is felt, represents typical academic concerns about the way research is "supposed" to be done but neglects the utilization aspects that are important to the consumers of IS research. It is the view of this research that greater attention must be paid to the end-user, especially in a discipline as practice-oriented as IS. The study uses published articles in formal academic literature and informal application-oriented literature to check for dichotomies in the academic and practitioner viewpoints.

IS 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 (Keen 1980). Past research suggested that three fields—computer science, management science, and organization science—constitute the necessary foundations for this discipline (Swanson 1984). A study of the emergence of management information systems (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 (Culnan and Swanson 1986). 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 (1987) 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 (1989) 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." Culnan and Swanson 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 ten year period (Cheon and Grover 1993). The lack of cumulative knowledge generation was also supported in a study that reviewed cognitive styles literature (Huber 1983) and found that the results of the studies did not lead to operational design guidelines.

Kuhn (1970) presented a model of scientific development based on the concept of paradigm with a progression from pre-science to normal science to crisis to revolution to new normal crisis to new revolution. As per this model, development of a field occurs through searching for paradigm. Banville and Landry provided a critique of this monistic view of science and presented a model adapted from Whitley's view on the sociology of knowledge (Whitley 1984). They classified the 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.

In order to update understanding of the current state of the discipline, a small initial study was conducted. Data from the ISWorld Net site about research preferences of IS faculty were used. The research preferences were iteratively coded into research categories and a similarity measure for each pair of categories was computed based on common occurrence for a researcher. It is evident from the multidimensional scaling (Figure 1) and cluster analysis that the IS discipline does not have clearly demarcated IS research specialties. The current state of IS research preferences seems to suggest a fragmented underlying structure with signs of the influence of the reference disciplines—computer science, organization science, and management science—identified in the chart.

Based on the discussion above, two research questions are raised that need to be addressed:

- Differences between research and practice in the IS area as evidenced by the publication process
- Evolution of themes in IS research and practice over time.

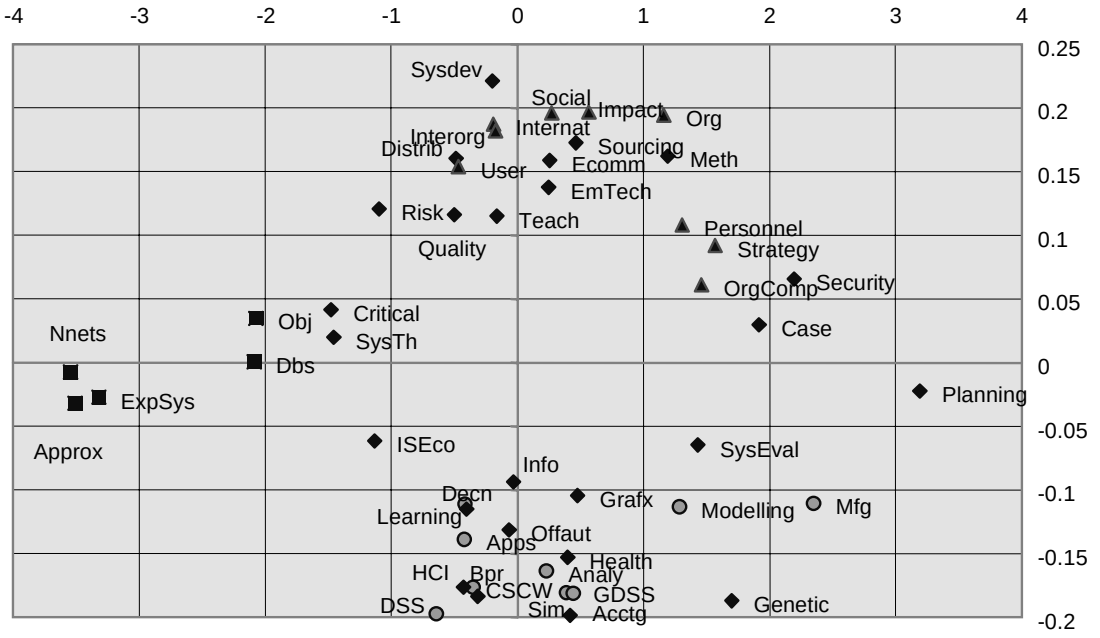

Figure 1. Information Systems Research Specialties: Continuing Influence of Reference Disciplines

In the following sections, this paper examines theoretical perspectives that provide insight into these issues, develops specific propositions, and proceeds with an empirical investigation.

2. DIFFERENCES BETWEEN RESEARCH AND PRACTICE

In this section, the dissemination of research through journals and the role of trade literature and magazines in the utilization process are examined. Some of the concerns about research are looked at and differences between practitioner and research literature are highlighted.

2.1 Purpose of Journals

The basic function of the publication system is considered to be

> to provide a means to communicate to readers manuscripts of high quality, screening out those of lesser value; to communicate recognition of good scholarship inside a field; and to communicate accomplishment of excellence so that decision makers, inside and outside the field, have a basis for determining allocation of resources for new research endeavors. [Cummings and Frost 1995]

This normative agenda is, however, affected by the various social, economic, and political processes that are part of the academic arena. The generation of knowledge has been interpreted as a social product whose objectivity may be elusive. Astley (1985) argues that the knowledge of administrative science is an artifact, with institutional processes investing this social product with legitimacy. Deetz (1995) believes that conceptualizing publication as a communi-

cation process aimed at developing a shared understanding will be constructive, rather than documentation of a fact or a product in a strategic game.

2.2 Purpose of Magazines

Magazines and trade journals play an important role in making research results available to practitioners. This may be because they directly address practical issues and also communicate in easier to understand language. Beyer and Trice (1982) propose that the processing of research information within user systems occurs through the process of sensing, search, or diffusion of information derived from research. They recommend that if researchers want their research to be used, they should act as their own advocates and disseminate their research findings in magazines read by users as well as in professional journals. Various studies have shown that business executives consider professional magazines and applied journals as important sources of research information (Caplan 1975; Dunnette and Brown 1968; Duncan 1974). There is also evidence that users assess research more favorably if it is more relevant to their work responsibilities (Chesler and Flanders 1967).

2.3 Research and Practice: Disagreements and Agreements

There is some evidence to indicate that researcher interests do not match with issues that may be of concern to industry. It is also noted that the evaluation of research work is done based on criteria that do not match user requirements. Duncan 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. (1993) 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 (1995) suggests that academics build theories of analysis while practitioners need better theories of action.

Narayanan and Fahey (1994) proposed three subsystems central to the process of producing useful knowledge: a knowledge generation subsystem, a knowledge utilization subsystem, and a resource controlling subsystem.

	Knowledge Generation	**Knowledge Utilization**	**Resource Allocation**
Objectives of inquiry	Scientific validity	"Pragmatic" validity	"Optimal" allocation of resources
Time Horizon	Limitless	Relatively time bound	Relatively intermediate
Dominant role	Researcher	User	Sponsor

Source: Narayanan and Fahey (1994)

Kilmann et al. (1994) 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. They propose the following factors that impact on the production/utilization of organizational knowledge.

	Processes	**Structures**
System-level	Dissemination/provision	Interfaces
	Feedback/solicitation	External forces
Subsystem-level	Production processes	Research community culture and organization
	Utilization processes	Practitioner community culture and organization

Source: Kilmann et al. (1994)

Based on the foregoing analysis, the following proposition is presented:

> **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. Journals are expected 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.

3. 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. [Martin 1994]

This comment captures one of the common critiques of the information systems discipline: the lack of secure foundations or paradigms. This section investigates the phenomena of changing IS paradigms as evidenced by academic and trade literature. A theoretical background is developed based on earlier work in the management area and some empirical evidence for the theory is provided.

The nature of shifting paradigms in the IS area is introduced and a theory based on institutional, diffusion, and management fashion literatures is developed to explain the phenomenon.

3.1 Shifting Paradigms

The phenomenon of rapidly changing paradigms offered as panacea to managers has been recognized in literature. Abrahamson (1996) 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, enjoyed their period of popularity, and then been discarded for the next "hottest" 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 (Lawler and Mohrman 1985).

The IS 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 expectation 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 (Hutchinson 1994).

- Computer-Aided Software Engineering (CASE) tools (Sumner and Ryan 1994): Business process reengineering (Grover et al. 1995).

The view presented here is that the frequent paradigm changes witnessed 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 IS 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.

3.2 Theory of Paradigm Change

The theoretical underpinnings of this research come from two broad traditions: diffusion perspective and institutional theory. These perspectives are examined and an explanation proposed for the observation of frequent paradigm changes.

3.2.1 Diffusion Perspective

Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers 1995). Typically the process of adoption occurs slowly in the initial phases due to low initial visibility for the idea, the uncertainty with regard to its benefits or performance impact, lack of externalities that would economize its use, and possible lack of complementary products to aid use.

Gill and Whittle (1993) identified four stages in the so-called panacea life-cycle: birth, adolescence, maturity, and decline. The panacea (such as management by objectives, organization development, and total quality management) takes birth when the inventor or a charismatic leader writes a seminal book, it gains adolescence as consultants and senior managers promote the packaged intervention, it matures once it is routinized/bureaucratized by consultants and internal staff, finally declining as substitutes or the next panacea appear or when costs exceed apparent benefits. A typical S-shape curve that results from such cumulative adoption is shown in Figure 2.

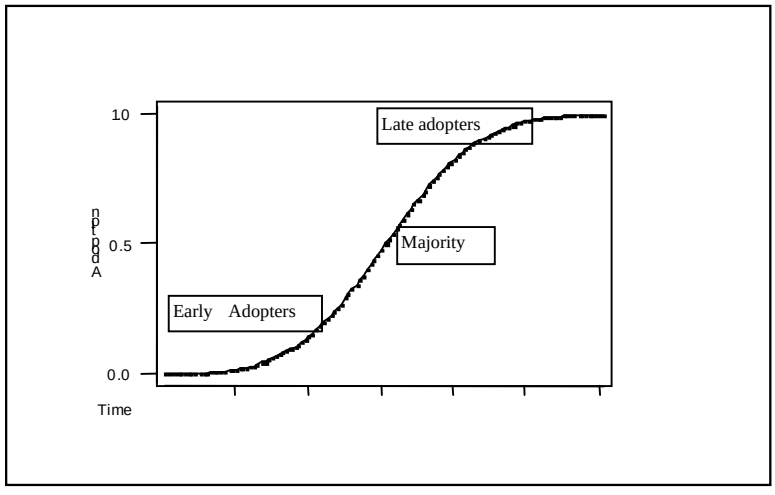

Figure 2. Process of Knowledge Creation

In the IS area, new paradigms may be created at educational and research institutions or in 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 the means for patterned flow of information.

3.2.2 The Institutional Perspective

Dimaggio and Powell (1983) argue that structural change in organizations is driven less by considerations of efficiency than by the structuration of organizational fields. Institutionalization also refers to "to infuse with value beyond the technical requirements of the task at hand" (Selznick 1957). 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 IS professionals. IS 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, the emergence of transitory beliefs about "rational" IS choices among IS professionals can be theorized. 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 (Strang and Meyer 1994). Also, interaction in such contexts is theorized to facilitate diffusion between interacting individuals. IS 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.

These perspectives lead to the following speculative view of the publication process:

- 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.

Based on the above analysis, the following propositions are developed:

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: 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.

4. RESEARCH METHOD

The study is centered around a classification of IS publication categories. The categories for the classification were developed based on earlier work (Swanson and Ramiller 1993). An iterative classification scheme was used to develop the categories based on the original scheme proposed in that study. Based on the analysis, 48 categories were identified (see the appendix) 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, each article was placed 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 January 1, 1991, and December 31, 1995, were included

in the sample. It was felt that this period would be adequate for conclusions about thematic content comparisons to be made, although a larger time frame would be desirable for observing significant variation over time.

The data from the earlier study (Swanson and Ramiller 1993), based on single journal for the period 1987 to 1992, was reclassified as per our classification scheme for further comparisons over time.

4.1 Journals and Magazines Searched

The following journals publishing articles in various IS 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.

- *Communications of the ACM* (CACM)
- *Information Systems Research* (ISR)
- *Journal of MIS* (JMIS)
- *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.

Five magazines publishing articles of interest to IS professionals were identified. These were chosen because they publish articles of general interest in the IS area and have a wide readership among practicing managers. *Computerworld*, *CIO Magazine*, and *Datamation* specifically cater to information system managers while *Business Week* and *The Economist* were chosen for wide readership, prestige, and attention to information system issues.

Since these magazines publish numerous articles related to news and current developments, specific columns or stories that were relevant to an understanding of academic perspectives were analyzed. For example, for *Computerworld*, specific columns titled "commentary," "management," "viewpoint," and "application development" were included in the analysis. Outlets like *Harvard Business Review* and *Sloan Management Review* were excluded from consideration since the interest of this study was in contrasting archetypal research and practitioner perspectives.

Table 1. Number of Articles

		1991	**1992**	**1993**	**1994**	**1995**	**Total**
Journals	ISR	12	16	13	20	12	73
	JMIS	27	32	35	25	33	152
	CACM	57	84	51	68	58	318
	MISQ	30	30	26	31	26	143
	Computerworld	84	184	209	282	272	1031
	Datamation	52	65	68	67	62	314
	Economist	20	33	37	50	46	186
Magazines	CIO	75	114	101	104	98	492
	Business Week	60	62	60	65	54	301
	Total	322	473	563	662	615	3010

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 an excessively large or small influence of a journal or a year, each journal and magazine in each year was weighted equally by calculating percentage of topics for each journal and magazine separately and averaging them. In this research, these weighted percentages were used as the data for proposition tests and other investigations.

4.2 Data Reliability and Validity Issues

The dynamic nature of the IS discipline makes it difficult to pin down a classification scheme that can be used, although it is recognized that many existing schemes are available (Barki et al. 1993, for example). This is because some of these schemes lack applicability to the period of this study and others focus largely on research issues and cannot be used for practitioner literature. For practical reasons, an iterative classification scheme was found to be the most suitable.

4.2.1 Reliability Issues

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

1. A pilot sample derived from all of 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.

4.2.2 Validity Issues

The aim of this research was to cover a significant portion of literature. The 3,010 published articles that were categorized do not represent a complete set, but, in the view of the researchers, represent the major "share of voice" in the 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. It is recognized 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 over a longer time period.

5. DATA ANALYSIS

5.1 Themes in IS Journals and Magazines

The major themes occurring in IS journals and magazines are presented in Table 2, ordered by the proportion of articles devoted to them. It is apparent that there is a difference in the prominent themes for journals and magazines. While journals are naturally devoted to conceptual, pedagogical and research oriented themes such as systems design, computer-supported cooperative work (CSCW), and advanced techniques, magazines are more oriented toward IS function and business issues such as commercial products, IT applications, IT marketing, and IS strategy. This cor-

Table 2. Top Five Themes

	1991	1992	1993	1994	1995
Journal	1. System design, development 2. CSCW 3. Database and data management 4. IS Research 5. Media, communication technology	1. System design, development 2. Database and data management 3. Advanced techniques 4. Expert system/ agents/NLP 5. Specific characteristic system	1. System design, development 2. CSCW 3. Object-oriented technology 4. IT usage and user models 5. Advanced techniques	1. Advanced techniques 2. Interorganizational systems 3. System design, development 4. CSCW 5. Media, communication technology	1. Expert systems/agents/ NLP 2. Reengineering 3. IT usage and user models/ adoption 4. Advanced techniques 5. CSCW
Magazine	1. IS strategy, IT company strategy 2. IS Function 3. Managerial decision making 4. IT applications 5. IT marketing	1. IT marketing 2. IS strategy, IT company strategy 3. Commercial products 4. Tools and techniques 5. IS Function Issues	1. IT marketing 2. IS strategy/IT company strategy 3. Standard/open system/quality issues 4. IS function issues 5. Media, communication technology	1. IS strategy/IT company strategy 2. Interorganizational systems 3. IT applications 4. Media, communication technology 5. System platforms	1. Interorganizational system strategy 2. Organization issues 3. IS strategy/IT company 4. Commercial products 5. Client-server technology

responds to issues that emerge from theoretical discussions—that practicing professionals tend to value application oriented research while academics stress long-term and more abstract concepts.

The theme of CSCW occurs in each year of the data, pointing to the significance attached to this subject and also to the origins of this technology in academia. At the same time, one would expect it to be represented in magazine literature on the same scale due to its application-oriented nature. Its omission from this list indicates a relatively lower level of reception in practice to this new technology. The research found some of the applied literature in magazines pointing to some disillusionment with the state of development and benefits accruing from this technology.

The theme of interorganizational systems has emerged strongly over the last two years with growth in Internet usage and the development of World-Wide Web (WWW) based applications, content, and services.

Another finding of interest is the key themes in magazines that reflect concerns of practitioners but do not command the same attention in journals. The emergence of organization/IS function issues in magazines is especially significant.

The importance given to issues such as impact of technology in organizations may point to directions of research that IS journals have not covered.

5.2 Differences Between the Two Streams

The difference in the topics of focus is clear if the differences between the proportion of articles dealing with specific themes are analyzed (Table 3). 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.

The research found 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.

The correlations between the extent of coverage devoted to specific topics in journals and magazines were compared (Table 4).

Table 3. Major Differences in Proportion of Articles for Specific Themes*

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

*Topics that showed a difference greater than 3% between journals and magazines (ranked order).

Table 4. Correlation Between Journal and Magazine Themes

	J91	J92	J93	J94	J95	M91	M92	M93	M94
J92	.6478**								
J93	.6946**	.5174**							
J94	.5234**	.3963*	.4709**						
J95	.2550	.3761*	.4600**	.3803*					
M91	.0700	-.0827	-.0648	-.2350	-.0668				
M92	.0265	-.0385	-.1000	-.2225	-.0187	.7734**			
M93	.0880	.0036	-.0073	-.1025	-.0190	.7129**	.8505**		
M94	.0564	.0067	-.1292	.0294	.0544	.6221**	.6688**	.8159**	
M95	.0430	.0203	-.0470	.1027	.0670	.5230*	.5406**	.6168**	.8065**

Number of cases: 48 1-tailed significance: * = .01; ** = .001

Journals and magazines are found to 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.

Given proposition P2, higher correlations would have been expected across time for journals rather than magazines, based on the assumption that magazines focus on short-term themes while journals look at longer-term issues. The research found that correlations are significantly higher for magazines, implying a greater consistency in themes for magazines than journals.

One explanation is that since IS is a relatively 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 more changes are expected in journal content across the years because there is a relatively smaller sample size for journal articles.

A notable theme that emerges is the increase in variability in recent years (1993-1995) compared to the past.

5.2.1 Journal Themes

There appear to be thematic differences between journals (Table 6). For example, information technology (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.

Table 5. Number of Changes in the Top Ten Themes

	1991-1992	1992-993	1993-1994	1994-1995	1991-1995
Journal	3	3	6	7	6
Magazine	3	2	3	4	6

Table 6. Most Frequent Themes in Journals (1991-1995)*

ISR	JMIS	CACM	MISQ
1. CSCW	1. DSS/EIS	1. System design, development	1. IT usage and user modeling/adoption
2. IS research	2. CSCW	2. Advanced techniques	2. User satisfaction, involvement
3. IS modeling	3. Expert system/NLP	3. Media, communication techniques	3. IS function issues
4. System design, development	4. IS personnel issues	4. Database and data management	4. System design, development
5. Expert system/NLP	5. Interorganizational system	5. Object-oriented techniques	5. IS personnel issues
6. IT usage and user modeling/adoption	6. IT usage and user modeling/adoption	6. Specific-use system	6. IS strategy/IT company strategy
7. Advanced techniques	7. IS research	7. Security issues	7. CSCW

* Ranked order

Table 7. Number of Themes Constituting the Top 50% of Articles

	Swanson and Ramiller (1987-1992)	1991	1992	1993	1994	1995
Journal	7	8	8	7	10	9
Magazine	-	9	10	11	10	11

Table 8. Standard Deviation of Theme Proportions

Standard Deviation of Proportions	1991	1992	1993**	1994	1995
Journal	0.0251	0.0226	0.0267	0.206	0.0220
Magazine	0.0210	0.0199	0.0168	0.0198	0.0182

Standard Deviation of Change in Proportions	1991-1992**	1992-1993**	1993-1994**	1994-1995**
Journal	0.0201	0.0245	0.0249	0.0237
Magazine	0.0139	0.0104	0.0115	0.0119

Number of cases = 48 F-test 2-tailed significance (journal vs. magazine): * = .01; ** = .001

One issue of interest is whether journals have increased in the richness of themes over time. An examination of Table 7 indicates that this does not appear to be the case, although there is a marginal increase in the number of themes in 1994-1995 over earlier periods. Over the years of the study, a small number of themes (ranging from seven to 11) capture about 50% of the articles published. In combination with the results about the variance in top IS topics over time, the conclusion is reached that IS research focuses on changing themes and there seems to be a high level of interest to publish in the current subjects of focus.

5.2.2 Journal and Magazine Trends

The available data is not sufficient to enable an analysis of changes over time for dramatic shifts to be observed. The variance of proportions devoted to themes does not show significant differences across the years.

There is greater variance in prominence for themes in the case of journals as compared to magazines. There is greater variance in the changes in proportions for themes in journals as well. This confirms the results obtained through the correlation matrix which indicate that IS journals have tended to be more varied in thematic content across time.

5.3 Does Practice Lead Research?

Some of the interesting trends in specific thematic areas are shown in Figure 3. The plots in the figure 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 natural language programming (NLP) theme declined and then strongly picked up in journals

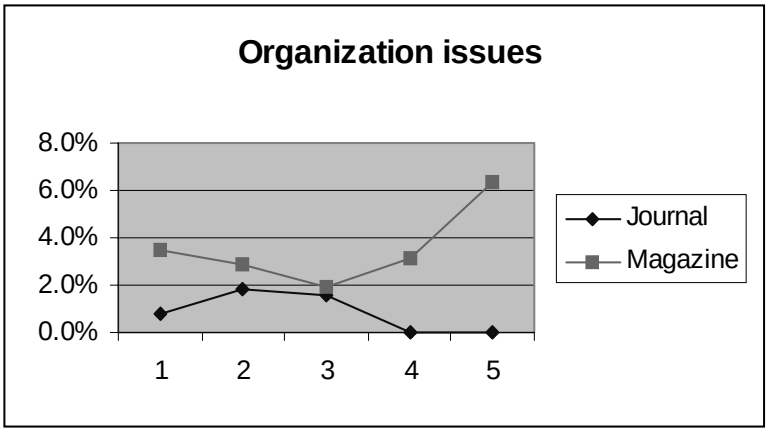

Figure 3a

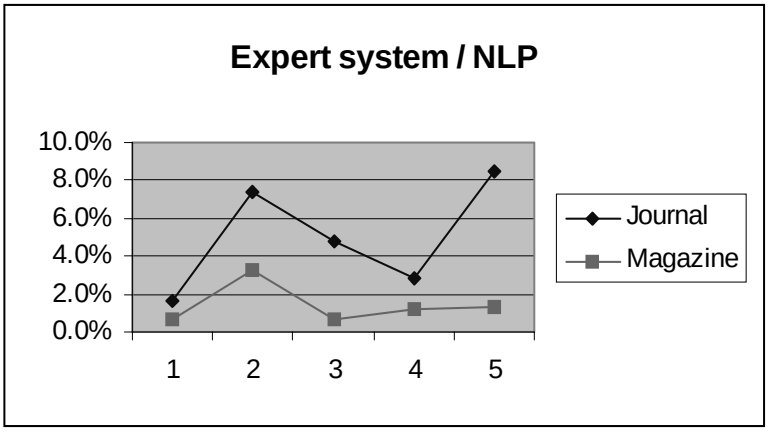

Figure 3b

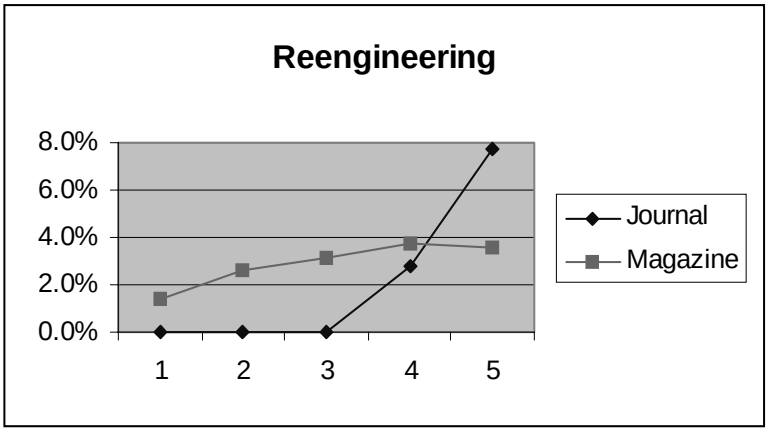

Figure 3c

Figure 3. Trends Over Time

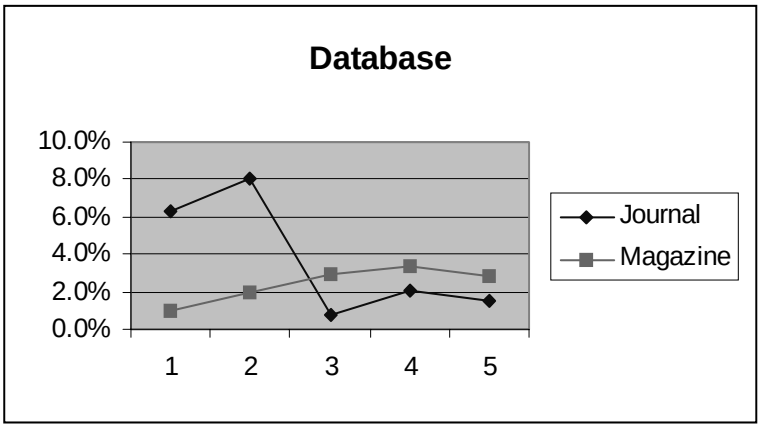

Figure 3d

Figure 3. Trends Over Time (continued)

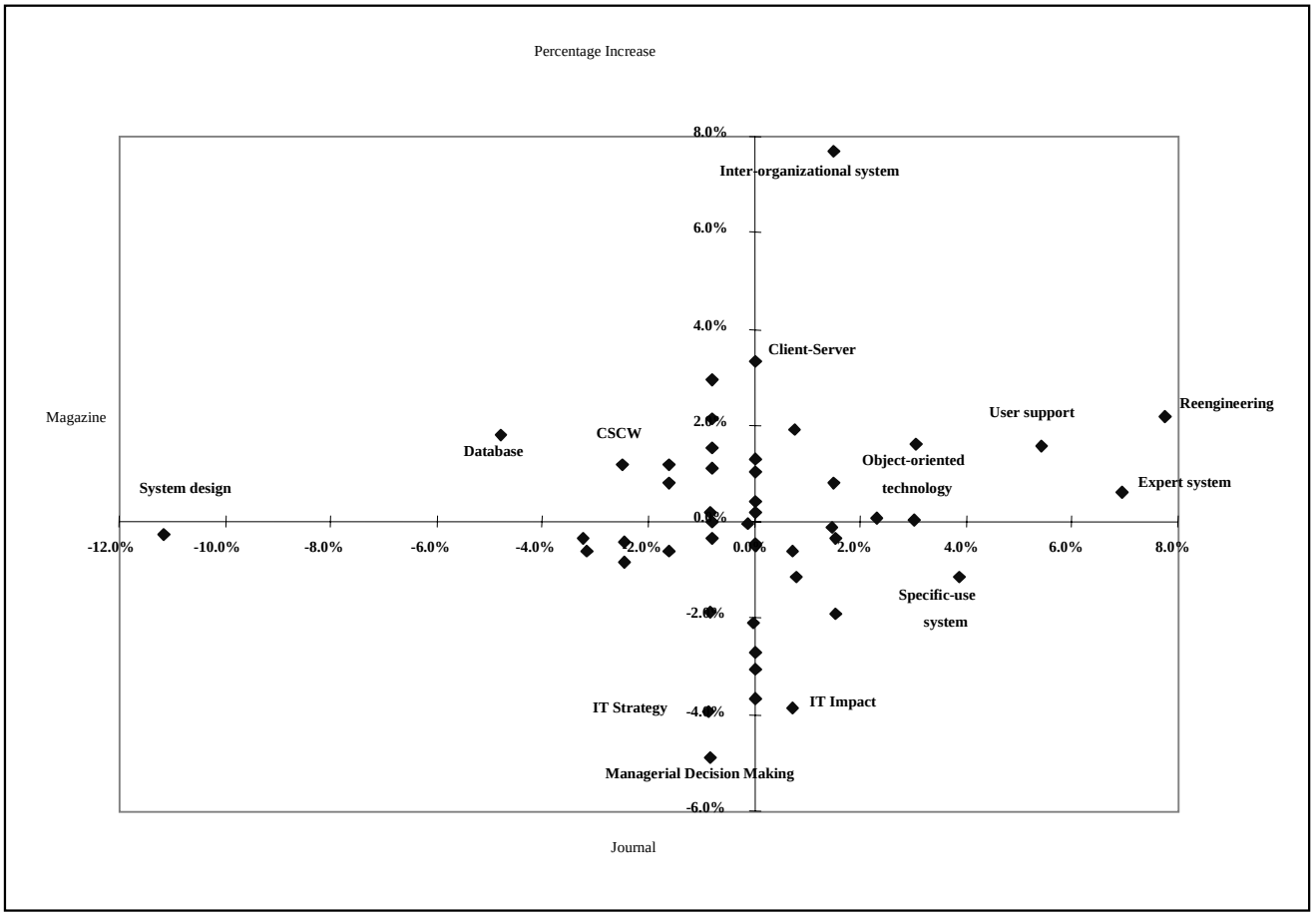

Figure 4. Trend in Journal Versus Trend in Magazine

while it has not surged up as strongly in magazines. Reengineering as a theme shows a stabilizing trend toward 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 the journals versus the magazines as shown in the Figure 4. In Figure 4, the X axis represents the changes of proportions, that is, percentage in 1995—percentage in 1991, in journals while the Y axis represents changes in magazines.

The graph can be divided 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 such as interorganizational 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 such as 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 have somewhat increased focus over the five years while magazines have reduced focus.

5.4 Summary of Results

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

Support was found 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.

Table 9. Classification of Themes

Quadrant	Topics
Upper-right (Increases in both journal and magazine)	1. Interorganizational 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. Marketing 3. IT Applications

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

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

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

Past research had highlighted themes such as interorganizational issues, security issues, organization related issues, and international issues among areas that needed further attention in IS research. The latter areas were found to be still under-represented. No significant increase was found 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.

No evidence was found to evaluate the diffusion or political perspectives. There is, however, evidence of conflicting contemporaneous trends in research and practice.

6. LIMITATIONS AND FURTHER WORK

The analysis of academic and practitioner literature is based on a study of US-based journals and magazines only. These may be biased toward 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 input from non-US sources.

Some inherent differences are expected between journals and magazines for the following reasons:

- Time to research, review, and publish in journals is considerable and leads to delays.
- Academic research may partly be driven by the 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 studies that have surveyed institutional members of the Society for Information Management over time (1980, 1983, 1986, 1990 and 1994-95) (Brancheau et al. 1996). Data from this study may also be used to characterize journals and magazines and to identify similarities and differences among them.

7. CONCLUSION

This study found support for the rapid shifting of themes in IS research, but this is not necessarily bad. IS 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, further research should seek to accumulate knowledge gained from previous findings and build on that edifice. Also, practitioner concerns should be examined to make sure that the research does not lose relevance in the community whose needs are purported to be served. In the long term, intellectual straitjackets should be avoided but progress in the discipline will occur when there is convergence and a body of useful knowledge is created.

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APPENDIX

LIST OF THEMATIC CATEGORIES

User training/support
User satisfaction/involvement
User perception and attitudes
Tools and techniques
Technology—object-oriented
Technology—media/communication
Technology—client/server
System platforms
System design, development, and methodology
Standards/open systems/quality issues
Specific use systems
Specific characteristic systems
Software maintenance
Security issues
Reengineering
Productivity issues
Organizational learning and memory
Organization issues
Network pricing
Managerial decision making
Legal issues/public issues/government
Legacy systems/legacy skills
Knowledge issues
IT usage and user models/adoption
IT spending/acquisition/budgeting
IT marketing
IT impact
IT diffusion
IT applications
IS strategy/IT company strategy
IS research
IS planning/IS infrastructure
IS personnel issues
IS performance evaluation
IS modeling
IS implementation/testing
IS function issues
Interorganizational systems
International issues
Innovation and IT
Information superhighway/networks
Human computer interaction
Expert Systems/agents/NLP
DSS/EIS
Databases and data management
Computer supported cooperative work
Commercial products
Advanced techniques