

KEY INFORMATION SYSTEMS ISSUES: AN ANALYSIS OF MIS PUBLICATIONS

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Abstract:

Reports of key MIS issues based on the perceptions of senior IS executives appear periodically in the MIS literature. In this article, we provide another perspective on key MIS issues by examining published MIS articles. A content analysis of MIS articles appearing between 1989 and mid-year 1993 in prominent academic and practitioner journals has been conducted in order to: identify, classify, and prioritize by meta-categories the key issues in MIS publications; to perform a trend analysis of the various meta-categories; and to examine the relevance of issues by providing a comparison with the issues that emerged out of previous key issue studies. Twenty-six key issues are ranked according to their frequency of occurrence as the topic of inquiry in the 630 articles surveyed. Further, a year-by-year analysis of publications from 1989 to 1992 provides some visible trends. The study also reveals differences that exist between the issues that appeared as important in MIS publications and those that appeared significant to the top executives in key issue studies. Reasons for and implications of these differences are offered.

Article:

INTRODUCTION

The growth rate in many areas of business and specifically in information systems (IS¹) has reached a level which would, in 1985, have seemed more like a fantasy than a prophesy. Reports of innovations in hardware, software, applications, and IS management appear in journals and newspapers daily. As an example, one area rich in current research: executive information systems (EIS) is predicted to grow by 400% in the 1990s (Kolodziej, 1989). In order to keep pace, studies are continually performed to determine the changing IS needs of managers (Davenport & Buday, 1988; Moynihan, 1990; Rao *et al.* 1987). In the same vein, a series of studies (many of them published in the *MIS Quarterly*) have been conducted to identify key information system (IS) issues that are critical to MIS managers (Brancheau & Wetherbe, 1987; Dickson *et al.*, 1984; Niederman *et al.*, 1991). It can be argued that the evolving nature of management information systems (MIS) necessitates this periodic examination.

Another potential source for identifying current key IS issues is published MIS articles in leading journals. Surely, the authors ought to be writing about issues of concern, and journal editors and reviewers providing the necessary filter so that the published articles represent key issues and concerns. In any case, this review of recent articles would provide an alternate view of key issues, worthy of examination in its own right. As such, the purpose of this study is to examine the published MIS research in leading MIS journals in order to:

- (1) identify, classify, and prioritize the key MIS issues by meta-categories,
- (2) to perform a trend analysis of the various meta-categories, and
- (3) examine the relevance of issues by providing a comparison with the issues that emerged out of the previous key issue studies.

To explicitly recognize the importance of the above research questions, it is useful to identify the goals of the practitioner and research groups. The research group is driven by theory development, long term studies, and a focus on normative solutions. The practitioner group, on the other hand, is interested in addressing issues of immediate concern, and finding satisficing and practical solutions. It is clear that the objectives of the two groups are not congruent. Our research questions are aimed at examining the degree to which these differences manifest themselves in research publications. As opposed to the SIM studies that are indicators of the issues of interest to the practitioner group, the present study provides a comparative investigation of the perceptions of both groups.

BACKGROUND AND LITERATURE REVIEW

The earliest attempt to study the relative importance of critical IS issues was done in 1980 by Ball and Harris (1982)² when they surveyed 417 SIM members and measured their ranking of 18 issues on a 6-point scale ranging from "not important" to "very important". A subsequent study by Martin (1982) used 15 chief IS executives in determining critical IS success factors. The results of the Ball and Harris (1980) and Martin (1982) studies provided impetus for the first of what would be a series of studies conducted by SIM (International Society for Information Management) and MISRC (the MIS research center at the University of Minnesota).

The respondents in all SIM/MISRC studies were senior IS executives. The first study was undertaken in 1983 (Dickson *et al.*, 1984). The delphi survey approach and a ranking method were used to prioritize the issues. The second study was conducted in 1986 by Brancheau and Wetherbe (1987). They executed a five-round Delphi survey and again used the ranking method. The most recently published research in this series was completed in 1989 by Niederman *et al.* (1991). They also used the delphi method, but asked the participants to rate rather than rank each issue. Another study in this series is currently underway by SIM/MISRC; their results are not publicly available as of this writing. In addition, consulting organizations and computer magazines have also reported the prevailing IS issues (e.g. Index Group, Inc., the *C/O* magazine, etc.).

Table 1

1980 top ten issues	1983 top ten issues	1986 top ten issues	1989 top ten issues
Strategic planning	Strategic planning	Strategic planning	Information architecture
Measuring effectiveness	End user computing	Competitive advantage	Data resource
Telecommunications	Integration	Organizational learning	Strategic planning
Data as corporate resource	DP, OA, FA, TC	IS role and contribution	IS human resources
Decision support systems	Software development	Alignment in organization	Organizational learning
Office automation	Measuring effectiveness	End user computing	Technology and infrastructure
Human resources	Organizational learning	Data as corporate resource	IS organization alignment
Organizational learning	Alignment in org	Information architecture	Competitive advantage
Alignment in organization	Human resources	Measuring effectiveness	Software development
End user computing	Data as corporate resource	Integrating	Telecommunication systems
	Decision support systems	DP, OA, FA, etc.	

An overview of the 1980 (Martin, 1982), 1983 (Dickson *et al.*, 1984), 1986 (Brancheau & Wetherbe, 1987), and 1989 (Niederman *et al.*, 1991) key issue studies is provided. The top ten issues in each study are shown in Table 1. *Strategic Planning* for information systems has always been among one of the top issues, although it slipped to third place in the 1989 study. Strategic planning for IS is concerned with an IS plan that is in concert with the business plan and goals. Three other issues that have appeared in all four studies are: *data as a corporate resource*, *organizational learning*, and *IS alignment in the organization*. Note that all four common issues throughout the decade pertain to the strategic nature of information systems and information technology. *Measuring effectiveness of IS* steadily declined in importance until it disappeared from the top ten in 1989. This

does not necessarily mean that the "measurement" problem has been solved; it might just mean that the problem is perhaps unsolvable due to the strategic and intangible nature of IS benefits. The issue of *human resources* disappeared from the top ten list after 1983, but resurfaced in 1989. *End user computing* showed up as the tenth priority issue in 1980, became number two in 1983, declined in importance in 1986, and disappeared from the top ten in 1989. This cycle matches the onset of end user computing in the early eighties, and its widespread use later into the decade. Other issues were more transient, and reflected the evolution of technology and its application over time. These issues included: *telecommunications* and *office automation* (1980), *decision support systems* (1980 and 1983), and *integration of data processing, office automation, and factory automation*, etc. (1986). In the 1989 list, it is instructive to note that a majority of the top ten issues relate to the strategic application of information technology.

Besides the above four well-recognized and often-cited studies of key issues, there have been other attempts to arrive at a list of key IS issues. Hartog and Herbert (1986) conducted an opinion survey of MIS managers and rated the following four issues higher than they were in the srm-misRc study for the same year: software development, data security, data integrity and quality, and office automation. Conversely, competitive advantage, end-user computing, and measuring effectiveness were rated lower than they were in the 1987 SIM-MISRC ratings. Another study by Narasimhaiah (1989) found the following to be important: functional and technical issues of systems analysis; behavioural and technical issues of systems design; behavior and technical issues of MIS impact.

The four studies discussed earlier and represented in Table 1 are generally well recognized as being rigorously conducted and widely disseminated. They served as the basis for the identification of key IS issues for the present study.

RESEARCH METHODOLOGY

For the present research, an exhaustive search of MIS articles appearing in leading journals was conducted using abstracts from the ABI database. Nine journals highly acclaimed in the field of MIS were chosen (e.g. see Gillenson & Stutz, 1991). The journals included seven academic and two practitioner journals, as shown in Table 2. The two practitioner journals are: *Harvard Business Review*, and *Sloan Management Review*; *Communications of the ACM* is a hybrid between practitioner and academic journals; the rest are academic journals.

The period covered for this search is from January 1989 to June 1993.³ Several factors contributed to the decision on the start date for the search. One was to look at recent research. Another was to keep the database from not getting overly voluminous. The third and the most important reason was to be able to compare our results with the latest key issue study (Niederman *et al.*, 1991). As pointed out before, the Niederman *et al.*, study was actually conducted in 1989.

Table 2. List of academic and practitioner journals

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1. *MIS Quarterly*
 2. *Management Science*
 3. *Decision Sciences*
 4. *Information & Management*
 5. *Information Systems Research*
 6. *Communications of the ACM*
 7. *Journal of Management Information System*
 8. *Harvard Business Review*
 9. *Sloan Management Review*
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Six hundred and thirty abstracts of MIS articles were identified from the ABI database. Using relevant information from each extract, a separate database was created. The following information was captured for each article:

- article title
- journal name
- author names

- date of publication
- research methodology
- a maximum of three meta-categories.

While the methodology used in each article was included in the database, it is outside the scope of this paper and is excluded from any further discussion. The meta-categories represented the subject area of the article. These meta-categories or keywords were assigned according to the list of key issues developed by Niederman *et al.*, (1991). Note that comparability to the Niederman *et al.*, results is one of the primary goals of this study. Therefore, the rationale and definitions used by them were used to assign keywords to the articles. A single article could conceivably cover more than one issue; therefore, each article could be assigned from one to three keywords. The maximum of three keywords proved to be adequate to classify all articles.

The Niederman *et al.*, study had twenty five key issues. One new key issue had to be added to accommodate a large group of articles that did not fit any of the twenty-five issues. The new issue which emerged was knowledge-based/expert systems. The total number of key words used were thus twenty-six. Three individuals completed the task of assigning keywords to each article. Each abstract was reviewed by at least one individual to assign the keywords. When there was some doubt in the assignment of the keywords, others in the research team were consulted to arrive at a consensus decision.

Finally, statistical tabulation procedures on the computer were used to analyze the data.

Table 3

Overall rank 1989–1993	Issue
1	Executive/decision support systems
2	Software development
3	Telecommunications systems
4	Strategic planning
5	IS human resources
6	End-user computing
7	Expert systems (new)
8	IS effectiveness measurement
9	IS role and contribution
10	Competitive advantage
11	Organizational learning
12	IS organizational alignment
13	Electronic data interchange
14	Technology infrastructure
15	Security and control
16	Data as resource
17	Applications portfolio
18	Information architecture
19	CASE technology
20	Organizational structure
21	IS asset accounting
22	Technology islands
23	Image technology
24	Global systems
25	Disaster recovery
26	Distributed systems

THE KEY ISSUES

The key issues or meta-categories are ranked based on the frequency of their occurrence as the topic of inquiry in the articles. Table 3 provides the ranked list of all 26 issues in descending order of frequency. We provide a brief discussion of the top ten issues. The discussion is geared more towards the current and general nature of each issue rather than specific articles related to it.

Rank 1: executive/decision support

Most articles have been written on providing information and decision support for executive decision making. Decision support systems (DSS), as the name implies, focus specifically on decision support. They originated in the late seventies (Alter, 1977; Sprague, 1980), and continued to receive attention in the late seventies and early

eighties. However, later it was observed that DSSs were primarily being used by lower level managers and staff personnel. Executive information systems (EIS) and executive support systems (ESS), designed to meet the information needs of senior executives in highly effective presentation modes, began to catch attention in the late eighties and early nineties (Watson & Frolick, 1993; Watson *et al.*, 1991). Currently, there seems to be much interest in EIS, as evidenced by many recent articles on the subject. In fact, there are several software vendors that sell EIS software that can *be* customized to customer needs (e.g. Commander Center, etc.). It seems that the topic of information/ computer support for the senior executive is enjoying a renaissance.

Rank 2: software development

The problems of information system development backlogs, inferior software quality, and rising programmer costs have persisted over the years (Davis, 1992; Gremillion & Pyburn, 1983). Some progress has been made over the years, corroborated by the number of articles in recent literature (e.g. Graham, 1991; Souza, 1991; Walrad & Moss, 1993). Today, end user computing and packaged software represent plausible alternatives to software developed by the IS department. Structured methods have been advocated for software development and are being used in many organizations. Another trend is the use of software engineering and CASE tools in the building of information systems (Forte & Norman, 1992; Freeman & Gaudel, 1991; Neumann, 1993). A new breed of development approaches, based on object oriented concepts, provides for software reusability and higher quality, and is considered a paradigm shift in development methodology.

Rank 3: telecommunication systems

Telecommunications are vital to large and distributed organizations. The trend towards globalization is making the need to effectively communicate within and outside the organization critical (Chidambaram & Chismar, 1994). Today's information systems have to rely on local area and wide area networks in order to monitor and process the variety of transactions in geographically dispersed locations. Planning and implementing telecommunication systems is proving to be critical for organizational success. In effect, electronic communication paths minimize constraints posed by time and distance (Keen, 1989). Not only is the telecommunication backbone necessary for an organization's transaction systems, but also fundamental to a responsive IT infrastructure and systems for competitive advantage (Clemons & McFarlan, 1986; Wiseman, 1985).

Rank 4: strategic planning

The information system function is no longer treated as a service or support function; it is widely regarded to have a strategic value. Strategic planning for IS recognizes its close linkage to business planning and business goals (King, 1988). It appears that an increasing number of organizations are undertaking strategic IS planning. Businesses are increasingly dependent on information technology to gain and maintain a competitive edge, and thus sustain their business. There are various ways to utilize IT for competitive purposes; Henderson and Venkatraman (1993) have proposed the Strategic Alignment Model which identifies four dominant perspectives for aligning IT and business strategies. Two of these perspectives regard IT as a driving force for business strategy. Note that an additional benefit of strategic IS planning is that it leads to increased learning from the execution of the process itself (Niederman *et al.*, 1991). The creation of the role of the chief information officer (CIO) in many organizations is further testimony to the important of IS strategic planning.

Rank 5: IS human resources

IS human resources has remained an area of concern for managers over the years. Rapid advances in information technology make existing skills obsolete in a short span of time, and put the onus on employees to acquire new skills, and on management to retrain the employees. One example of technological obsolescence is the COBOL programming language. While being a mainstay of business programming for three decades, COBOL is finally being eroded by newer structured languages and object oriented languages (Freedman, 1986). Given the continuous change in skills and the widening of the types of requisite skills, what is needed is a flexible and productive workforce that can rapidly adjust to changing demands (Dreyfuss, 1990). Other trends that have caused human resource concerns for IS are downsizing and outsourcing. Many organizations have downsized their IS staff or considered exercising the option to bring escalating IS costs under control (Right

Associates, 1992). Another cost containment mechanism, not so radical, is outsourcing. Outsourcing, including international outsourcing, allows the limited contracting out of various IS functions to outside vendors, and has attracted the attention of many firms (Lacity & Hirscheim, 1993).

Rank 6: end-user computing (EUC)

End-user computing, which started in the early eighties, has now become widely pervasive in most organizations today. IS departments first attempted to manage and control EUC; but this proved to be unworkable from the user's point of view (Gerrity & Rockart, 1986). IS departments had to ultimately relinquish control, and instead began to provide a support role in the form of information centers. Other approaches also exist to manage EUC as described by Gerrity and Rockart (1986). For example, while information centers continue to exist, user areas are increasingly employing support personnel in their own areas (Robey & Zmud, 1990). Finally, while end user computing has eased the problems of application development backlogs and application inflexibility, problems continue to exist (Alavi & Weiss, 1986) associated with end user developed systems (e.g. quality, integrity, documentation and support).

Rank 7: knowledge-based systems/expert systems

Expert or knowledge-based systems (ES or KBMS) were first introduced into business at the turn of the eighties decade. Classical examples of expert systems include XCON for computer configuration at Digital and MYCIN in medicine (Turban, 1995). Early systems were extremely large containing thousands of rules, expensive, and installed on specially configured large mainframe computers. Later into the eighties, with the advent of the personal computer, user friendly ES shell software is readily available. Much of the ES development at present is using shell software, and in building small systems made up of rules only in the hundreds. Du Pont (1988) is the classic case of a company where thousands of small ESs have been developed by end users. While the technological problems of knowledge representation and system development are not formidable any more, the bottleneck continues to be knowledge acquisition (McGraw & Westphal, 1990).

Rank 8: IS effectiveness measurement

IS effectiveness measurement continues to defy attempts to define it, measure it, and evaluate it (Dixon & John, 1989). Even after three decades of computers and information systems, much investment in IT and IS development is based on intangible benefits and strategic value. Nevertheless, senior management would yearn to enhance the return on IT investments. This desire has led many organizations into engaging in IS downsizing and outsourcing (Lacity & Hirscheim, 1993). Obviously, the measurement issue presents a serious challenge to the IS research community, and they continue to make attempts to address the concern. One approach taken by many researchers is to use "surrogate" measures for IS effectiveness, e.g. user satisfaction (Doll & Torkzadeh, 1988), and usefulness and ease of use (Davis, 1989).

Rank 9: IS role and contribution

As per our previous remark, the information system function was regarded as a service and overhead function in the early days of computing. However, most organizations now understand the strategic and critical role of IS in business. Applications of IS, besides transactional systems, include management systems such as decision support systems, executive information systems, group decision support systems, organizational support systems, and expert systems (Turban, 1995). Every function and process can benefit from the application of IT, as well as cross-functional integration and business process reengineering can be achieved using information technology to obtain quantum benefits (Davenport & Short, 1990; Hammer, 1990). An organization can attain tremendous organizational effectiveness and flexibility using IT allowing it to rapidly respond to emerging business opportunities. Further, IT can allow an organization to gain strategic value by permitting alliances with external entities in its value chain, by means of Inter-organizational systems (Wiseman, 1985). Finally, information technology is facilitating and many times driving an organization's quest to internationalize its operations and reach global markets (Ives & Jarvenpaa, 1991). A primary concern related to the issue is for the various constituencies, functional managers, and employees in the organization to understand and explore the full potential of IS contribution.

Rank 10: competitive advantage

Interest in information systems that provide competitive advantage to a firm (also called strategic information systems—SIS) surged in the mid eighties. Publicized and anecdotal accounts of such systems are reported in companies like American Hospital Supply, Otis Elevator, American Express, and American Airlines. Such systems allow a company to enhance its position in the marketplace. Such systems are typically targeted at the firm's customers, suppliers, or competitors. Typically, information technology in this role strives to streamline internal, business processes and forge electronic links with suppliers, customer, or business partners. Porter (1980) and others following Porter's lead (e.g. Portar & Millar, 1985; Wiseman, 1985) have suggested various strategies to identify opportunities for SIS development and to manage the process of development.

Lower ranked issues

Issues ranked below # 10, but still relatively high, include items of long-standing as well as emerging interest. Issues such as organizational learning (# 11) and IS organizational alignment (# 12) are directed towards reaping the full potential of IT by proper organizational structuring and control (see Brown & Magill, 1994). Similarly, data resource (# 16) and information architecture (# 18) focus on the pervasiveness nature of IT and its treatment as a resource which has utility for the entire organization (Cash *et al.*, 1992). Newer issues include: electronic data interchange—EDI (# 13), technology infrastructure (# 14) and CASE technology (# 19). The technologies of EDI and CASE hold much promise for greater productivity and efficiency; they are being increasingly applied in many organizations (Finlay & Mitchell, 1994; Keen & Cummins, 1994).

TREND ANALYSIS

In order to observe possible trends in the issues being addressed in MIS publications, a year-by-year analysis was undertaken. Table 4 presents the ranking of top ten issues for each year from 1989 to 1992. The year 1993 was not included since data for the entire year was not available at the time of research execution. While no drastic shifts were seen in this four year period, some observable trends include:

- (1) Executive and decision support is being increasingly addressed in MIS publications. We attribute this more to the recent interest in executive information systems, and not as much to decision support systems.
- (2) Software development continues to enjoy a significant amount of attention from writers and researchers. Software development has always been a thorny issue for IS managers and developers. The recent developments in software engineering, CASE tools, and object oriented methods seem to offer some promise in this area.
- (3) Research on knowledge-based and expert systems is receiving new and increasing attention. Some of this writing activity may be due to the introduction of new artificial intelligence technologies, such as neural networks, genetic algorithms, etc.
- (4) End user computing (EUC) shows a slow and steady decline in publications related to it. Possible reasons include that EUC has become a pervasive and accepted phenomenon, the early issues have already been thrashed out, and the current issues possibly fall outside the realm of IS management.
- (5) IS role and contribution is receiving lesser attention from writers and researchers. The value of IS role and contribution may have already been well publicized in the literature, thus reducing the need for further emphasis. One area that may actually raise the importance of IS role and contribution in the future is "Business Process Reengineering (BPR)". BPR is receiving heightened attention from both practitioners and researchers as a way for organizations to drastically simplify their business processes in order to obtain multifold improvements in productivity and cost savings.
- (6) Strategic planning has declined slightly in importance in terms of what is being published. Once again, the reason may be that much has already been written about the issue and that many organizations may already

have a process in place for strategic IS planning. We maintain, however, that strategic planning for IS should remain a critical activity for organizations due to increasing competition and market globalization.

Table 4

Rank	1989	1990	1991	1992
1	Strategic planning	Executive/DSS	Executive/DSS	Executive/DSS
2	IS human resources	End user computing	Strategic planning	Software development
3	Software development	Software development	Software development	Expert systems
4	IS role and contribution	IS role and contribution	Expert systems	IS human resources
5	Executive/DSS	Strategic planning	IS role and contribution	Telecommunications systems
6	IS effectiveness	IS human resources	End user computing	End user computing
7	IS organizational alignment	Organizational learning	Competitive advantage	Strategic planning
8	Technology infrastructure	IS organizational alignment	Technology infrastructure	IS effectiveness measurement
9	Telecommunications systems	Competitive advantage	Electronic data interchange (EDI)	IS role and contribution
10	Competitive advantage	Expert systems	Telecommunications systems	Security and control

COMPARISON WITH KEY ISSUE STUDIES

The purpose of all of the key issue studies (1980, 1983, 1986, 1989) has been to project the IS issues that would dominate in the next few years. The Niederman *et al.*, (1991) study of 1989 issues, being the closest to the time frame considered in this article, is the most relevant for comparison. Accordingly, the question of interest is whether the authors of MIS publications are writing about the same issues as projected by Niederman *et al.* The answer to this question will also answer a related and important question: Are the key issue studies serving their intended purpose?

Based on our evidence, there is not an unequivocal answer to the above question. The answer is both "yes" and "no". At best, a mixed picture emerges as evinced in the following comments:

(1) Five of the top ten issues identified in the 1989 study also appear in the top ten list of this study. They are: strategic planning, IS human resources, competitive advantage, software development, and telecommunications systems. On the other hand, except for two meta-categories: data resource and information architecture, all other top ten IS issues in the 1989 study appear in the top fifteen list of MIS publications. However, as a contrast, three issues: EUC, IS measurement and Executive/DSS that appeared very low in the 1989 study (in the bottom ten) are listed among the top ten in the MSI publications list.

(2) Five of the top ten issues in the 1989 study fall below the tenth place in the current study. These are: information architecture, data resource, organizational learning, technology infrastructure, and IS organization alignment.

(3) Four of the top ten issues in this study fall below the tenth ranking in the 1989 study. These are: IS role and contribution, IS effectiveness measurement, executive/decision support, and end user computing. The key issue "knowledge-based/expert systems" is a new item in our study, which was not even included in the 1989 study.

(4) A new perspective into the differences in the two sets of issues can be offered by looking at the meta-categories under three broad classes: operational, tactical and strategic issues. Examples of operational issues include the availability of hardware, operating and applications software, and human resources for MIS. Tactical issues include management's awareness of MIS capabilities, human resource development for MIS, quality of data, standards, etc. The strategic category is characterized by items like information architecture,

data resource management, strategic planning for MIS and organizational learning. It is readily observable that the key issue studies are heavily dominated by strategic concerns, while the publications results also include some tactical and operational concerns. This bias in favor of strategic issues in key issue studies is easily explained: these studies represent the viewpoints of senior IS executives. In this sense, it can be argued that the publication results present a more balanced picture of the significant IS issues.

(5) Since the 1989 key issue study projected issues three to five years into the future, it would seem that it would be a better predictor of publications in the later years. This argument was not supported, however. Comparing the top ten 1989 key issue study issues with the year-by-year top ten publications, there were six matches in 1989 and 1990, five matches in 1991, and only four in 1992. If anything, the prediction quality of the 1989 study deteriorated in the third and fourth years.

(6) Given the above comments, it may be that the key issue studies are not leading indicators of future publications. In fact, the possibility of the key issue studies being lagging indicators of prevailing issues and publications must be entertained. Readers must be familiar with the infamous time lag between research execution and final publication. Especially, in the leading journals considered in this study, the lag is at least a year and can be as high as two to three years. With this observation, the scholarly inquiry for the articles appearing in 1989 went on most likely during 1987 and 1988. Now if the key issue study of 1989 indicates concerns similar to research conducted in 1987 or 1988, it is clearly a lagging indicator. This called into question the wisdom of repeating key issue studies. The prevailing key issues can be simply obtained by a meta analysis of recent literature, such as in this article, rather than conducting a whole new study.

CONCLUSIONS

This article has provided an insightful examination of the issues being discussed in leading MIS publications. Compared to the periodic key issue studies in the MIS literature, this analysis provides an alternate view of the important issues in MIS that are worthy of research and inquiry. As per our analysis, the top three topics receiving the most attention in leading journals are: executive and decision support systems, software development, and telecommunication systems.

A comparison was offered of the publications with the key issue studies of the past, more specifically the most key issue study of 1989. A mixed picture emerged from the comparison. There is a partial match between the key issue study results and the publications. Reasons for and implications of these differences were offered. It is reiterated that our study is more directed towards academic journals, although a few leading practitioner journals were included. It might be that the issues being addressed in strictly practitioner journals may be different or closer to the key issue study results. In any case, we emphasize that the MIS research community and the MIS practitioner community stay in touch with the work and concerns of each other. In that spirit, we have provided an essential step.

Notes:

¹ The terms IS and MIS are used interchangeable

² Note that there is a time lag between the conduct of the study and the publication of the article. The issues, however, represent the time at which the study was conducted.

³ At the time of research execution (early 1994), ABI abstracts were readily available for all nine journals only to June 1993. Plans call for updating the database on a periodic basis.

REFERENCES

- Alavi, M., & Weiss, I. R. (1986). Managing the risks associated with end-user computing. *Journal of Management Information Systems*, 2(3), 5-20.
- Alter, S. L. (1977). A taxonomy of decision support systems. *Sloan Management Review*, 19(1), 39-56.
- Ball, L., & Harris, R. (1982). SMIS member: A membership analysis. *MIS Quarterly*, 6(1), 19-38.
- Brancheau, J. C. & Wetherbe, J. C. (1987). Key issues in information systems management. *MIS Quarterly*, 11(1), 23-46.

- Brown, C. V., & Magill, S. L. (1994). Alignment of the IS functions with the enterprise: Toward a model of antecedents. *MIS Quarterly*, 18(4), 371-403.
- Cash, J. I., McFarlan, F. W., McKenney, J. L., & Applegate, L. M. (1992). *Corporate information systems management: Text and cases* (3rd edn). Homewood, Ill.: Irwin.
- Chidambaram, L., & Chisnar, W. G. (1994) Telecommunication technologies: Use and investment patterns in multinational corporations. *Journal of Global Information Management*, 2(4), 5-17.
- Clemons, E. K. & McFarlan, F. W. (1986). Telecom: Hook up or loose out. *Harvard Business Review*, 64(4), 91-97.
- Davenport, T., & Buday, R. (1988). *Critical issues in information systems management in 1988*. London: Index Group.
- Davenport, T. H., & Short, J. (1990). The new industrial engineering: Information technology and business process redesign. *Sloan Management Review*, 31(4), 11-27.
- Davis, D. B. (1992). Does your IS shop measure up. *Datamation*, 38(18), 26-32.
- Davis, E. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Dickson, G. W., Leithaiser, R. L., Wetherbe, J. C., & Nechis, M. (1984). Key information systems issues for the 1980's. *MIS Quarterly*, 8, 135-159.
- Dixon, P. J., & John, D. A. (1989). Technology issues facing corporate management in the 1990s. *MIS Quarterly*, 13(3), 247-255.
- Doll, W. J., & Torkzadeh, G. (1988). The measurement of end-user computing satisfaction. *MIS Quarterly*, 12(2), 259-274.
- Dreyfuss, J. (1990). Get ready for the new workforce. *Fortune*, 165-181.
- Du Pont (1988) Du Pont's artificial intelligence implementation strategy. *Harvard Business School Case Study*, 9-189-036,1-17.
- Finlay, P. N., & Mitchell, A. C. (1994). Perceptions of the benefits from the introduction of CASE: An empirical study. *MIS Quarterly*, 18(4), 353-370.
- Forte, G., & Norman, R. J. (1992). A self assessment by the software engineering community. *Communications of the ACM*, 35(4), 28-32.
- Freedman, D. H. (1986). Programming without tears, *High Technology*, 6(4), 38-45.
- Freeman, P. A., & Gaudel, M-C. (1991). Building a foundation for the future of software engineering. *Communications of the ACM*, 34(5), 30-33.
- Gerrity, T. P., & Rockart, J. F. (1986). End-user computing: are you a leader or a laggard. *Sloan Management Review*, 25-34,
- Gillenson, M. L. & Stutz, J. D. (1991). Academic issues in MIS: Journals and books. *MIS Quarterly*, 15(4), 447-452.
- Graham, C. (1991). CASE cracks applications backlog. *Datamation*, 37(6), 97-99.
- Gremillion, L., & Pyburn P. (1983). Breaking the systems development bottleneck. *Harvard Business Review*, 83(2), 130-137.
- Hammer, M. (1990). Reengineering work: Don't automate, obliterate. *Harvard Business Review*, 68(4), 104-112.
- Hartog, C., & Herbert, M. (1986). 1985 opinion survey of MIS managers: Key issues. *MIS Quarterly*, 10, 351-361.
- Henderson, J. C. & Venkatraman, N. (1993). Strategic alignment: Leveraging information technology for transforming organizations. *IBM Systems Journal*, 32(1), 4-16.
- Ives, B., & Jarvenpaa, S. L. (1991). Applications of global information technology: Key issues for management. *MIS Quarterly*, 15(1), 33-49,
- Keen, P. G. W. (1989). Information technology and organizational advantage. In P. Gray, W. King, Ephraim McLean and Hugh Watson (Eds.), *MolS, Management of Information Systems*, The Dryden Press.
- Keen, P. G. W., & Cummins, J. M. (1994). *Networks in action*. Belmont, Calif.: Wadsworth.
- King, W. R. (1988). Strategic planning for information resources: The evolution of concepts and practice. *Information Resources Management Journal*, 1(1), 1-8.
- Kolodziej, S. (1989). EIS is a prestigious strategic weapon. *Software Magazine*, 9(9), 58-64.
- Lacity, M. C., & Hirscheim, R. (1993). The information systems outsourcing bandwagon. *Sloan Management Review*, 73-86.
- Martin, E. W. (1982). Critical success factors of chief MIS/DP executives. *MIS Quarterly*, 6, 1-9.

- McGraw, K. L., & C. R. Westphal (Eds) (1990) *Readings in knowledge acquisition*. New York: Ellis Horwood.
- Moynihan, T. (1990). What chief executives and senior managers want from their IT departments. *MIS Quarterly*, 14(1), 15-25.
- Narasimhaiah, G. (1989). Identifying MIS research issues using a research framework. *Information & Management*, 17(3), 131-141.
- Neumann, P. G. (1993). The role of software engineering. *Communications of the ACM*, 36(5), 114.
- Niederman, F., Brancheau, J. C. & Wetherbe, J. C. (1991). Information systems management issues for the 1990's. *MIS Quarterly*, 15(4), 474-500.
- Porter, M. E. (1980). *Competitive strategy: Techniques for analyzing industries and competitors*. New York: Free Press.
- Porter, M. E., & Millar, V. E. (1985). How information gives you competitive advantage. *Harvard Business Review*, 63(4), 149-160.
- Rao, K. V., Huff, F. P., & Davis, G. B. (1987). Critical issues in the management of information systems: A comparison of Singapore and the USA. *Information Technology*, 1.
- Right Associates (1992). *Lessons learned: Dispelling the myths of Downsizing*. Philadelphia: Right Associates.
- Robey, D., & Zmud, R. (1990). Research on end-user computing: Theoretical perspectives from organizational theory.
- In K. M. Kaiser, & H. J. Opelland (Eds), *Desktop information technology* (pp. 15-36). Amsterdam: North Holland.
- Souza, E. (1991). The impact of CASE on software development. *Journal of Information Systems Management*, 81(1), 17-24.
- Sprague, R. H. Jr. (1980). A framework for the development of decision support systems. *MIS Quarterly*, 4(4).
- Turban, E. (1995). *Decision Support and Expert Systems* (4th edn). Englewood Cliffs, N. J.: Prentice-Hall.
- Walrad, C., & Moss, E. (1993). Measurement: The key to application development quality. *IBM Systems Journal*, 32(3), 445-460.
- Watson, H. G., & Frolick, M. N. (1993). Determining information requirements for an EIS. *MIS Quarterly*, 17(3).
- Watson, H. G., Rainer, R. K., & Koh, C. E. (1991). Executive information systems: A framework for development and a survey of current practices. *MIS Quarterly*, 15(1).
- Wiseman, C. (1985). *Strategy' and computers: Information systems as competitive weapons*. Homewood, Ill.: Irwin.