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Published paper

Exploring Cultural Impact on Long-Term Utilization of Enterprise Systems

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Abstract

Culture has been increasingly recognized as a key determinant of IS and ERP success. By drawing on theoretical antecedents in previous IS and culture studies, this paper examines and analyzes cultural impact on ERP utilization in China. The study involved 25 semi-structured interviews in two Chinese companies. The findings identified that China's cultural features of high power distance, low uncertainty avoidance and collectivism, can originate a set of crucial ERP barriers and problems, which are located in diverse management and organizational areas in Chinese companies. The study suggested that, in order to address these cultural obstacles and thus ensure long-term ERP success, Chinese enterprises need to substantially change their traditional business procedures, staff attitudes, and management behaviour. Given that many cultural factors are not unique to a country, the findings of this study should have applicability beyond China.

1. Introduction

Enterprise Resource Planning (ERP) systems are enterprise-wide information system (IS) packages, which consist of a number of software modules that aimed at supporting and integrating diverse business processes across functional divisions of an organization [1, 2]. ERPs are widely perceived as the most important development in the corporate use of information technology (IT) in the 1990s [3], and have nowadays been adopted by thousands of modern companies across the world.

As ERP becomes popularized, it is increasingly realized in the research field that ERP innovation is heavily dependent on the national, cultural, social and organizational contexts, in which the system is implemented and used [4, 5]. This realization results in an increasing number of recent studies [6, 5, 7] focused on ERP-related issues in different localized contexts.

Among these, China has captured particular attention from IS researchers worldwide [8, 9, 10, 11].

This is not only attributed to China's remarkable economic growth in recent years, but is also due to the fact that the country possesses the world's third-largest IT market after the US and Japan [9]. ERP sales in China are rising particularly fast, from US$ 70 million in 2000 [7] to around US$ 1.04 billion in just the first half of the year in 2008 [12].

However, despite this rapid development of the ERP market, ERP innovation in the Chinese context is never a straightforward task. In particular, cultural differences, between Western countries where ERPs are originated and China where these systems are operated, can raise substantial challenges, difficulties and barriers to ERP implementation and usage [8, 13]. The effects of cultural issues on ERP implementation in China has received considerable attention from IS researchers [7, 8, 9, 10]. Nevertheless, there is a scarcity of studies focused on the impact of Chinese culture on ERP utilization at the post-implementation phase. Since more and more companies progress from implementation to exploitation of ERPs [14, 15], this topic has become increasingly significant.

Consequently, the realization of this research gap led the researcher to conduct the study reported in this paper. This research study examined and analyzed the influence of culture on long-term ERP utilization and exploitation in China. The research involved a multi-case study of two Chinese firms. This paper is structured as follows: the next section presents a literature review on cultural factors that may affect ERP exploitation in the Chinese context. Subsequently, the research methodology is presented, followed by a discussion of the research findings. Finally, discussion is made on the limitations and implications of the research, with conclusions drawn.

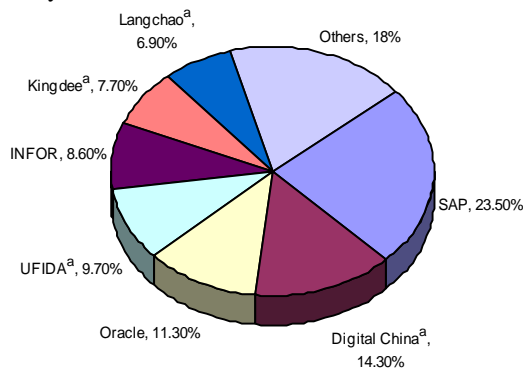## 2. Cultural impact on ERP exploitation

Culture, as defined by Hofstede [16], is "the collective programming of the mind which distinguishes the members of one group or category of people from another". In fact, culture will not just shape an individual's patterns of thinking, feeling and potential acting [16], but will also influence behaviour,

rules and management in organizations [6, 10]. The nature of culture thus determines its importance in both individual use and organizational exploitation of IS in general and of ERP in particular.

In China, culture is often perceived as an important determinant of ERP success [8]. The discrepancy between the Western and Chinese culture has been reported to have profound impact on ERP innovation [7, 10, 13]. In particular, data format and language are identified as typical cultural issues influencing the adoption and usage of Western ERP packages in the Chinese context [17, 7, 18]. As reported by Xue et al. [7], presentation, formats and content of reports and tables generated by foreign ERP systems (e.g. SAP) may not suit the needs of Chinese companies. These foreign ERP products may also not be easily customized and localized into Chinese language [7, 19]. The existence of these cultural issues can certainly reduce user acceptance at the post-adoption phase [14].

However, and in fact, many Western vendors (e.g. SAP and Oracle) entered the Chinese ERP market in the early 1990s. In order to improve the localization of their products, foreign ERP vendors, like Oracle, have gradually set up a number of research and development (R&D) centers in China in the 2000s [42]. Given the past success history and strong R&D capability of these leading system vendors, it is reasonable to argue that their ERP products should have now been substantially improved and localized to meet the needs of Chinese users.

Moreover, Zhang et al. [8] mentioned that foreign ERP vendors took up more than 90% of the Chinese ERP market share in 1998. This situation in China however has been dramatically changed during the last decade. In particular, as shown in Figure 1, foreign and domestic vendors respectively hold about half of the Chinese ERP market within the manufacturing industry in 2008.

a Chinese ERP vendors

Figure 1. China's ERP market shares in the manufacturing sector in 2008 [2]

These facts clearly indicate that, investigation of cultural impact on ERP utilization in China should go beyond the previously identified issues of report presentation and language translation. More critical cultural aspects, which can affect the usage of not just foreign but also Chinese ERP packages in local firms, need to be explored.

In truth, Hofstede [20] identifies five independent dimensions that can be used to distinguish cultural features between one country and another, including:

- Power distance – indicates the extent to which the members of organizations accept that power is distributed unequally;
- Masculinity vs. femininity – refers to the extent to which individuals perceive the world as assertive/competitive or modest/caring;
- Uncertainty avoidance – deals with a society's tolerance for uncertainty and ambiguity;
- Collectivism vs. individualism – shows the degree to which people value relationships with family, friends and colleagues;
- Long vs. short term orientation – indicates a society's time perspective, or the importance of the future versus the past and present.

According to Hofstede's study [20], the Chinese culture is characterized by high power distance, high collectivism, low uncertainty avoidance, and long-term orientation. An extensive review of the IS literature [8, 13, 21, 22, 23] suggested that Hofstede's dimensions of power distance, uncertainty avoidance and collectivism often have essential effects on IS adoption and usage in Chinese companies. These three Hofstede dimensions were thus selected to be explored intensively in this ERP study.

2.1. Power distance

High power distance is one of the features embedded in the traditional Chinese culture [20]. This cultural characteristic has resulted in very centralized, directive and hierarchical management systems in Chinese companies [21, 22].

In particular, top managers in Chinese firms often hold ultimate control on many organizational aspects, and are inclined to make centrally decisions [21, 22]. Reimers [23] argues that such centralized management system enables Chinese top managers to make important IS decisions without collecting and considering alternative ideas from a wider group of people (e.g. IT experts and system users). However, because top managers are very often neither IS experts nor daily users of ERPs, they may lack experience of operational situations and have insufficient technical

knowledge to make appropriate ERP maintenance or enhancement decisions on their own [14].

On the other hand, power centralization in Chinese firms often implies low staff empowerment. Under such organizational climate, Chinese employees may generally accept work as assignment from their managers without knowing or thinking the reasons of doing so [24]. These staff also often tend to adhere to the directives of their superiors, but are reluctant to propose solutions and initiate new ideas to address the problems at hand [22]. These working behaviours may prevent Chinese managers and in-house IT experts from efficiently reviewing and enhancing their ERP systems in the long run [13].

In addition, in the Chinese business culture, organizational power is often perceived to be related with the ability to share or withhold information [22]. In other words, information is a key source and indicator of power in Chinese firms, and is thus rarely made accessible widely [21]. Moreover, under a centralized management mode, information flows in Chinese companies typically follow the direction of top-down directives and bottom-up reporting [21, 22]. All these organizational features however may reduce the need and willingness for Chinese managers and staff to exchange information freely with each other [21, 22], and thus representing a further constraint for organization-wide communication and ERP usage.

2.2. Uncertainty avoidance

Low uncertainty avoidance is an integral part of the Chinese culture [20]. Due to this cultural characteristic, Chinese people are traditionally more tolerant of uncertainty and unclear information than their Western counterparts [21]. They also tend to accept situations as they are rather than to predict and control the situations [22].

As a consequence, Chinese managers are less inclined to use systematic procedures and explicit information to tailor business plans and forecasts to predict the uncertain future [21, 22]. Martinsons and Westwood [21] go on to state that IT investments in Chinese companies typically aim to automate, control and monitor the company's basic operations, rather than to improve business planning and decision making. As a result, Chinese managers may not be able or willing to fully exploit and utilize the analytical functions of their ERP systems [13].

Moreover, instead of conducting a rational analysis of data related to a specific problem, Chinese managers may be more inclined to make their decisions based on subjective experience, common sense and intuition [21]. Reimers [23] reinforces that managers in traditional Chinese companies may not trust the data

provided and the suggestions made by ERP systems, and may even modify the (e.g. production and purchasing) quantities recommended by the system based on their own experiences. This however may not just reduce utilisation and return of ERP, but may also lead to serious human decision mistakes [13].

2.3. Collectivism

Hofstede's study [20] showed that China has a long and strong tradition of collectivism, which values the needs and benefits of the group over the individual. This cultural characteristic proves to have substantial influences on Chinese organizational communication.

Specifically, collectivist members in Chinese firms always tend to establish long-term relationships with close colleagues in the same work group [8]. Strong personal relationships in turn allow in-group members to develop and maintain better trust and loyalty with each other [20]. This then provides the basics for effective communication between group members in Chinese companies. However, because such in-group relationship generally forms through a long time frame, it is often difficult to be accessed by outsiders [8]. This phenomenon results in that Chinese managers and employees may only be willing to make important information accessible within their groups, rather than across the entire organization [21, 22]. Zhang et al. [8] conclude that this Chinese cultural feature represents an impediment for cross-functional integration and collaboration, which is entailed by ERP systems.

3. Research methodology

3.1. Research aims and methods

This research aimed to investigate and analyze cultural impact on ERP utilization within the context of Chinese organizations. According to Yin [25], Eisenhardt [26] and Benbasat et al. [27], the case study strategy is particularly desirable and useful in obtaining anecdotal evidence and in-depth human insights to investigate 'a contemporary phenomenon within its real-life context'. Therefore, the case study design was adopted as a suitable approach to achieve the research aim. Moreover, in order to allow cross-case analysis and thus facilitate theory building and extension [27, 25], this research adopted a multiple-case rather than single-case design.

Two Chinese companies, located in the Guangdong region, were involved in the study. In order to protect the anonymity of participants, these two sites are respectively referred to as Company A and Company B in this paper:

- Company A is a state-owned enterprise, which has over 60-year operational history. The firm is a leading manufacturer of electronic products in China. Its sales network covers 28 major regions across the country. Company A currently has around 500 employees, with annual revenue of around 180 million RMB.
- Company B is a subsidiary company of TCL Corporation (a prominent Chinese electronics manufacturer). The firm has set up sales branches in more than 20 cities in China. It employs around 430 staff, and its annual revenue reaches 140 million RMB in 2008.

These two case companies were selected due to the following reasons: first, both sites have successfully implemented ERP in all key functional divisions, including sales, production, purchasing and accounting areas. Second, ERP system has been using in these companies for more than 3 years. Due to these facts, managers and system users of these firms were expected to have adequate operational experience and knowledge on ERPs. Thus they were deemed to be able to offer valuable insights into the ERP and cultural issues being studied. Finally, and most importantly, the CEOs of both sites recognized the important role of culture on ERP acceptance and usage in their firms. Therefore, they were willing to not just grant access but also provide substantial support to enable the researcher to conduct in-depth investigation in their organizations.

Moreover, China's cultural characteristics of high power distance, low uncertainty avoidance and collectivism as identified by Hofstede, are used as the scaffolding to frame the study. In order to explore intensively cultural influences of each of these key characteristics on ERP exploitation, semi-structured interview was selected as the data collection method [28, 29]. The following specific topics, which emerged from the literature review presented above, were covered in the design of interview scripts:

- Attitudes on power distance;
- Management style;
- Decision making behaviour and processes;
- Staff working behaviour;
- Attitudes on uncertainty avoidance;
- Planning and forecasting behaviour and processes;
- Attitude on collectivism;
- Staff relationship and group behaviour;
- Communication and cooperation between departments;
- Impact of these aspects on ERP usage.

Subsequently, 25 semi-structured interviews were conducted with the CEOs, IT managers, and managers

and users in diverse departments (i.e. sales, financial, production, and purchasing department) of the two case companies (Table 1). These interviews, which involved managers and system users at various levels and in all major functional divisions, allow the researcher to develop a holistic understanding about current ERP usage in these sites.

Table 1. Positions of interviewees

	Company A	Company B
CEO	1	1
IT manager	1	2
Departmental manager		
Sales	1	1
Financial	1	1
Production	1	1
Purchasing	1	1
System user		
Sales	1	1
Financial	1	2
Production	2	2
Purchasing	2	1
Total	12	13

All interviews were digitally recorded with prior permission, and lasted for 40 minutes to 1 hour. In order to enhance the trustworthiness of data [28, 30], written transcription was done on the same day that the interview had taken place. Moreover, the transcription of each interview was sent to the interviewee to read through, and thus allowing the researcher to identify and remove potential bias or incomplete interpretation [28].

3.2. Data analysis

The interview data was analysed by using a thematic analysis approach with a priori coding. Thematic analysis is one of the predominant techniques for analysing qualitative data [31]. It is "a method for identifying, analysing and reporting patterns (themes) within data" [32]. This data-driven inductive approach can often be used together with a deductive priori coding [33]. In this study, Hofstede's three cultural dimensions mentioned earlier were used as a set of priori codes/themes, while a wide range of codes were also identified from data. Following guidelines given by Braun and Clarke [32], the thematic analysis conducted in this study consisted of five stages, as summarized in Table 2.

Furthermore, in order to organize and represent concepts and findings derived from the analysis [34], a concept map was established. As shown in Figure 2, irradiating from the centre of the map are the three

cultural characteristics/themes, which are linked to their organizational and ERP impact that emerged from data. This concept map provides the structure for reporting the research findings in the next section.

Table 2. Five stages of the thematic analysis

| Stage	Description of the process
1. Getting familiar with the data	Get known the data by reading and re-reading the data set.
2. Coding the data	Developing the coding scheme, and coding the textual data in a systematic fashion across the entire data set by using NVivo.
3. Connecting codes with themes	Collating codes into themes, gathering all data relevant to each theme.
4. Reviewing themes & developing concept maps	Checking if the themes work in relation to the coded quotes and the entire data set, generating concept maps of the analysis.
5. Reporting findings	Final analysis of selected quotes, relating results back to the research question & literature, presenting findings.
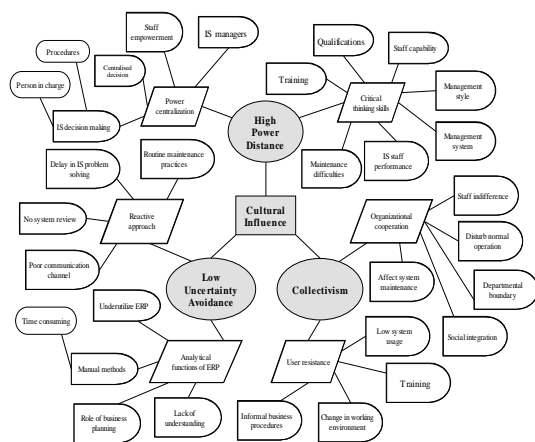
Figure 2. Concept map of research findings

In addition, it should be noted that all semi-structured interviews were actually conducted in Chinese. Given that misrepresentations and errors can often occur during translation [35], the data analysis process was carried out based on the original Chinese data set. Thus, only selected quotes were translated into English in order for them to be presented in the finding section. It was deemed that this approach could help to reduce the probability of potential translation errors, and thus raise the quality and credibility of findings.

4. Findings

The findings of this multi-case study are presented and discussed by using the concept map as scaffolding, and are thus divided into three sub-sections.

4.1. Impact of high power distance

As discussed above, the Chinese cultural characteristic of high power distance results in Chinese leaders holding close to absolute power and control in the company [13, 22]. Interviewees of this study confirmed that, "power centralization is a very common phenomenon in contemporary Chinese companies" (CEO Company A).

As discussed in section 2.1, under this autocratic environment, Chinese top managers may traditionally be reluctant to involve IT managers and system users in IS decision making [21, 23]. The findings of this study however are contrary to those in the literature:

> I am the first person to be contacted if any departments have further IS needs. A search for potential IS solutions to address these user needs will then be carried out. After further discussion and consultation with the department concerned, a proposal will be drafted and sent to the CEO. The CEO will then hold a meeting within the top management team to discuss the proposal further. He will then make the final decision based on the result of the discussion and the information I supplied (IT Manager Company B).

It clearly emerged from this quote that, the CEO of the case company would not make centralized IT decisions on his own, although he holds the power to do so. In this case, in-house IT experts and system users also make an important contribution to the IS decision making process. These findings show an obvious difference between the case company and traditional Chinese firms reported in the literature [21, 23]. Indeed, this change is deemed to be attributed to China's increasingly competitive business environment, which requires Chinese leaders to adopt a more cautious, professional and systematic approach to strategic planning and decision making. This fact was confirmed by the IT manager of Company A:

> Our increasingly hard market conditions determine that we are not allowed to make any mistakes on IS development and maintenance issues […] In order to avoid potential risk and internal resistance, top managers will generally take into account our opinions and suggestions before making final decisions, especially for IS which is not their specialist area (IT Manager Company A).

In fact, a real problem caused by power centralisation in these Chinese companies seemed to be arbitrary allocation of management power, as cogently stated by the same IT Manager:

> In Chinese firms, the boss often has ultimate power and control on many organizational aspects. Thus, the real power assigned to a manager may not merely depend on his position in the firm, but also largely depends on his personal relationship with the big boss. The more your boss trusts in you, the more the actual power you may be given. Otherwise, you may not be assigned with as much power and authority as you suppose to have (IT Manager Company A).

As a result of this issue, IS managers in Chinese firms sometimes may "not be adequately empowered […] and thus face difficulties when dealing with user resistance and promoting ERP-related changes" (IT Manager Company A).

Furthermore, under a centralized management system, Chinese staff are traditionally inclined to receive and follow explicit directives from their superiors, rather than to critically question the suitability of decisions made by them [22]. It was therefore predicted that Chinese employees may often not have the habit of making use of critical thinking [13]. The analysis of the data indicated that this phenomenon does exist and represent a crucial ERP exploitation barrier in both case companies:

> Our IT people had not established a detailed user requirement analysis when implementing ERP. They just simply purchased a set of modules from the ERP vendor, without thinking carefully whether these modules contained all functions that we need (Production Staff Company A).

> Many basic tasks (e.g. system requirement analysis) were not conducted properly and rigorously in ERP implementation. This led to a lot of difficulties and disappointments when we actually use the system (Financial Manager Company B).

> I don't think they (i.e. in-house IT experts) have done enough during ERP maintenance. For instance, they don't have any detailed plans about when and how often redundant data of the system should be cleaned. They should really think about such issues in more details and plan ahead (Purchasing Staff Company A).

It emerged from these statements that, IT staff of the case companies might often failed to think and analyse critically the assigned ERP tasks in either ERP implementation or exploitation. In fact, they may also lack experience for using critical thinking skills, or they may be poor professionals. As a consequence, these ERP tasks had not be conducted by following a proper and rigorous approach. This is certainly very dangerous, and may even contribute to serious system and business disasters.

4.2. Impact of low uncertainty avoidance

Business planning and forecasting were perceived as crucial tasks by all interviewees. Curiously, when asked how ERP was utilized to facilitate business planning, all departmental managers and users in the interviews responded that ERP was mainly used to support operational rather than analytical activities in the company. In particular, the Financial Manager of Company B stated that:

> For the financial department, ERP is mostly used to process daily transactions and for bookkeeping. For other divisions, e.g. sales and production area, their ERP modules contain functions like sales forecasting and production planning. However, these analytical functions are rarely used […] We still prefer establishing budgets and forecasts by using our traditional manual system (Financial Manager Company B).

This result however is to be expected. As discussed before, Chinese managers are traditionally tolerant of ambiguity [20], and are therefore less inclined to adopt systematic procedures to predict future uncertainties [21]. Consequently, they may not be willing to make use of planning and analytical functions of ERP systems [13]. Indeed, this ERP issue may also be attributed to the fact that IS managers in the case companies did not hold sufficient power to deal with user resistance and promote ERP usage, as discussed earlier.

Moreover, further analysis of the interview data indicated another significant ERP issue that could be caused by low uncertainty avoidance, that is, the reactive approach adopted by Chinese IT staff towards ERP problems:

> IT staff in our firm would rarely come and collect user feedback from us. Normally, what they will do is just wait…wait for us to tell them what has gone wrong […] I don't think they will know these system pitfalls at an initial stage as they are not daily system users. They may only realize these problems until some serious consequences have been caused (Production Staff Company A).

> I don't think our IT staff give a specific priority for doing system review or evaluation. The IT department may lack of people to conduct this task regularly, or they may just think this is less important (Sales Manager Company B).

As clearly shown in these statements, IT staff of both firms might often not attempt to identify ERP

problems proactively by either collecting user feedback or carrying out regular system review. They tended to wait for system users to report to them any technical issues encountered. It is reasonable to claim that, such reactive approach may be a result of low uncertainty avoidance, which makes Chinese IT experts feel tolerant of uncertain and unclear information. This behaviour may inevitably lead to "delay in identifying and resolving ERP problems, and thus reducing user satisfaction" (Production Staff Company A).

4.3. Impact of collectivism

Under a collectivist culture, Chinese people often consider a group rather than an individual as a fundamental unit of political, social, and economic concerns [16]. This cultural feature was found to be embedded in both case companies, especially Company A which is a very traditional state-owned firm:

> A large amount of our employees have being here for 30 years. So you can imagine that they would develop extremely strong relationships with each other after working together for such a long time. Therefore, our employees generally have a strong perception on the networks and groups that they belong to (CEO Company A).

However, because ERP is developed based on the Western culture that is characterized by individualism, it may often not fit in a collectivist society, like China [8]. This fact was clearly pointed out by the IT Manager of Company A:

> After ERP was used, employees are required to communicate and interact with each other through computers more than by face-to-face. People are encouraged to do their work independently by sitting in front of a PC. Many of them thus feel that ERP system has reduced their social interaction with other in-group members, and that they have been isolated from their friends (IT Manager Company A).

This IT manager concluded that, such cultural misfit may "inevitably result in user resistance in accepting and using ERP in the firm. Therefore, it is essential for us to provide substantial ERP training to this type of employee".

In addition, it is widely accepted that ERP systems can help to break down departmental boundaries and thus facilitate cross-functional integration [36, 37]. However, Allen [37] argues that, technical data integration that can be achieved by using ERP may not directly lead to social integration of people across diverse divisions. In fact, and as discussed above, cross-functional integration and cooperation may often

be difficult to be achieved under China's collectivist culture [8]. Evidence was found from the interviews to support these arguments.

In particular, a financial staff of company B stated that, clerks in the purchasing department would often input duplicated supplier records into ERP. This had substantially increased the difficulty and complexity of the financial work. When asked whether they realized this issue, a purchasing staff of the firm responded:

> We knew these mistakes would often happen. Because we are always very busy, when adding a new supplier we may not check whether an existing record has been stored in the system…also because our ERP cannot automatically detect duplicated records and give us related warnings, we may often enter duplicated supplier records into the system […] It is true that we have not paid sufficient attention to this issue as such duplicated records will not affect our work too much, although this may affect the financial department (Purchasing Staff Company B).

It became clear from this quote that, the purchasing staff realized their mistakes and understood how this may affect the work of their financial counterparts. They however seemed to be "relatively indifferent to these problems" (Financial Staff Company B). It thus emerged from these statements that, some collectivist employees in Company B seemed to only care about the benefits of their own group/department, when overlooking problems that might be caused to other divisions or even the entire firm. This evidence clearly showed poor cross-functional integration and cooperation in this case company. It is apparent that such staff behaviour will inevitably affect success of ERP utilization, which is heavily dependant on efficient and sufficient organizational collaboration [8].

5. Further discussion and limitations

Overall, by drawing on and extending Hofstede's work, this study identified and explored a set of cultural and organizational barriers and issues that can affect long-term ERP utilization in Chinese companies, as summarized in Figure 3.
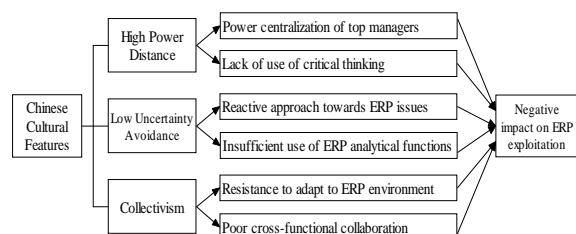

Figure 3. Empirical model derived from findings

In particular, owing to a long tradition of high power distance, Chinese top managers typically tend to remain very centralized control in the firm. The findings showed that these Chinese leaders currently may not be fully ready to empower their middle-level managers, such as IS managers, who thus may not be able to conduct their duties effectively during both ERP implementation and post-implementation phase. Moreover, it was confirmed that the centralized management system in Chinese firms can actually discourage in-house IT experts from making use of critical thinking, which in turn leading to poor performance of this type of professional. Also due to the cultural feature of low uncertainty avoidance, Chinese IT specialists may often fail to predict and prevent crucial ERP utilization and maintenance problems proactively and efficiently. Apart from these, Chinese system users were identified to have resistance and difficulties to adapt themselves from a collectivist climate that emphasizes in-group relationships, to the new ERP environment that encourages cross-functional collaboration and commitment. In addition, it emerged from the findings that Chinese managers and users, who are more tolerant of future uncertainty, may be less prepared to use analytical functions of their ERPs to support business and tactical planning.

It is apparent that, these identified cultural issues represent some of the major triggers for ERP post-implementation failure in the Chinese context. In order to increase the possibility of ERP success, some IS researchers [8] suggest that, China's user companies and system vendors need to customize ERP packages to fit the local culture. However, it clearly emerged from this study that, merely modifying the ERP system may neither be able to remove the identified cultural obstacles (e.g. power centralization, poor cross-functional cooperation), nor mitigate their organizational impact. In truth, in order to overcome these cultural impediments, there proves to be a need for Chinese leaders and employees to make a substantial effort to change their current working behaviour, routine business practices, management system, and organizational policies.

Additionally, it should be stressed that cultural features are often not something unique to a particular country [38]. For instance, collectivism also applies to many cultures, such as Asia, Africa, and South America [20, 38]. Also, both high power distance and low uncertainty avoidance are inherent in the culture of many Asian countries, e.g. Malaysia, Philippines, and India [20]. Therefore, the findings identified in this study may also be applicable to other nations that have similar cultural and organizational features to China.

This study has two limitations. First, although the Hofstede dimensions provide a good starting point to study culture and its impact on information systems, this model has been criticized for being too simplified to describe all important aspects of national cultures [6, 39]. In fact, other cultural features, e.g. high context communication identified by Hall [40], may also affect ERP utilization in China. These additional cultural aspects are planned to be further explored in future research. Second, as a typical disadvantage inhered in any case study research, the findings may not be strongly generalisable. Therefore, further studies are strongly recommended in order to validate and generalize the findings of this research, especially the empirical model presented in Figure 3.

6. Implications

The results of this study have important practical implications. Specifically, the findings can help Chinese practitioners to identify and understand possible cultural weaknesses affecting ERP utilization in their firms. The identified cultural issues also represent a set of key areas, which both foreign and local ERP vendors and consultants need to pay particular attention when providing support and consulting advice to their Chinese clients.

On the other hand, the findings also contributed to theory. While prior cultural studies on IS and ERP [6, 7, 8, 10, 21, 23] focused mainly on system implementation aspects, this research is one of the first studies contributed to the gap of cultural influences on ERP post-implementation, particularly in the Chinese context. It extends our understanding on organizational and ERP issues related to the cultural dimensions of power distance, uncertainty avoidance and collectivism, by identifying and exploring a set of crucial cultural barriers as highlighted in Figure 3. Together with foregoing IS research, this study provides researchers deeper insights into cultural issues and impact across the entire ERP life-cycle in China.

7. Conclusions

This study provides an in-depth investigation and discussion into cultural influences on long-term ERP utilization in China. It particularly emphasized on ERP impact associated with the Chinese cultural features of high power distance, low uncertainty avoidance, and collectivism. The findings led to the conclusion that, the Chinese culture can trigger a number of critical ERP exploitation barriers and issues at strategic, managerial, and operational levels in China's companies. Disregarding these cultural factors may

lead to crucial ERP failures, which in turn can contribute to significant business disasters, as in the case of FoxMeyer Drug's bankruptcy [41]. Therefore, Chinese leaders and IS managers need to become aware of these cultural issues and their critical impact, as well as to take proper actions to address these crucial problems, in order to ensure continuous ERP success at the post-implementation phase.

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