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## **Introduction to the Special Issue on Information Systems in China of the Information Systems Journal**

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In the last twenty years, China has been the subject of considerable attention as its economy has opened up and as it has become the recipient of phenomenal amounts of foreign direct investment. These twenty years have been years of enormous change - both within the country, and in the way China is perceived from the outside. The recent accession to the World Trade Organisation and the forthcoming 2008 Beijing Olympic games are but two examples of high profile events. As China changes, increased attention is being paid to the development of information systems that will underpin national development, across all sectors of the economy. In a recent special issue of the Communications of the ACM [1], the role of IT as a transforming agent for the nation was highlighted. In proposing this special issue, we aimed to accomplish a dual set of objectives, viz.: encouraging more IS research in China and publishing good IS research conducted in China. We were particularly interested in exploring how information systems issues in China are unique, relative to our traditional IS research.

Attempting to summarise current research and practice on as broad a topic as Information Systems and in as large and diverse a country as China is an ambitious undertaking. Even a cursory review of online resources will illustrate the breadth of IT applications, from the world's largest online marketplace (Alibaba) through to communication systems in large scale industrial enterprises such as Bao Steel and on to smaller scale ERP systems in SMEs. A google.com search for "China" and "Information Systems" produces close to two million hits, while the same search on scholar.google.com produces 47,400 of which the first is instructive - "Management Information Systems in the Chinese Business Culture: An Explanatory Theory", published in 1997 in Information & Management, authored by Martinsons and Westwood [2]. It is no coincidence that, a decade and many more papers later, Martinsons is the author of one of the five papers in this special issue.

IT applications were first introduced into Chinese enterprises in the 1980s and became widespread in the 1990s, some twenty years later than in Western countries. These first applications were triggered by decision makers at a national level finally realising (after discussions about the relative importance of industrialisation and informatisation) that IT applications have the potential to support the expansion and industrialisation process that was underway at that time. As China transformed its economy towards a greater market orientation, so IT was perceived to be an important enabling factor for subsequent industrial and economic success.

However, this late appreciation of the benefits, as well as the focus on the technically-oriented, productivity-enhancing aspects, of IT meant that research in the area also tended to be both late, and largely technical. Papers by Chinese authors written at this time targetted the application of IT to a wide range of different industrial contexts and/or professions. To some extent, this phase of IS research in China is still with us. Many of the papers submitted to the special issue are of this ilk. Based on data collected by the Chinese National Knowledge Infrastructure [3], about 2215 papers on MIS were published in Chinese journals from 1980-1998. In the following eight years (1999-2007), the number swelled dramatically to 15813.

The focus of much of this published work is on the implementation of IS applications. Much less attention has been paid to the management of these systems or to more complex

socio-technical and cultural analyses of the impacts of these systems on organisations. There has thus been a disconnect between the focus of much of the indigenous Chinese IS research and that which has come to be the hallmark of contemporary IS research excellence internationally. Furthermore, research methodology treatments in the Chinese IS literature tends to be rather primitive and lacking in empiricism: many papers rely extensively on conceptual analysis, personal observation or experience reports [4]. Nevertheless, as more Chinese scholars are trained overseas, and as they return to China, so the situation is changing, even as it becomes more Western oriented. Appreciation of the importance of rigorous research design is increasing, as is the quality of research writing. However, there are unexpected problems too, since these returned Chinese scholars have a tendency to replicate Western studies in the Chinese context, but not realise the importance of injecting Chinese characteristics into their research designs. It may be that they feel that Western readers are less interested in the specific Chinese characteristics and so exclude them from the research design for this reason, though, as we hope this special issue makes clear, the opposite is actually the case. The resulting research is then of rather limited interest - testing Western models in a Chinese context. Instead, a more reflective, culturally-sensitive design and analysis is called for, so as to reflect the unique Chinese features of IS applications and consequences.

In this special issue, we present five papers that, we believe, do reflect an emerging quality in Chinese IS research. These five have been hewn from 27 original submissions, written by 74 authors in 8 countries. Unsurprisingly, there is no single research theme evident in these five papers, given the emergent nature of IS research in China. However, each of the papers makes a unique contribution in its own right. Some readers might query the lack of representation by Chinese scholars living in mainland China. We promoted the special issue widely in mainland China, as well as globally, strongly encouraging submissions through electronic means, paper flyers and a pre-submission workshop held at Peking University in early 2006 (several months before the submission deadline). As it turned out, we were pleased to see that 12 of the original submissions were written by author teams where at least one author (and often several or all) was located in mainland China. Moreover, in a further 12 of the original submissions, at least one author was originally from mainland China but is currently working (or studying) overseas. This latter list includes three submissions that were eventually accepted for the special issue. Of the three remaining papers, two were written by author teams from Taiwan (one of these papers was finally accepted for the special issue) and one was written by a Latvian-Canadian, currently located in Hong Kong (also accepted for the special issue).

We were disappointed that none of the twelve submissions from mainland China-located teams survived the review process. However, we believe that the intent of this special issue – encouraging (and publishing) high quality research in and about China – is one that requires a long term effort. A key activity in that effort is providing constructive feedback to authors – irrespective of whether their papers are eventually accepted or not. In selecting reviewers, we were careful only to invite people both knowledgeable about IS in China and interested in seeing good research published. We are very grateful to the many reviewers who gave so willingly of their time and who were so constructive in their remarks. While our disappointment is certainly mirrored by that of the authors, we were encouraged by the level of interest (organisational IS research in China is very much a nascent field) and we hope that the unsuccessful authors will have profited by their experience and so be in a stronger position to conduct their future research projects and write their future papers.

Our first article is the latest addition to the well-established stream of research on Chinese management and information systems by Maris G. Martinsons [5]. In contrast to the focus of Martinsons & Westwood [2] on how cultural factors influence IT applications within

Chinese organizations, this article concentrates on the inter-organizational information systems that underpin e-commerce. The article develops a comprehensive theory to explain the challenges and opportunities facing e-commerce development in China and other emerging markets. Martinsons contends that Chinese buyers and sellers rely on personal relationships (*guanxi*) due to the lack of a trustworthy rule-based system to govern commerce. His theory suggests that the importance of personal trust, informal information and blurred business-government relations in China will shape the transition from the physical marketplace to online marketplaces. He supports his theory by contrasting the success of several Chinese ventures that nurtured mutually-beneficial relationships with the failure of firms such as MSN and Yahoo to transplant their business models from the rule-based U.S. economy to China. We believe that further elaboration and testing of the theory of relationship-based e-commerce provides rich opportunities for a variety of IS research. For example, it will be interesting to see whether Martinsons is correct in forecasting that m-commerce will transform Chinese consumer behaviour and, more generally, that institutional deficiencies in emerging markets will continue to impede e-commerce even after the physical infrastructure is improved. Perhaps even more significant are his contentions that cultural and institutional factors have different levels of influence on different types of IS, and that IT can be used both to reinforce relationship-based commerce (by personalizing information and communications) and to accelerate the transition to rule-based commerce (through increased transparency and public information). This suggests that the leaders of governments as well as businesses may choose among various IS configurations as they pursue various objectives, but no one can afford to ignore IS.

The second article, by Man Zhang, Saonee Sarker and Suprateek Sarker [6], examines the effect of IT capability on the performance of export-focused SMEs in China, especially related to those pursuing rapid internationalization from their very inception. Such SMEs, while being significant contributors to the Chinese economy, constantly face challenges arising from their “liability of foreignness” and “resource scarcity,” and they are always on the look-out for mechanisms that would enable them to mitigate these challenges and realize higher performance. This paper, reporting on an empirical study of several Chinese export-focused SMEs, reveals that the development of IT capability is one key mechanism by which the firms can achieve higher international performance, and encourages owners/managers to actively invest in such capability within their respective organizations. Apart from demonstrating the importance of IT capability, the study also highlights the specific sub-dimensions of IT capability that such firms should (or should not) develop in order to thrive in the global environment.

In the third article, Hsin-Lu Chang, Kai Wang and Iris Chiu [7] investigate the impacts of IT-business fit in the Chinese IT manufacturing industry. In particular, the experience of implementing a Web-based e-procurement system (EP) between four Chinese personal computer & notebook component suppliers and one large Taiwanese OEM is examined. After the OEM transferred the entire EP infrastructure, including systems and personnel, to Chinese suppliers, the system performance varied. The authors observe that a lack of fit between procurement practices and EP systems produces extra burdens and costs to Chinese buyers and sellers. The authors also demonstrate that EP use in the form of weakly integrated EP systems leads to great performance improvement for firms facing low environmental, partnership and process uncertainty as well as having limited IT knowledge. The results offer important insights for practitioners in China in that they need to diagnose their environmental conditions before choosing the appropriate type of EP to implement. Meanwhile, researchers can build upon this article to further examine the impact of fit on EP performance and generalize the results.

The fourth article, authored by Mike Newman and Yu Zhao [8], uses an innovative process model to describe and analyse the process of introducing ERP systems in two Chinese SMEs, linking these efforts to Business Process Re-engineering (BPR). Comparing the results from the cases with earlier work, the authors found that one case seemed to fit most of the characteristics of a Private Venture whereas the other case, while also a Private Venture, had a very low degree of fit. They also observed the differential role of top management support in the two Chinese companies. Somewhat surprisingly, they found that cultural issues were only of limited importance – which suggests the riskiness of making unreflective generalizations of Chinese cultural factors to all IT contexts. Finally, the ability of the project team to deal with unexpected events was seen as critical in ensuring the stability of a project. In contrast, project drift led to greater degree of chaos. Newman and Zhao end the paper by offering some suggestions as to how stakeholders can improve their chances of implementing ERP systems more successfully.

The final article, by Chris Westrup and Wei Liu [9], argues, based on evidence from two case studies of global UK multinationals with Chinese joint ventures, that the ICTs used by these companies relate to their national roots and that China is seen by them as a very unusual setting which is treated as a special case. For example, one company was prepared to roll out a global ERP system elsewhere, but refused to implement it in China, while the second company cordoned off their ICT systems in China from their other, more global, systems. Cultural frames of reference are advanced as an important explanation of differences in the usage of ICTs in China. Building on these ideas this paper argues that *how* difference is recognised, accommodated and (re)affirmed is significant for the performance of formal business processes. Formal and ICT enabled systems ‘work’ by being embedded in changing Chinese cultural practices such as *guanxi* though this is frequently not recognised by Western managers. While the global nature of global firms may be overplayed, the local arrangements of joint ventures are very important in how ICT systems are implemented in which the embedding and disembedding requires an understanding of sited cultural practices that underpin the performance of formal systems. What is at stake is how global firms and their ICT systems are able to adapt to Chinese circumstances, and, in the longer term, how Chinese joint venture partners, often previously state owned enterprises, adapt to different forms of control mediated by ICTs.

In reflecting on how IS research, and practice, may develop in China in the future, we are struck by the way different firms manage their Chinese operations. We have seen many examples of Western companies attempting to introduce their Western-inspired or developed products into the Chinese market - sometimes with spectacularly disastrous results. This is perhaps no where more true than in the volatile area of Consumer to Consumer (C2C) trading, where the global leader, eBay, dramatically withdrew from the market in late December 2006, with the domestic Chinese C2C portal TaoBao building its market share very rapidly indeed [10]. But what of IS research? The failure of Western giants to conquer the Chinese market should have lessons for researchers too, namely that Western models may well not be appropriate, as Martinsons [2, 5] so clearly indicates. Consequently, it will not be sufficient for Chinese researchers (or anyone else researching China) merely to replicate Western studies in China. Rather, we suggest, there is a critical need for a more culturally reflexive approach to IS research in China, one that accepts the realities of Chinese systems, and incorporates them into research designs, at the same time drawing upon other academic disciplines in China for explanatory theories. Further, in order to gain a deeper understanding of what is special about IS in Chinese organisations, we suggest that a more emic and intensive focus would be appropriate. As Anne Tsui [11, p.3], in her capacity as editor of *Management and Organization Review*, has remarked in a trenchant and provocative editorial on contextualization in Chinese management research, there is a need to identify “the

important issues that are unique or at least important to Chinese firms, managers and employees, even if such phenomena might be foreign to scholars outside this context". Such emic research would be highly desirable, and we hope that some of the papers presented in this special issue achieve this target. At the same time, we encourage more emic IS research in China, and hope that Chinese researchers in particular will respond to this call. The more intensive focus that we call for relates to the choice of methodology. All too often, we feel, researchers rely on the tried and tested survey, with occasional case studies (not always very well done) to spice up our lives. Rarely, however, do we see interpretive studies, using ethnographic and action-oriented methods. Such studies are undoubtedly time consuming, as well as risky, but they have the potential to yield very significant rewards for researchers who aspire to surface the "embeddedness" of the rich relational, cultural, and institutional contexts inherent in the Chinese business systems.

Finally, we commend these five papers to you and hope not only that you enjoy them, but also that they stimulate you in your own research endeavours. We believe these papers represent only the tip of the iceberg for IS research in China. There remain many interesting questions that await researchers eager to explore the China IS phenomenon. More efforts, for example, can explore unique aspects of IT (e.g., social computing) that may be more salient in the China setting (e.g., in propagating the relationship-based *guanxi* building). We certainly hope to see more IS researchers going beyond progress updates (e.g. infrastructural maturity) to investigate the emergent interplay of forces and conflicts brought about through IT innovation within national, organizational, professional and personal contexts.

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