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Key Issues in Information Systems Management: A China's Perspective

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Abstract

Research on key issues on IS management can keep IS researchers updated about latest key problems and challenged faced by IT industry and IT-related management, which can provide useful insights and clear directions for future IS studies in next few years. However, most of such researches have been done from the perspective of North America. a study from the perspective of an Asia country can provide additional findings to this important research issue, and thus contributes to the accumulative knowledge for the issue. This research intends to bridge the gap in the relevant research literature by analyzing key issues faced by China's enterprise senior managers through the first national wide survey of top ten IS management issues. The results of this study could provide some research insights for both IS practitioners and researchers who have research interests in China. The key IS management issues were identified after the data analysis, and the result is compared with US and other countries'. The comparison shows some similarities as well as some interesting differences.

Keywords: Key issues, Information System, CIO, China.

1. Introduction

In the last decade, almost every three years, MIS Quarterly (MISQ) would publish a paper on key issues in IS management. However, because those studies were conducted by surveying US senior managers, the top IS key issues largely reflected perspectives and views of senior managers in North America. Prior study has shown that key IS management issues were also influenced by political, economical, cultural, and technological infrastructure factors in different countries (Deans et al., 1991). Therefore, key issues in IS management identified from the perspective of North America may not be necessarily the ones faced by senior managers in other countries, such as in an Asia country.

Although there were a few prior studies being conducted on key IS management issues from other countries' perspectives, this research stream has not been systematically studied in other countries in a periodical way. Particularly, no such a study has been done for more than 12 years from the perspective of an Asia country. Since Asia has maintained relatively faster economic development speed in the last decade, especially in its IT industry, a study on key IS management issues from the perspective of an Asia country seems very important and timely in early 21st century.

The contribution of this research is that it bridges the gap in the relevant research literature by analyzing key issues faced by China's senior managers through the first nation wide survey of top ten IS management issues in recently. The results of this study could provide guidance for both Chinese IS practitioners and IS researchers who have research interests in China. The key IS management issues were identified after the data analysis, and the result is compared with US and other countries' key IS management issues. The comparison shows some similarities and interesting differences. The rest of the paper is organized as follows: first, current research results about the top 10 key IS management issues are reviewed;

second, the survey method is presented; third, data gathered through the survey are analyzed and presented. Discussion and implications were provided in the final section of the paper.

2.Previous Findings Regarding Top IS Management Issues

The top IS management issues have been systematically examined by IS researchers. Before 1990s, IS strategic planning is clearly the most important issue. It is consistently ranked the number one issue among US private sectors (Ball and Harrison, 1982; Dickson, et al, 1984; Hartog and Herbert, 1985; Brancheau and Wetherbe, 1986). During this time, there are rapidly and complex change in the application of technology in the business environment. Business is increasingly depended on the Information Technology. The urgent need of integration of technology into business missions make IS strategic planning the top priority for IS managers. This top priority is strengthened by the imperative need of end-user training because of the proliferation of end-user computing technology. Lack of support from top management also make the strategic IS planning a priority. During the 1980s, IS managers are trying to position themselves within organizations. The issues about the role of IS managers, how to measure the effective of IS in terms of the alignment with organization strategic goals, i.e. the contribution of IS department frequently turn up to the top issue list. At the beginning of 1980s, technology issues such as communication protocol, network layers, system developing methodologies are also among the priority list of IS managers.

During the middle of 1980s, the issues of software development, database administration, information architecture development and integration of technologies gain more attentions. End-user computing also caught a lot of attention from IS managers in the 1980s. IS managers tended to focus on end-user computing training and satisfaction. The management of IS human resources only managed to make into the top 10 list twice (Ball and Harrison, 1982; Dickson, et al., 1984). Communication with the top management also received insignificant attention among IS managers (#8 on Hartog and Herbert's list). At the end of 1980s, Caudle, Gorr and Newcomer (1991) conducted a national survey about the key information system management issues in public sectors. They found that although IS strategic planning is consistently ranked number one in previous studies, long term planning was only ranked number seven on public sector IS managers' list. The importance of integration of current and future technologies is ranked number one public sector issue. The importance of this issue was on the decline in the private sector, i.e. number two on the Dickson et al's (1984) list, number seven on the Hartog and Herbert's (1985) list and number 10 on the Brancheau and Wetherbe's (1986) list. Two software development issues made to the top 10 list, i.e., information requirements identification and software maintenance. More specific system development issues, such as end-user computing, office automation, data security, database management and distributed data processing, were also among the top 10 list.

During the 1990s, the focus of IS managers shift considerably. The center of the focus is now on the developing and building of a responsive IT infrastructure. The number one issue at the beginning of the 1990s is "developing an information architecture" (Niederman, Brancheau and Wetherbe, 1991), and the number one issue in the middle of 1990s is "building a responsive IT infrastructure" (Brancheau, Janz and Wetherbe, 1996). The importance of end-user computing issues such as end-user training and satisfaction declined dramatically. The facilitation of organizational learning and usage of IT was ranked number five in 1991, but dropped out of top 10 in 1996. Not only IS strategic planning is no longer the number concerned issue (number three on Niederman, Brancheau and Wetherbe's list and number nine on Brancheau, Janz and Wetherbe's list), the importance of the issue of proving the competitive advantage of IS dropped from number two (Brancheau and Wetherbe, 1986) to number eight (Niederman, Brancheau and Wetherbe, 1991). The same trend also holds for the

need to align IS goals with the goals or missions of the organization. The may reflect the fact that the IT industry in US is now a more mature industry and the position of IS department within an organization had been strengthened. One interesting development in the early 1990s is that importance of issue of IS employee recruiting, training and retentions. The issue of specifying, recruiting and developing IS human resources was ranked number four at the beginning of 1990s (Niederman, Brancheau and Wetherbe, 1991), but completely dropped out of top 20 issues several years later (Brancheau, Janz and Wetherbe, 1996). The comparison of the top 10 US IS management issues is listed in Table 1.

Table 1: Top 10 IS Management Issues in US

Rank	Ball and Harrison, 1982	Dickson, et al., 1984	Hartog and Herbert, 1985	Brancheau and Wetherbe, 1986	Caudle, Gorr and Newcomer, 1991	Niederman, Brancheau and Wetherbe, 1991	Brancheau, Janz and Wetherbe, 1996
1	IS planning	IS planning	IS planning	IS planning	Integration of Technologies	Developing an Information Architecture	Building a responsive IT infrastructure
2	Measuring IS effectiveness	End-user computing	Aligning IS with Business Goals	IS for competitive advantage	Comprehensive Planning Integration	Making Effective Use of the Data Resource	Facilitating and managing business process redesign
3	Impact of communications on IS	Integration of Technologies	Software development	Educating all managers	Information Requirements Identification	Improving IS Strategic Planning	Developing and managing distributed systems
4	Role of information resource manager	Software development	Database administration	IS's role and contribution	End-user Computing	Sepcifying, Recruiting, and Developing IS Human Resources	Developing and implementing an information architecture
5	Decision support systems	Measuring IS effectiveness	End-user computing	Aligning IS in the organization	Office Automation	Facilitating Organizational Learning and Use of IS Technologies	Planning and managing communication networks
6	Office automation	Educating all managers	Data security	End-user computing	Data Security	Building a Responsive IT Infrastructure	Improving the effectiveness of software development
7	IS human resources	Aligning IS with business goals	Integration of technologies	Database administration	Long-term planning mechanisms	Aligning the IS Organization With That of the Enterprise	Making effective use of the data resources
8	Educating non-IS management	IS human resources	Educating senior personnel	Info. Architecture development	Database Management System Impact	Using Information Systems for Competitive Advantage	Aligning the IS organization within the enterprise
9	Centralization vs. decentral of Is	Database administration	Software quality assurance	Measuring IS productivity	Distributed Data Processing	Improving the Quality of Software Development	Improving IS strategic planning
10	Employee job satisfaction	Decision support systems	Telecommunication technology	Integration of technologies	Software Maintenance	Planning and Implementing a Telecommunications Systems	Implementing and managing collaborative support systems

Besides the series of MISQ studies about the top IS management issues in the US, other researchers have been trying to examine the same topic in different countries, such as Australia (Watson, 1989), Taiwan (Harrison and Farn, 1990) and Slovenia (Dekleva and Zupancic, 1996). Although these studies were conducted in different regions of the world and at different time, their results shows striking resemblance with the US studies on issues such as IS strategic planning, end-user computing, alignment of IS goals with the missions of the organization, the position of IS in the organization, etc. This might be due to the fact that all of these three countries' economies are well developed industrial economies and the extensive ties between US and these countries with the IS community. An interesting finding is the highly rated issue of the training and retention of IS professionals (number two on Watson's list, number four on Harrison and Farn's list, and number two on Dekleva and Zupancic's list). This may be due to reasons such as the shortage of IS professionals, the inadequate training of current IS professionals and the IS professionals' need for advancement. Another interesting finding is that the IS managers in these three countries consistently assigned higher rating on the issues of improving communication with the top management. Better communication can in turn improve the involvement of top management and then have more chance to show the value and contribution of the IS department to the top management. The findings of the three studies are listed in Table 2.

Table 2: Top 10 IS management issues in Other Countries

Issues	**Watson, 1989**	**Harrison and Farn, 1990**	**Dekleva and Zupanncic, 1996**
1	Improving IS strategic planning	Communications with end users	Inadequate appreciation of IS by executives and other users and their lack of involvement in IS development
2	Specifying, recruiting, and developing human resources	Communications with top management	Education of IS professionals
3	Developing an information architecture	Improving the productivity of information systems professionals in the development of applications	Lack of IS strategic planning
4	Improving the effectiveness of software development	IS staff development and the maintenance of attractive career paths	Management of IS function
5	Aligning the IS organization with that of the enterprise	Improving the productivity of maintenance activities	Organizational problems
6	Increasing understanding of the role and contribution of Is	Creating and promoting information management activities which provide or enhance competitive advantages for the firm	Education of IS users
7	Using information systems for competitive advantage	Maintaining close agreement between the goals of the organization and the goals of the information service group	Integration of subsystems into the comprehensive information architecture
8	Facilitating and managing end-user computing	Training end users to be effective participants in the development of	Telecommunication infrastructure in Slovenia and its links to the world

		applications	
9	Promoting effective use of data as a resource	Fostering more effective use of work stations by professionals	Executive IS
10	Facilitating organizational learning and the use of IS technologies	Accomplishing more complete integration of systems through better interface and interconnectivity standards	National and ISO-compatible IS standards

China's industry has been invested on IT heavily during last decade. According to the State Economic and Trade Commission, the average investment on IT had reached 10 million US dollars among Top 100 (the biggest IT invested enterprises). The speed of the adoption of IT among industries such as retailing, banking, e-business, telecommunication and e-government has been accelerated during recent years. For example, the speed of Chinese ERP growth in 1999 was at 45%, however, it increased to 85% in 2001 (Zhang, 2002). Concerning the important role of China in world economy, particularly in IT industry, it is important to study the top 10 IS management issues in China.

3. Research Methodology
A preliminary study was made to help identify some initial key issues faced by chief information officers (CIOs) in China's large enterprises in 2003. The CIO concepts was introduced into China in 1980's, but until recent years, it has been widely accepted by most of enterprises, and the China CIO Association (CCIOA) was just established in late 2003. There are about 250 members in CCIOA, representing dominant IT corporations or organizations in China. One co-author of this paper was invited to be an advisor for this newly set up CIO community. Through this special participation, the CIO association issued a letter to support and urge its members to participate in this survey. A national wide survey was later conducted in the first time in China mainland.

The survey was initially started in late October 2003 when the first national CIO club's annual meeting was held, where all CIO members were present. During the meeting, the initially designed questionnaire was sent out to CIOs, and their feedback was received. Some interviews were also conducted to solicit the CIOs' feedback on the initially designed questionnaire. Based on the feedback, the questionnaire was revised again and a final version of the questionnaire was worked out.

Questionnaires were then sent out to all CIO members of the club in late 2003, and within one month, about 50 questionnaires were returned. A research assistant was hired to make long-distance calls (or through fax or email) to contact those CIOs who didn't fill in the questionnaire and return it. Up to the end of January 2004, totally 93 questionnaires were received, which gave us a 37% response rate. The low response rate can be due to the novelty of survey-based research to these CIOs, and this survey about the top IS management issues in particular to Chinese corporations.

4. Results
The final results are shown in Table 3. The importance of each individual issue can be assessed by its mean item ratings. All of the issues are rated on a 10 point scale. As it is shown in Table 3, every top rated issue's mean rating is greater than 7, which indicates they are all considered pretty important. While several traditional issues are included, there are

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also some new issues more related to China's particular IT industry environment. We classified these 10 issues as 3 group: 1) Strategic issues; 2) Management issues; 3) Technology issues. An unscrambling to each of these groups is discussed below.

Table 3: Key IS Management Issues in China

Ranking	Mean	Standard Deviation	Issues
1	8.34	2.19	Integration of Information technologies with enterprise business practices
2	7.98	2.26	Improving enterprise information system security
3	7.97	2.27	Enterprise Information Systems strategies
4	7.80	2.17	Making effective use of the data resources
5	7.60	2.13	The influence of CIO and IS organizations
6	7.56	2.01	Business Process Reengineering
7	7.52	1.93	The building of enterprise IS infrastructures
8	7.38	2.33	Building a responsive IT infrastructure
9	7.26	2.04	The evaluation of ROI of IS
10	7.24	2.12	Integration of different suppliers' open systems

1) Strategic issues

Strategic issues related enterprises' vision, mission, and future development direction are concerned mainly by enterprise top manager. This group include three issues: #1) Integration of information technologies with enterprise business practices; #3) Enterprise information systems strategies; #5) The influence of CIO and IS organizations; and #8) Improve the responsiveness to business environment.

Just before one decade, the function of IS department in most of Chinese organizations is to facilitate daily operation. But now, many organizations' success depends on the effective and efficient integration of information technologies with their business practice needs. It is no surprise that the Integration of information technologies with enterprise business practices is ranked as number one, how to merge information technologies into their business is still a big challenge to most Chinese enterprises CIOs. The rapid changing business environment, evolving new technologies, fluid IT human resources and the need to develop and maintain Information System all require CIOs to focus on the alignment of IS strategies with their business strategic. This issue relate with the Enterprise information systems strategies issue (#3) closely: the lack of mature strategic IS planning methodologies is a common problem concerned by many Chinese CIOs.

How to improve the responsiveness of an enterprise to the complex business environment is rated eighth. It should be noticed that China's enterprise business environment is fairly complex: the majority of the enterprises are state-owned, with significant percentage of private-owned and foreign-owned enterprises. Currently, major state-owned enterprises are facing strong competition from private-owned and foreign-owned enterprises. This complex structure coupled with quick changing information technologies and market make Chinese enterprises' business environment very uncertain and unpredictable. To make their organizations be more proactive, to transform the organization structure into a quick response one is an important problem that Chinese CIOs facing.

2) Management issues

This group include 4 issues: Making effective use of the data resources (#4) show that as the penetration of IT growths, a mass data are being collected in many enterprises. However, these data are usually unrecognized, unorganized, inaccessible or underutilized. How to

effectively extract information out of data is a daunting task to CIOs. The influence of CIO and IS organizations (#5) is another issue in this group. It has reported that there are at least about 10,000 CIO in current China's enterprises(CNIC, 2003). The traditional Chinese corporate culture emphasizes the dependence of the network or relationships, or "guanxi," to generate revenues and profits. This network of relationships is even more important while China is trying to modernize its business infrastructures. CIO is a relative new managerial position in China's corporate structures, and the wide spread of IS adoption only happened in recent years. Therefore, CIOs may feel their importance to the success of the enterprise may be underestimated.

Another issue in this group is Business Process Reengineering (#6). China's economic system used to be a government direct intervened and planned system. The way most Chinese enterprises operate their business complies with this system. As China's economy is moving toward marketing economy, many enterprises, particularly state-owned medium to large size enterprises, have remolded themselves to adapt to the new environment. Many cases shown that IS can be an enabler in this transformation process. The last one in this group is the evaluation of ROI of IS (#9). It has been reported that during last decade, many major state-owned enterprises have invested heavily on IT, but they still lack good evaluation method for estimate the return of the investment. How to justify and separate the return of IS department from other departments is obviously very concerns to China's CIOs, since they have to prove the value of IT and the IS department.

3) Technology issues

It is very interesting to watch the three issues in this group: the Improving enterprise information system security (#2) was taken seriously by most CIOs. It has reported that Chinese Internet user has increased 8% than last year and reached 94 millions in the beginning of 2005 (CNNIC, 2005). As more and more organizations are connected through communication networks, particularly Internet, the security risk increases dramatically. An intrusion could cause a heavy monetary losses, information reveal and reputation damages. Because of this, firewall and virus-protect software have good market potential. It has reported that a software package "Rui xing" was sold 10 million sets, but it has only taken a small share in this market(Shi, 2004).

Building enterprise IS infrastructures (#7) is a traditional issue, but it is still taken important by most Chinese CIOs. An effective enterprise IS infrastructure is still lacking in many China's organizations. In many enterprises, the IS infrastructure with various kinds of hardware, databases, critical applications, different operating system platforms, integrate them into one highly productive network is a difficult task. Different computing needs, massive network construction, and the alignment of IS functions with business functions make the building of a solid IS infrastructure a complex problem.

The last issue is the integration of different suppliers' system platforms (#10). The traditional relationship between China's enterprises has been restricted to buyer-supplier relationships. With the development of IT industry and business environment, deeper cooperation between companies and subsequent establishment of supply chain become a charmed target. However, many companies have created their own IT platforms and infrastructure. This makes the integration a daunting task for the companies involved.

5. Discussion and Implications

To compare the findings from this study with the results from earlier studies, the top 10 IS management issues from this study is first compared with Brancheau, Janz and Wetherbe's (1996) study of the top IS management issues in US. The results are listed in Table 4.

Table 4: Key IS Management Issues Comparison US and China

Rank	Brancheau, Janz and Wetherbe, 1996	Hovar, 2003	This Study
1	Building a responsive IT infrastructure	Evolving CIO Leadership Role	Integration of Information technologies with enterprise activities
2	Facilitating and managing business process redesign	Security & Privacy	Improving enterprise information system security
3	Developing and managing distributed systems	Infrastructure Management	Enterprise Information Systems strategies
4	Developing and implementing an information architecture	Information Technology & Business Alignment	Making effective use of the data resources
5	Planning and managing communication networks	Speed & Agility	The influence of CIO and IS organizations
6	Improving the effectiveness of software development	Complexity Reduction	Business Process Reengineering
7	Making effective use of the data resources	Introducing Rapid Business Solutions	The building of enterprise IS infrastructures
8	Aligning the IS organization within the enterprise	E-Business Strategies	Improve the responsiveness to the business environment
9	Improving IS strategic planning	Mobile & Wireless Solutions	The evaluation of ROI of IS
10	Implementing and managing collaborative support systems	Knowledge Management	Integration of different suppliers' open systems

The comparison shows apparent similarities as well as interesting differences. Managers from both countries tend to stress the importance of the integration of IS with business activities, the building of responsive IS infrastructure, formulating enterprise IS strategies, making effective use of data resources, the alignment of IS functions with business process reengineering, etc. This may reflect the importance of strategic planning to both IS communities. However, there are some subtle differences. In Brancheau, Janz and Wetherbe's (1996) study, the top issue is building a responsive IS infrastructure. This issue is rated number seven by China's CIOs. The second issue from Brancheau, Janz and Wetherbe's (1996) study was rated number sixth by China's CIOs. China's CIOs are more likely to treat how to integrate current existing IT with their enterprises' business practices their number one issue, which is not specifically rated by their US counterparts in 1996. The issue of IS strategic planning is rated number nine in US in 1996 and number three in China in 2003. There are several issues from Brancheau, Janz and Wetherbe's (1996) study did not make to top 10 in this study, such as developing and managing distributive systems, planning and managing communication networks, improving the effectiveness of software development, implementing and managing collaborative support systems. These issues are more specific issues related to particular types of information systems or more advanced level of IS development. To China's CIOs, there are many more urgent and macro management issues needed to be dealt with at first. Surprisingly, there are several issues showed up on this study's list but are not on US list, such as improving system security, the influence of CIOs and IS department in organizations, improve the responsiveness of business environment, the

evaluation of ROI of IS, and the integration of different suppliers' platforms. The issue of system security is rated second by China's CIOs. In the latest SIM 2002 study, this issue is also rated number two by SIM members (Hoving, 2003). Apparently, business environment and the influence of IS departments issues were rated more important by China's IS community than its counterparts in US.

To further investigate the significance of the results, the top ten list from China is compared with the top ten lists from Australia, Republic of China and Slovenia in earlier studies. The result is listed in Table 5.

Table 5: Key IS Management Issues Comparison between China and other countries

Issues	Watson, 1989	Harrison and Farn, 1990	Dekleva and Zupanncic, 1996	This Study
1	Improving IS strategic planning	Communications with end users	Inadequate appreciation of IS by executives and other users and their lack of involvement in IS development	Integration of Information technologies with enterprise activities
2	Specifying, recruiting, and developing human resources	Communications with top management	Education of IS professionals	Improving enterprise information system security
3	Developing an information architecture	Improving the productivity of information systems professionals in the development of applications	Lack of IS strategic planning	Enterprise Information Systems strategies
4	Improving the effectivenss of software development	IS staff development and the maintenance of attractive career paths	Management of IS function	Making effective use of the data resources
5	Aligning the IS organization with that of the enterprise	Improving the productivity of maintenance activities	Organizational problems	The influence of CIO and IS organizations
6	Increasing understanding of the role and contribution of Is	Creating and promoting information management activities which provide or enhance competitive advantages for the firm	Education of IS users	Business Process Reengineering
7	Using information systems for competitive advantage	Maintaining close agreement between the goals of the organization and the goals of the information service group	Integration of subsystems into the comprehensive information architecture	The building of enterprise IS infrastructures
8	Facilitating and managing end-user computing	Training end users to be effective participants in the development of applications	Telecommunication infrastructure in Slovenia and its links to the world	Improve the responsiveness to the business environment
9	Promoting effective use of data as a resource	Fostering more effective use of work stations by professionals	Executive IS	The evaluation of ROI of IS
10	Facilitating organizational learning and the use of IS technologies	Accomplishing more complete integration of systems through better interface and interconnectivity standards	National and ISO-compatible IS standards	Integration of different suppliers' open systems

The comparison results from Table 5 show considerable similarities between China and other countries in previous studies. IS communities around the world seem to share common emphasize on the building of IS infrastructure and the alignment of IS departments with organization missions, business practices and planning. The results from this study are more comparable with the results generated from the study of Australian IS managers. One issue which is shared among China, Australia and Slovenia is the appreciation of the contribution of CIOs and their IS departments. This might be due to the early development of IT industry in these countries. While the commonalities of the top IS management issues may reflect the relative homogenous of the IS communities around the world, there are some significant differences between China and other countries. The first significant difference is about end-user computing. Issues related to end-user computing were rated number eight and number ten in Australia (Watson, 1989), number nine in Republic of China (Harrison and Farn, 1990), and number sixth in Slovenia (Dekleva and Zupanncic, 1996). Surprisingly, there is no issues in China's top 10 IS management issues related to end-user computing. This result may reflect the declining importance of end-user computing. The second major difference between this study and previous non-US studies is the importance of IS professional recruiting, training and retention. This issue is rated number two in Australia, number fourth in Republic of China and number two in Slovenia. In China, this issue is rated number eleven, out of the top 10 list. The explanation to this could be that the better educated and readily available Chinese IT professionals (Shan, 2001). Furthermore, the issues of system security, ROI, the integration of different suppliers' system platform and the need to quick react to business environment are unique to Chinese IS communities.

There are several limitations to this research. First, this study did not adopt the Delphi research method. The advantage of the Delphi method is to produce a list of shared issues by subjects through several rounds of survey administration. This method requires the subjects to be willing to participate in the study. This condition may not exist for the current study. There is a lack of motivation to participate in the study. A compounding factor is that the Chinese culture discourages the leaking of a company's information. Many participants don't want to take part in 2nd, or 3rd round of survey. Another limitation is that the results may only pertain to the members of CCIOA. About 72% of the members are from large to extra large companies. This sample may not be a representative sample of the population. The third limitation is that the importance of each issue should be determined by the business environment which individual CIOs are facing, not determined by statistical averages (Niederman, Brancheau and Wetherbe, 1991). Therefore, the interpretation of these results should be with care.

6. Conclusion

A survey investigating the top 10 IS management issues in China is conducted with CIOs from CCIOA members. The results indicate that Chinese IS managers consider the integration of current information technologies into business practices their number one priority. Most of the concerns are related to IS strategic planning, infrastructure building, function alignment and business process reengineering. This study is the first time in investigating the most concerned IS management issues in China. Understanding of these issues can provide Chinese CIOs much guidance in terms of current and long term business practice goals. For IS researchers, this study provides targeting areas where a relevant contribution can be made. The significance of this study can be greatly enhanced by increasing the motivation of participants and adopting the Delphi survey method. Although the nature of this study is largely exploratory, this study represents the first step toward the determination of the critical IS management issues and subsequent theory-guided research on these issues.

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