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# Organizational Context and IT Application: The Case of China

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## Introduction

The field of information systems has seen dramatical increase in research and practices in the last decade. Most researches in this area are centered on one country, and most often the country involved is U.S.A. However, as information systems are more and more used in other countries, the study of IS should also expanded to other countries, especially those high-growth developing countries such as China, Thailand, etc. One emerging question is the applicability of theories and research instruments in the IS area, and the possibility of neglecting important explanatory variables. Similar observation has been in the area of organizational theory and research (Shenkar and Glinow, 1994).

A number of studies have been done on the mutual impacts between information technology and organizational context. Bakos (1987) presented a simple framework for the organizational impacts of information technology. The organizational structure and information technology is studied by Raymon, Pare, and Bergeron (1993) by exploring the relationship between IT sophistication, organizational sophistication and organizational performance. In another study by Raymon (1990), he suggested that organizational context has a significant impact on IS sophistication and IS success. But when we explore the relationship between organizational context and information technology in a foreign or international, previously discussed theories and models as well as another related studies may not applicable. New variables are needed and alternative relationship between variables are suggested. In this paper, information technology application and organizational context in china is used as a case to illustration the national contingency in studying the issue of IT and organization context.

## Ownership

When considering the application of IS and its impact on business performances, usually the ownership would be used a control variable, and it is assumed by some researchers (e.g. Roberts, 1975, Lachman, 1985) that there is no behavioral differences between state-owned enterprises and non-state-owned enterprises, or the source of reported differences may stemmed from the differences in task environments (Lachman, 1985). However, in planned economy, such as those in China and former Soviet republics, and even the emerging demorcracies of Eastern Europe, the ownership of the enterprises is an important determinant of the business decisions, strategies, and organizational structures. Therefore, ownership should be treated as explanatory variable rather than a control variable. This effort is further validated by the factor that in China and former Soviet republics, most oftenly, the application of information systems in enterprises is initiated by government policies and regulation, the same as other advanced technologies.

The most important but unequally studies types of ownership include stae-ownership, publicly traded ownership, and privately held ownership. However, as in china, the majority of enterprises are state-owned, though ownerships are emerging, such as foreign subsidiaries, joint-ventures, public traded firms, and private ownerships. State-owned enterprises operate in a planned economy and market economy mixture environment, enterprises of other types of ownership operate in a market economy environment, though a pure market structure as the ones in developed countries is still lacking, the trend toward that end is clear. Therefore, it is expected that state-owned enterprises and firms of other ownership types would exhibit different patterns of organizational structure and information technology applications.

Common research findings have suggested that state-owned firms are less sensitive to market incentives and influenced more by external political interests and public accountability (Mascarenhas, 1989). In line with the above observation, it is noticed that in china, the incentives for stae-owned enterprises to apply

information technology are usually not based on economic or performance concerns, but rather political ones or ideological ones. For example, the usage of information systems is used as one of the criterion for the evaluation of enterprises in china, however, this evaluation does not include the evaluation of the impact of IT on business performance nor the level of usage of IT. Therefore, a strange phenomena in IT application in china is that IT is treated as a symbol of power and progress (Davis, 1992), it is not perceived as a means to improve business operations, but becomes an end of itself. Consequently, although advanced IT may be installed in state-owned enterprises, the usage is rather low.

On the other hand, State-owned enterprises cannot freely make the adjustments to organizational structure and personnel arrangements expected under the traditional contingency mode, so the necessary organizational changes associated with the application of IT, especially those that would affect the change in coordination internal or external to the organization, or change the competitive environment of the industry, are very hard to implement in state-owned enterprises, so we would see less utilization of the technology, and consequently, no significant impact on organizational performance.

## Market Focus

Firms' markets were observed with respect to how they may differ in market focus, i.e. either export oriented or domestic market focus. Mascarenhas (1989) suggested that ownership may be a good predictive variable for the market focus of firms, and he found that non-state-owned enterprises would have a larger international scope than state-owned enterprises. Vernon (1979) noticed that state-owned enterprises tend to have a domestic market focus. However, contrary to the observations made by researchers (e.g. Mazzolini, 1980), in China, state-owned enterprises are encouraged to pursue export oriented business, although state-owned enterprises are also expected to build national champions and compete against foreign corporations so as to reduce foreign domination of domestic industries (Vernon, 1979). The export practices by state-owned enterprises would be awarded by tax breaks, preferential usage of foreign exchanges and other favorable treatment both the enterprises as a whole and for the employees. On the other hand, most non-state-owned enterprises, i.e. private enterprises, joint-venture, and foreign subsidiaries focused on the domestic market of china provided by the sheer number of population in china.

It is shown that firms with domestic market emphasis are more likely to adopt functional organizational structure, while export oriented enterprises would be more likely to adopt other forms of organizational structure such as organized around product or product lines. One explanation for this phenomenon is that due to the emphasis on export and the attraction provided by the substantial benefits associated with the export activities, enterprises would pay more attention to their export related activities, one way is to set up the organizational structures around the product or product lines for export purposes. On the other hand, the domestic focused enterprises tend to view the overall and balanced progress on every aspects of the business operations, and would be more likely to organized the enterprises into functional department in accordance to the hierarchical nature of the chinese society.

One impact of market focus on IT application is in the justification for initial applications. Unlike developed countries, the economic justification for initial applications will not usually be cost displacement because the relatively low cost of man power vs. the cost of information technology (Davis, 1992). So alternative means to justify the initial applications are needed. For export-oriented enterprises, in order to improve the information exchange and facilitate the responsiveness to customer needs, information technology is deployed in the areas that would add value towards these areas. For example, when a big ship construction firm in Shanghai acquired an IBM mainframe, the first application they installed in computer-aided engineering instead of the traditional accounting application, since the CAE would significantly increase their ability to design more advanced ships and engineer the development process more effectively, thus improve their competitive ability in international market. Conversely, export-oriented enterprises tend to have more hard currency reserve which would enable them to buy more advanced computer hardwares and software. For firms with domestic market orientation, their first incentive to deploy IT is to reduce cost and manage the internal information flow. Therefore, they would more likely start with traditional accounting applications, and then move on to other applications.

## Organizational Structure

The organizational structure of the firm plays an important role in the IT management control architecture (Cash, et al, 1992). It was found that in less developed countries, the activities were grouped mostly on product or function (Yavas, et al, 1985), and the configuration of organizational structures and managerial approaches will be culturally bound on core values (Lachman, et al, 1994).

Shenkar and von Glinow (1994) noticed that ideology is a very powerful force in china, influencing not only organizational structure but virtually every facets of organizational life. However, as the propogada and emphasis on ideology has been relaxed in recent year, the influence on organizational structure of ideology would be more confined to state-owned enterprises, howeverm even so, the organizational structure in non-state-owned enterprises is still influenced by chinese philosophies and ideology, only to a less extent.

In China, state-owned enterprises are mostly organized following the Soviet model, which is pervasively functional structured, and due to the rigid hierarchical nature of the society, the information flows between the enterprises and the government institutions are also organized in a very rigid fashion, with almost every department in the enterprises need to submit some report to the corresponding supervising bureaus. Therefore, enterprises with functional structures have a need to maintain specific information and reports to be reported to its supervising agencies besides the information to be included in the overall report of the enterprises.

Conversely, the hieracrchical nature of the organizational structure in China leads to the pervasive practices of formal planning and evaluation activities for IS application, even though sometimes the planning and evaluation are not very rigidly performed.

## Implications

In summary, through the case of China, it is clear that when explore the relationship between organizational context and IT application in other countries, especially those with different market and social structures, we need to be sensitive to the national contingency, and try to identify those variables that may be neglected in previous researches.

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