

# **The Impact of Culture on ERP Implementation: SAP in China**

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## **Abstract**

The primary purpose of this research was to study the impact of culture on the implementation of a Western-developed ERP system (SAP) in an Asian environment from the local Chinese informant's perspective. Unlike the majority of IS cultural research into ERP implementation, this study used a qualitative approach. Unstructured interviews were used on two occasions to collect data from informants during the implementation with a focus on their personal perceptions and interactions. This approach was adopted to allow informants to freely express their experiences and opinions in relations to the implementation. This implies that the researcher did not direct the interviews with any predetermined questions but rather allow the informants to direct the focus base on what they saw as important. Data analysis was based on the Seven Steps framework from Colaizzi (1978). The overall result of this research was that culture had a positive influence on the implementation of a Western-developed ERP system (SAP) in China. The findings in the case study showed that while the implementation of an ERP system had introduced new elements into their work practices and created new challenges for the informants, they did not see them in terms of cultural differences and mismatches. Instead, they accepted them as changes that must be accommodated. They relied on their creativity and innovation to find a better way to make the ERP system more compatible to their work practices. This is important because contrary to the common view, cultural misalignment did not cause rejection of the SAP system, and further a non-Western culture did not necessarily make implementation of Western-developed ERP systems more difficult to implement in an Asian environment. Furthermore, the findings in the case study showed that the Chinese cultural values of Guanxi are important in the management of uncertainties created from environmental factors and deficiencies in the SAP system. The research described in this thesis confirmed the usefulness of the National Cultural Dimensions (Hofstede, 1980) and Situated Culture Theory (Weisinger & Salipante, 2000) for obtaining meaningful insights that drew together the influences of environmental factors and Chinese culture, and how the informants dealt with the SAP implementation. The outcome of this research has provided new insights into an appreciation of different cultural values and an understanding on how informants intuitively applied them as problem-solving tools. In addition based on this research, suggestions have been made for future research with a focus on how culture could be taken into account to support the implementation of new technologies.



## **Note**

Papers published by the candidate are listed in chronological order below:

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## CHAPTER 1 - INTRODUCTION

### 1.1 INTRODUCTION

The aim of this chapter is to establish a context for the research to be presented in this thesis. It will address the following issues:

- Research Background
- Perceived Research Problem
- Research Objective
- Research Questions
- Scope
- Research Contributions
- Research Limitations
- Summary of Chapters to Follow
- Chapter Summary

This chapter will conclude with an outline of the four remaining chapters to follow in this thesis. However, before proceeding to the research background it is necessary to establish definitions of terminology used throughout this thesis: *National Culture; Situated Culture and; Enterprise Resource Planning*.

National culture can be defined as “the collective programming of the mind which distinguishes the members of one group or category of people from another” (Hofstede, 1991:5). People share collective national characteristics that represent their cultural mental programming. This mental programming “shapes values, beliefs, assumptions, expectations, perceptions and behaviour” (Myers & Tan, 2002:7). National culture is commonly defined as the “norms, thinking, attitudes, and behaviours from different national cultural backgrounds” (Feng, 2003:14). In this research has clearly demonstrated that the culture of China differs from that found embedded in the SAP system developed in Germany.

Situated culture can be defined as a “socially negotiated, dynamic, practical, and locally situated process” (Weisinger & Salipante, 2000:376). The traditional concept of culture as being homogenous and stable need not be discounted when adopting a more dynamic view, culture can be both homogeneous and stable as well as being dynamic and “in-the-making” (Weisinger & Salipante, 2000:384). This supports that the traditional concept of culture can be useful because it has meaning in everyday language and practice, and for conveying the challenges of one group effectively interacting with members of a different society. Further, this view sees the interaction between different cultures as being situated in a particular context. It recognizes that contextual factors can come into play in addition to various generalized culture dimensions. As a result this research has drawn on the benefits of Situated Culture Theory, enabling the researcher to identify unique local cultural processes and workplace practices that might have impacted on the ERP implementation.

Enterprise Resource Planning (ERP) can be defined as a system that has been designed specifically for the enterprise wide coordination of “resources, information, and activities needed to complete business processes such as order fulfilment or billing” (Giachetti, 2004:1158). ERP systems have also been described as having the capability to integrate data across an organisation and impose standardised procedures on data input, use and dissemination (Davenport, 1998; Laughlin, 1999; Stair & Reynolds, 1998). Of particular relevance in this research, is the definition that combines culture and ERP systems as: “shared information systems, which are systems that cross typical organisational boundaries and therefore have multiple users and stakeholders who have different cultures and approaches to work” (Pawlowski et al., 2000:1). Within this definition, the concept of culture can be embedded in software such as an ERP system reflecting the view of the software developers, vendors and consultants (Molla & Loukis, 2005). This implies technology can be shaped by the “interest, values and assumptions of the developers, investors and users” (Orlikowski & Iacono, 2001:127). In the modern business environment the interactive effects of ERP systems and culture can be extended globally.

## **1.2 BACKGROUND**

With the advent of globalisation, the issue of culture has become important because it is now common practice for Western organisations to introduce their locally-developed ERP systems into their foreign branches. While the implementation of an ERP system may be beneficial, it can also create significant disruption to the host organisation's structure and operations (Davenport, 1998). The structural disruption that can be caused by an ERP system can impact on the culture of the organisation implementing it, such as through business process reengineering (BPR) (Sandoe et al., 2001). Conversely, culture has been found to have an impact on the implementation of ERP systems (Sheu et al., 2003; Van Everdingen & Waarts, 2003; Zhang, Lee, Zhang, & Banerjee, 2002). It has the potential to contribute to disruption because of mismatches between the culture embedded in the ERP system and that of the host organisation (Chen et al., 2006; Liang et al., 2004; Rajapakse & Seddon, 2005; Skok & Döringer, 2001; Soh et al., 2000; Xue et al., 2005; Zhang et al., 2006; Zhang, Lee, Zhang, & Banerjee, 2002; Zhu & Ma, 1999).

The literature on ERP systems indicates that the low success rate in reaping the benefits of Western-developed ERP systems in Asia and particularly in China can be attributed to their inappropriateness in an essentially Asian environment (Feng et al., 2003; Li & Li, 2000a; Li et al., 2003; Li, Chaudhry et al., 2001; Wang et al., 2005). In response there has been a call for the indigenization of these systems where values can be integrated such as developing a Chinese version of ERP system architecture. This suggestion is not new. From earlier research Western-developed Material Resource Planning (MRP) systems were found not appropriate to the Chinese environment (He et al., 1997). In recent reports it has been argued that the structure embedded in Western ERP systems could not support important Guanxi-based business practices in China, considered very important for transactions and marketing. Guanxi can be defined as a quality relationship that determines appropriate behaviour and treatment of each other (Chen & Chen, 2004; Wong et al., 2003). Guanxi have been found to be highly influential to ERP implementation in China. For example, researchers have found that the full implementation of ERP system was not possible because the organisation concerned wish to maintain a guanxi-oriented approach to work practices (Wang et al., 2006). As such it



highlights the importance of culture and its potential impact on the implementation of Western-developed ERP systems in an Asian environment.

### ***1.3 PROBLEMS WITH THE EXTANT RESEARCH***

While there is a considerable body of research on how culture can influence behaviour in organisations, relatively few of the studies explicitly examine the potential impact of culture on Western-developed ERP system implementation.

When examining national culture, Hofstede's (1980) Theory of Cultural Dimensions could be of some assistance. It has been widely used in IS research to identify the differences between cultures. However, it does have limitations: It requires a quantitative approach that precludes the ability to gain a deeper understanding of the impact of culture on an ERP system implementation. Further, it can not explain the relationship between culture and ERP implementation from a native perspective. Consequently, this suggests a need for the use of a qualitative approach that has been applied in this thesis.

There is also the consideration that culture may be dynamic and not static as Hofstede's theory suggests. Culture and value systems can change with circumstances. Accordingly, this indicated that Situated Culture Theory would also be useful in this research. It overcomes the limitations of looking at the impact of culture on ERP implementation from the perspective of cultural differences. Situated Culture Theory provides the means to take into account the specific context of the implementation from the native informants' perspective.

### ***1.4 RESEARCH OBJECTIVE***

To address the perceived research problem this research will examine the implementation of a Western-developed ERP system from a local Chinese informant's perspective.

### **1.5 RESEARCH QUESTION**

The aim of this research is to provide a deeper understanding of the role and impact of culture in ERP implementation. This research starts with recognition that there are cultural differences between Chinese culture and the Western culture that is assumed to be embedded in Western designed ERP systems (Carmel, 1997; Kaplan, 1995; Kersten et al., 2001). Given these differences, this research examines how Chinese culture affects or impacts the implementation of a Western designed ERP system. Thus, the primary research question driving this research is as follows:

*How does culture impact on a Western-developed ERP system implementation in a Chinese environment?*

Two secondary research questions that follow from the primary research question are as follows:

*(1) How did the Chinese informants taking part in this research handle the problems introduced by the SAP implementation?*

*(2) What changes were necessary to accommodate the SAP implementation in a Chinese work environment?*

### **1.6 SCOPE**

This research involves an exploratory approach. This implies that it is an initial study that will examine the impact of Chinese culture on a Western-developed ERP system implementation from a national culture perspective. It has been suggested that if “the implementing organization is from a different country than that of the ERP package’s main markets, country level differences need to be identified” (Soh & Sia, 2004:379). Accordingly, an understanding from a national culture perspective is necessary to enable subsequent research that might look at impact at lower levels such as organisational culture. These can include organisational and individual effects on culture.

In keeping with the national culture perspective adopted in this research, three of the four Cultural Dimensions from Hofstede (1980) will be used. These are collectivism, power distance and uncertainty avoidance. These have been acknowledged as being relevant when these perspectives been applied (Hofstede, 1980). In addition this research will draw on Situated Culture Theory (Weisinger & Salipante, 2000). A definition of this theory was provided at the beginning of this chapter and it will be further explained in Chapter 2. The support of this second theory is a recognition that the application of National Cultural Dimensions (Hofstede, 1980) does not take into account the environment in which an implementation takes place. Situated Culture Theory “holds that cultural understanding is locally situated, behavioral and embedded in everyday, socially negotiated work practices” (Weisinger & Trauth, 2002:306), as such “it would be unwise to rely just on Hofstede’s concept of culture” (Ford et al., 2003:22).

A single case study forms the basis for the present research. ElevatorTech (a pseudonym) is the Chinese operation of a Western-based elevator manufacturer. In looking at national culture, the involvement of this organisation is acceptable because it remained essentially Chinese since its acquisition in the mid 1980’s. It is the projected SAP ERP implementation that could bring about change in the future operations of the organisation.

Unlike most existing research into culture and ERP implementation that has used a quantitative methodology (Clemmons, 2005; Ford et al., 2003; Ifinedo, 2007; Krumbholz et al., 2000; Mehlinger, 2006) this research employs a qualitative approach. It will involve a cross-sectional sampling which means that the data collected represents a single snap-shot in time (Neuman, 2000) rather than that collected over an extended period. A number of interviews will be conducted with projected users as well as SAP IT teams. The data are analysed using the Seven Steps of Phenomenological Analysis of Colaizzi (1978).

### ***1.7 RESEARCH CONTRIBUTIONS***

It is anticipated that this research will make both theoretical and practical contributions. From a theoretical perspective it will demonstrate the effectiveness of using a qualitative perspective for research on this topic. As an exploratory study it will provide a basis to attract further research that will then assist in building a growing body of new knowledge. From a practical perspective it is anticipated the outcome could possibly be used as a point of reference for consultants doing practical work in China and other non-Western cultures.

### ***1.8 RESEARCH LIMITATIONS***

Two potential limitations in this study are anticipated. Firstly, because this study is an interpretive single exploratory case study, the findings can not be easily generalised to the wider population (Eisenhardt, 1989; Howison, 2006; Lee, 1989b; Tellis, 1997b; Yin, 1984). While this limitation is recognised, the purpose is not to represent the world but to represent the case (Stake, 2005). This research is more concerned with the particularity of the organisation in the case study and not the discovery of general laws (Burrell & Morgan, 1979). Secondly, while it would have been ideal to adopt a longitudinal study approach to track changes in the company, due to limitations of funding and time this is not possible.

### ***1.9 CHAPTER SUMMARY***

This chapter developed a context for the research being presented in this thesis. Definitions of major terms relevant to the research were established at the beginning of the chapter. A background discussion was then used to identify the perceived research problem. This led to the research objectives and questions. The scope of the research was then outlined. Following this the limitations and contributions anticipated from this research were identified.

### ***1.10 SUMMARY OF CHAPTERS TO FOLLOW***

The remainder of this thesis contains 4 chapters:

- Chapter 2- Literature Review
- Chapter 3- Methodology
- Chapter 4- Findings
- Chapter 5- Discussion

*Chapter 2* presents a review of literature on the cultural impacts on ERP system implementations in Asia. The review indicated that while traditional cultural perspectives using Hofstede's (1980) National Culture Dimensions is valuable, it is limited in explaining how two cultures interact. An alternative view of culture using the situated culture theory of Weisinger and Salipante (2000) is proposed.

*Chapter 3* presents the chosen methodological approach. It involves an exploratory study based on interpretive case study.

*Chapter 4* presents the findings. The key findings will be on the Chinese perceptions on the SAP implementation.

*Chapter 5* will provide a discussion and conclusions drawn from this research. In addition it will review the limitations and contributions and make suggestions for future research.

## CHAPTER 2 LITERATURE REVIEW

### 2.1 INTRODUCTION

This chapter provides a review of literature related to this research. It examines the issue of culture as applicable and also reports research conducted on ERP systems. To begin, when dealing with culture the following issues will be considered:

- Definitions of Culture
- Culture Embedded in IS software
- Cultural Awareness in Information Systems
- Cultural Perspective in this Research

Following this the focus will move to the concept of ERP:

- Evolution of Enterprise Resource Planning (ERP) Systems
- Emergence of Culture in ERP Implementation
- Cultural and Technological Change

### 2.2 DEFINITIONS OF CULTURE

As earlier as 1952, Kroeber and Kluckhohn (1952) stated there could be more than 164 definitions of culture. This suggests that defining it can be very difficult and complex (Groeschl & Doherty, 2000). In addition clear definitions can be problematic. Although national culture and organizational culture are not identical (Hofstede, 1997), they cannot exist and operate separately (Al-Emadi & Al-Asmakh, 2006; Sun, 2003). National culture can be manifested in an organisation and have significant impact on the values and beliefs of people, affecting attitudes and behaviour (Adler, 2002; Pauleen et al., 2006; Trompenaars, 1993). Culture has been defined in the literature in the following ways:

- “the pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems” (Schein, 1985:3) ;
- “collective programming of the mind”(Hofstede & Bond, 1988:6)
- “shared perceptions, patterns of belief, symbols, rites and rituals, and myths that evolve over time and function as the glue that holds the organisation together (Zamanou & Glaser, 1994:475);
- “the underlying framework that guides an individual’s perception of observed events and personal interactions, and the selection of appropriate responses in social situations” (Johansson, 1999:73);
- “the customs, ideas, beliefs, etc, of a particular society, country, etc” (Oxford-Dictionary, 2000:165);
- “the distinctive patterns of ideas, beliefs, and norms which characterize the way of life and relations of a society or group within a society”(Reeves & Baden, 2000:4);
- “totality of that group’s thought, experiences, and patterns of behaviour and its concepts, values, and assumptions about life that guide behaviour and how those evolve with contact with other culture” (Jandt, 2007:7).

However, for this research the following characterisation of culture by Fletcher and Brown (1999) based on shared common characteristics of a number of definitions of culture will be adopted in the present research:

- Culture is prescriptive, in that it prescribes those forms of behaviour that are acceptable to people in a specific community;
- Culture is learned, as people are not born with a culture but are born into a culture. The norms of the culture are acquired as people are raised in and exposed to the culture;
- Culture is dynamic, as not only does it influence our behaviour but our behaviour influences the culture reflecting its interactive nature; and

- Culture is subjective, because people attribute meaning to issues on a subjective basis and these subjective meanings develop within the context of the culture (Fletcher & Brown, 1999:59).

### *Cultural Awareness in Information Systems*

From the literature, knowledge about culture is essential in information systems (IS) research. For example, culture can “have a significant impact on the development and operation of information systems within the organisation”(Stair, 1992:45). Sheng et al. (2003) suggested that culture could guide:

- how work is done;
- how technology is used;
- how people think; and
- provide standards for interaction and communication.

In addition culture may impact on people’s behaviour such as how problems are solved, how a job is conducted and how people communicate (Bates et al., 1995). Culture may play a central role in strategic change in organisations and it has been suggested it may be “the primary driver of strategic change” (DeLisi, 1990:85). Further, practices consistent with a society’s predominant cultural values are valued favourably(Erez & Early, 1993).

Furthermore, understanding and accommodating cultural differences may prove to be essential if organisations are to deploy their IT successfully in other countries (Applegate, 1994; DeLisi, 1990; Schein, 1984; Straub, 1994; Zimmerman et al., 1994).

“Because many organisations are now doing business beyond their national boundaries and these global activities are facilitated and supported to a large extent by current communication and information technologies...it is important to understand the impact of cultural differences on these activities” (Corbitt et al., 2004:68-69).



### **2.3 *CULTURE EMBEDDED IN IS SOFTWARE***

Western culture has played a dominant role in software development (Carmel, 1997; Juustila, 1995; Kaplan, 1995; Kersten et al., 2001; Nakakoji, 1996; Taylor, 1992), and culture may be embedded in the design of technology (Bollier, 2002; Bray, 1997; Hart-Davidson, 1997; Kersten et al., 2004; Orlikowski & Iacono, 2001; Orlikowski & Robey, 1991). For example:

“The structures that are embedded in software...and in the technical standards of the internet...determine what kinds of inter-relationships we can have as a society. Software is becoming a key component of the hard-wiring of our culture” (Bollier, 2002:1)

Technology is embedded with cultural beliefs and practices and is designed to produce some cultural condition (Hart-Davidson, 1997). Depending on the cultural context, the process of IS design and development can vary according to the culture for which it is produced (Couger et al., 1990; Kersten et al., 2004; Kumar & Bjorn-Andersen, 1990; Palvia et al., 1996). Success in the design of IS could be in the inventor’s interpretation of “the values, institutional arrangements, and economic notions of that culture” (Carlson, 1992:175).

Further, technology can be shaped by the “interest, values and assumptions of the developers, investors and users” (Orlikowski & Iacono, 2001:127). For example, ideologies such as Western market interest (capitalism), values (ethics and freedom of choice) and assumptions (how things ought to be done) are apparent as “technical efficiency is computed in terms of returns to capital, returns to labour, speed of production or efficiency in the use of raw material...[thus] celebrates capitalism and its epistemologies”(Bray, 1997:161). In terms of resource allocation and order of authority in information technology, systems designed in an organisation may often take organisational power structure into consideration (Orlikowski & Robey, 1991). The decision makers in an organisational setting may be reinforced by having access to greater decision making tools and its associated information than those who hold a lower

position, showing that the technology structure itself reflects levels of domination. This supports the concept of resource allocation based on position held in the organisation. These expressions of power and resource allocation are similar to that of Bray (1997) who described technology as “a form of cultural expression, and as such plays a key role in the creation and transmission of ideology” (Bray, 1997:369).

Culture is a primary concern in the design of technology (the application core) and is a key factor in the successful deployment in an international market. Previous research has identified technology as having two layers: a culture-dependent interface and a culture-independent core (Kersten et al., 2004). To help software companies develop programmes for international markets work is often done with only the culture-dependent interface, similar to a user interface, to meet different social and cultural requirements (Hall, 1999; Nakakoji, 1996). This engages only the surface culture (for example symbols, artefacts and organisational structures) rather than deep culture such as beliefs, ideas, language, rules, knowledge, procedures and norms. Software implementation usually requires engagement with not only the surface culture but also the deep culture (Kersten et al., 2004). Software companies usually do not adapt the culture-independent core of the technology to another culture, so avoiding re-writing the same application for every new national market.

Given the global reach of technology, problems have been identified from a growing list of examples of poor IS design, demonstrating the need to better understand the cultural assumptions embedded in IS development (Kankanhalli et al., 2004).

The current research is about what happens when technology is developed in one culture (SAP developed in Germany) and adopted for use in another (China).

## **2.4 CULTURAL PERSPECTIVE IN THIS RESEARCH**

The study of culture can be very complex and the perspectives used wide ranging. It has been suggested that culture could be explored from a cognitive level (Hutchins, 1995; Lamb & Kling, 2003; Tan & Gallupe, 2006) or a symbolic level (Geertz, 1973; Levi-Strauss, 1976). In addition there may be methodological challenges, for example the appropriate approach to investigate, identify, model or measure cultural effects (Baskerville, 2003; Inkeles, 1997; Ott, 1989; Sahlins, 1976). There can also be different approaches such as a cultural dimension lens (Hofstede, 1980) or a dynamic approach (Weisinger & Salipante, 2000).

Reviewing all literature on culture is an undertaking beyond the scope of this present research. Here the aim is to study the effects of Chinese culture within the case study on the implementation of a Western-developed ERP system. It will be conducted with reference to the following perspectives:

- National Culture
- Situated Culture

### **2.4.1. NATIONAL CULTURE**

“National Culture is an important new factor arising in the context of information systems used for cross-cultural applications” (Koeszegi et al., 2004:105). National culture impacts deeply on cultural patterns in organisations (McCarthy, 1998). It moulds organisational culture and affects the beliefs, attitudes and behaviour of its members (McCarthy, 1998). As a consequence, organisational culture and national culture recursively mirror one another (McCarthy, 1998). When the focus is on cultural distance, national culture has a greater influence than organizational culture (Gallegos, 2001). Research has shown that national culture is critical to ERP implementation in multi-national settings and can impact on its successful implementation (Burch, 2006; Rajapakse & Seddon, 2005; Sheu et al., 2004b; Soh & Sia, 2004; Waarts & Everdingen, 2005; Yen & Sheu, 2004). For example, it has been found that national cultural differences between countries, even within the EU, can impact the likelihood of ERP

adoption. This can have important implications for companies expanding into foreign countries (Waarts & Everdingen, 2005).

For the purpose of this research it is proposed that the implementation of a Western developed ERP system into a Chinese-based organisation represents a transfer of software with an intrinsically embedded culture. This is essentially a cross-cultural phenomenon where the movement occurs from national culture rather than from organizational culture. Further, Chinese national culture can be manifested at the organisational level through individuals. This can have significant influence on the way new technologies such as ERP systems are adopted and used by individuals in organizations in China. Accordingly, this supports the focus on national culture in this subsection.

Within National Culture two further perspectives of culture are discussed:

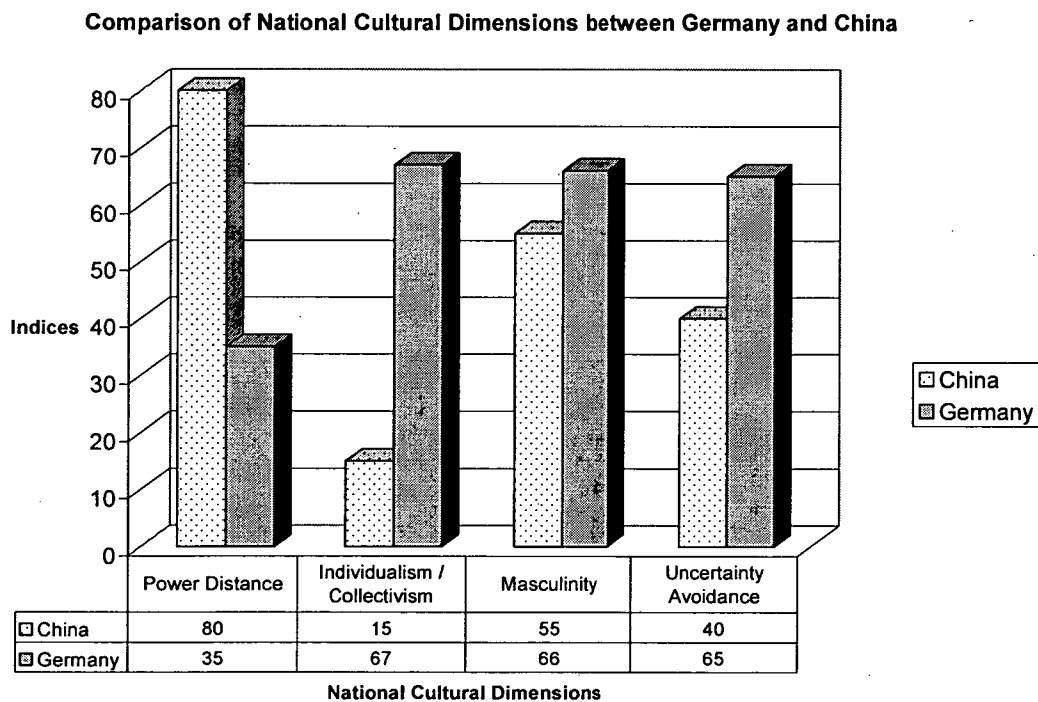
- Hofstede Model of National Culture
- Chinese Culture

According to Smircich (1983) cross-cultural studies usually depict culture as a factor or variable that is *synonymous with country*. A cross-cultural study aims to identify similarities and differences among cultures so as to draw implications for organisational effectiveness. It has been argued that multinational companies must understand cultural differences if they are to successfully deploy information technology throughout the world (Applegate, 1994; Harris & Davison, 1999; Tan et al., 1995). Studies using this perspective can rely on models of national culture to inform on these differences. For example, Watson et al. (1994) looked at national culture to examine the differences between groups from the U.S and Singapore when using Group Support Systems (GSS).

The majority of IS literature has relied on Hofstede's (1997) model of national culture (Ford et al., 2003; Myers & Tan, 2003). This model of national differences is presented in four dimensions:

- Power distance (PD)
- Individualism vs. Collectivism (IC)
- Femininity vs. masculinity (MAS)
- Uncertainty avoidance (UA)

The research presented in this thesis draws on three of the four cultural dimensions of Hofstede (1980): power distance, individualism vs. collectivism, feminity vs. masculinity, uncertainty avoidance, and the published cultural indices of Fletcher and Brown (1999) to compare the cultural differences between Germany and China. As shown in Figure 2-1 below within the established indices the Power Distance and the Individual vs. Collective dimensions indicate the most difference. This research will not apply the femininity and masculinity dimension because there is slight cultural difference between Germany (66) and China (55):



**Figure 2-1 Comparison of National Cultural Dimensions between Germany and China (Fletcher & Brown, 1999:78-80)**

Each of Hofstede's (1980) terms appears below with an explanation of implications for a German designed ERP system and Chinese culture.

### *Power Distance*

Power Distance refers to the extent to which less powerful members expect and accept unequal power distribution within a culture. According to Hofstede's Cultural Dimensions, countries with low power distance incline towards 0 and those with a high power distance incline towards 100. This figure places Germany (35) somewhat in the middle, much lower compared to China (80). This could imply that Germany does not have a large gap between the wealthy and poor and the belief in equality is stronger compared to China. From the above values, it could be said that China tends to have more centralized political power and exhibit tall hierarchies in organizations with large differences in salary and status. Subordinates in China may view the "boss" as a benevolent dictator and are expected to do as they are told (Marcus & Gould, 2001:8). Whereas in Germany, their relatively lower power distance indicates that they view subordinates and supervisors as closer together and more interchangeable. It has flatter hierarchies in organizations and less difference in salaries and status and may view themselves more as equals. A number of studies have been conducted on the role of power distance in China. Chinese people expect power to be unequally distributed and naturally defer to those they perceive to be their superiors (Ramaseshan et al., 2006). These superiors are also expected to be benevolent and treat all people fairly, providing them with stability, close supervision, and explicit rules (Pun, 2001). The strong hierarchical ordering makes empowerment a challenging process in Chinese organisations (Zhao et al., 2006).

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*Individualism and Collectivism*

Individualism in cultures implies loose ties; everyone is expected to look after one's self or immediate family but no one else. Collectivism implies that people are integrated from birth into strong, cohesive groups that protect them in exchange for unquestioning loyalty (Marcus & Gould, 2001). Figure 2-1 shows that there are significant differences between Germany (67) which is high in individualism and China (15) low in individualism and high in collectivism. Accordingly, Germany belongs to the individualistic culture where personal time, freedom and challenges are valued. In family relations they value honesty/truth, talking things out, using guilt to achieve behavioural goals, and maintaining self-respect (Hofstede, 2000). China belongs to a collectivist culture that values training, physical conditions, skills, and the intrinsic rewards of mastery. In family relations they value harmony more than honesty/truth and silence more than speech, use shame to achieve behavioural goals, and strive to maintain face (Marcus & Gould, 2001). Low individualism is important for learning the Chinese way of thinking. This trait shows the Chinese emphasis on loyalty to stay close with groups such as family, work and teams. Chinese business habits tend to stay with the same partners or suppliers to maintain loyalty and not deteriorate relationships.

A major aspect of Chinese collectivism is *guanxi* (Yang, 1994; Zhao et al., 2006). This refers to "one's network of connections and friendships" (Yang, 1994:147). High collectivism is characterised by a preference for tightly knit social networks with the expectation that in-group members will support each other (Ramaseshan et al., 2006). Similarly, Lee and Dawes (2005) suggested that in a high collectivistic culture, people have a strong urge to maintain social harmony and interdependence within the in-group. Individuals in contexts characterised by collectivistic culture are more likely to expect cooperative behaviours from individuals in their in-group than those in more individualistic contexts. They also suggested that there is higher level of social interconnectedness among in-group members in collectivistic contexts than in individualistic contexts.

*Masculinity and Femininity*

In masculine cultures, the traditional distinctions are strongly maintained, while feminine cultures tend to collapse the distinctions and overlap gender roles. Traditional masculine work goals include earnings, recognition, advancement, and challenge. Traditional feminine work goals include good relations with supervisors, peers, and subordinates; good living and working conditions; and employment security (Hofstede, 2000). According to the Cultural Dimension Indices (Fletcher & Brown, 1999), Germany's 66 shows a higher masculinity index compared to China's 55, but the differences could be considered slight compared to other indices. This means that these two cultures tend to share similar values in terms of masculinity.

*Uncertainty Avoidance*

In uncertainty dimensions, Hofstede (2000) claimed that people vary in the extent to which they feel anxiety and uncertainty as opposed to the more universal feeling of fear caused by known or understood threats. Cultures may vary in their avoidance of uncertainty, creating different rituals and having different values regarding formality, punctuality, legal-religious-social requirements, and tolerance for ambiguity. Hofstede (2000) noted that cultures with high uncertainty tend to be expressive, seem active, emotional but shun ambiguous situations. By contrast, low uncertainty avoidance cultures tend to be less expressive and less openly anxious; people behave quietly without showing aggression or strong emotions. In Germany, "people have an inner need for living up to rules... the leading principle which keeps the organisations together can be formal rules" (Hofstede, 1980:319). Punctuality is highly valued in Germany and that meeting agendas are strictly followed (Gesteland, 1996). This implies that Germans are not keen on uncertainty and there is an emphasis on planning to avoid it. According to Gesteland (1996) German society relies on rules, laws and regulations, indicating that the emphasis is on reducing risk, introducing changes step by step. German society retains a certain level of social formality which has an impact on business protocol. German speaking cultures tend to establish "workflow" bureaucracies that prescribe the work process in much greater detail (Hofstede, 1980:319). This tends to suggest that technology designed in Germany exhibits a greater level of detail and regulation attesting to the high uncertainty avoidance in Germanic cultures (Harvey, 1997). China has a



lower uncertainty avoidance score (40) than Germany (65). This implies that in China, people are more likely to tolerate uncertainty compared to Germans. They are also more likely to take risks and rely less on written rules (Hofstede, 1980). Organisations in countries with a relatively lower level of uncertainty avoidance are “kept together by more ad hoc negotiation, a situation that calls for a larger tolerance for uncertainty for everyone” (Hofstede, 1980:319). However,

literature on indices of uncertainty avoidance in China often note it as a high uncertainty avoidance country (Bassett, 2004; Li & Pu, 2006; Sun, 2000). This implies that people in China can display a preference for clearly defined rules, consensus, harmony and security (Bassett, 2004).

All this may be relative when determining the differences between Germany (uncertainty score of 65) and China (uncertainty score of 40). Although while China has retained some of the features of high uncertainty avoidance, it is also more flexible in reacting to uncertainty in their environment.

literature on China’s indices in uncertainty avoidance often report it as a high uncertainty avoidance country (40) (Bassett, 2004; Li & Pu, 2006; Sun, 2000), particularly when compared to Australia with an uncertainty score of 27 (Bassett, 2004). This implied that people in China can display a preference for clearly defined rules, consensus, harmony and security (Bassett, 2004). However, when compared to Germany, a more balanced interpretation can be considered whereby China may be seen as having retained some of the features of high uncertainty avoidance characteristics and on the other hand are more flexible in reacting to uncertainty in their environment.

With reference to Hofstede’s four dimensions it can be concluded that there are differences between Germany and China. These have been said to influence the outcome of ERP implementation. In this research, the researcher has drawn on Hofstede’s model to compare cultural differences between Germany and China and provide insight into the cultural origins of SAP (developed in Germany) and the Chinese culture in a cross-cultural setting. This helped to identify what is unique to both the ERP system and the Chinese culture.

*Key Characteristics of the Chinese National Culture*

An extensive search of literature was conducted to identify three key characteristics of the Chinese National Culture. The aim was to provide the basis for the analysis of the impact of the implementation of the Western based SAP system in this research.

The key characteristics are:

- Harmony and Conflict Avoidance;
- Relationships and Reciprocity; and
- Hierarchy.

*Harmony and Conflict Avoidance*

Harmony is an important characteristic of traditional Chinese culture (Feng, 2005b). The concept has a long history in Confucian countries such as China, Korea and Japan and includes the tradition of conflict avoidance (Leung et al., 2002). From the literature it has been argued that harmony is the cardinal virtue in Chinese culture and along with the values of guanxi (connections), mianzi (face), seniority, and authority, guides Chinese conflict management (Chen, 2002). As a result, establishing a harmonious relationship is the main focus of Chinese communication. Chen (2002) also emphasized that harmony is a goal that the Chinese strive for and the ability to interact harmoniously is the main criterion by which communication competence is measured.

The management of conflict is assumed to be motivated by a “sincere display of whole-hearted concern” (Hwang, 1998:108). The achievement of harmony involves the pursuit of equilibrium and the sustenance of hierarchical relationships (Chen, 2002). Further, particularly in situations where the relationship is very important, the Chinese will not openly disagree, instead will search for common ground and if not found will pursue their goal in secret (Hwang, 1998). When presented with a task, it is not unusual that the successful completion of that task is subordinate to the maintenance of harmonious relationships within the in-group (Triandis et al., 1988).

There is considerable support in the literature that open discussion and cooperation could lead to better problem-solving and more positive outcomes (Tjosvold et al., 2000;

Tjosvold & Sun, 2000). Research conducted on Chinese participants has found that conflicting opinions, if discussed in a cooperative context, promote open mindedness and integrated views and leads to better decisions (Tjosvold et al., 2000). Empowering people to manage conflict cooperatively can strengthen team effectiveness in China (Chen & Tjosvold, 2007). However, studies have shown that conflict avoidance may create more harm than good (Lebra, 1984; Leung et al., 2002). It can cause damage by “substituting superficial harmony for genuine problem solving” (Leung et al., 2002:209) and may increase latent hostility (Lebra, 1984).

### *Relationships and Reciprocity*

Both relationships and reciprocity are of relevance to the research in this thesis. The traditional Confucian concept of *guanxi* emphasizes role relationships between “emperor/subject, father/son, husband/wife, elder/younger brother, and friend/friend” (Hong & Engeström, 2004:554). A set of background factors such as being a relative and having the same place of origin may also be involved. However, in modern practice, *guanxi* is more focused on mutual favour exchanges in diverse social networks (Lou, 1997; Wong, 1998; Yang, 1994). Within the context of business relationships and communication, reciprocity is a key ingredient in which mutual favours are granted and “strings pulled” on the basis of *guanxi* that binds people together both within and between organisations.

*Guanxi* can influence communicative aspects of organisational life. This can include interpersonal trust, frequency of communication, favourable evaluation of each other by members who share some ties or connections, and preferential actions such as offering information or resources (Child & Markoczy, 1994; Farh et al., 1998; Tsui & Farh, 1997). Interpersonal relationships are central to managing in China (Hui & Lin, 1996). Chinese people are said to be more concerned than Westerners about interpersonal relationships (Pan & Zhang, 2004; Xin & Pearce, 1994). Relationships are widely recognised as critical for doing business in China (Hui et al., 1999). Many observers of Chinese social relations have noted that, in comparison with foreigners, Chinese have a much stronger tendency to divide people into categories and treat them accordingly (Butterfield, 1983). Relationships help to tie people together so that they trust and favour those with whom

they have a relationship; however, those without a close relationship are categorised into a different social network (Hui & Graen, 1997). Studies have shown that high-quality relationships can foster trust and reduce prejudice (Stephan, 1987). Research have shown that quality relationships between managers and employees are key to effective leadership (Graen & Uhl-Bien, 1995).

Guanxi implies the acquisition of resources and information during interpersonal interaction and as such can have a positive effect on promotion, reward allocation, special treatment and authorisation (Cheng, 1995; Chou, 2002). Guanxi in an organisation is not only influenced by culture but also by institutional factors (Huang, 2002). This implies that an institution can prescribe formal work relationships that constrain the interactional roles and behavioural norms defined by guanxi. Accordingly, an individual's job performance may be affected due to any resulting conflict (Chou et al., 2006).

According to Wong et al., (2005) guanxi networks are essential for doing business in China so much so that building long term guanxi has become a common phenomenon. In China, building long term relationships with external agencies including government departments, such as tax bureaux could help enterprises in their projects: "issue licences for import and export, help enterprises enter the stock market, approve a loan" (Hong, 2002:337). However, not all people agree with guanxi networks. Fewsmith (2000) gave the examples of unorthodox methods used by salespersons in China who frequently gave small gifts to the official they were courting. He stated that "in the eyes of some [Westerners], these practices were a form of corruption" (Fewsmith, 2000:101). Many Westerners find it difficult to distinguish guanxi and corruption (Hong, 2002). Hence, in a Western sense it is conceivable that guanxi in business and relationships in extreme form can carry a negative connotation (Smart, 1993). Although guanxi can facilitate problem solving and compromise, there can be too many obligations to fulfil (Hui & Graen, 1997). The negative aspect could include strong in-group bias (Hui & Graen, 1997) and harsh treatment for out-group members (Wank, 1996).

In the Chinese world it is relationships, not law, which provides the security necessary to do business. Establishing a long term relationship of friendship and trust is a pre-requisite

to building a business relationship (Blackman, 1997). Hence, the Chinese people are more likely to trust a close friend/relative or inner circle member more than a casual acquaintance and in this sense the value on relationship in Chinese society overrides any monetary returns. This is very plausible considering that Hofstede (1980) also suggested that in a collectivist society, a person's existence is defined by bilateral relationships.

### *Hierarchy*

This is the third key characteristic to be used when examining the impact of a SAP implementation in a Chinese context. Hierarchy has been defined as the orderly organisation of the administration of office whereby "each lower office is under the control and supervision of a higher one" (Weber, 1957:331). It has been suggested that Chinese tend to be very sensitive to their hierarchical position in social structures and will behave in ways designed to display, enhance, and protect both the image and the reality of this position (Hong & Engeström, 2004). Chinese loyalties are vertical in their orientation and reflect the high acceptance that Chinese people have of hierarchy (Child & Markoczy, 1994). Given this focus on hierarchical relationships, this cultural dimension is related to Hofstede's (1980) notion of power distance.

Hierarchy as the dominant form of organisation became enshrined in the structure of virtually all institutions of Chinese society. It is a necessary condition to support efficiency and productivity, and the dynamics and rules of behaviour in organisations that we now accept as traditional are followed closely. Control of information, knowledge and thus power used to reside in the traditional hierarchical structures built to manage work. The implementation of ERP systems dictate changes with the demand that knowledge, power and control are shared diffused and distributed. Thus a new organising principle is required to make sense of the consequences of the new conditions and the structures being born in response to changed conditions.

The Confucian preference of hierarchical order still persists in working and family relations in China (Shenkar & Zeira, 1987). Confucian-based values emphasize a strong respect for hierarchy whether in work or family. This preserves interpersonal harmony, and personal modesty (Chinese Cultural Connection, 1987). Confucianism stresses five

basic hierarchical relationships: ruler and subject, father/son, husband/wife, older brother/younger brother, and friend/friend. These relationships are complementary and reciprocal. While the ruler displays virtue, talent, and justice, the subject shows loyalty and respect for authority (Farh et al., 1997). For each of these relationships, role prescriptions specify what should and should not be done by the submissive partner. Individuals with traditional values believe that relationships should be hierarchically maintained and that harmony is highly valued (Spreitzer, Sutcliffe et al., 2005). Confucianism teaches that authority is to be honoured and obeyed (Hong & Engeström, 2004). In Chinese culture there are conditions associated with speaking, and not everyone is entitled to speak. A spoken voice is equated to seniority, authority, experience, knowledge, and expertise. As a result, listening becomes a predominant form of communication, characterised as receiver-centered communication (Yum, 1988) or “non-reciprocal and passive” (Gao et al., 1996:286).

Confucian authority and *guanxi* should be viewed as two complementary and interactive principles (Hong & Engeström, 2004). Within the Confucianism concept, the relationships between harmony, relationships and hierarchy are interlinked. The traditional concept of *guanxi* emphasizes role relationships based on Confucian values with an emphasis on strong respect for hierarchy, preserving interpersonal harmony and exhibiting personal modesty (Spreitzer, Perttula et al., 2005).

#### **2.4.2. SITUATED CULTURE**

While Hofstede's theory may be useful in identifying differences between cultures, from the literature, it has been suggested that it usually requires a quantitative approach using objective orientation and a positivist approach (Ford et al., 2003; Myers & Tan, 2002). However, this raises concern that cultural bias may exist when this approach is used. That is it predetermines the role of culture rather than seeking to identify its effect. There is also the consideration that culture may be dynamic and not static as Hofstede's theory suggests (Myers & Tan, 2002). "anthropologists have largely rejected the idea of culture as having hard and fast boundaries" (Myers & Tan, 2002:9). For example, globalisation has created the opportunities for individuals to embrace cultural values and basic assumptions of other cultures (Groeschl & Doherty, 2000). Chinese culture is changing (Mo & Berrell, 2004). Practicality has become the first principle in motivating workplace behaviour (Mo & Berrell, 2004) and there is a shift towards a value-based system. It is more goal-achievement oriented than egalitarian (Cyr & Frost, 1991). This implies a full adoption of Hofstede's theory may not be the best approach in the context of the current research.

Incorporating a further perspective of culture may be more appropriate. The concept of Situated Culture Theory (Weisinger & Salipante, 2000) has been used in a wide range of IS research (Weisinger & Trauth, 2002). This includes ERP implementation (Trauth, 2000), along with GIS implementation (Walsham & Sahay, 1999), EDI implementation (Trauth et al., 1993) and diffusion of IT (La Rovere, 1996). "While context is concerned with the structure or environment within which the social interactions occur, culture is concerned with the meanings that are ascribed to that context" (Weisinger & Trauth, 2002:308).

Rather than being a holistic and relatively stable entity, culture is seen as fragmented, variable, contentious, and “in-the making” (Prus, 1997:38). This perspective on culture characterizes it as variable, historically situated, and evolving with the context (Brightman, 1995; Prus, 1997; Weisinger & Salipante, 2000). Culture “in-the-making” may be described as:

“not simply as a stable and homogeneous structure but as a socially enacted, dynamic process involving the reproduction and revision of practices...[it also suggested that] cross-cultural knowledge is more concerned with an ongoing social process than a cognitive set of ideas held by individuals” (Weisinger & Salipante, 2000:384-385)

Culture does not exist in a vacuum rather it is enacted in the way that people behave. In particular “behavior must be attended to ... because it is through the flow of behavior, more precisely, social action – that cultural forms find articulation” (Geertz, 1973:17)

Accordingly, cultural understanding may be described as:

“locally situated, dominantly behavioural, and embedded in mundane and evolving social practices that are jointly negotiated by actors within specific contexts, constituting situated learning. This emergent perspective recognizes the fragmented, improvisational, and contested nature of culture and the increased overlapping and intermixing of people from diverse social settings around the globe. Consequently, cultural knowing can be conceptualized as socially produced, dynamic, practical, and locally situated” (Weisinger & Salipante, 2000:376).



Accordingly within the context of the present research where the emphasis is on the impact of culture on ERP implementation it is proposed that Situated Culture Theory (Weisinger & Salipante, 2000) could be of value. That is, it will support an examination of the behaviour of those involved in the case study during the process.

## **2.5 *EVOLUTION OF ENTERPRISE RESOURCE PLANNING SYSTEMS***

The aim of this section is to describe the emergence of ERP systems. Within this section the following issues will be addressed:

- History of Enterprise Resource Planning (ERP) Systems;
- The Impact of ERP Implementation; and
- ERP and Culture.

### 2.5.1. HISTORY OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEMS

While ERP systems have been attributed to the 1990s their evolution can be traced back to the 1960s. They began with customised inventory control software packages with no integration, then to Materials Requirement Planning (MRP) software with minor integration in the 1970s (Shakir & Hossain, 2002). From there an upgraded version of MRP II was developed in the 1980s (with more integration) and was later developed into ERP systems in their current form in the 1990s as a fully integrated software package. Present ERP systems are moving towards ERP II which includes integration both inside and outside the organization (Shakir & Hossain, 2002). Shakir and Hossain's (2002) table below illustrates the changes involved in expanding the category of intended users to include not only the plant managers and supervisory staff but also the end-users and external stakeholders.

**Table 2-1 The Evolution of ERP Systems (Adapted from (Shakir & Hossain, 2002:225))**

System	Year	Focus	Architecture (Technology)	Users	Levels of Integration
IC (Customized inventory control software packages)	1960's	Inventory control based on traditional inventory concepts.	2-tier architecture (mainframe)	Plant managers and supervisory staff	No integration
MRP (Materials requirement planning)	1970's	A high level scheduling, priority and capacity management system, which is build around a bill-of-material process in a manufacturing environment.	2-tier architecture (mainframe)	Plant managers and supervisory staff	Minor integration
MRPII (Manufacturing resource planning)	1980's	An extension of MRP to shop floor and Distribution management activities.	2-tier architecture (mainframe)	Plant managers and supervisory staff	Integrated within the manufacturing environment but not to other functions of the organisation
ERP (Enterprise resource planning)	1990's	MRP II was further extended to cover areas like Engineering, Finance, Human Resources, Projects Management etc (i.e. the complete set of activities within a business enterprise).	3-tier architecture (client-server) RDBMS object oriented programming	Managers, supervisory staff and end-users	Integration between the functions of the organisation including multi-site integration
ES, ERP II or ERP of the future (Enterprise Systems)	2000's	Most ERP systems are enhancing their products to become "Inter-organizational" and "Internet Enabled". New modules are added to the product portfolio, i.e. CRM, SCM, Data warehousing and AI.	A mix of centralised and distributed architecture (client-server and internet networking)	Intra as well as extra-organisational stakeholders (suppliers, customers, partners)	Integration inside as well as outside the organisation.

As the table shows, the level of integration has also changed from little or none to full integration inside and outside the organisation. This means information systems that were previously isolated from one another were brought together (integrated) to provide complete information resources. This may also imply there is a fundamental shift in how

organisations use information systems when they choose to implement ERP. It has been suggested that these changes were made possible by developments in technology from a 2-tier architecture mainframe to a 3-tier architecture one with a mix of centralised and distributed architecture including internet networking, especially for the improved ERP II version. The focus of the organisation has also changed from a single departmental view limited to a traditional inventory concept to one that is inter-organisational and multidimensional. This includes product, customer relation management, supply chain management, data warehousing and artificial intelligence (Shakir & Hossain, 2002).

The organisational motivation for ERP implementation was based on problems created by a lack of integration between the information systems. These could be divided into two types; operational and technical (Sandoe et al., 2001). Operational problems relate to how non-integrated systems can impact on internal and external relationships in an organisation. These include inconsistent business processes, globalisation, inability to support strategies, complex processes, processes that were unresponsive to customer needs, high cost structure and poor process and corporate performance. The technical concerns deal with how the non-integrated systems do not support organisational growth, obsolete operating systems, difficulty integrating new acquisitions, systems not integrated, poor quality of information and disparate systems (Sandoe et al., 2001). From the literature, ERP can help organisations to achieve greater flexibility and increase efficiency (Radding, 1999), improve communication, lower operating costs, increase revenue (Oliver, 1999) and reduce cycle times, better collaboration and higher profit margins (Stein, 1998). ERP is also said to be able to unite all the disparate processes of a value chain (Kappos, 2000). They have become fashionable as a means of integrating the diverse functions of an organization and streamlining operations to achieve organizational effectiveness (Lee & Lee, 2000). This is based on the understanding that the standardisation of data definitions and structures, through the use of common conceptual schema, or “data-integration” could eliminate the need for additional data translation and enable coordination (Goodhue et al., 1992).

### 2.5.2. THE IMPACT OF ERP IMPLEMENTATION

From the literature it has been suggested that ERP systems could dictate organisational processes and structures in the organisations that implement them (Kallinikos, 2004), 2004). They can control how people work by changing the organisational infrastructure, through workflow maps and imposing their own logic on the organisation (Davenport, 1998; Kallinikos, 2004). These massive changes, when forced on people, processes, strategies and structures of the organisation (Davenport, 1998) can exert a form of domination and control over people that could in turn impact on the organisational culture (Krumholz et al., 2000).

Supporting this view it has been suggested that the introduction of new technology can be a stimulus to *culture change* by causing new patterns of social interaction, changing the nature of tasks and roles, and threatening the power base of individuals who are affected by new technologies (Scott et al., 2003). Similarly, this could occur with the implementation of new systems like ERP. Further, a BPR approach to ERP implementation requires the destruction of old organisational structures and culture prior to the introduction of new arrangements (Hammer & Champy, 1993).

With globalisation many companies are introducing ERP packages to countries that are socially and historically different. This can have a dramatic effect on their foreign affiliates without full knowledge of what changes will be brought about by the system (Kallinikos, 2004). The danger of not being aware of its effect on culture and process changes can cause “serious detrimental effects on staff attitudes” (Skok & Legge, 2002:196).

The norms and behaviour needed to enable and support the data integration possible with an ERP system require at least an increase in knowledge about other departments to support cross-functional processes, and usually also an increase in work space (Soh et al., 2003). This often requires the users to learn new sets of behaviours (Schneider, 1999), meaning people involved in change are expected to go from A to B and they are also expected to move from “jobs to jobs with different roles and responsibilities” (Uruthirapathy, 2001:4).

The redefinition of work will in turn change the standard routines and procedures of people working in an organisation. The implication of this can go beyond the superficial level of keeping “organisational operations accountable and integrated across functions and production sites”(Kallinikos, 2004:8). Authority is split, supervisory control widened and negotiation and cooperation are unavoidable (Hammer & Stanton, 1999). In turn this could cause the realignment of status, power and working behaviour of the people in the organisation, which suggests a need to change the values of the group such as the need to establish new networks and the assignment of values to the information received. The implementation of ERP can be “construed as a change in the nature of the organization’s life, since it suddenly precludes the existence of diverging views. From this perspective, the deployment of an ERP system can be considered as a radical organisational innovation” (Besson & Rowe, 2001:48). These requirements can have strong implications for cultural elements such as performance, commitment and innovation.

From the literature it may be seen that change is inevitable in the path towards diffusion and adoption of technology. Traditional theories of innovation diffusion (Rogers, 1995) have assumed that people make rational choices about adopting new ideas based on their expected utility. There is an assumption that some people are inherently open to new ideas (early adopters) whilst others are more conservative (laggard) (Rogers, 1995). Of significance is the economic impact of time-delay as users’ progress from awareness of ERP to adoption. ERP implementation is based on perceived economic benefits for the organisation. Implementing change is based on a compromise between the time needed for users to change and the limited time for completion. For many organisations, time is of the essence in the technology transfer and adoption process. Organisations seek to increase payoff through higher turnover of resources instead of ‘locking them in’ for a longer period of engagement.

Irrespective of any culture it has been demonstrated that when new IT is introduced into an organisation there is a possibility that users may need to acquire new behaviours. An inability to do so could result in dismissal (Bingi et al., 1999; Hammer & Champy, 1993; Hammer & Stanton, 1999; Huq et al., 2006). When implementing ERP this can bring about negative social consequences such as:

- Association of “Early retirement” (Bingi et al., 1999:3);
- Downsizing and re-organisation of skills and the intensification of work (Hall, 2002);
- High staff attrition because of high workload during ERP implementation (Bingi et al., 1999).

In addition, in any culture, staff are often forced to quit their job as the organisation finds it easier to instil new process approaches in recently recruited employees (Huq et al., 2006). Staff replacement has been found to be as high as eighty percent (Huq et al., 2006). Many organisations perceived that it is cheaper to employ new staff after finding that new employees often take new tools for granted without questioning them (Orlikowski, 1991). New employees do not have to go through the acculturation process of fear, anxiety, confusion, resistance and inspiration in giving up the old ways and adopting new ones (Walker & Le, 1990).

Although it might not be the intention of an organisation to replace a large number of employees, organisational change initiatives can have “unexpected and unintended consequences” (Davison & Martinsons, 2002:50). While some literature promotes the up or out attitude this can be counterproductive (Markus & Tanis, 2000). For example,

“They [CEOs] should be prepared to dismiss anyone who steadfastly refuses to support the initiative. In our experiences, it is not uncommon for anywhere from a quarter to a half of the senior team to leave, voluntarily or otherwise, during the changeover” (Hammer & Stanton, 1999:116).

Although such an inflexible approach may seem to solve the problem of resistance to new technology it can lead to reduced productivity and cause undue stress to the remaining employees in turn causing low morale. In the end companies may find themselves having to rehire staff (Markus & Tanis, 2000). This implies that some organisations are implementing ERP systems without a clear understanding of the potential negative repercussions.

## **2.6 ERP AND CULTURE**

In this section the focus will be on the issue of culture and how it may be of influence in the modern business environment. Implementing ERP systems have caused change to organizations through their impact on structure and culture. The established business culture has needed to change to accommodate the new system.

On this basis, this section will address the following issues:

- Globalization and Cultural Differences;
- Cultural Misfit.

### **2.6.1. GLOBALIZATION AND CULTURAL DIFFERENCES**

There has been considerable interest in understanding the cultural influences on ERP implementation. Much of it has highlighted the importance of understanding culture and how it could influence the successful implementation and use of ERP systems (Molla & Loukis, 2005; Skok & Döringer, 2001; Thavapragasam, 2003; Zhang, Lee, Zhang, & Banerjee, 2002). With a world-wide increase in the number of implementations (Gallivan & Srite, 2005; Sheu et al., 2004a) national differences are likely to play a major role in multi-national ERP initiatives. “Local autonomy was shown to affect the deployment of IT in global firms” (King & Sethi, 1999:7). Efforts to make ERP applicable for global use have met with mixed results. The effects of culture can vary according to different geographical location usually in terms of national boundaries. It may be that cultural preferences and practices make reengineering problematic because of the implications of organisational change (Davison, 2002). “In North America and Western Europe, where most ERP developers are located, this [changes] may not be problematic, since the developers built typical organisational processes and practices into their systems. However, in cultural contexts embodying organisational practices different than those encountered in North America or Western Europe, there can be significant problems associated with the reengineering of local practices and processes” (Davison, 2002:109). This implies systems coming from these areas will reflect the culture of the developers.

The ERP adoption rate is significantly lower in Asia compared to Western countries (Rajapakse & Seddon, 2005). This may be because of problems resulting from when a company “tries to increase centralised control and decision making through an ERP system... [which is]... ill-suited to this purpose” (Rajapakse & Seddon, 2005:3). It could imply that ERP systems with embedded “Westernness” are not suitable for an Asian environment because of cultural clashes. This may explain why “ERP systems may be adopted less, and be less effective, in developing countries in Asia” (Rajapakse & Seddon, 2005:15).

Implementing Western designed ERP systems into China may be problematic because of the following:

➤ Language

Language differences and poor translation had made it difficult for the Chinese people to understand Western-developed ERP systems. This can be a cause of frustration for the Chinese people because “they had to ask for help even a minor problem” (Liang et al., 2004:70)

➤ Report Format and Content

Differences between Western and China’s accounting standards made it difficult for Chinese employees to produce reports using Western-developed ERP systems. In particular the Chinese use both vertical and horizontal tables as oppose to that conventionally used in Western systems (Liang et al., 2004).

➤ Cost Control Module

The inflexibility of the cost control module to reflect frequent price changes in raw materials made it difficult for Chinese companies to use Western-developed ERP systems (Liang et al., 2004).



➤ Price

The cost of ERP systems developed in the West is much higher than those developed in China: five million RMB Yuan v. 700000 RMB Yuan. This makes Western-developed ERP systems less attractive to Chinese companies (Liang et al., 2004).

➤ Business Process Redesign

This problem referred to the conflict between implemented ERP models and the changing regulatory requirements in China. Rapid and abrupt regulatory changes meant that Chinese companies had to restructure frequently. This in turn calls for a more flexible ERP system that can meet “frequent business process redesign” (Liang et al., 2004:71).

➤ Customer Support

This related to the shortage of qualified technical personnel in China to provide adequate software support (Liang et al., 2004).

➤ Consulting Partners

Problems associated with consulting companies resulted from their lack of familiarity with Western-developed ERP systems and “inability to provide adequate technical support” (Liang et al., 2004:71).

This may further explain why “the world’s leading ERP vendors struggle in the Chinese market” (Liang et al., 2004:70). In contrast, locally developed ERP systems, more in tune with local requirements, have a higher chance of success. As a result locally developed ERP systems are able to “defend the challenge from global ERP leaders such as SAP and Oracle” (Xue et al., 2005:279) and effectively compete in the Chinese market.

The theories of Hall (1976) and Hofstede (2001) have been applied to explain the differences in ERP implementation through differences in national cultural characteristics (Shanks et al., 2000; Waarts & Everdingen, 2005).

The cultural classification theory (Hall, 1976) has also been used to examine the differences in communication patterns in different countries (Waarts & Everdingen, 2005). Through both Hofstede's and Hall's theories on culture, it has been determined that "higher levels of uncertainty avoidance, masculinity and power distance dimensions in a country negatively influence ERP adoption, while higher levels of long-term orientation have a significant positive influence" (Waarts & Everdingen, 2005:601). Based on the differences of ERP implementation in different countries, it has been recommended that organisations should consider cultural issues when planning to adopt the software (Shanks et al., 2000). It has been proposed that organisations must change their culture in order to ensure an effective ERP implementation (Perez et al., 2004; Turbit, 2003). The ability of a firm to leverage the SAP resource to its maximum potential depends to a considerable extent on the firm changing its organisation culture (Perez et al., 2004). The "ability of organisation to leverage on the ERP systems... [Depends] on how open an organisation is to change its culture" (Molla & Bhalla, 2006:16).

National culture has been found to influence how people behave towards the use and acceptance of ERP systems (Sheu et al., 2004a). In a Chinese environment, six specific categories of national differences have been found to impact on ERP implementation (Sheu et al., 2004a):

1. Culture and language - the use of English increased employee resistance to ERP implementation ;
2. Government/corporate politics - concerns over sharing too much information, fearing that individual branches of a company would argue for getting better or equal treatment than another;
3. Management style - attitude towards setting a priority for implementing an ERP system;
4. Government regulations - tax policies dramatically increase the complexities of multinational ERP implementation due to more complicated operating procedures;
5. Time zone - when considering involvement with the rest of the world across many different time zones; and

6. Labour skill - the effects of labour skill on the length and content of the training programme during implementation.

The above factors create additional challenges to ERP implementation especially if culture is often associated with resistance to change (Krumbholz et al., 2000), so much so that “without resolving national differences, organisations are unlikely to apply ERP successfully” (Sheu et al., 2004a:256). An awareness of cultural differences is critical to ERP success (Davison, 2002; Molla & Loukis, 2005).

“Awareness of cultural assumptions embedded in ERP and introduction of mechanisms to mitigate any cultural mismatch may improve the likelihood of ERP process and outcome success” (Molla & Loukis, 2005:14). As stated earlier, assumptions can include “technical efficiency is computed in terms of returns to capital, returns to labour, speed of production or efficiency in the use of raw material ...[thus] celebrates capitalism and its epistemologies”(Bray, 1997:161). Numerous solutions to the problems have been proposed. Cultural compatibility has been determined as a factor in explaining ERP implementation success (Hong & Kim, 2002). “ERP and process adaptation are only effective when the organisational fit of ERP is relatively low. Beyond a certain level of organisational fit, more adaptation will only lead to lower implementation success” (Hong & Kim, 2002:37). A solution proposed on the misalignment is the management of cultural change through a formal cultural analysis during the system development process (Butterfield & Pendegraft, 1996). In other words, the focus is on changing IT to suit the culture, in doing so “groups are more likely to adopt a technology if their own values match or fit the values embedded within the technology or those associated with its development” (Leidner & Kayworth, 2006:366). Another solution proposed is to conduct a cultural analysis and if a misfit is likely to occur:

- withdraw technology altogether;
- “take corrective action”, for example, altering the technology’s design and functionality before it is implemented; and
- charge ahead, acknowledging the likely problems that will occur (Pliskin et al., 1993)

Others have suggested that it would be better if organisations change their culture to suit the ERP systems (Kappos, 2000). Chiron a biotech company successfully altered the attitude of its staff by altering the organisation's culture through changing the environment, structures, processes, roles, responsibilities and systems (Morfin, 2006).

### **2.6.2. CULTURAL MISFITS**

As a general concept, a large number of researchers have examined the problem of cultural misfit in relation to ERP implementation (Rajapakse & Seddon, 2005; Skok & Döringer, 2001; Soh et al., 2000; Wang et al., 2006; Yeh et al., 2006; Zhang et al., 2005). One example showed that an ERP system may be difficult to successfully implement because of differences in culture between the following:

- The culture embedded in ERP software reflecting the views of the developers, vendors and consultants; and
- The culture reflecting the views of the implementing organization's project team, manager and users (Molla & Loukis, 2005:1).

Organisations have a higher chance of successful ERP implementation when the state of the system "matches" the state of the organisation. On the other hand any misfits caused by cultural alignment may result in problematic system implementation or in the extreme, total rejection of the system (Soh et al., 2000). Some researchers have suggested that western ERP is not suitable in Asia because the culture embedded in it is different from Asian culture (Rajapakse & Seddon, 2005). However many of these studies tend to neglect the shifting nature of social relations.

Multi-national companies must understand cultural differences if they are to successfully deploy technology into another culture (Applegate et al., 1999; Harris & Davison, 1999). Researches They frequently cite the work of Hofstede (1980, 1991, 2001) to point to significant cultural differences that are impeding the realization of Western ERP benefits (Palomino Murcia & Whitley, 2007; Rajapakse & Seddon, 2005; Van Everdingen & Waarts, 2003). ERP transfer from the West cannot take place without considerable change in the host organisation (Martinsons & Davison, 2003; Martinsons & Hempel, 1998).

Because local culture may be impeding the realization of Western ERP benefits, the Chinese have a different perception of the problem: The low success rate particularly in China has been said to be due to the inapplicability of Western developed ERP systems into an essentially Chinese environment (Feng et al., 2003; Li & Li, 2000a; Wang & Chen, 2006b). Thus, a need has been recognised for the indigenization of ERP systems integrating Asian value systems such as developing a Chinese version of ERP system architectures (Feng et al., 2003; Li, Lam et al., 2001; Li & Li, 2000b; Wang & Chen, 2006b). This view is not new, earlier research by He et al., (1997) found Western designed MRP II systems were not appropriate to the Chinese environment. More recently it has been argued that the structures embedded in a Western developed ERP system could not support important Guanxi based business practices. These are considered very important for transactions and marketing (Marble & Lu, 2007).

There are growing reports of ERP systems not meeting local needs in Asia (Ghosh, 2002; Krumbholz & Maiden, 2000; Molla & Loukis, 2005). From one case study it was reported that an ERP system had failed to adapt to local circumstances in terms of not having enough flexibility to adapt to warehouse personnel requirements in dealing with “complex delivery orders” (Krumbholz & Maiden, 2000:279). Whilst the ‘complex delivery orders’ may not be deemed cultural in Hofstede’s definition, it does fit with the idea of culture in Weisinger and Salipante’s Situated Cultural Framework. They explained the need to take into consideration local practices and their context to understand cultural practices in the organisation. Failure to adapt ERP packages to local cultural needs often result in “projects which are expensive and overdue” (Ghosh,

2002:101). Multinational companies usually implement ERP systems without any local customization because they are trying to “avoid high maintenance costs and other reasons” (Weisinger & Salipante, 2000). However, “...no information system can be expected to work unless cultural context is taken into account” (Gamble & Gibson, 1999:12). Further in order to develop a system that will succeed in another culture, the designer must correctly assume who will use the technology and the meanings users might assign to it. This implies that the designer must:

“directly link the [designer’s] unique artifact with larger social or cultural values... [and that success lies in the designer’s interpretation of] the values, institutional arrangements, and economic notions of that culture” (Carlson, 1992:175).

Considerable research has been done on culture and ERP (Bendoly et al., 2006; Molla & Loukis, 2005; Rajapakse & Seddon, 2005; Skok & Döringer, 2001; Zhang, Lee, Zhang, & Banerjee, 2002). However, comprehensive research on accommodating local culture into ERP systems has not been explored in the IS literature. There is an increasing body of work that recognizes that there are cultural assumptions embedded within ERP systems (Rajapakse & Seddon, 2005; Skok & Döringer, 2001; Soh et al., 2000; Wang et al., 2006; Zhang, Lee, Zhang, & Chan, 2002).

Understanding a particular information technology requires interpretation and engagement of the embedded culture and deciphering the underlying cultural meanings of an ERP system is not an easy task (Leidner & Kayworth, 2006).

SAP, an ERP system designed in Germany, embodies German values, which are designed specifically for the acceptance by their own culture (Skok & Döringer, 2001). Western ERP packages may embody the organization’s distinct cultural style of problem solving, which includes assumptions such as users’ needs, values and working styles (Soh et al., 2003).

Within the context of implementing a Western ERP system into another culture the transparency of the embedded culture may become more important. At least from a non-western user perspective, this might mean bridging the gap between their culture and the culture embedded in the system.

## **2.7 CULTURAL AND TECHNOLOGICAL CHANGE**

In the previous section, it was established that the implementation of a Western designed ERP system into another culture could bring about change in the host culture. This can include changes in organizational procedures, processes and behaviour and also how culture can influence the ERP system. This section will focus on the following issues:

- Adapting ERP system to culture;
- Adapting culture to ERP systems; and
- Limits to cultural sensitivity in ERP implementations.

### **2.7.1. ADAPTING ERP SYSTEM TO CULTURE**

Organisations that choose to customize ERP systems to suit their current processes will face the danger of not being able to adopt industry “Best Practice”. Problems can arise when attempting to integrate current practices into an ERP system. Any such changes will usually put an additional strain on the organisation’s resources. It may be simpler to retain a legacy system which in the first place might have already accommodated the various non-standard processes and practices. It is also questionable whether an ERP system should be reconfigured to suit the organisation. For example:

“ERP packages in particular are solidified technologies whose complexity usually transcends the ability of particular organisations to rework the source code, reprogram or redefine the logic on which any such package is based” (Kallinikos, 2004:11).

Further, any changes can not involve:

“changing package source code...because of the cost involved and the difficulty of maintaining future upgrades. Even when customisations are needed to provide critical functionality, they are done without changing the source code...” (Soh et al., 2000:50).

In theory, it would seem that an organisation could choose the level of adaptation needed in an ERP implementation. However in reality, “contextual adaptation and reshaping of such packages cannot undo the logic and the very presuppositions on which the package is predicated” (Kallinikos, 2004:11). This includes aligning the organisational structure, business processes and workflow to the embedded logic of the ERP system (Daneva & Wieringa, 2006; Davenport, 1998; Glass, 1998). This concept of adaptation raises the question of whether ERP can really be reconfigured to an organisation’s existing culture. Even though an organisation may indicate that they have changed the system to suit the organisation, in reality local practices have to change to fit the new technology and not vice versa, especially at the individual level.

### **2.7.2. ADAPTING CULTURE TO ERP SYSTEMS**

SAP is based on industry ‘best practice’ where a reference model is used to streamline complex business processes to “standardise the way business is carried out” (Curran & Ladd, 1999:21). Changing the organisation’s culture to suit an ERP system can create problems such as loss of competitive advantage. However, should all organisations adopt the same SAP model then it can lessen the ability to gain a competitive advantage. This argument has been supported in the findings that ERP systems increase “rigidity and possible decreases in organisational flexibility and resilience” (Ignatiadis & Nandhakumar, 2007:36).



The implication is that a “one-business-model-fits-all approach is unlikely to be successful” (Davison, 2002:111). This is one of the risks that must be taken into account and balanced off against the benefits of uniformity. While there are advantages in implementing an ERP system such as facilitating organisational change, there must be recognition of possible negative aspects. For example, “the combined effects of cultural and process changes in ERP projects can produce serious detrimental effects on staff attitudes” (Skok & Legge, 2002:80).

This suggests that there are limits to which the recipient organisation can accommodate the changes needed through re-engineering within the ERP implementation. When the implementation has a negative impact on the organisation through change, it can result in user resistance and possibly also system rejection (Cooper, 1994; Pliskin et al., 1993). Studies have also shown that such problems can lead to recipients succumbing to the cognitive complexity (March & Olsen, 1989; Turkle, 1995; Zuboff, 1988) of the systems and returning to “their own limited and seemingly controllable zone of duties” (Kallinikos, 2004:19).

### **2.7.3. LIMITS TO CULTURAL SENSITIVITY IN ERP IMPLEMENTATIONS**

The success of ERP implementation is determined to an extent by cultural influences. These influences point to either the need for cultural adaptation by the recipient organisation or incorporating cultural perspectives during design and development process. However, there are reasons why attempts at adaptation to another culture can be counterproductive. For example, adapting the ERP package to prevailing cultural style was one important cause for the underperformance in 12 projects (Densley, 1999). More recently it has been reported that it can decrease “the benefit and at the same time increase the cost of implementing and maintaining the ERP system” (Daneva & Wieringa, 2006:195).

These highlight possible adverse aspects related to ERP adaptation and implementation success. Consequently it may well be more advantageous for organisations to choose changing their organisation processes and culture to maximise the benefits of an ERP system. What this implies is a need to find a balance between the two forms of cultural adaptation:

- Change the culture of the organisation to suit the ERP system; or
- Adapt the ERP systems to suit the organisation's culture.

“the possibility for the culture or the IT to adapt in order to yield a better fit is rarely acknowledged” (Gallivan & Srite, 2005:319). However, it can be argued that in practice, when misfits occurred, organisations were more likely to employ adaptation strategies to change the culture of the organisation or modify the ERP system to suit the organisation's culture (Soh et al., 2000). Figure 2-2, “Spectrum of Misfit Strategies” as proposed by Soh, et al (2000) shows the ways in which organisations adapt through using trade-offs between the amount of organisational change and the extent of the required customization. It also presents interesting insights into levels of adaptation needed by the organisation as well as the ERP system when coping with misfits between these two entities. As implied in Figure 2-2, if an organisation wants to retain their culture, it will have to customize or tailor the ERP system to match it. At the other end of the spectrum, an organisation will inevitably experience a greater amount of change should they decide to adopt ERP with limited change to the system.

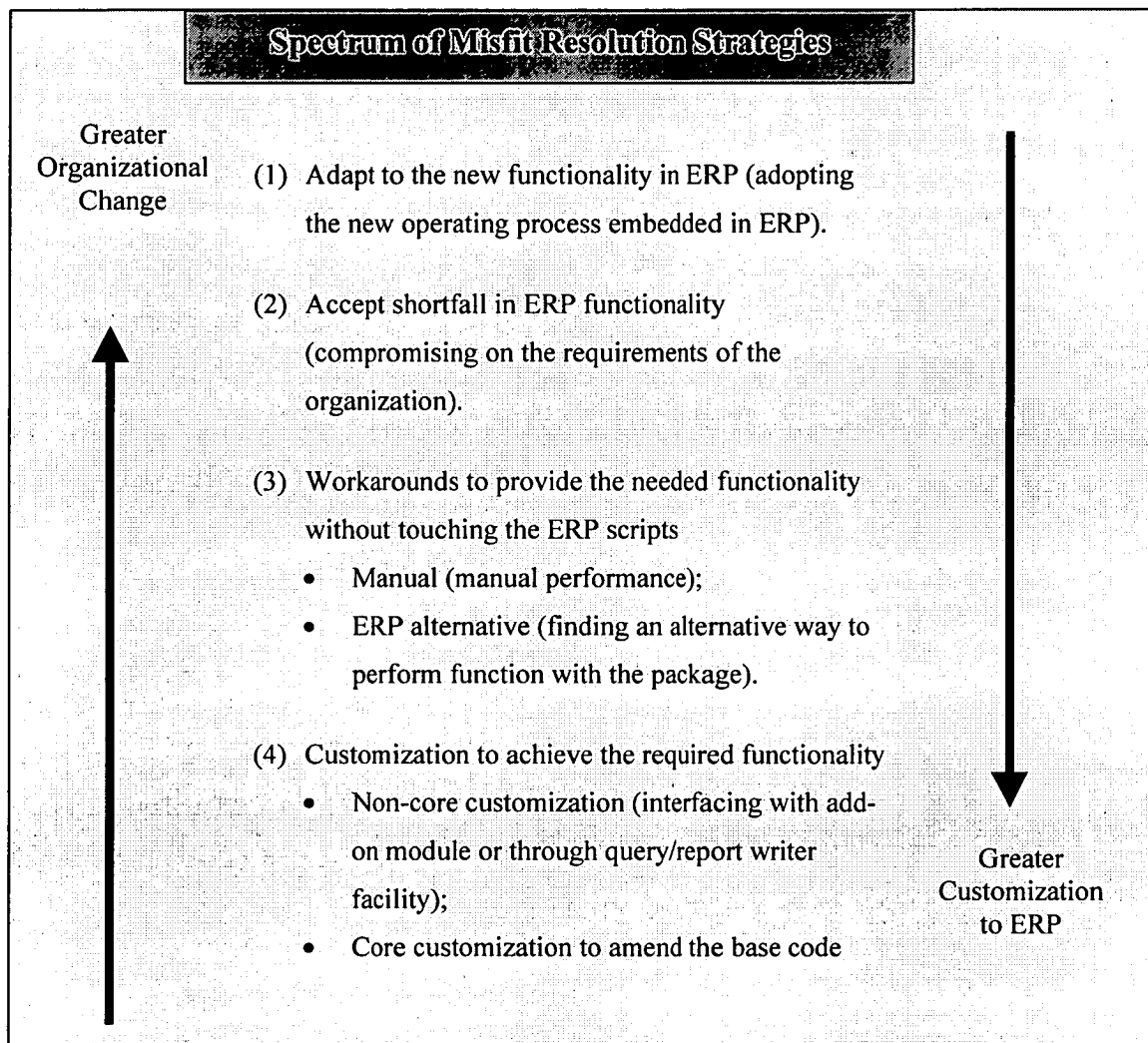


Figure 2-2 Spectrum of Misfit Resolution Strategies (Adapted from (Soh et al., 2000:50)

While the optimal situation is one in which there is similarity between the ERP and recipient cultures, such matches are rare. Assumptions that ERP systems can be modified to suit the existing processes of an organisation are fraught with difficulties. This is mainly because the logic embedded in ERP is very resilient to change, revealing an almost deterministic nature that has seldom been explored in the IS literature. One exception from Kallinikos (2004) is the argument that ERP packages should be treated as independent products capable of being analysed in their own right. In doing so, we are then able to disclose the philosophies (logic) of a system which in turn provides a link to its relationship with human agency, organisation and work (Kallinikos, 2004). There are three important issues to consider:

1. Contextual adaptation and reshaping of such packages cannot undo the logic and the very presuppositions on which the package is predicated;
2. Contextual adaptation is conditioned by characteristics of technology that become black-boxed and thus escape or withstand deliberate manipulation; and
3. The adequate understanding of the issues occasioned by any technology, not just ERP systems, entails the depiction of common elements that cut across specific cases (Kallinikos, 2004:4).

There are also problems with the conception of misfits between ERP and culture. For example, the perception of misfit as permanent rather than temporary has been criticised (Gallivan & Srite, 2005). There is evidence to support that given enough time, what may initially appear to be a poor IT/culture fit may later drift (Ciborra, 2000) or mutually adapt (Leonard-Barton, 1988) to achieve a better fit. This implies that ERP and culture are amenable to change. For example, in the conception of IT artefacts, it has been emphasized that these should not be viewed as being neutral because they have embedded within them the values and interest of its interest group relative to time, place, discourse and community (Orlikowski & Iacono, 2001).

As such there is a need to understand how IT changes to “accommodate a diversity of evolving interests, values, assumptions, cultures and other new technologies” (Orlikowski & Iacono, 2001:131). On the other hand, such changes in IT are only made possible through the user’s appropriation, modification and selective use of technology (Orlikowski, 1999). This view of the IT artefact and its association with users has influenced how we look at and study the impact of ERP implementation on culture.

## **2.8 LITERATURE REVIEW SUMMARY**

This chapter has covered a number of perspectives of research related to culture and ERP implementation. It has looked at how culture can be defined and ways in which it can be studied. It has examined the awareness of cultural issues in information systems research and how it is related to software. In relation to ERP implementation, it has reviewed its evolution and the emergence of culture in ERP implementation including cultural and technological change. This review of the literature has also assisted in determining the proposed objective of this research. That is, to examine the impact of culture on a Western-developed ERP system in a Chinese environment.

It has shown that when examining national culture, Hofstede's Theory of Cultural Dimensions could be of some assistance. It has been widely used in IS research to identify the differences between cultures. While this theory has been more commonly associated with a quantitative approach this does not preclude an opportunity to apply it from a qualitative perspective. On this basis it can support the present research where the desire is to gain an insight into the implementation from the personal views and experiences of those involved. In addition it has been recognised from this review of literature that it is important to also consider the context in which the implementation takes place. For this purpose, the Theory of Situated Culture will also be used.

## CHAPTER 3 - METHODOLOGY

### 3.1 INTRODUCTION

The aim of this chapter is to describe in detail the methodology used in this research.

Broadly, it will address the following issues:

- Case Study;
- Research Paradigm;
- Data Collection;
- Data Coding and Analysis; and
- Chapter Summary

Since the methodology must be such that it enables the research questions to be answered for the reader, it may be helpful to re-state the research question being addressed in this thesis:

*How does culture impact on a Western-developed ERP system implementation in a Chinese environment?*

There are two secondary research questions namely:

*(1) How did the Chinese informants taking part in this research handle the problems introduced by the SAP implementation?*

*(2) What changes were necessary to accommodate the SAP implementation in a Chinese work environment?*

### **3.2 CASE STUDY**

This section deals with items of relevance to the case study, namely:

- Research Case Study
- Case Study Approach
- Access to Research in China

#### **3.2.1. RESEARCH CASE STUDY**

At the beginning of this thesis the focus of the research was established as being based on a single organisation. In this section relevant issues related to the host organisation will be described to set the context of the research.

The case company is given the fictional name of “ElevatorTech”, whose operations in China employs approximately 2000 Chinese nationals. It is a large multi-national in the escalator and elevator manufacturing industry, and is one of the world’s leading manufacturers and suppliers of escalators and elevators. The ElevatorTech Group employs approximately 40,000 people worldwide with over 1000 branches in more than 200 countries.

ElevatorTech China provides sales, installation and after-sales services throughout the country. The company has established in China the following:

- One wholly owned company (ElevatorTech (China) Co. Ltd) headquartered in Shanghai) that manages sales and service, and produces escalators for the Asia Pacific region;
- One joint venture based in Suzhou that has become a major production base of elevator components in Asia, as well as managing domestic sales and service;
- Two wholly owned component plants, one for escalator steps and moving walk pallets and another for elevator components and control system software both based in Suzhou;
- An R&D centre located in Shanghai that delivers managerial and technical training to sales, installation, maintenance and management personnel.

In the Chinese operation the philosophy is that only the Chinese can manage effectively in that environment. Accordingly, operational management is the sole responsibility of the Chinese management with almost all department heads being Chinese. While some of the senior management positions such as CEO of ElevatorTech China, and Research and Development Head positions are filled by expatriates the majority of positions held at the process level are filled by Chinese nationals. The few expatriate managers are expected to direct a workforce that differs from their home countries in many dimensions, including language, education, customs and traditions. The organisational culture in ElevatorTech China largely shares Chinese cultural values similar to other Chinese-owned organisations, being that they share a similar workforce and compete in a like environment. While it is recognised that Chinese organisational structure today reflects those in Western countries, collectivism is still embedded deeply in the Chinese organisational culture (Harrison et al., 2000).

At the time ElevatorTech was approached to take part in this research the parent company had approved in principle the implementation of SAP in its China operations. This particular product was chosen because it was already in use in the worldwide operations of the company. As such it was seen as extending the transparency of business process operations to its Asian arm.

The implementation of an ERP system was also motivated by the growing competition from foreign and local companies. It represented part of a strategy to improve operational efficiency in China. This could be achieved by centralizing and streamlining operations and as such it was seen as offering an opportunity to increase competitiveness.

In keeping with the philosophy of maintaining local culture in the Chinese branch operations, the implementation of SAP was to be conducted by a team of ElevatorTech staff in conjunction with SAP consultants based in Hong Kong. A steering committee had also been set up using internal personnel. The end users of the system would be native-born process workers.



Initially the focus of the implementation would provide members of the organization with the reasons underlying the choice of SAP and familiarise them with the features it would provide. This was to be followed by an incremental approach to the installation of the SAP modules. Throughout the process those employees who were required to use the SAP system would be encouraged to call for meetings where any concerns could be voiced and discussed.

### **3.2.2. CASE STUDY APPROACH**

An interpretative case study approach was adopted for conducting this research. It is based on a single case study. The advantage of using this method is its ability to explain what goes on in an organisation and it is also very helpful in answering the “how” and “why” questions (Yin, 1994). This choice is appropriate because ERP implementation in China fits well as an illustrative case that exhibits what happens when a Western designed ERP system is implemented in an essentially Chinese environment. This allows the gaining of richer insights than could be obtained through the use of a survey technique. Further, a case study approach provides an opportunity to engage with the informants in their natural real-life work setting. This provides in-depth data on the informant’s thoughts, beliefs and feelings about the implementation of a Western designed ERP system. This, then, leads to a better understanding of the complexity of the research participant’s environment, their motivations, and the rationale for their actions and behaviour.

A case study has been identified as:

- An empirical inquiry that investigates a contemporary phenomenon within its real-life context;
- Where boundaries between the phenomenon and the context are not clearly evident; and
- In which multiple sources of evidence are used (Yin, 1984:23).

The case study approach has been identified as being highly effective in IS research. It is a bounded system where “the search is for an understanding of the particular case, in its idiosyncrasy, in its complexity” (Stake, 1988:256). Its approach to research has been described as being “well-suited to new research areas” (Eisenhardt, 1989:549), especially when existing theory was inadequate. It has also been described as an ideal methodology when a holistic in-depth investigation is needed (Feagin et al., 1991).

While an interpretative case study approach has been proposed for use in this research, it is acknowledge that a major limitation can be a lack of scientific generalizability in the positivist sense (Eisenhardt, 1989; Howison, 2006; Lee, 1989a; Tellis, 1997a; Yin, 1984). The view is that robust conclusions cannot be supported by case study alone, hence the weakness of this method. While the limitations are recognised in terms of weaknesses in generalisation, the purpose of this research is not to represent the world but to represent the case (Stake, 2005). This research is concerned with the particularity of the organisation in the case study and not the discovery of general laws (Burrell & Morgan, 1979). However, the findings of the research do enable transferability. Accordingly, there is support for the adoption of a case study approach.

### **3.2.3. ACCESS TO RESEARCH IN CHINA**

Conducting research in China can be impossible without the establishment of a prior relationship with a potential participant organisation. Accordingly, contact was made with the Asia Pacific Regional Director of the case company. The proposal for research into ERP implementation into China was put to the director and accepted and the research case study established. The process included sending applications and writing to various agencies for advice and approval for conducting research in China. This process included the following:

- Approval from the University Ethics Committee (see appendix 1)
- Inform Director of International Services
- Inform Dean of Graduate Research
- Obtain Funding approval from Research for Higher Degree (see appendix 2)

Details of these contacts are elaborated and provided in appendices at the end of this thesis.

### **3.3 RESEARCH PARADIGM**

Before committing to the research methodology consideration must be given to the paradigm to be adopted (Guba & Lincoln, 1994). The research paradigm based on the choice of ontology and epistemology which in turn establishes the broad guiding set of principles to the research methodology. This research is base on a subjective ontology and qualitative epistemology.

#### **3.3.1. ONTOLOGY**

Ontology reflects on whether the social and physical world exists independent of people (objectivist), or whether it is, to an extent at least, socially and linguistically constructed (subjectivist). Objectivism is based on the premise that there are absolute truths and facts in the natural world that can be perceived by man. This also implies that there can be some form of measurement and confirmation of this perception. Subjectivism on the other hand acknowledges that the natural world includes humans and to an extent at least to say the world is a creation of human thought (Diefenbeck, 1984).

A subjective ontology is adopted because understanding the phenomenon from the informant's perspective is central to this research. A subjective stance will allow an in-depth examination based on individual and group reactions and responses. This is supported in that individuals can have different perspectives on an experience or situation regarding the phenomenon under investigation, just as our understanding of an IT artefact such as ERP can have a different meaning in different cultures (Ang & Pollard, 2004). Instead of believing that reality is measurable using objective data "multiple subjectively derived realities can coexist" (Lee & Poynton, 2000:6).

### 3.3.2. EPISTEMOLOGY

Epistemology is the basis for the construction and evaluation of knowledge (Dooley, 2001). It refers to the study of ways in which we acquire knowledge (Orlikowski & Baroudi, 1991). There are three main areas of epistemology, these are:

1. positivism;
2. interpretivism;
3. critical theory (Chua, 1986).

We shall deal with each in turn. Positivism according to Orlikowski and Baroudi (1991) is an epistemology with several beliefs:

- Reality exists independent of the researcher;
- There is an existence of cause and effect relationships;
- The role of researcher is to discover truths through precise measurements;
- Human action is intentional and universal truths should be sought.

According to Fitzgerald and Howcroft (1998) quantitative researchers tend to follow a positivistic epistemology in the belief that they are independent from the research participants and their responses. They believe that data collected in this manner will be valid and reliable regardless of the research context (Silverman, 1993). In this research, while it is recognised that a positivist approach has the advantage of being rigorous and systematic, it could also severely restrict the study of culture.

It could be argued that a positivistic approach is unsuitable for research involving national or organisational culture. A positivistic approach is likely to render cultural phenomena ahistorical, linguistically naïve and psychologically unaware (Arbnor & Bjerke, 1997). Although positivistic research can be employed to produce meaningful quantitative measures, the nature of culture renders its understanding through positivistic research techniques very difficult (Von Krogh & Roos, 1995). A positivistic approach

focuses only on very limited aspects of cultural phenomena and fails to provide an in-depth understanding of it (Ashkanasy et al., 2000).

In contrast, an interpretive approach aims to understand social life from the inside, to study meaningful social actions. This can be defined as actions to which people attach subjective meaning. In order to do this, interpretivist researchers become part of the social environment and attempt to put themselves into the perspective of informants (Neuman, 2000). The interpretivist researcher “insist that researchers are no more ‘detached’ from their objects study than are their informants” (Miles & Huberman, 1994:8).

Critical theory approaches aims to understand social activities from the meanings within the social context and life world of actors (Ngwenyama, 1991). It acknowledges that all knowledge is shaped by human interests of different kinds and is historical and political in nature (Nichols & Allen-Brown, 1996). It recognises that organisational context is important to meaning construction as well as to social activities (Ngwenyama, 1991). It is sensitive to the life worlds of participants and is oriented toward interpreting and mapping the meanings of actions from the actors (Stahl, 2007). In terms of methodology, critical theory perspective usually adopts pluralistic methods of inquiry such as participation, observation, and analysis of contextual data (Stahl, 2007). Critical theory is closely associated with ethics and morality. it has been suggested that researcher using critical theory approach had to pay “explicit attention to ethical questions if it is to become more successful” (Stahl, 2007: 138). This approach is also associated with its intentions to change “the status quo, overcome injustice and alienation, and promote emancipation” (Stahl, 2007: 139).

In this research an interpretive stance is taken because there is a belief that the world is conceived through an extension of human consciousness and subjective experiences (Burrell & Morgan, 1979). There may be a wealth of tacit and explicit knowledge held by individuals of which they may be unaware. This falls within the framework set by Boland (1979), in that “individuals act towards things on the basis of the meaning that things have for them, that meanings arise out of social interaction, and that meanings are developed and modified through an interpretive process” (Boland, 1979:260). The suitability of an interpretivist epistemology in this research is also reinforced in that it could unearth the “beliefs and values that underlie political discourse, customs, and traditions” (Ashkanasy et al., 2000:497). It involves the interpretation of ERP implementation in ElevatorTech from comments made by informants and observations of work practices, and how these were reported to management. This is important if it is considered that the success of an ERP implementation usually depends on how users think about the value of technology and how they choose to use that technology (Orlikowski, 1993).

### **3.3.3. METHODOLOGY- QUALITATIVE VS QUANTITATIVE**

A qualitative approach fits best with an interpretive epistemology that specialises in developing understanding and places an emphasis on context (Patton, 2002). “... qualitative researchers stress the socially constructed nature of reality, the intimate relationships between the researcher and what is studied, and the situational constraints that shape inquiry” (Denzin & Lincoln, 1998:8). “The methods used by qualitative researchers exemplify a common belief that they can provide a ‘deeper’ understanding of social phenomena than would be obtained from purely quantitative data” (Silverman, 2000:8).

In contrast, in a quantitative approach, the emphasis is on the objective truth existing in the outside world. This can be revealed through the use of a scientific method of measuring relationships between different variables systematically and statistically (Patton, 2002). This means it is deductive and “emphasizes the measurement and analysis of causal relationships between variables, not processes” (Denzin & Lincoln, 1998:8).

Given the above discussion, the research described in this thesis used a qualitative interpretive approach.

The next section will describe in detail the data collection process used in this research.

### **3.4 DATA COLLECTION**

In this section, the techniques used to gather the data will be explained in detail. These include:

- Interviews;
- Non-participant observation; and
- Supporting techniques

#### **3.4.1. INTERVIEWS**

As described earlier two forms of interview were used to carry out the collection of data. These were preliminary interviews and main research interviews.

##### *Preliminary Interviews*

Interviews were conducted prior to the main interviews to gain a top-down view of the implementation in Shanghai and to establish rapport with the people involved in this project. This was necessary because in the Chinese culture it can be difficult to gain information without establishing prior relationships.

The preliminary interviews were conducted in Hong Kong in May 2005. Three informants took part: the Asia Pacific IT manager and two senior SAP consultants who were to be involved in the implementation at ElevatorTech. Each interview was conducted in the offices of the informants and lasted approximately one hour. These interviews used semi-structured questions, designed to elicit background information about the SAP implementation and were centred around:

- The primary aim for implementing a SAP system;
- The focus of the implementation;
- Details of the people involved in the project;
- The anticipated challenges;
- The project scope and potential; and
- Clarification of technical jargon and work practices in the elevator and escalator industry.

These interviews were transcribed and analysed to gain an overview of the SAP implementation and to familiarise the researcher with issues in ElevatorTech that might be expressed by the informants.

#### *Main Interviews*

The main interviews were conducted during two fieldwork exercises in Shanghai. The fieldwork exercises lasted approximately 28 days each and were conducted between the period starting from April and ending October 2005. The sessions were scheduled to coincide with two stages of the implementation. In the first, prospective users had been made aware of the reasons underlying the choice of SAP and given some exposure to the capabilities of the software. The second stage represented the time when the incremental implementation of the software had commenced and was running in parallel with the legacy system.

Selection of informants for this research was made by management, based on their level of involvement in the SAP project. They were encouraged to contribute their views and make comments on their growing familiarity with the system. In order to capture their views over a period of time the researcher had planned to interview the same informants over the seven month period. However, this was not possible, because some of the initial informants left the organisation before the second interviews. This included the initial SAP project leader who resigned from ElevatorTech between the two data collection sessions. Accordingly, it was inevitable that new informants were added in order to gain continuity to the perspective from the local cultural view of the SAP project. These new



informants had been involved in the SAP project but were not previously put forward as interviewees by management. The new informants included the second SAP leader. Because of his earlier involvement on the technical side of the SAP implementation he was able to pick up from where the last SAP project leader left off. The makeup of the rest of the informants included power users involved in the SAP financial module and material management modules. To give a more complete picture, other informants included non-users such as Shanghai IT support and technical support staff. Table 3.1 shows the positional roles of those taking part in the 23 interviews. It indicates the informants represented different hierarchical levels and functional groups in ElevatorTech.

**Table 3-1 Summary of Interviews Conducted**

Participants involved	Phase One	Phase Two
Shanghai IT support	2	2
First SAP Project Leader	1	
Second SAP Project Leader		1
Power Users (Financial & Material Management)	2	2
SAP Users	6	6
Other Participant- Technical Support Staff		1
Total	11	12

A secure room was made available for the interviews and participants were advised of this prior to each session with the exception of the SAP project leaders who were interviewed in their own offices.

Unstructured interviews were chosen in this research because they provided an opportunity to gain a rich, in-depth insight, where informants were encouraged to describe in their own terms how they felt about the SAP implementation and the values that were manifested in their daily work practices. The aim of this research was not about testing or verifying hypotheses. The focus was on the individuals involved in the ERP

implementation. Since they were the ones in the best position to observe and understand their own attitudes and behaviour (Broom & Dozier, 1990). Unstructured interviews can be used to elicit in-depth information and avoid forcing the informants into a preconceived response pattern. They also allow each individual informant the freedom to express their values (Chinese or Western) and explain the context factors that may have influenced their decisions and behaviours. The advantage is that a richer picture could be gleaned if individual informants are given space to answer as fully as they wished by using questions that were open rather than closed.

This form of interview has been recognised as providing the ability to gain a greater depth of understanding than other approaches. Unstructured interviews can give respondents liberty to discuss reactions, opinions and behaviour on a particular issue (Ghauri & Gronhaug, 2002; Hitchcock & Hughes, 1995). They allow the researcher to enter into the inner-world of the informants and gain a true understanding of their experiences of the event (Strauss & Corbin, 1998) and complex behaviours without imposing any prior structure or categorisation that might limit the field of inquiry (Fontana & Frey, 1994). They also provide greater scope for interviewers to introduce new material into the discussion that might not have been planned “but arose only during the course of interview” (Hitchcock & Hughes, 1995:162).

In this research there was no predetermined order of questions and they were asked in a spontaneous manner (Lekvall & Wahlbin, 1993). This approach fits within the exploratory nature of this research with no pre-established views of the expected outcome. Each interview lasted from 60 to 90 minutes. Potential informants who could not speak English were not precluded from taking part because the interviewer speaks Mandarin as a native language.

With permission of the informants the interviews were tape recorded. On the few occasions where permission was not forthcoming recording did not take place and the researcher made notes during the interview. On reflection these interviews tended to generate more candid responses. The recording of each interview was transcribed as soon

as possible after completion. In this research, in acknowledgement of a recommendation from the literature, the researcher personally undertook the transcription process and so enhanced familiarity with the data gaining a deeper insight (Corden & Sainsbury, 2006).

Audio recordings were converted into digital sound files using conversion software called Audacity. These were then imported into transcription software, Transcriber, a tool that segments the labelling and transcribing of the interviews. This system is faster than the traditional method of listening to tapes and then transcribing them into a word processing document. It has the added advantage that it is embedded with a time tracking device corresponding with the transcript, with an ability to move between the audio and visual recordings. A graphical depiction of this process can be found at Appendix 3.

Transcribe allows specific areas of the audio recording to be located easily so supporting the ability to check, refer, listen and relive the interactions with informants. Through this it is possible to go back to each statement that can be re-checked by other researchers. This supports the credibility of the data and the analysis process because it provides the researcher with an ample opportunity to fulfil the important requirement of gaining familiarity with the data (Colaizzi, 1978; Corden & Sainsbury, 2006; Hitchcock & Hughes, 1995).

After segmenting, labelling and transcribing the interview each file was exported to Microsoft Excel for data coding and analysis. Excel was chosen because it is relatively easy to merge, cross-reference, analyse, backup and manipulate data. Further it did not incur any additional cost as would have been the case should a dedicated qualitative software package been used.

### *Non-Participant Observation*

This approach was employed as a supporting tool in this research. While non-participant observation did not represent a primary form of data collection, it was used to enrich the interpretation and understanding of the main interview data. It helped to confirm that what the informants said was observed in reality.

A summary of the non-participant activities in the research included:

- 120 minutes of observation of the Financial and Control (FICO) SAP users operation area during month-end closing;
- 12 hours of SAP users training sessions over a two-day period;
- 90 minutes of observation at FICO control room; and
- 18 project meetings.

The researcher accompanied the SAP consultants in their daily round of activities. This included taking notes during project meetings and SAP user training sessions. The researcher sat and ate with the SAP consultants and other informants groups, such as the power users, and shared their short walk around the compound after lunch. This provided insight into their social networks as well as their various perspectives on the SAP implementation including their values, business and organisational practices in an informal setting.

For SAP users the non-participant observation was undertaken in their area of operation. While observing the researcher asked them to describes and comment on what they were doing. During the SAP training sessions the observations continued with the researcher taking notes on the issues raised by the SAP users and also the prevailing emotions and atmosphere. Notes were also taken during the various project meetings and in the FICO control room. These included reflections and initial analyses which helped to mark areas of patterns and ideas when interpreting the main data.

### 3.4.2. SUPPORTING TECHNIQUES

This research used a range of supporting data collection techniques. While these were not used directly in determining the findings they were used in a supporting role. This implies that these data were also used to aid understanding and interpretation of the main data, fulfilling one of the aims of the research in being based on an interpretative approach. The supporting data were sourced from the following documents:

- Field notes
- Informal discussions
- Meetings and Workshops

#### *Documents*

During the course of this research, documents were collected to remain informed on all aspects related to the implementation. These were accessed in several ways. Annual company reports, media coverage and literature on ElevatorTech activities in China were obtained to build an understanding of the Chinese business environment that ElevatorTech was facing. During fieldwork access was also provided to the internal communication mail (via Intranet) when stationed at ElevatorTech HQ. Further information pertinent to the project was drawn from SAP documentation including operational manuals, training materials, project plans, progress reports and memoranda (especially on contract management).

#### *Field Notes*

During the period spent at ElevatorTech field notes were taken in relation to happenings and events in the company. These primarily involved interviews and training sessions. The field notes from the interviews provided an opportunity for reflection on the comments made by informants. It also provided an opportunity to note their behaviour and the context in which they operated. Thoughts about how the interviews proceeded were also documented. These included how an informant's voice softened when talking about sensitive aspects and the identification of issues worthy of further investigation. In addition, field notes were taken to record informal interactions with some of the

informants such as during SAP user training. In a way, this process can be described as a form of reflection or what Weber (2003) described as reflexivity or “a way of seeing the interrelationships between the sets of assumptions, biases, and perspectives that underpin different facets of research” (Weber, 2003:vi).

### *Meetings and Workshops*

In this supporting data collection technique the researcher attended and took notes during the various meetings held to coordinate the implementation. Many of these meetings had a focus on resolving problems identified with the SAP system. At the invitation of the company the researcher was funded to participate in an ElevatorTech IT workshop in Sydney, Australia. The aim of this workshop was to identify IT delivery issues that had arisen in the Asia Pacific region. At the workshop many of the issues that claimed the attention of the SAP implementation team were discussed formally and informally. The formal presentation provided an opportunity to present the preliminary research findings of the implementation in Shanghai as well as gather insights into the progress of recent developments in Shanghai and Suzhou. It was also a chance to gain some feedback from the research informants about the findings. Informal discussions held during breaks in the proceedings provided an opportunity to learn how they perceived the implementation issues confronting them. Periodic contacts were maintained with ElevatorTech between 2005 and 2006 to discuss the findings of the research and keep updated on the progress of the implementation in Suzhou.

### **3.5 DATA CODING AND ANALYSIS**

This section will describe in detail the process of data coding and analysis. It will include:

- Reference Model;
- Rigour and Validity; and
- Limitations of Qualitative Data Analysis.

### 3.5.1. REFERENCE MODEL

The adoption of a qualitative approach in this research was used to support the objective of gaining an in-depth understanding of the experiences of Chinese informants during the implementation of a Western designed ERP system. This included the study of personal attitudes, behaviours, and reactions during the installation.

In support of this, Colaizzi's (1978) Seven Steps of Phenomenological Analysis is adopted. This approach draws on the Husserlian principles and is a product of the school of descriptive phenomenology (Magnussen et al., 2008). Phenomenology is the study of how people describe the things and experiences they come to know through their senses (Husserl, 1938). It has also been described as the "reflective study of the essence of consciousness as experienced from the first-person point of view" (Smith, 2007:2). Descriptive phenomenology is guided by "the proposition that there are basic structures within each unique human experience. When one reflects upon the experiences, the meaning is apparent" (Magnussen et al., 2008:126). The goal of descriptive phenomenology is "to gain a description of the meaning of an experience from the participant's point of view" (Magnussen et al., 2008:126).

The phenomenological approach is not novel in the IS field (Boland, 1990; Introna & Ilharco, 2004). Phenomenology is used in diverse areas of IS research including IS evaluation (Introna & Ilharco, 2004), games analysis (Mallon & Webb, 2006), Business Process Reengineering (BPR) (Moreno Jr., 2001), culture and team dynamics (Harmer, 2003) and developing Web-based IS (Pradip & Jacob, 2004). As a further example, "Husserlian phenomenology has been used to provide the rationale for the use of soft systems methodology (SSM) approaches in both information systems (IS) research and IS development" (Probert, 2004:1).

While no example could be found of the Colaizzi method of phenomenological analysis in IS research, it has been widely cited in other disciplines (Tymieniecka, 2003); in particular, nursing (Magnussen et al., 2008), psychology (Moustakas, 1994), education (Stone, 1978) and management (Sanders, 1982).

To support the data analysis in this research his seven-step phenomenological analysis will be adopted. The reasons are as follows:

Unlike the method proposed by Ngwenyama (2001), the Colaizzi approach offers a clear prescriptive process that can be easily followed to achieve the desired outcome; that is, in this case, to provide a rich description of the experiences of the informants involved in the SAP implementation. It is capable of producing a descriptive analysis (Webb, 1999). The Colaizzi (1978) method emphasizes that experience is essential to understand human psychology. This is because if a given experience is separated from the “concrete meaning structure of the person ... we would lose that meaning that the person is trying to affirm in her/his daily life” (Castro, 2003: 48). Further this method has been applied in the study of cultural phenomena (Harris, 2003; Magnussen et al., 2008; Suhoza, 2006).

Furthermore the Colaizzi approach can accommodate analyses where language may be problematic. This qualitative analysis method calls for the transformation of naïve descriptions of informants and the implicit aspects of each meaning unit to those that could be easily understood (Colaizzi, 1978).



Interview transcripts were analysed using Colaizzi's (1978) Seven Steps of Phenomenological Analysis. This model is particularly useful in reducing the data to a manageable size and can be used to uncover patterns, features, attributes, and meaning of the life experiences of the Chinese informants allowing themes to emerge from the data. The Seven Steps are:

1. review collected data;
2. extract significant statements;
3. formulate meanings;
4. cluster themes;
5. exhaustive description;
6. fundamental structure; and
7. member check (Colaizzi, 1978).

#### *Step One – Review Collected Data*

Within the reference model, the first step in coding data from interviews is to appreciate the potential of the collected information by becoming thoroughly acquainted with it (Colaizzi, 1978; Hitchcock & Hughes, 1995). This was initially accomplished when the researcher personally transcribed the interviews. This was then followed by listening to tapes and re-reading transcripts and field-notes until a close familiarity with them was achieved (Corden & Sainsbury, 2006). An extract of the transcriptions is attached in appendix 4.

*Step Two – Extract Significant Statements*

This step involved identifying aspects seen as most important to the phenomenon under study (Colaizzi, 1978). These were exported to Microsoft Excel for further data coding and analysis, while those found to be not relevant to the research were eliminated. These included casual comments made by informants that bore no relationships to the questions asked. Highly relevant statements regarding informant's experiences during the implementation of SAP were highlighted and extracted. A total of 348 significant statements were noted. An example of the significant statements extracted from an interview is presented below.

**Table 3-2: Example of Significant Statement from an Interview**

Line Number	Transcript
CL 2	Once SAP goes live it will have significant effect on our side that is the way we do our job now, how it will change when SAP comes online.
CL 3	Because the way we do things now are more localised, like account permit such as cash and etc are based on local model. But once it comes to SAP we are totally using a global kind of account. There is a big difference because we were approaching it from the local then do a matching to process it through but now we start from the global and then change it to local.
CL 4	From local side I felt the flow have been reversed but from the global side it has become more convenient. But the biggest problem I felt will be when it comes to the local side. For us if we go from global to local. Because the report produced is automated to generate global report but on the local side, you know because in our country enterprises are categorized into different levels such as A level or B level as a form of control. But when they come and check our company, for example our company's account our account came from global report therefore when they check our account I don't know whether will there is any problem. This is one of the biggest problems and I had continuously spoken to them about this.

On reflection, these aspects were supported through the non-participant observations undertaken during the data collection process.

*Step 3- Formulate Meanings*

The extracted highly relevant statements were then translated into more general terms to reflect the actual meanings of the informants. Because of language difficulties, data on the Chinese informant's experiences had to be translated to improve readability and make them understandable. Colaizzi's (1978) method for qualitative analysis calls for the transformation of naïve descriptions of informants and the implicit aspects of each meaning unit to those that could be understood easily. Relevant statements dealing with how cultures interact were extracted and studied carefully. Table 3.2 below shows some examples of the outcome of this process. It make sense to reveal the actual meaning of the significant statement in the informant's own term as well as provides an opportunity to uncover any hidden meanings within those statements.

**Table 3-3: Process of Formulating Meanings in Informants' Own Terms**

Line Number	Transcript	Formulated Meanings
CL 2	Once SAP goes live it will have significant effect on our side that is the way we do our job now, how it will change when SAP comes online.	The impact of SAP on local practices.
CL 3	Because the way we do things now are more localised, like account permit such as cash and etc are based on local model. But once it comes to SAP we are totally using a global kind of account. There is a big difference because we were approaching it from the local then do a matching to process it through but now we start from the global and then change it to local.	Flow of processes change to accommodate global flow
CL 4	From local side I felt the flow have been reversed but from the global side it has become more convenient. But the biggest problem I felt will be when it comes to the local side. For us if we go from global to local. Because the report produced is automated to generate global report but on the local side, you know because in our country enterprises are categorized into different levels such as A level or B level as a form of control. But when they come and check our company, for example our company's account our account came from global report therefore when they check our account I don't know whether will there is any problem. This is one of the biggest problems and I had continuously spoken to them about this.	Local regulations mismatches with global process creates challenges to user

*Step 4 – Cluster Themes*

Central to qualitative data analysis is the task of discovering themes (Ryan & Bernard, 2000). This is required in step 4 of the framework – “Meanings Grouped into Themes” (Colaizzi, 1978). Common patterns or trends from formulated meanings in step 3 were grouped into themes. As table 3-4 shows this revealed 26 themes and nine key themes. The key themes were further divided to the three cultural dimensions: power distance, collectivism and uncertainties avoidance.

**Table 3-4 Theme Clusters Aggregated From the Formulated Meanings**

Key Themes	Themes
<b>(1) Influence of Power Distance</b>	
Management Directions on ERP System Accepted without Question	Directions from superiors take priority
	Roles and positional levels emphasized
	People express strong reactions and emotion about their superiors
Controlled Requests for Modifying the SAP System	No time for involving users or for iteration
	User participation was not based on improving design but simply source of information
	User involvement too late with little effect on design
	No mention of users in the development
Uneven Benefits	Different benefits
<b>(2) Collectivism</b>	
Sense of Obligation	Efforts made to learn SAP
	Emphasis on duty towards role and task
	Emphasis on collective efforts for SAP implementation
Maintenance of Social Harmony	Compromising individual goals
	Negotiations and Compromise
Consensus Building	Reaching Common Understanding
	Meetings and consensus building
<b>(3) Uncertainty Avoidance</b>	

Uncertainties Created from New Elements in Work Environment	Adapting flexibility to diverse environment
	Differences between environments are mitigated
	Redesign and construction of new environments
	Differences between accounting environment are mitigated at the HQ level
Uncertainties Created from Challenges from Chinese Business Environment	Circumvent environmental constraints
	Appropriation needs to occur
	Accounting environment is richly contextualised by location
Managing Uncertainties with Guanxi	Relationships with External Agencies
	Networking to enable the realisation of desired outcomes
	Communications and networks
	Relationships building

In determining the key themes, each of the 26 themes were examined for any similarity between them. For example, one key theme cluster was identified as “Uncertainties Created from New Elements in Work Environment”. This key theme was based four cluster themes “Adapting flexibility to diverse environment”; “Differences between environments are mitigated”; “Redesign and construction of new environments”; and “Differences between accounting environment are mitigated at the HQ level”. These four cluster themes were formulated meanings sorted into these categories. These reviewed informant’s feelings about encountering something new and different when reliving their SAP implementation experiences.

This process follows Colaizzi (1978) whereby it is recommended that in this step there needs to be an attempt to allow for the emergence of themes that are common to all the informants interviews. Within this step, on reflection, field notes that marked areas of patterns and ideas from non-participant observations supported the interpretation of the main data.

*Step 5 - Exhaustive Description*

Here all the resulting ideas were integrated into an exhaustive description of the phenomenon, and included all the perspectives of informants interviewed in this research. It was achieved by incorporating the emergent themes, theme clusters and formulated meanings into the description to create its overall structure. A detailed, analytic description was compiled of the informants' feelings and ideas on each theme. Below is a sample of exhaustive description:

There are a lot of entries, keying in different data in different systems to upgrade and prepare the required information for the management report. Also there is a lot of expectation for SAP. However, in the process of improving the business flow in the organization, we also need to negotiate, such as increasing manpower or new ways of improving the solution. This is because of the procedures in the organisation and the differences in Field Operations (FO), there are many difference types of management reports.

For more information refer to appendix 5.

*Step 6- Fundamental Structure*

This involved the identification of the fundamental structure for each exhaustive description. In consideration of its length it has been recommended that it should be reduced to an essential structure (Colaizzi, 1978). Further, it should include a description of the processes and meanings derived through the previous steps of analysis (Haase & Myers, 1988). For example the identification of themes and their relationships previously mentioned in step three and four. Because these two processes does not produce the whole picture to tell you about the phenomenon, further synthesis is needed to show a consolidated picture of how informants feels about the ERP implementation.

A structural synthesis was then formulated that encapsulated the essence of the experiences of local Chinese informants on the ERP implementation. The structural synthesis represents the experiences reported in the interviews. This is done by bringing all the parts together. For example, when synthesizing and analysing the essence of informant's perspective on the ERP implementation, it became apparent that informants did not perceived their experiences with ERP systems in terms of mismatches. Below is a sample of this structural synthesis:

Informants in the case study experienced differences in terms of concepts in time, procedures, terminology and processes. They also experienced the introduction of new elements in their work environment such as changed processes and procedures. While these may be seen as mismatches from a Western perspective, the Chinese informants see it as a process that needs normalisation.

#### *Step 7 - Member Check*

At an ElevatorTech IT workshop in Sydney, the preliminary interpretation of the findings was presented to their Group Chief Information Officer, the 2nd SAP project leader in Shanghai and the SAP project leader (Korea, Vietnam). The aim was to check for any omissions and confirm the findings reflected their understanding. As well as confirming the findings, this workshop provided an opportunity to get feedback. It also provided comparative information on SAP projects currently being implemented by ElevatorTech in the Asia-Pacific region. While no major issues were identified, a need for more information on communication with the users was expressed.

### 3.5.2. RIGOUR AND VALIDITY

The criteria used to add rigor and validity to this research are:

- Credibility;
- Transferability;
- Dependability; and
- Conformability (Lincoln & Guba, 1985).

These criteria have comparable rigor with the 'normal' criteria of internal validity; external validity; reliability and objectivity found in conventional positivist terminology (Lincoln & Guba, 1985). They are far more suitable and relevant to qualitative interpretive research than the traditional criteria.

#### *Credibility*

The techniques for identifying credibility are prolonged engagement, persistent observation, peer debriefing, negative case analysis and progressive subjectivity (Lincoln & Guba, 1985). In this research, member check (Colaizzi, 1978) and data tracking are evidence of prolonged engagement and persistent observation.

The approach taken for member check included verifying the data and its interpretation with the informants. This involved asking the informants to review the transcripts of the interviews and indicate their satisfaction with their accuracy. Audio recordings were also made available to informants upon request. The preliminary findings were presented in an ElevatorTech IT workshop (Appendix 6). Further in the workshop peer debriefing took place. This workshop was presided by the Chief Information Officer (CIO) of ElevatorTech Group and attended by SAP IT implementation team members from different Asia Pacific regions. During the workshop each SAP IT team leaders and consultants responsible for implementation in Korea, Vietnam and China updated and discussed their SAP implementation experiences with the group.



### *Transferability*

The main research technique to achieve transferability is 'thick description' (Geertz, 1973). This is achieved by providing as detailed a description as possible about the time, place, context and cultural perspectives. When these have been thoroughly addressed it enables other researchers to assess the findings and conclusions presented and determine whether they can be transferred to another setting. In this research a rich description of the context was maintained, thus allowing readers of the research to assess transferability to other context.

### *Dependability*

Dependability can best be demonstrated by documenting the logic of processes and method decisions. It is often accomplished using an audit trail. This implies maintaining a log containing personal notes, which allows for reflection upon what happened in relationships, personal values, and perceptions (Guba & Lincoln, 1989). Diligent attention to documentation facilitates the setting up of the "audit trail" (Rodwell & Beyers, 1997). In this research, data collection and analysis were documented to provide an audit trail. Field notes were also kept summarising date, time, location and the subject matter of all meetings. They formed a reflective diary to explore assumptions and preconceptions enabling the exploration of ideas, themes, thoughts and feelings throughout the data analysis process. This is important as reflexivity is central to achieving a common understanding of the phenomenon.

### *Confirmability*

Confirmability is the confirmation of the data and interpretations. This is done by tracking raw data, documentary evidence, interview summaries, member checking, data analysis and the logic used to arrive at the interpretations. This technique is the 'confirmability audit' (Guba & Lincoln, 1989; Rodwell & Beyers, 1997). In this research the use of electronic transcription equipment supported data credibility through the ability to trace it back to its original source. It also provided a quick and easy cross-data check, so adding another level of credibility.

### **3.5.3. LIMITATIONS OF QUALITATIVE DATA INTERPRETATION**

It is acknowledged that interpretive methods have limitations, such as reliance on the interpreter's analytic lens (Hawkesworth & Kogan, 2004). The potential of this limitation has previously been acknowledged in chapter one and the means of addressing it were established.

A further potential limitation was introduced through the use of audio recording equipment at the interviews. It precluded the opportunity to take into account details such as behaviour and mood changes. This was overcome by the use of note-taking by the interviewer. A good demonstration of this limitation was when two interviewees declined to have the session recorded. When compared to other informants these interviews were more forthcoming and candid.

### **3.6 *METHODOLOGY CHAPTER SUMMARY***

This chapter focused on the methodology applied in this research to gather the data necessary to address the research objective.

Initially it was established that a case study approach was the most appropriate technique. The characteristics of the selected case company, ElevatorTech were then provided.

The process of data collection was then described in detail, following this, the focus moved to data coding and analysis. Finally, issues relating to rigour in this research were presented.

## CHAPTER 4 FINDINGS

### 4.1 INTRODUCTION

The aim of this chapter is to present the findings revealed from the data analysis reported in the previous chapter. In doing so it is acknowledged that any ERP implementation, due to the need to fit business processes to information systems, will bring about change in the way business processes are conducted. Such changes can be even greater as in the case study organisations where the implementation is replacing a legacy system. The findings reflect the challenges, reactions, perceptions, feelings and behaviours of the informants working at ElevatorTech who were projected to be the first hand users of the SAP system. At the same time, based on the primary objective of this research, the focus will be on the impact of characteristics of the Chinese culture in the case study environment.

At the beginning of this thesis it was established that this research will draw on three of the four cultural dimensions of Hofstede (1980). For the purpose of presenting the findings, these dimensions will be used to highlight the influence of culture. The findings were developed with reference to the Colaizzi's (1978) Seven Steps framework. Within this, step four involves clustering meanings into themes. From this process nine themes emerged that reflected the experiences of informants involved in the implementation. These themes are important because they clearly support the role of culture in the implementation of a Western-developed ERP system in a Chinese environment. Along with the three cultural dimensions, the nine themes will form the basis for the presentation of the findings. These are:

- The Influence of Power Distance;
  - Management Directions on the ERP System Accepted without Question;
  - Controlled Requests for Modifying the SAP System;
  - Uneven Benefits;
- Collectivism;
  - Sense of Obligations;
  - Maintenance of Social Harmony;
  - Consensus Building;
- Uncertainty Avoidance;
  - Uncertainties Created from New Elements in Work Environment;
  - Uncertainties Created from Challenges from Chinese Business Environment;
  - Managing Uncertainties with Guanxi.

Contrary to a commonly held view that culture has little, or only a slight impact on the successful adoption of Western-developed ERP systems, this research has found evidence to support it actually played a positive role. The findings showed that while the uniqueness of the Chinese business environment and changes caused by SAP implementation had created many challenges for the informants in the case study, the findings demonstrated that culture can actually make it easier for implementers of SAP, rather than cause problems. This study showed that informants rely on their culture as an important resource for change.

In presenting these findings it is necessary to point out that while the themes can be linked to the three dimensions they are not necessarily mutually exclusive. That is, there is considerable interaction between these dimensions and the themes.

## **4.2 THE INFLUENCE OF POWER DISTANCE**

There was evidence in the case study that high power distance actually softens or deters employees from resisting directions by their superiors to incorporate an ERP system into their work environment. The evidence of the positive impact of power distance on the SAP implementation in ElevatorTech is high power distance tended to facilitate the acceptance of the ERP package, as illustrated by the following three themes:

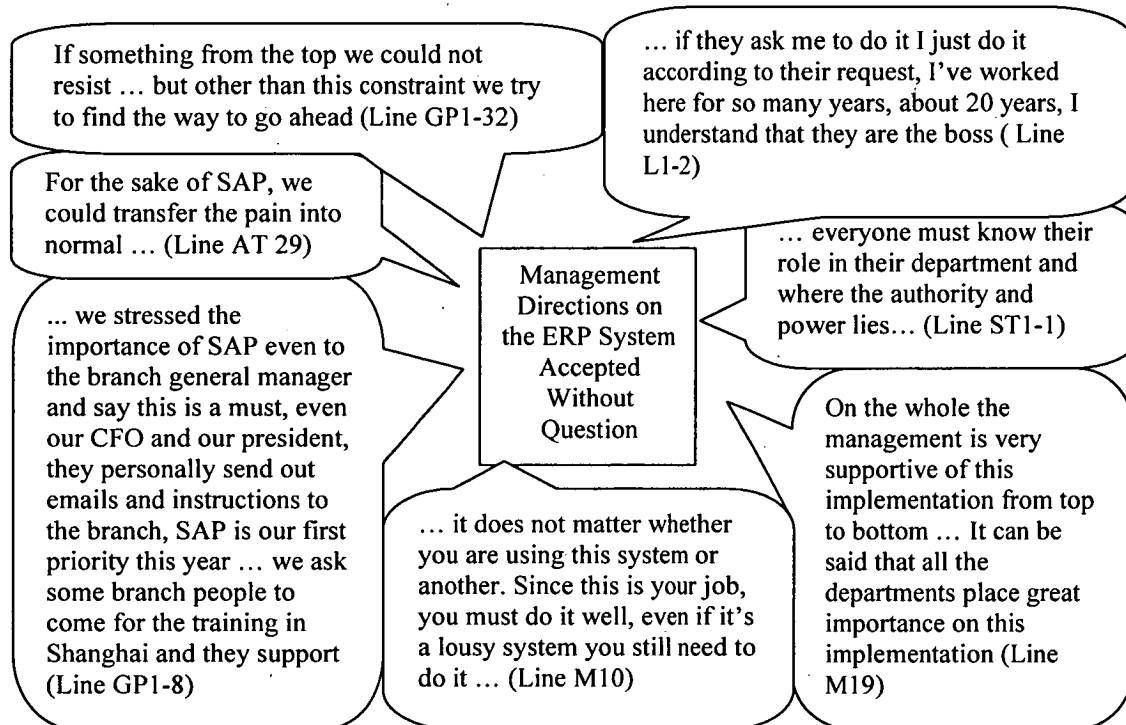
- Management Directions on the ERP System Accepted without Question
- Controlled Requests for Modifying the SAP System
- Uneven Benefits

In Chinese organisations high power distance largely follows Confucianism. That is, a strong social hierarchy based on position. This implies that in China rank and hierarchy are important aspects with decisions being made by leaders at the top and those below are expected to carry out directives without question. Employees are expected to be loyal and devoted to their organisation and in return it is expected to take care of them (Rarick, 2007). This study found that high power distance actually assisted the ERP implementation at ElevatorTech, which is contrary to a research finding that countries with high power distance are more likely to reject ERP systems. This was attributed to the incompatibility between culture and the embedded assumptions in the ERP system (Rajapakse & Seddon, 2005).

### *Management Directions on the ERP System Accepted without Question*

The findings showed that ElevatorTech's strong hierarchical culture has been a facilitating factor in the SAP implementation. This is confirmed by the participants in the research who acknowledged that they not only complied with instructions given to them in the implementation but they endorse the use of formal power to ensure goal attainment. This is illustrated in Figure 4-1 which shows the views of informants that were used to construct this theme.

As figure 4.1 shows the impact of the Chinese value of high power distance was most prominent among informants at the lower level of the organisation's hierarchy. This included clerks from Accounts Receivable, Contract Control, Field Operations North and Field Operation Financial Controller. This view was further substantiated by the interviews with SAP project leader B.



**Figure 4-1 Management Directions on the ERP System Accepted without Question**

**Legend**

GP	SAP Project Leader B
L	Accounts Receivable clerk (Finance and Control)
M	Field Operation North clerk (FON)
AT	Contract Controller (Sales and Distribution)
ST1	Field Operation Financial Controller

From a cultural point of view, the finding supported that the Confucian emphasis on values like respect for authority had played a part in the obedient response from those at the lower levels of the organisation's hierarchy. Especially when the findings indicated that the SAP project is strongly supported by top management. In the Chinese culture, when decisions are made by leaders at the top everyone is expected to carry out a directive without question. For instance, some of the informants felt that they had to fulfil the needs of management even if it became apparent to them that this would be a painful

process. Further supporting this view are extracts from the interviews with the Contract Controller Clerk from the Sales and Distribution Department (see line AT 29) and from Field Operation North Clerk (see line M10):

“For the sake of SAP, we could transfer the pain into normal ... “(Line AT 29)

“... it does not matter whether you are using this system or another. Since this is your job, you must do it well, even if it’s a lousy system you still need to do it ... “(Line M10)

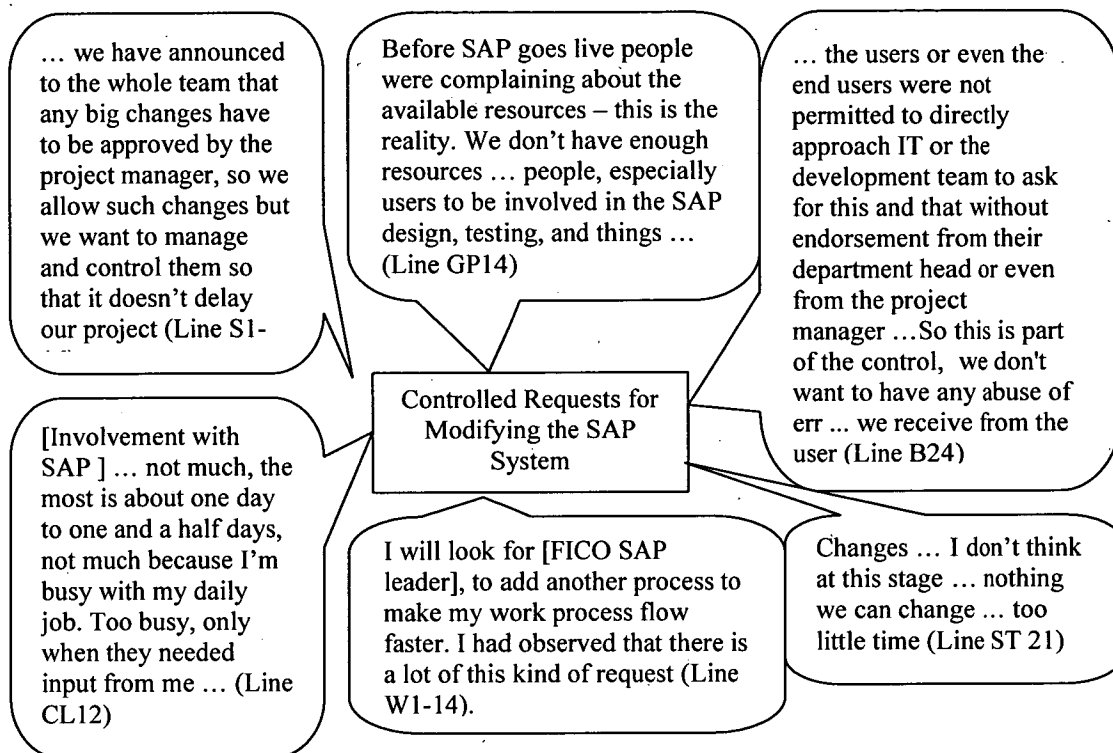
Informants in the case study considered that it was their duty to obey the orders from the top. Directives from management were not negotiable; the software had to be used in their daily work. It did not matter whether they thought it useful or not. This clearly illustrates the influence of not only power distance in the acceptance of authority but also the traditional Confucian values on the obedience of orders based on the informants’ order in the positional hierarchy. The informants made considerable effort to be compliant, this was observed during the SAP training sessions where they were seen to be making an effort to learn the SAP system. They appeared to be willing to learn and their interactions with the SAP trainers could be described as dynamic. The proposed users actively consulted the trainers and provided feedback on their experiences. This finding was further supported in the interview with the accounts clerk in the finance and control section:

“Most of the people make a lot of effort to learn to use the systems, even older staff members” (Line W1-9)

*Controlled Requests for Modifying the SAP System*

The existence of a high power distance factor was also found to be a facilitating factor in the SAP implementation. There were an overwhelming number of change requests from employees for modifications. Although these requests were driven in part by the many reports (local province financial reports and heavy reliance on a hard-copy flow of documents) needed to meet the requirements of the Chinese business environment. Since these many requests exceeded the financial, human resources and time constrain of the project, of necessity they had to be constraint. When Project Leader A was involved employees were able to request that the system should produce a specific report that was outside the normal scope of SAP. However, when Project Leader B was appointed this practice was disallowed. This person was more resolute, and adopted an authoritarian change-control that excluded users from any involvement in software changes. This approach was supported by the SAP Consultant and IT Technical Expert. Outside the technical area, the Field Operation Financial Controller and the Finance Manager also indicated the view that there was no time for involving users or for software modification to the SAP system. Users had to go through a formal process to request any changes in the SAP system. This authoritarian style of implementation worked in the favour of management by maintaining the integrity of the SAP system, providing a cohesive reporting strategy for their global operations. Figure 4-2 presents the findings supporting this theme.





**Figure 4-2 No Time for Involving Users or Software Change**

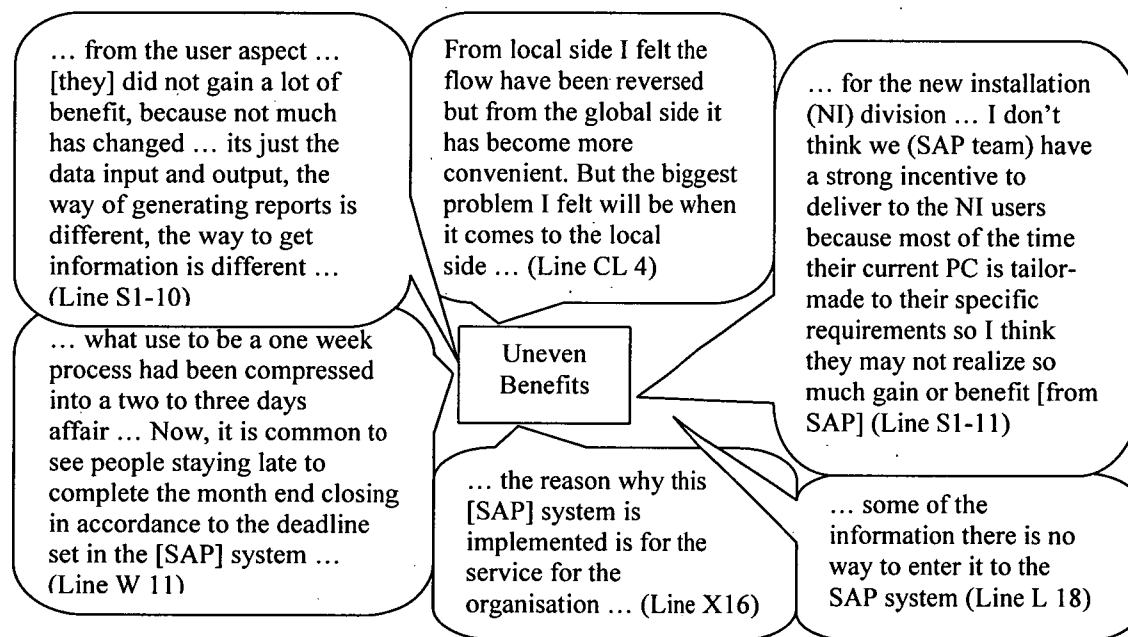
**Legend**

GP	SAP Project Leader B
B1	SAP Consultant (Sales & Distribution and Material Management-SD&MM)
S	IT Technical Expert (SD&MM and FI&CO)
ST1	Field Operation Financial Controller
CL	Finance Manager (Finance and Control)
W	Accounts clerk (Finance and Control)

Evidence from the interviews showed that when there is involvement of users, informants were simply used as sources of information. Management also established strict control measures to limit user requests for additional functionalities in SAP. In addition, there were checks and balances in place to make sure the system implemented in ElevatorTech did not deviate from the system currently used throughout the global operations of the company. The use of power distance as a form of control enabled ElevatorTech to achieve this objective.

### *Uneven Benefits*

From the findings it was evident that some informants felt that SAP had benefited management more than users, as shown in the selected comments in figure 4-3 below. This theme was strongly supported, in particular from the Finance Section ranging from the Finance Manager down to the Accounts Clerks. The view was also supported by the IT Technical Expert. This person has expertise in SAP implementation including considerable experience in its SAP Sales and Distribution (SD) and Financial and Controlling (FICO) modules.



**Figure 4-3 Uneven Benefits**

There was a common view amongst informants that management gained more from the implementation than those at the operational level. Even though this may be the case, in keeping with the philosophy of high power distance the findings indicated that the Chinese acceptance of inequality had a positive impact on the implementation at ElevatorTech. Thus their need to keep social system balanced, meant less resistance to

the acceptance of SAP. The resignation of potential users of this inequality was noticeable in ElevatorTech. During the implementation, it was observed that there was an almost unspoken assumption that the adoption of SAP was inevitable, and that, for better or worse, they must come to terms with the changes that were to follow. This was evident in their daily work, as illustrated in the interview with the Accounts Receivable clerk from the Finance and Control Department:

“ [there are] many requirements and not only from our immediate boss but also from other bosses as well... For example, in BPAC, he [boss] know where to get and how to use the system, but he still ask me to do it, for me, if they ask me to do it I just do it according to their requested, I've worked here for so many years, about 20 years, I understand that, they are the boss” (Line L1-2).

In ancient Chinese ideology there is a saying that “equal queens, equal sons, equal powers and equal cities – all lead to disorder” (Young, 1981). This finding confirms that in high power distance countries, individuals are more likely to accept inequalities and that authority and seniority are important to individuals (Tsui, 2001).

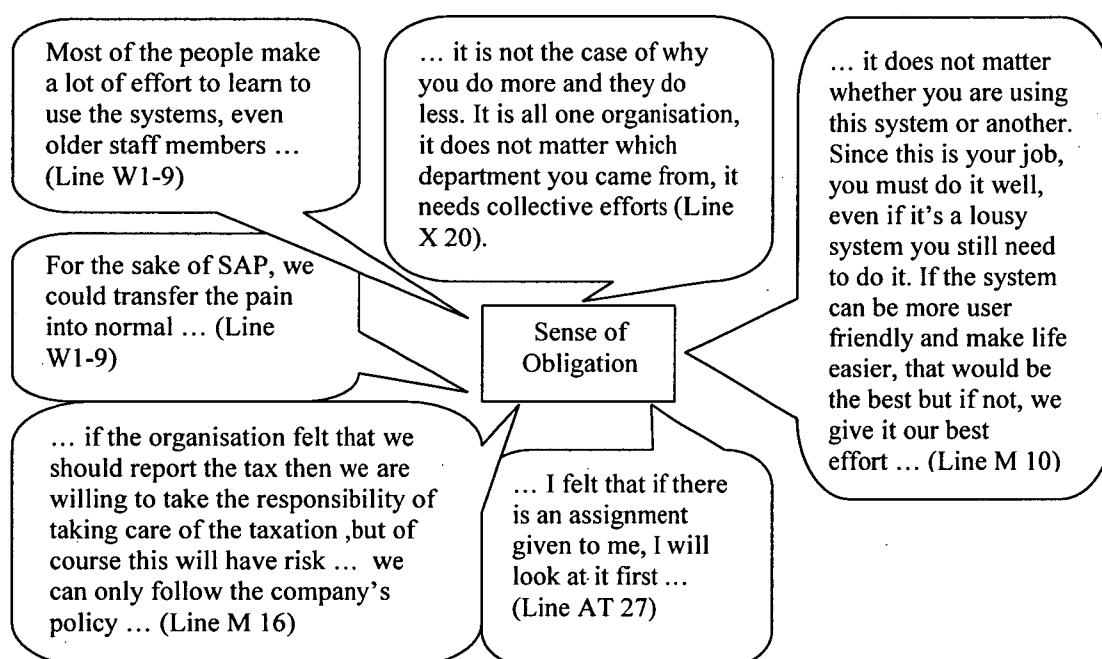
### **4.3 COLLECTIVISM**

At ElevatorTech it was found that the Chinese values of collectivism, the second cultural dimension to be address in the finding, played an important role in terms of arriving at solutions that were acceptable to the informants in the case study. In this section evidence of the positive impact of collectivism on the SAP implementation in ElevatorTech will be presented in three themes:

- Sense of obligation
- Maintenance of Social Harmony
- Consensus Building

### *Sense of Obligation*

In the findings there is support that the Confucian values on obligation had a positive impact on the SAP implementation in ElevatorTech. The Chinese employee's sense of obligation to the organisation was a key factor in employees viewing the implementation as a form of duty from which they could not turn away. Figure 4-4 indicates employees shared a sense of loyalty and responsibility to the organisation. The cultural factor of a sense of obligation was strong across a range of positional roles including users from the Contract Control section, Accounts, Sales and Distribution and user from the Field Operation side. This finding was reinforced by the view of the SAP Consultant.



**Figure 4-4 Sense of Obligation**

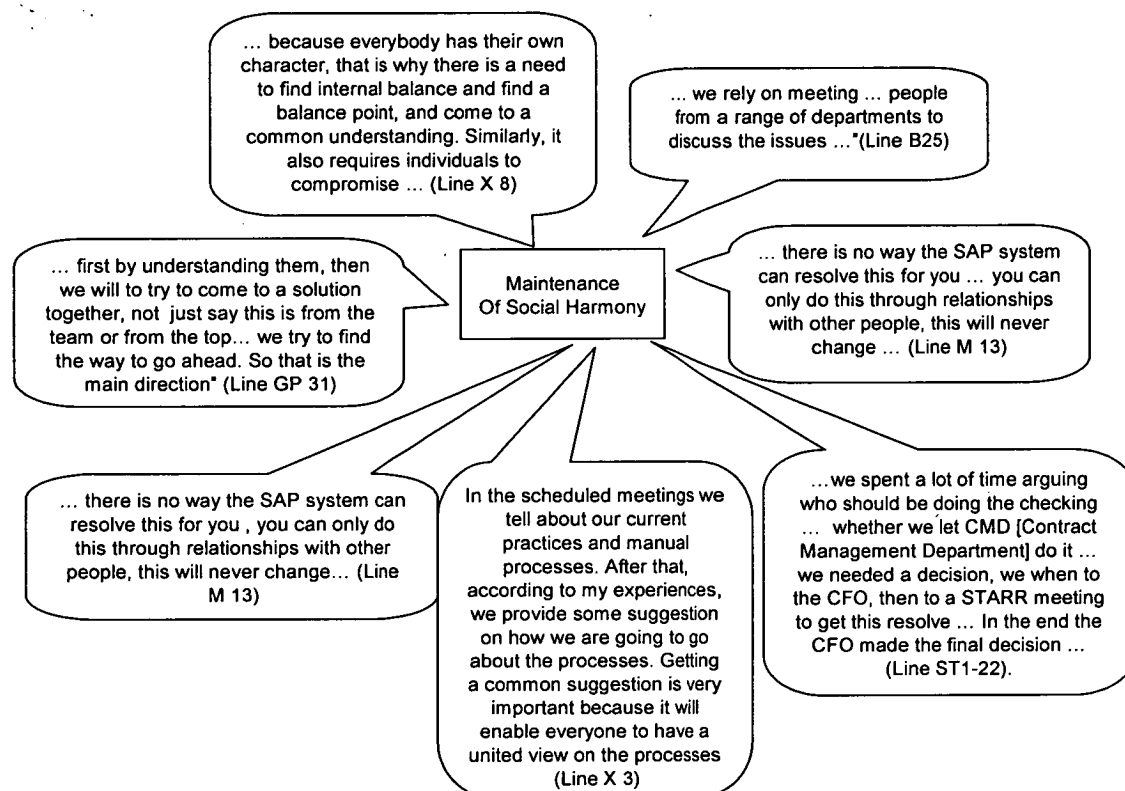
**Legend**

AT	Contract Controller (Sales and Distribution)
BI	SAP Consultant (Sales & Distribution and Material Management-SD&MM)
M	Field Operation North clerk (FON)
ST1	Field Operation Financial Controller
W	Accounts clerk (Finance and Control)
X	Sales and Distribution clerk (SD and MM)

From the case study it was apparent that during the implementation, the informant's focus was on their obligation to the company. Because their loyalty was to the company the informants at ElevatorTech were prepared to go beyond their normal work obligations to ensure the success of the SAP implementation. The informants in the case study felt bound to the value of obligation and such feelings are in the roots of their culture. In China, people are concerned about fulfilment of social obligations inherent in their relationships (Ho et al., 1991) . However, obligations are not all one way, they also require repayment and there is a limit to the extent of obligation (Coleman, 1990). In this research, it was observed that the company repaid their obligation to the people involved in the implementation by acknowledging them in the company newsletter and providing them with a social gathering and overnight stay at a resort. It reflected the reciprocity of the Chinese practice in that it is expected of management to look after their members in exchange for loyalty.

#### *Maintenance of Social Harmony*

Traditionally the Chinese value of collectivism stresses harmony. Figure 4-5 illustrates how the strong Confucian value of harmony was influential during the SAP implementation, especially regarding conflict avoidance and a non-assertive approach to conflict resolution. Of particular importance is the view expressed by the Project Leader B. Informants who shared his view included a SAP consultant as well as people from Sales and Distribution and Field Operations.



**Figure 4-5 Maintenance of Social Harmony**

**Legend**

BI	SAP Consultant (Sales & Distribution and Material Management-SD&MM)
GP	SAP Project Leader
M	Field Operation North clerk (FON)
ST1	Field Operation Financial Controller
X	Sales and Distribution clerk (SD and MM)

Confucian values on harmony include adopting a non-confrontational and indirect attitude to keep a harmonious atmosphere. This approach proved to be instrumental in helping resolve differences when incorporating changes during the SAP implementation. In this regard the SAP Project Leader played an important role in maintaining such harmony especially if conflicts arose. For example, the disagreement over which department should be responsible for entering the SAP work based serial (WBS) number and match it with the contract number. The first SAP Project Leader tried to resolve this problem by using face to face negotiations, applying a direct communication approach. However, following western methods of communication to resolve conflict in a Chinese environment proved to be detrimental to the implementation effort. It was observed that the first SAP Project Leader would let conflicting parties meet and discuss their differences. This often resulted in shouting matches, particularly between the Accounting

and Contract Management Departments. This Project Leader emphasized directness in relaying messages between the two conflicting parties and while this may have helped prevent misunderstanding; it actually escalated conflict as it might mean losing face if anyone of the party back down. This method escalated an already conflict situation, it resulted in shouting matches and severely disrupted the harmony in the group comprising of users and IT personal. A quote from one of the interviews provided below illustrates the conflict during that period:

“the contract number and the WBS number is not the same, so when we have to check the account between the WBS and the contract number but the arguments is who should be the one to enter the WBS number and match it with the contract number. That is should the person who initial key in the data enter the WBS number with the contract number or should the accounts department enter this into the system by matching the WBS and contract number. So this is the problem, we had a lot of arguments on this for a long time” (ST 35)

In resolving this issue, the second SAP Project Leader achieved a more positive outcome by using harmony as a mechanism to solve SAP project conflicts. Instead of face to face interaction the second SAP Project Leader smoothed over these conflicts by meeting them separately and listening to their views. It softens the negative feelings and presents the conflicting parties in more acceptable terms by understanding their underlying concerns and difficulties. This method of communication helped save face because it is less direct and gave the parties a chance to compromise. The confirmation of face and maintaining cooperative goals to avoid affronting disagreement is implicitly part of the Chinese cultural value of harmony. The second Project Leader was successful in getting a compromise between these two parties and restored harmony in the group. This finding is important because in the Chinese culture, the primary role of leader is to act as parental figure in maintaining harmony, respect, and cohesion within the organisation (Rarick,

2007). The inability to do that could result in a loss of authority and respect from not only group members but also from the top management. His approach also provided a valuable insight on the importance of harmony and how to protect it from continued conflicts which if not controlled properly can impact on group performance. It also indicated harmony can be more effective than power distance in solving issues.

This finding is also important because unresolved conflicts between group members tend to draw in other members as well, which in turn complicates the issues and “compounds the atmosphere of tension”(Shook & Kwan, 1991: 217). This feeling was expressed by other members of the group. The findings indicated that individualistic behaviour could negatively impact on the SAP implementation. The informants also felt exploitative assertiveness by certain individuals in the conflict had impacted on the progress of the SAP implementation. The cultural importance of harmony affected the way the Chinese employees behaved during SAP implementation. There was also supporting evidence that informants in the case study preferred cooperation and interdependence to individualism. This view was expressed by one of the SAP consultant:

“... she [the employee] also very strong in her thinking, she not easy give way to other people, maybe, she had a mission in her mind or impose by her department head or whatever, but I can see certain things that she can, she don't easily compromise with other people....even though I can see there is some room for her to listen to other people...she quite insistent [in her thinking]...” (Line B1-34)

Thus the SAP consultant was chastening this person for lacking in the co-operative dimension of her behaviour. It became apparent in the findings that the informants in the case study felt that participation in shared progress and interdependence were very important. This was evident in the interview with the Sales and Distribution Clerk.



“this project relies on the cooperation from different departments and in the whole organisation, it is not the case why you do more and they do less, it is one organisation it does not matter which department you came from , it needs collective efforts” (Line X-20)

Individualism in some members was not an acceptable behaviour. Harmony is achieved through the key values on assumptions that people are interdependent and contributes to their collective orientation. It is also achieve through the assumption that people would know how to behave appropriately according to the hierarchical position hold (Westwood, 1992).

Informants in the case study use harmony-seeking behaviour as a way to avoid potential problems with others. This finding was supported by the interview from the Sales and Distribution Clerk:

“... because everybody have their own character, that is why there is a need to find internal balance and find a balance point, and come to a common understanding. Similarly, it also requires individuals to compromise.” (Line X8)

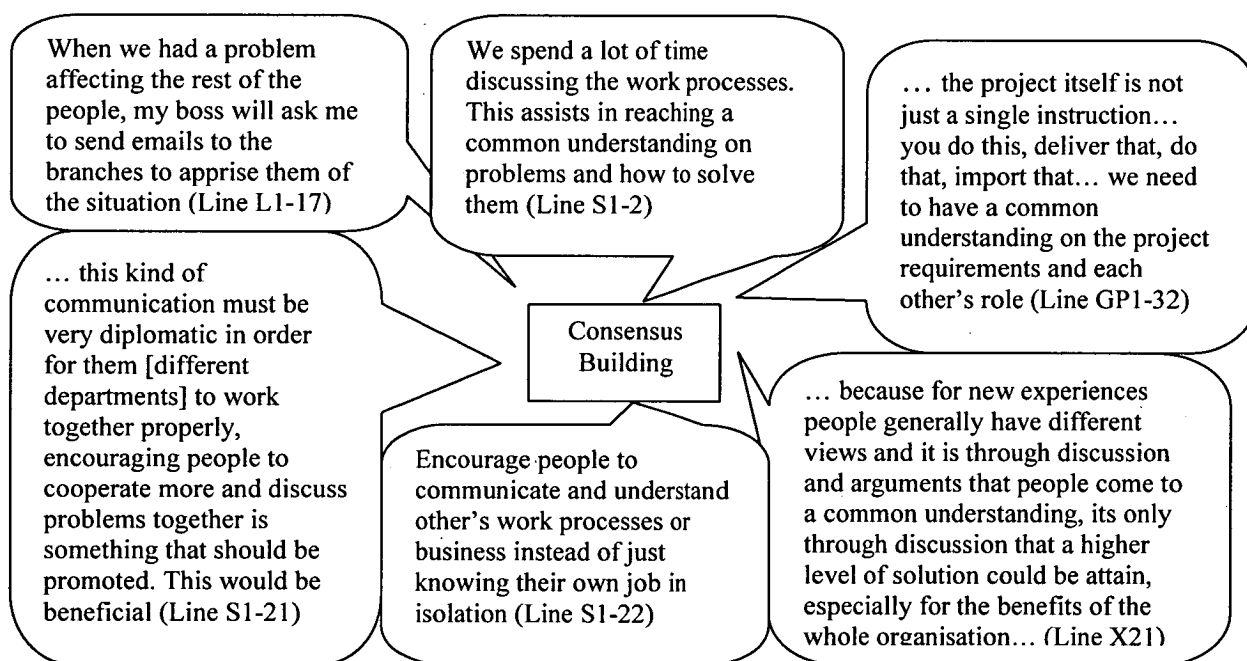
Harmony stresses behaviours that show respect for group members, working for accepted solutions, listening to and using ideas of others, taking care of group members. Observation on the ground showed that when this is not followed it impacted on the progress of the SAP implementation.

### *Consensus Building*

The findings in the case study indicated that in ElevatorTech, consensus building was still very much entrenched. It was found that a coordinated effort involving different key users was needed to appropriate SAP into the local environment. Numerous meetings with stakeholders were held to reach a common understanding. These were deemed

important to smooth out differences to allow the project to progress. Communication was seen as an essential part of this process.

In any ERP implementation, change is a big issue and coupled with the strict control over modification of SAP meant that not all local needs could be met. In some situations the new business processes inherent in SAP created bottlenecks for users because workarounds were needed to make SAP work in the local environment. This increasing workload necessitated the intervention of middle management. Accordingly, reaching a common understanding was a key issue to resolve this matter. Figure 4-6 shows a selection of comments from the interviews which support the consensus building theme.



**Figure 4-6 Consensus Building**

**Legend**

GP	SAP Project Leader
L	Accounts Receivable clerk (Finance and Control)
S	IT Technical Expert (SD&MM and FI&CO)
X	Sales and Distribution clerk (SD and MM)

To achieve the acceptance of SAP, it was in the interest of management to take the initiative in building consensus. The findings in the case study showed that collectivism led to consensus on appropriate strategies to address problems that arose during the

implementation. It offered the informants a means to accept the software despite having misgivings about its benefits. This was observed during meetings where informants from different departments worked to come to a common understanding. At ElevatorTech it was found that this process was necessary to arrive at solutions that were acceptable. This is evident in the interview with the Sales and Distribution Clerk:

“... this project relies on the cooperation from different departments and in the whole organisation, it is not the case why you do more and they do less, it is one organisation it does not matter which department you came from , it needs collective efforts” (Line X 20).

This finding related to consensus building supports the view that people in a collectivistic country tend to be “more concerned about the consequences of one’s behaviour for in-group members and to be more willing to sacrifice personal interest for the attainment of collective interest” (Leung, 1987:899).

#### **4.4 UNCERTAINTY AVOIDANCE**

Uncertainty avoidance refers to the extent to which members of a society feel threatened by uncertain and ambiguous situations and try to avoid them (Hofstede, 1980). Uncertainty avoidance in China is very high (Nielsen et al., 2004). High uncertainty avoidance has been linked to more resistance for change (Palomino Murcia & Whitley, 2007) and has also been linked to the low success rate or the low adoption of ERP systems in some European countries such as France and Italy (Van Everdingen & Waarts, 2003). Contrary to these reports, informants in the case study, instead of resisting when faced with uncertainty during the implementation, relied on their cultural value of *guanxi* to reduce uncertainty, limit risk and bring order and cohesion to their daily work. Before showing the evidence of these findings, it is important to understand what kind of uncertainties informants faced during the implementation. Such an understanding can be gained from the situation through the lens of Situated Culture Theory (Weisinger & Salipante, 2000). This theory has informed us that the circumstances in which an event

happens should be taken into account if one is to understand the influences of culture. This implies ‘that “a manager may be better able to comprehend the emergence of unique local cultural processes that reflect distinct socially negotiated realities and workplace practices” (Weisinger & Salipante, 2000:27). Behaviours may be interpreted differently and can vary considerably across situations and contexts. The responses from informants in the case study can be translated into societal emphases on particular values. Further, Situated Culture Theory “holds that cultural understanding is locally situated, behavioral and embedded in everyday, socially negotiated work practices” (Weisinger & Trauth, 2002:306). Since considerable change in ElevatorTech was anticipated, one could not ignore the influences from the environment in which the implementation was taking place. In this research Situated Culture Theory aided in the appreciation of the challenges informants faced in accepting SAP in their local work practices and provided a better understanding of their behaviour.

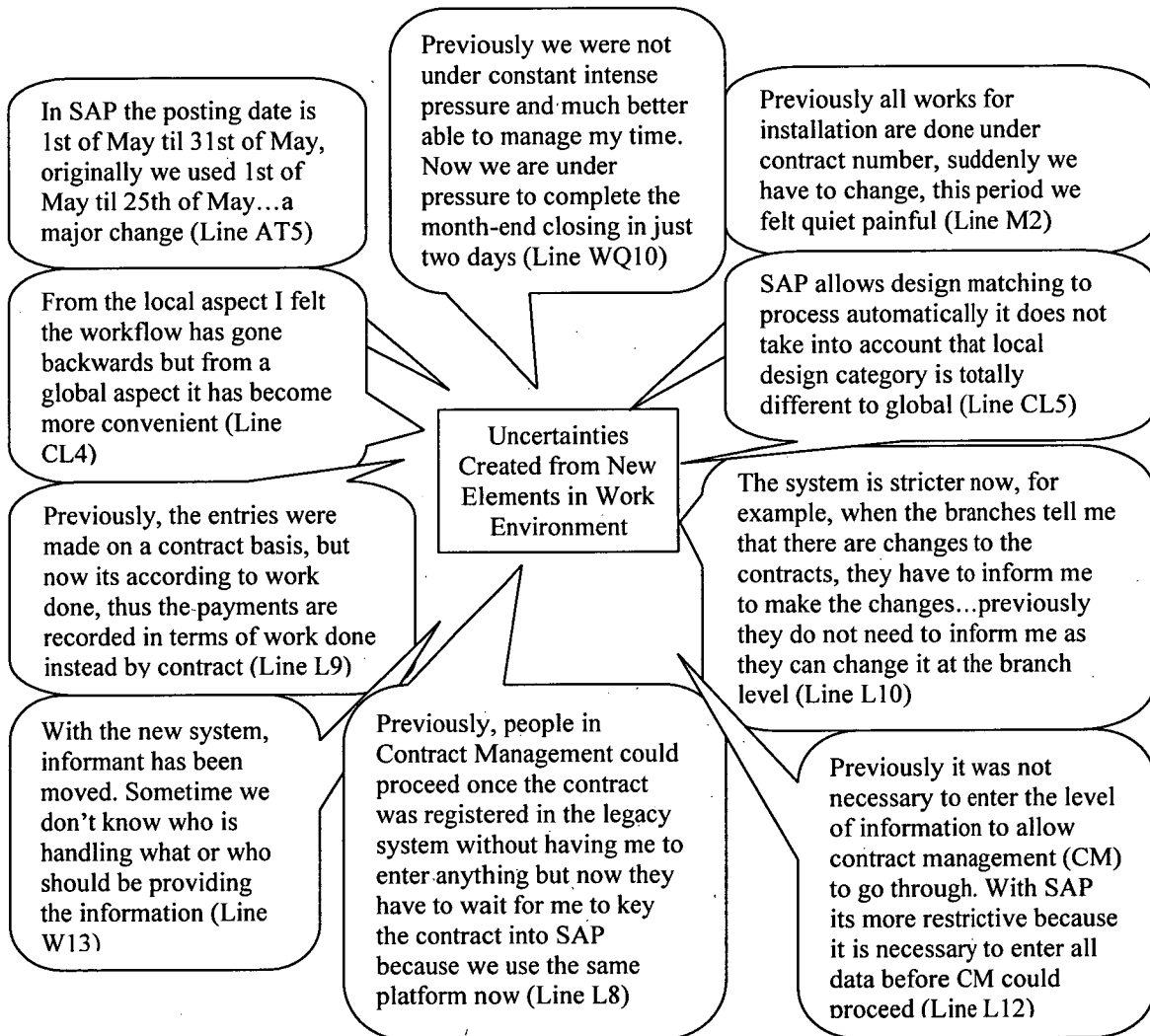
To continue this section the following will introduce the three themes related to uncertainty avoidance. The first two themes identify findings related to the environmental uncertainties faced by informants in the case study during the SAP implementation. The third theme is focussed on an explanation of how the Chinese cultural influence of guanxi was used to manage uncertainty and ambiguity during the implementation. These three themes are:

- Uncertainties Created from New Elements in Work Environment
- Uncertainties Created from Challenges from Chinese Business Environment
- Managing Uncertainties with Guanxi

#### *Uncertainties Created from New Elements in Work Environment*

The implementation of SAP brought about considerable changes in the normal work practices of the users. Because this necessitated a new approach in the way they went about their daily work, they found the change extremely challenging and so felt uncertain interacting with SAP. In addition, the integrated nature of the software meant that information flows and their sources were more abstract and less personal than before.

This presented them with a new organisational reality. Figure 4-7 illustrates the basis for identifying this finding. According to the informants, the new elements in the work environment were central to promoting the views of the informants regarding the impact of the implementation.



**Figure 4-7 Uncertainties Created from New Elements in Work Environment**

**Legend**

AT	Contract Controller (Sales and Distribution)
CL	Finance Manager (Finance and Control)
L	Accounts Receivable clerk (Finance and Control)
M	Field Operation North clerk (FON)
W	Accounts clerk (Finance and Control) 1
WQ	Accounts clerk (Finance and Control) 2

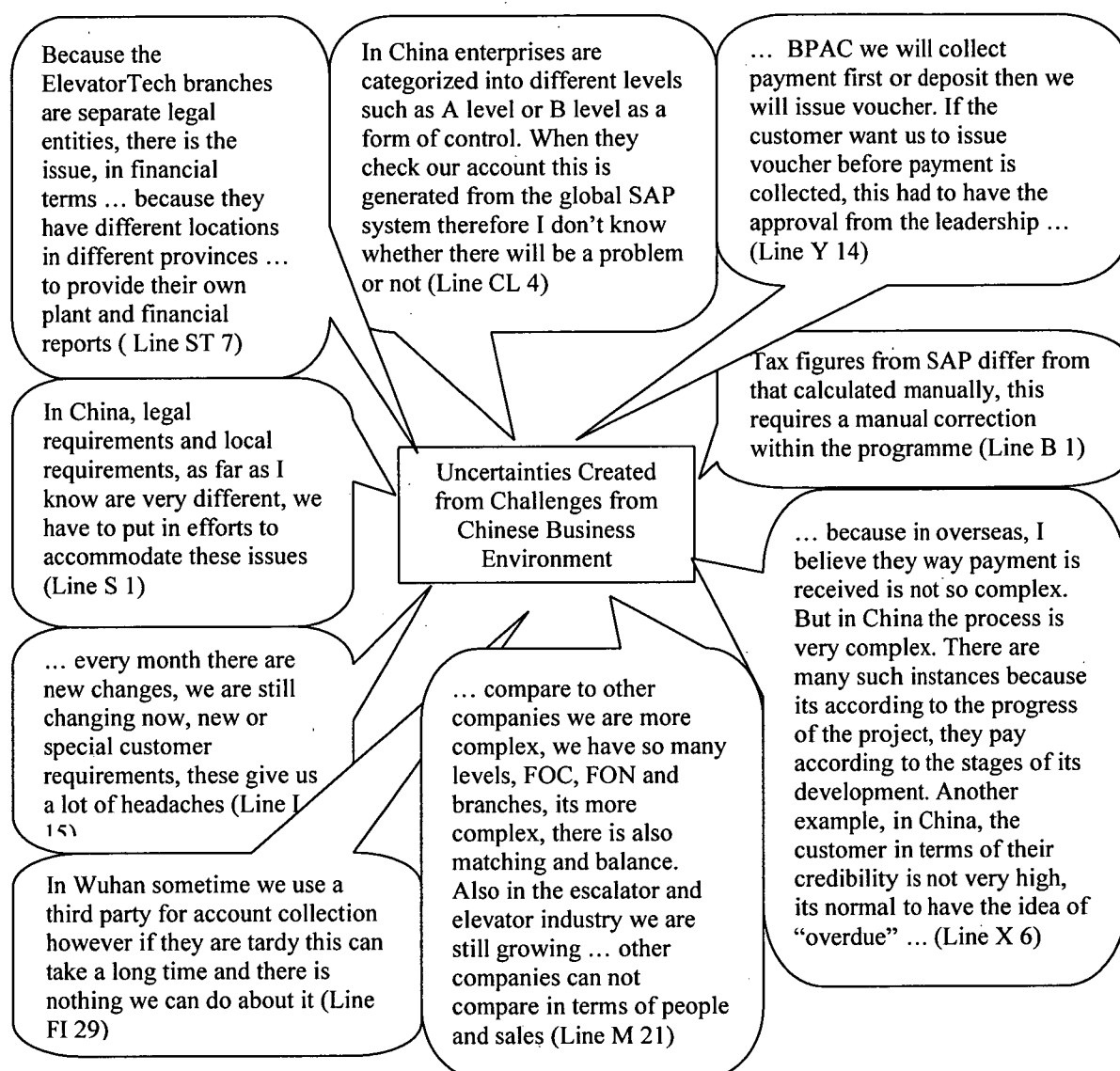
The findings from the case study demonstrated that the informants had to draw on their cultural beliefs and values to adapt to, and accept, the SAP implementation. It was clear that the disruption to previously established work practices had changed relationships so increasing uncertainties. Chinese culture has been described as “relationship-centred”(Furnham, 2005).

*Uncertainty Created from Challenges from Chinese Business Environment*

In many ways the Chinese business environment differs from that on which the SAP is based. It was obvious that the software did not meet Chinese taxation regulations or cater for business requirements outside of ElevatorTech.

The findings showed that for the users, SAP made it more difficult for them to process requests for their customers and generate reports for external reporting purposes. This included tax reporting, local provincial financial reports and the like. Accommodating these new challenges in terms of determining solutions to make SAP work in their work environment also increased the uncertainty level. Because use of the system at ElevatorTech was mandatory, users did not have a choice, having to adapt to its inadequacies.

Figure 4-8 presents this section of the findings. As the legend shows, the interviewees who contributed to this finding were from a number of organisational roles and also from a number of levels from the organisational hierarchy.



**Figure 4-8 Uncertainties Created from Challenges from Chinese Business Environment**

**Legend**

B1	SAP Consultant (Sales & Distribution and Material Management-SD&MM)
CL	Finance Manager (Finance and Control)
FI	Accounts Clerk (Beijing Branch)
L	Accounts Receivable clerk (Finance and Control)
M	Field Operation North clerk (FON)
S	IT Technical Expert (SD&MM and FI&CO)
ST1	Field Operation Financial Controller
X	Sales and Distribution clerk (SD and MM)
Y	Contract Management Controller

The research showed that there was considerable difficulty in using SAP to efficiently support many of the practices in the conventional Chinese business environment of ElevatorTech.

For instance, there is a heavy reliance on the flow of hard copy documentation and this is a widely accepted and preferred practice. As a result it was difficult for employees at ElevatorTech to move from this practice when dealing with external agencies that were outside the scope of the SAP software even though this represented a considerable portion of their business involvement. This included customers, suppliers and government. The impact on the Chinese employees was evident during an observation of the Accounts Receivable Clerk where she was seen to be reading emails with attached SAP screen-dumps and recording that information into an Excel spreadsheet and then transferring some of that information on to documents written in Chinese. These documents were predominantly written in Chinese and required official stamps. Further, "stamps" could not be authenticated electronically or replaced by SAP. It was also impossible to customize the software for ElevatorTech's customers who were still reliant on a hard-copy flow of documentation. Even in the early stage of the implementation it soon became apparent that convoluted processes were necessary because of the inadequacies of SAP in the Chinese business environment. In addition, employees in ElevatorTech had limited influence on any modifications to SAP. This was because management had strict control on any changes to the system due to budgetary constraints of the project. Driven by the uncertainties within the work environment, users in the case study developed workarounds to accommodate local Chinese business requirements. This finding was best illustrated with the quotation from the Accounts Receivable Clerk:

" I have to reformat the information according to the needs of the customer...the system [SAP] is very structured, not all the information are contained in one frame...some of the information need to get it from another frame and compile the



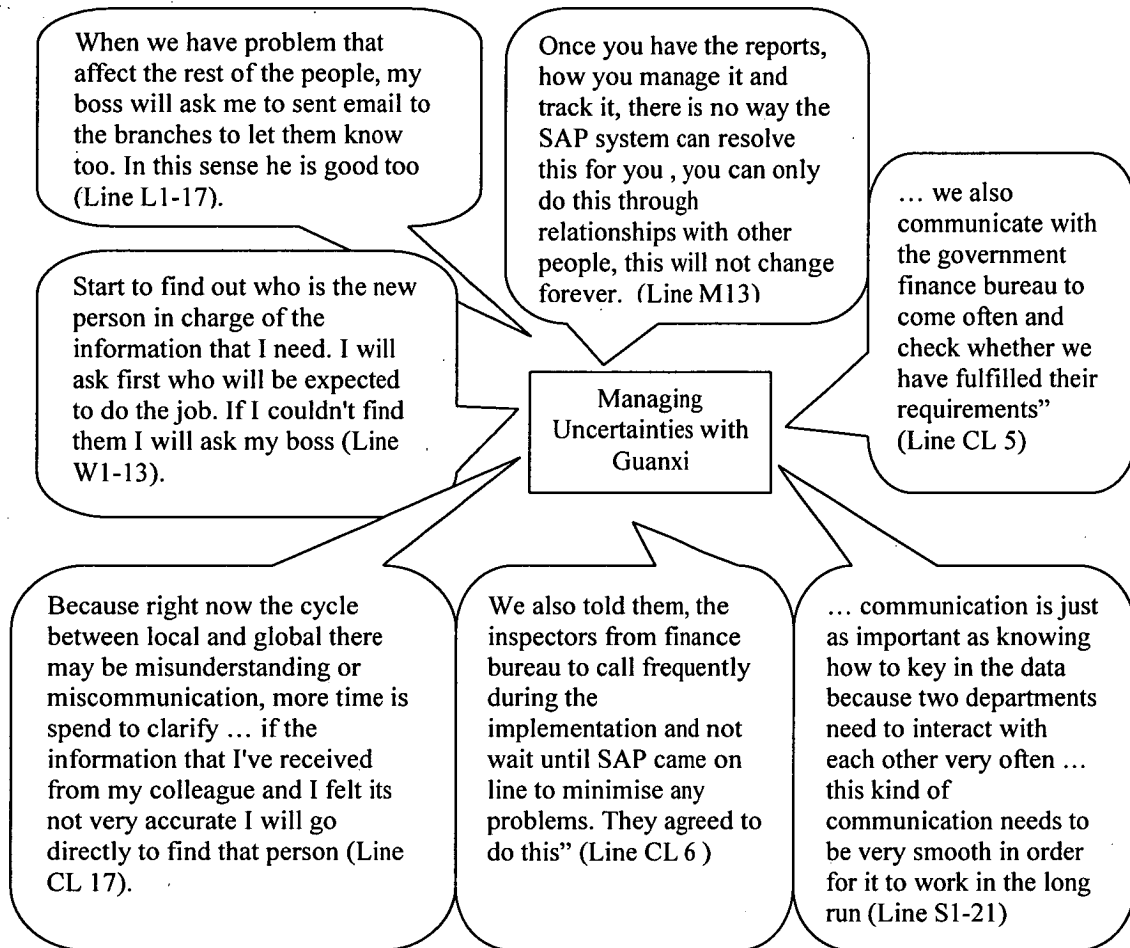
report into a format that the customers could understand” (Line L1-9)

She further expressed her frustration:

“... we are still changing now, new customer requirements or special requirements by the customers, this give us a lot of headaches” (Line L1-15)

#### *Managing Uncertainties with Guanxi*

The findings revealed that the Chinese relatively high level of uncertainty avoidance did not cause resistance to the use of SAP. This is despite evidence showing that the implementation increased uncertainties for the informants. Instead they apparently relied on their Chinese cultural values based on Guanxi to manage these new uncertainties created through the introduction of the ERP software. The findings showed that it was used internally by informants in the case study to look for needed resources and useful information to reduce uncertainty. They did so by also relying on their hierarchical network linkages, such as through their superior-subordinate relationships or peer to peer relationships to gather the resources they need to fulfill their work requirements. Guanxi was also used to make SAP acceptable to external government agencies such as the financial bureau. Figure 4-9 shows those who contributed to this finding.



**Figure 4-9 Managing Uncertainties with Guanxi**

**Legend**

CL	Finance Manager (Finance and Control)
L	Accounts Receivable clerk (Finance and Control)
M	Field Operation North clerk (FON)
S	IT Technical Expert (SD&MM and FI&CO)
W	Accounts clerk (Finance and Control)

In response to the challenges faced by the users of the system at ElevatorTech, the findings indicated that Guanxi or the Chinese philosophy of relationships had a positive impact on the implementation. The Account Manager in the case study relied on Guanxi to provide liaison with external agencies to ensure their acceptance of SAP. This aspect was important to this research because the SAP-generated reports had to meet the requirements of the local Chinese government agencies. This was beyond the conventional processes available in the software. Although based on a single informant, it

highlighted the need for frequent communication with Chinese government agencies to make SAP acceptable to them.

The informant represented in this finding is the Finance Manager who had sole responsibility for providing liaison with government departments during the implementation to ensure compliance with local regulations. This included government departments such as the taxation and local finance bureaux. This was evident in the interviews:

“... we also communicate with the government finance bureau to come often and check whether we have fulfilled their requirements” (Line CL 5)

“We also told them, the inspectors from finance bureau to call frequently during the implementation and not wait until SAP came on line to minimise any problems. They agreed to do this” (Line CL6)

The need for such liaison supports that guanxi networks are essential for doing business in China (Wong et al., 2005). It was acknowledged that building long term relationships with external agencies including government departments, such as tax bureaux could help enterprises in their projects (Hong, 2002).

The close relationships between the potential SAP users were found to have a positive impact on the implementation in particular for fulfilling customer's requirements. There was still a strong emphasis on relationships in ElevatorTech to fulfill daily task that could not be accommodated by SAP. This finding was supported in the interviews with the clerk from Field Operation North:

“ ... how you manage it and track it [i.e. information],  
there is no way the SAP system can resolve this for you ,  
you can only do this through relationships with other  
people, this will not change forever” (Line M13)

There was also evidence that the Confucianism's attitudes towards roles, accountability and responsibilities based on fixed hierarchical relationships or power distance had an important influence on informant's acceptance of SAP. For instance, informants preferred to have visibility of the person on the other end of the information in SAP. This was important to them, especially if the person at the other end failed to discharge his responsibility adequately. Support for this finding was evident in interviews with informants from the Field Operation Financial Controller (ST1) and the clerk from Field Operation North (M):

“... you have to decide who should be responsible first,  
then after that you will think of a method to pass this  
information... ” (Line ST1-36)

“... we can only follow the company's policy , so if there is  
any problem , at least from the perspective of responsibility  
whether you have the responsibility under this policy and  
other people will not because of this blame you. It is very  
important that it is written down in the workflow [in SAP],  
it should be this way and we have to follow this” (Line  
M16).

#### **4.5 CHAPTER SUMMARY**

In this chapter the findings of this research were presented. Based on step four in the analysis framework (Colaizzi, 1978), nine themes were identified. For the purpose of presenting the findings, these were divided into three cultural dimensions: power distance, collectivism and uncertainty avoidance. The findings showed Chinese cultural values had a largely positive impact on the SAP implementation. It revealed important insights into Chinese fundamental values such as collectivism, respect for authority or power distance, harmony and the importance of relationships, reciprocity and obligations on the implementation of the SAP system in ElevatorTech. Informants mobilized their own indigenous resources as a way of responding to the challenges brought about by the implementation of the Western-developed SAP system. They adapted it to suit local Chinese business work practices. Confucian values regarding relationship, harmony and respect for orders have provided a kind of survival raft for the informants in the case study. Chinese culture and the way relationships are structured had the potential to increase the ability of informant to survive the challenges and adapt to uncertainties during the implementation.

## CHAPTER 5 – DISCUSSION AND CONCLUSIONS

### 5.1 INTRODUCTION

The aim of the final chapter is to discuss and draw together the research presented in this thesis. The chapter will cover the following topics:

- A review of the research objective;
- A discussion of the research findings;
- An overview of the research;
- Comparison with existing research;
- Conclusions;
- Review of limitations;
- Review of contributions; and,
- Suggestions for further work.

### 5.2 A REVIEW OF THE RESEARCH OBJECTIVE

This research aimed to explore the implementation of a Western-developed ERP system from the perspective of local Chinese informants. In so doing it has investigated the following primary research question:

*How does culture impact on a Western-developed ERP system implementation in a Chinese environment?*

In turn this involved two secondary research questions:

- (1) How did the Chinese informants taking part in this research handle the problems introduced by the SAP implementation?*
- (2) What changes were necessary to accommodate the SAP implementation in a Chinese work environment?*

This research has successfully fulfilled its objective in that it has shown that from a national perspective the impact of culture has largely been positive during the ERP implementation at ElevatorTech. As a result this research questions the commonly held view that a Western-developed ERP system can prove difficult to implement in a Chinese work environment because of differences between cultures. Cultural misfit has been acknowledged as potentially the cause of a problematic system implementation and in an extreme situation total rejection of the system (Soh & Sia, 2004; Soh et al., 2003; Soh et al., 2000). This research has shown that informants in the case study drew on their traditional Chinese cultural values to handle the challenges and perceived disadvantages that SAP introduced into their daily work practices. However, it must be acknowledged that they were working in an organisation that supports the maintenance of the Chinese philosophy.

The claim of meeting the research objective can be supported by the case study findings and, as appropriate, reference to three of the four Cultural Dimensions (Hofstede, 1980) and the theory of Situated Culture (Weisinger & Salipante, 2000) as well as the relevant literature and observations drawn during the research.

### **5.3 DISCUSSION OF RESEARCH FINDINGS**

The following section discusses the findings of this research. It follows the three cultural dimensions (Hofstede, 1980). This approach is supported by the fact that the nine themes that were identified from the data analysis could be categorised within these three dimensions. Because this research was based on a qualitative methodology that employed unstructured interviews for data collection these sub-themes were in no way pre-determined but rather were gained from the spontaneous responses of the informants. The three cultural dimensions are:

- Influence of Power Distance
- Collectivism
- Uncertainty Avoidance

### 5.3.1. INFLUENCES OF POWER DISTANCE

The discussion will start by addressing the findings on power distance and its implications for management. In reporting the findings of this research with respect to high power distance three sub-themes were identified. These were:

1. Management directions on the ERP system accepted without question;
2. Controlled requests for modifying the SAP system; and
3. Uneven benefits.

All of these sub-themes contributed to the positive influence of culture on the SAP implementation in the case study organisation.

#### *Management Directions on the ERP System Accepted without Question*

According to Hofstede (1980) individuals from high power distance countries are more likely to accept and expect differentials of power. People in these cultures tend to accept directions from those in a higher level position. This may have explained why the Chinese employees in ElevatorTech accepted the opinion from their top management that adopting new technology such as the SAP system was necessary. Chinese culture is known as a high power distance culture that accepts superior-subordinate relationship as hierarchical (Hofstede, 1980). This implies that for the adoption of the SAP system in ElevatorTech, a one-way, top-down execution of social power in hierarchy was a significant factor that led to the acceptance of the software. These findings are consistent with high power distance characteristics of a culture where there is an acceptance of more autocratic leadership or centralization of authority (Hofstede, 1980). For example, the influence of top management was found to have extended down to the middle and the lower levels of the hierarchy in ElevatorTech. It was observed that this made it easier for the second SAP Project Leader to influence middle managements to comply with some of the SAP project requirements. This included persuading branch managers from different geographical locations to release people from their work to attend SAP training. The prevalent strong hierarchical structures which amplified the uneven power distribution in ElevatorTech may have explained why Chinese employees at the lower level of the



hierarchical position were acutely aware of their role positions and what was expected of them. According to one of the employees, this strong hierarchical structure has been present in ElevatorTech since she started work more than two decades ago. The Chinese employees at the lower level of the hierarchical positions were expected to behave according to their role positions; there was no questioning of top management influence. Compliance was achieved and requests were carried out simply because it was someone in authority who asked for it. It is plausible that this behaviour could be prevalent in other cultures that are characterized by the acceptance of hierarchy, and authority.

At ElevatorTech, the SAP implementation was mandatory, users did not have any choice and needed to adapt and adopt the new system. In this regard Hartwick and Barki (1994), found that when IT use is in a mandatory context, the subjective norm had a significant effect on intention. Subjective norm can be defined as a “person’s perception that most people who are important to him think he should or should not perform the behaviour in question” (Fishbein & Ajzen, 1975:302). It is possible that in high power distance country like China, the Chinese employees at the lower level of the hierarchy accepted the adoption of the SAP system more readily than those in a culture belonging to low power distance. In high power distance culture, top management have a greater influence on behaviour, this probably made it much easier for the Chinese employees at the lower level of the hierarchy to accept the power of decision making of their superiors even if the employees have concerns over the limitations the SAP system have. It is apparent in ElevatorTech that directions from their superiors were sufficient to motivate them to comply with the decisions adopt the SAP system.

In China, “it is the leaders who typically set policies or serve as role models for IT applications in their organisation” (Martinsons, 2008:351). This means that in a mandatory ERP implementation setting, top management’s influence on the behaviours of Chinese people can be more pronounced relative to people in a lower power distance culture. This proved to be true in the case of ElevatorTech; Chinese employees in ElevatorTech were more inclined to comply with the decisions made by their top management. This clearly demonstrated that management used employee respect for

authority to persuade them to accept the changes brought about by the implementation. Traditionally “Chinese culture teaches that authority is to be honoured and obeyed” (Hong & Engeström, 2004:567). In the case study the importance of the SAP implementation was communicated by top management to lower positional levels in the organisation by news-letters, emails and SAP Steering Committees meetings. These meetings were attended regularly by the CEO of ElevatorTech, the CFO, different department heads and the SAP project team. This set the priority of SAP over individual or departmental interests. These different forms of communication assisted in promoting universal support in the Chinese operations of ElevatorTech. This included releasing people to attend SAP training and assisting employees to learn the software, thereby building support for this initiative. As a result there was little resistance to the implementation. This aspect of the findings in relation to the influence of power distance at ElevatorTech is not new. In the literature several studies have shown that a more directive management style is preferred in Asian cultures whereby top management makes the decision and then persuades the subordinates to accept that decision (Redding & Casey, 1976; Redding & Richardson, 1986).

In relation to high power distance, recent research by Newman and Zhao (2008) has demonstrated that it can play a considerable influence on acceptance of a foreign developed ERP system in an Asian environment. Their research was based on a comparison of two case studies in China. In the first case study the implementation was successful because top management was actively involved in the planning and implementation phases of the project. In the second case study due to a lack of senior management support there was resistance and the implementation was unsuccessful. In addition, even though high power-distance was evident in their findings, Newman and Zhao (2008) claimed that culture did not have an impact on these implementations. However it can be argued that culture did in fact play a role in promoting the acceptance or rejection of the implementation. Management involvement, implying high power distance, was obviously crucial in determining the differences in outcome between the two case studies.

*Controlled Requests for Modifying the SAP System*

It became apparent during the research that SAP was unable to accommodate the local Chinese business needs at ElevatorTech. This created considerable concern and stress among the software users because they were unable provide all the information needed by customers and other agencies. Users found that the SAP system was unable to fully support their daily processing needs. They needed more than what the system could provide. To address this issue the users devised work-arounds that precluded an ability to ensure consistency in the data from a whole-of-organisation perspective. This situation highlighted a serious limitation in the SAP system. This finding is not new, previous studies have found Western-designed ERP system to be inappropriate in a Chinese environment (Feng et al., 2003; Li & Li, 2000a; Li et al., 2003; Li, Chaudhry et al., 2001; Wang et al., 2005). In a setting where users were involved in the selection of an ERP system, SAP would have been rejected. However, at ElevatorTech the decision to adopt the SAP system was mandated by the central authority. The employees did not have any choice. This might explain why there was a surge in modification requests and why the first SAP Project Leader was unable to control the budget. One of the most expensive costs was the hiring of additional programmers.

When the second SAP Project Leader took over it was made manifestly clear that it was not practical to customize the software every time a user needed new information. Customisation can be both expensive and ineffective and can result in the failure of an ERP implementation (Densley, 1999; Rasmy et al., 2005). The primary goal in implementing SAP at ElevatorTech was to satisfy the general information requirements throughout the organisation. The second Project Leader was successful in controlling the surge in change-modification requests by directing that they all go through formal channels. This demonstrated the difference in the way the Project Leaders handled this issue. Unlike Project Leader A, Project Leader B exercised an authoritarian style as underpinned by the Confucian ideal of hierarchical order.

This situation at ElevatorTech shows that the involvement of the Chinese employees in the SAP implementation was different from that reported in the literature. The lack of

user involvement in ERP system selection, development or modification has been shown to be counterproductive (Skok & Legge, 2002; Somers & Nelson, 2004; Zhang, Lee, Zhang, & Banerjee, 2002). Consequently limited user involvement could have increased the probability of failure in the ERP implementation in the case study organisation. To add to the potential for failure the Chinese employees in ElevatorTech had perceived only limited usefulness in the SAP system being able to enhance their job performance. However, the findings in the case study suggested otherwise. For example, when problems did occur due to the limitation in the SAP system, the Chinese employees relied on their dynamic relationships to counter the negative effects from the SAP system.

The findings of the case study supported the maintenance of a strong hierarchical culture at ElevatorTech. The successful outcome indicates some benefits for an authoritarian approach to ERP software implementation in a Chinese organisation. The findings also demonstrated the benefits of management interacting with users in a complementary way that did not compromise the Confucian idea of hierarchy with its emphasis on respect, loyalty and listening to those higher in authority. At ElevatorTech, management need to acknowledge the Chinese employees' need for relationship-building to make SAP work in terms of reciprocity also compensating and recognizing those that did well in the implementation.

#### *Uneven Benefits*

It was obvious from the case study that the SAP implementation had benefited some more than others within the same culture. There was a bias towards management benefit rather for people at the lower level of hierarchy positions. That is, it catered for the managerial requirements for a standardised reporting structure across the organisation that could seamlessly extended to the global operations of the company. For the users, the software actually increased their workload. While the SAP implementation did not create uneven benefits in ElevatorTech, it made them more obvious. In the organisation, unequal benefits were viewed as normal and were accepted based on the unequal relationships within the organisational hierarchical structure. The influences from these unequal relationships had existed in the company for a long time and had changed very

little prior to the software implementation. In support of this an informant who had worked in ElevatorTech for more than two decades had accepted the reality that she has to accept orders coming down from people in higher position than her without question. These findings are consistent with high power distance characteristics of a culture where there is an acceptance of inequalities (Hofstede, 1980). It was apparent that the implementation of SAP had not changed the pre-existing structure such as the distribution of authority or power in ElevatorTech. This finding confirms the outcome of research by Sia et al. (2002) on the ERP system as an ambivalent technology of power and has the tendency of perpetuating management power rather than empowerment of users.

At ElevatorTech to qualify their decisions, during SAP training, management emphasized to users the benefits of SAP from a group's perspective rather than at the individual level. They also emphasized that the work of each group would contribute to that of a larger group and ultimately each person would benefit from this cooperative union and the idea of a modern organisation. From a collectivistic point of view, this made it more palatable for the Chinese employees in ElevatorTech to accept the SAP system. It was also highly probable that few employees at a lower level of the organisational hierarchy would reject this qualification from management. This is because in the Chinese culture, it is difficult to challenge anyone with authority, and to do so would cause loss of "face" and shame (Westwood, 1992). To further support this traditional Chinese cultural values emphasize submission to authority, obedience to superior power, and fitting into social hierarchy (Hsu, 1972).

While the high power distance characteristics of the Chinese culture may have made the employees in ElevatorTech accept SAP more readily, it also made them vulnerable to external factors such as uncertainties created from the unique business practices in China. This was because of the deficiencies created by the SAP system which had affected the Chinese employees work practices as well as in responding to the variable circumstances imposed upon them. A further discussion of these effects can be found in the last three themes of the discussion in relation to new uncertainties and managing uncertainties through guanxi.

### 5.3.2. COLLECTIVISM

Collectivism, the second Cultural Dimension (Hofstede, 1980) used in this research is also found to have a positive impact on the SAP implementation in ElevatorTech. This study found that collectivism was important for the coordination and cooperation needed during the SAP implementation in ElevatorTech. The discussion will address this finding through the following sub-themes:

1. Sense of obligations;
2. Maintenance of social harmony; and
3. Consensus building.

#### *Sense of Obligations*

It was evident in the case study that during the implementation, the Chinese employee's obligation to the company (as indicated by the interviewees) had a positive impact on the implementation. For instance, their loyalty to the company meant that employees were prepared to go beyond their normal work obligations to ensure the success of the SAP implementation. In the Chinese culture, people are concerned about fulfilment of social obligations inherent in their relationships (Ho et al., 1991). This social obligation or the obligation to put the company first showed that employees would work for the good of the company even though the SAP implementation created stress. Certainly, the research informants interviewed in the case study felt bound to the value of obligation. This is one of the most important aspects of Chinese Confucianism, that is a sense of duty and responsibility (Scarborough, 1998). Such feelings of obligation are in the roots of their culture. It explained why employees in the case study could endure hard work during the 'painful' implementation process. It has been reported that obligation or sense of duty is a more powerful emotional influence than reliance on law to coerce desired behaviour in a Chinese culture (Liu, 2003). However, obligations are not all one way, they also require repayment and there is a limit to the extent of obligation (Coleman, 1990). In this case study, the company repaid their obligation to the people involved in the implementation by acknowledging them in the company newsletter and providing them with a social gathering and overnight stay at a resort. It reflected the reciprocity of the Chinese practice

in that it is expected of management to look after their members in exchange for loyalty. The situation of management being able to rely on, or even take advantage of a sense of obligation on the part of employees is not new. An earlier research report showed that in a cultural contrast between UK and Chinese managers, it was found that whereas the focus of UK management was on rights and entitlements, the focus of the Chinese management was on obligations (Hampden-Turner & Trompenaars, 1994). A search of the literature has failed to find any reference to the important role of obligation in achieving a successful implementation of a foreign ERP system in an Asian environment.

The findings of this research contradict claims that the implementation of an ERP system would empower users in the organisation (Boff, 2002; Davison & Martinsons, 2002; Sia et al., 2002). In the case study organisation this sense of empowerment was not evident among the Chinese employees. It is possible that this is because the term “empowerment” is a Western concept (McKenna, 1995), and true empowerment of users in China may not be realistic. The strong sense of duty and hierarchy embedded within the Chinese employees made it unlikely that empowerment would occur at ElevatorTech. For the employees, to cooperate is a “duty”, while for management to control is considered their right. Chinese people are expected to see themselves in the context of others and understand the need for reciprocity and obligations. This meant that in this research implementing a Western-designed ERP system into a Chinese context necessitated a cultural reinterpretation of the SAP system.

#### *Maintenance of Social Harmony*

The Chinese collectivistic values of maintenance of social harmony were found to be of importance for managing changes during the SAP implementation in ElevatorTech. In a collectivist and relationship-centred culture in which Confucian social norms are emphasized, behaviour is judged according to conformity to those norms and relationship obligations. If a person behaves badly, he or she breaks those norms and is judged socially. Confucianism is based on a theory of rule by self-restraint (Liu, 2003). The finding in the case study showed that when such culturally-approved self restraint was missing, unregulated and culturally inappropriate individualistic behaviour negatively

impacted the implementation. It was evident when individualism came into play during the implementation, over who should enter the work based serial (WBS) number. The individualistic behaviour displayed was problematic not only for the Project Leader, but also for the SAP IT team as they could not progress further until this issue was resolved. This situation confirmed report that prolonged conflict can impair group performance (Levine & Moreland, 1990). The negative impact of individualism in a Chinese setting is not new. Earlier research by Tjosvold, Law and Sun (2003) on the impact of differences between collectivistic and individualistic values on productivity in China found that teams that developed collectivistic rather than individualistic values achieved cooperative goals. Their analysis led them to believe that cooperative goals helped the teams to discuss their opposing views openly and constructively, which resulted in strong relationships and productivity. In addition the individualistic behaviour displayed by one of the protagonist meant that it made it more difficult to achieve a harmonization of interest. It may be that in the case study collectivism was more difficult to achieve due to the uneven benefits offered by the system. Fear of losing out on the benefits or lack of such benefits might explain why competitive conflict behaviour was present at ElevatorTech. Competitive conflict is where “one succeed, the other is less likely to reach his or her goal” (Tjosvold & Fang, 2004:82). This can frustrate communication and can results in a deadlock or imposed solutions that undermine problem solving and relationships (Tjosvold & Fang, 2004:82). This might explain why the first SAP Project Leader found it almost impossible to resolve this problem.

It has been documented that Asian people prefer to avoid dealing with conflict, whereas Westerners tend to confront conflict directly (Kirkbride et al., 1991; Leung, 1997; Markus & Lin, 1998; Tse et al., 1994). Although Chinese people wish for relationships without conflict, it is part of working in organisations in China as well as in the West (Tjosvold & Fang, 2004). It is common in the life of an ERP project implementation for there to be conflict situations either between individual people or between groups (Elbanna, 2007; Olson, 2004). Without exception, during the SAP implementation in ElevatorTech conflicts were evident.



The different approaches of the two SAP Project Leaders provided valuable insights into Chinese conflict management processes. The results were different when one of them approached conflict resolution through harmonizing of interest rather than open discussions. The first SAP Project Leader attempted a more Western approach, while the second took a more culturally sensitive approach. In Western based literature it has been suggested that there is value in taking an open approach to conflict resolution (Tjosvold & Fang, 2004). A similar approach to this was taken by the first SAP Project Leader. She had both conflicting parties meet face-to-face, and the result was bad confrontation and no resolution to the problem. It is possible that this result may have also been influenced by the individualistic behaviour displayed by one of the protagonist. Another possible explanation can be linked to Chinese cultural values of collectivism. Lee and Dawes (2005) suggested that in a high collectivistic culture, people have a strong urge to maintain social harmony. Therefore it is not unusual for the people in a high collectivistic culture to expect a conflict management style that is non-confrontational and focus on maintaining harmony. This might explain why the face-to-face approach used by the first SAP Project Leader did not result in any resolution despite her efforts. Letting both conflicting parties meet face-to-face is often confrontational where people are expected to assert themselves during the meetings. While it is acknowledged that this can help to reduce miscommunication between each party, it is apparent that this came at the expense of social relationships. According to Ma (2007), a confrontational, direct and task-oriented Western conflict management style is a reflection of the influence from an individualistic society. This approach may have worked well in an individualistic society where people value autonomy, assertiveness, competition, and individual achievement (Hofstede, 1980). However, Western approaches to conflict management may not be culturally appropriate in China. In a collectivist culture like in China, people are wary of open confrontations because relationships are more important to them (Hofstede, 1980). Hence a collectivistic style of managing conflict that is non-confrontational, indirect and reflects concerns for others has a higher chance of success, confirming that Western theories cannot be assumed to apply to a collectivist society like China (Hofstede, 1993).

The approach by the second SAP Project Leader to managing conflict was more in tune with the current cultural climate at ElevatorTech. His initial concern was to understand opposing views. Instead of letting conflicting parties meet face to face, his approach was to meet with them separately to find a practical solution and integrate ideas from both sides. This made the final decision more acceptable to all. According to Bond and Hwang (1986) Chinese strategies for resolving conflicts are characterized by strategies geared to “short-circuit open conflict - the use of indirect language, middlemen, face-saving ploys, a long-range view and flexibility. Strategies such as open debate, which require direct confrontation, are avoided”(Bond & Hwang, 1986:262). The strategy of the second SAP Project Leader may have worked better because his method conforms to Chinese strategies for resolving conflicts. Although avoidance may be seen as unproductive in a Western approach to managing disputes, “it is much more common in East Asian culture than Western cultures” (Friedman & Chi, 2002:5). The success of the second SAP Project Leader confirmed that Western theories cannot be assumed to apply to a collectivist society like China (Hofstede, 1993). In addition, for a collectivist culture, maintaining social harmony and relationships is paramount (Triandis, 1995). The different outcomes by the SAP Project Leaders has highlighted that in an Asian environment engaging with others about problems may be very risky. As shown in the case study, relationships can be damaged, and social harmony disrupted.

### *Consensus Building*

The collectivistic culture in China places value on the goals of a group or society and demands in-group belonging, cooperation, interdependence, and interpersonal harmony (Triandis, 1995). For the Chinese employees in ElevatorTech, a contact is not only a name but also a potential partner or friend in multiple contexts that require continuing and personalized relationships. This study found that the influence of collectivism was positive during the SAP implementation. When a problem was shared across different departments during the software implementation, employees would use collective efforts to solve it. The knowledge gained through personal relationships was regarded reliable and appropriate because of personalization. Not surprisingly, emails (with screen dumps of SAP information) and telephone calls became a continuing and significant form of

communication. This helped to make the Chinese employees of ElevatorTech accept the use of SAP in their daily work. The employees felt that without coordination and cooperation between users from different departments, they would not be able to overcome the constraints of the SAP system. While it is acknowledged that they did not use the software in the way the designers of SAP had anticipated, people from accounting would coordinate with those from the contract management area to overcome the problems they faced in addressing local Chinese business needs.

### **5.3.3. UNCERTAINTY AVOIDANCE**

As stated in the findings, uncertainty avoidance refers to the extent to which members of a society feel threatened by uncertain and ambiguous situations and try to avoid them (Hofstede, 1980). It is related to the anxiety felt when members of a society are confronted with new situations, problems or challenges (Dorfman & Howell, 1988). In the ElevatorTech case study, employees used Guanxi and worked through relationships with colleagues to mediate the uncertainty they faced during the implementation of the new system. Their approach to this situation tends to dispel the myth that Western-designed ERP systems cannot be effectively implemented in an Asian environment. Employees at ElevatorTech relied on interpersonal relationships to handle the negative effects from the unique Chinese business environment and the new uncertainties brought about by the introduction of the western developed software. In the following sections the influence of Chinese uncertainty avoidance will be discussed under the three sub-themes identified in the findings of this research:

1. Uncertainties created from new elements in work environment;
2. Uncertainties created from challenges from Chinese business environment; and
3. Managing uncertainties with guanxi

*Uncertainties Created from New Elements in Work Environment*

Traditionally the Chinese have a high need for certainty and are more likely to avoid creating conflict that could result in uncertainty (Ralston et al., 1995). Individuals with high uncertainty avoidance values feel uncomfortable in unknown or unpredictable situations and therefore they prefer to avoid them (Hofstede, 1980). The adoption of new technology can be risky for the Chinese because there can be many unknown factors associated with it. Further, it has also been reported that the heavy avoidance of uncertainty by the Chinese is linked to their strong desire to maintain social order with a degree of predictability (Chimezie et al., 1993). This need for certainty can have a negative impact on an ERP implementation, such as very high resistance to change (Van Everdingen & Waarts, 2003) or problematic working atmosphere (Palomino Murcia & Whitley, 2007).

The present research showed that the introduction of new work processes in the SAP implementation increased uncertainties among informants at ElevatorTech. This confirmed that technology can be viewed as an ambiguous and risky project for adoption and implementation (Galliers, 1997). However, this did not cause them to reject the new software. Instead the Chinese employees were fast to take actions to fill the information gaps caused by changes in access to certain information, to reduce uncertainty. Consequently this finding from the present research questions the claim that “ERP systems can be used as tools to reduce uncertainty among users with structured business process” (Hwang, 2005:154). Rather the results support that ERP implementations can cause both technical and social uncertainties (Wu et al., 2008). While proponents of ERP systems may argue that the software increases the availability of information to everyone, in reality, the focus is more likely to be about the control of users and not necessarily about empowerment through access to information (Davison & Martinsons, 2002; Okunoye et al., 2008; Sia et al., 2002). Further, hierarchy between management and employee can suppress the empowerment characteristics of ERP systems (Sia et al., 2002). In the present case study, to obtain more certainty, this could explain why those at lower levels in the hierarchy went through great steps to get to know the people holding information outside their immediate area. Based on relationships socially developed from

Chinese cultural values, information was obtained through formal channels such as asking their superior, working through their already established networks, through emails, and also by phone calls. These particular practices distinguished the way in which the Chinese informants used the SAP system. This finding is similar to that reported in the study by Westrup and Liu (2008). They found that the “Chinese workers and managers appear to link information to people rather than to processes” (Westrup & Liu, 2008:438). The findings from the present case study have indicated that any assessment of the fit between culture and ERP systems should take into consideration an emphasis on the active role of people in negotiation and renegotiation of the use of a Western-developed ERP system in a particular culture.

#### *Uncertainties Created from Challenges from Chinese Business Environment*

During this research it was recognized that context would play an important part in effecting the behavior of the informants during the implementation. Previous studies of ERP implementations showed that at a national level environmental factors such as language, economic, legal and political structure can have an impact (Avison & Malaurent, 2007; Hawking, 2007; Sheu et al., 2004a). During this research, recognition of context aided the appreciation of the challenges informants faced in adapting SAP to their local work practices and provided a better understanding of their behaviour. For example, employees in ElevatorTech stressed the importance of relationships with external agencies to make the software accepted by government agencies. In recognition of this knowledge the findings included the fact that there was a meeting of contextual factors that came into play during the SAP implementation in ElevatorTech in addition to the effect of Chinese cultural values. The application of contextual factors highlighted that environmental effects such as local laws and policies hindered the adoption of SAP in ElevatorTech when they were not managed properly. It also showed the importance of Chinese culture, such as Guanxi or relationships, to mediate the environmental effects that could have hindered the software implementation. This finding has two important implications. Firstly, the findings indicated that an understanding of local laws and practices can help the choice and assessment of ERP packages. Secondly, the findings served as a caution to researchers who glibly assume that Chinese culture has a negative

impact on the implementation of Western-developed ERP systems. This is an important contribution of this research because few studies have examined the combined effects of Chinese environment and the interplay of specific national cultural values on an ERP implementation, especially from a user-perspective. It also confirmed the value of Situated Culture Theory to move “to a better understanding of contextualism in the cross-cultural IT environment” (Weisinger & Trauth, 2002:306).

An extensive search of the literature failed to locate articles that attempted to compare the degree of uncertainty between Western and non-Western users during a SAP implementation. However, from the case study there is evidence to indicate that informants at ElevatorTech experienced increased uncertainties created by additional requirements of local taxation requirements and the heavy reliance on the flow of documentation. It is highly unlikely that this situation would arise during a SAP implementation in the West. Therefore it was not surprising that in the case study informants at ElevatorTech were apprehensive in using the software in its totality because its deficiencies created an uncertain work environment. The use of SAP to fulfill local reporting needs was evidently not a priority at ElevatorTech. This was because there were so many different types of local reports needed and it was neither possible nor economic to modify the software to generate these reports automatically. This could explain why informants in the case study used the system in a way that was not anticipated by the developers of SAP. Instead of avoiding the use of SAP and going back to the old system, employees in ElevatorTech had a pragmatic approach to the problem. Work-arounds were developed to achieve local reporting needs. This involved getting reliable information they needed from the SAP system via screen dumps in E-mails. This method allowed them to route information that was essential for their daily work which would have otherwise been slower to access because of the inflexibility of the SAP processes or because of their lack of accessibility to information from the software. To assure the effectiveness of work-arounds the cooperation and involvement of people from different departments was essential. This approach by users to overcome a deficiency of SAP in the local work environment may be of significance for multinational companies seeking to standardize an ERP package in their Chinese subsidiaries. This aspect of the findings

highlights the need to factor in time for users to adapt to the system and identify areas that might require the users to fill in the gaps left by the SAP system. In such situations forward planning is essential to assist users to overcome the problems with deficiencies in regard to the local environment.

### *Managing Uncertainties with Guanxi*

The findings demonstrated the pivotal role of the Chinese value of Guanxi as a cultural resource to alleviate uncertainty faced by the employees at ElevatorTech. The findings support the theory that people from a high uncertainty avoidance culture try to avoid ambiguous situations (Hofstede, 1980). Through their guanxi or relationships with other employees, they were able to make the SAP system more acceptable for daily work use. This may explain how the Chinese employees were able to adapt to the software instead of rejecting it. In order to resolve uncertainties created by the limitations of the SAP system, employees in ElevatorTech sought solutions by asking advice from their superiors and colleagues. They also relied on guanxi to make SAP more acceptable to external agencies. This outcome is contrary to the conventional belief that people with high uncertainty avoidance are less likely to adopt new technology because of the many unknown factors associated and the risks involved (Bassett, 2004; Chadhar & Rahmati, 2004; Feng, 2005a; Hwang, 2005; Palomino Murcia & Whitley, 2007).

The way in which the SAP implementation in ElevatorTech unfolded showed that the need to reduce uncertainty is not necessarily a bad thing. For instance, the implementation had introduced a need for the Account Manager to provide liaison with external agencies to ensure the acceptability of SAP. A recent report from KPMG in China may explain why such a liaison was important. In relation to China this report found that in order for a company to qualify as a VAT General Taxpayer, “a company must demonstrate to the satisfaction of the tax bureaux that it has a reliable accounting system” (Ho, 2006:14). In the case study, an interview the Finance Manager explained that the complex taxation situation in China was the reason why attention was given to the company’s relationships with external agencies, and highlighted the need for her active involvement. The need to have a close working relationship during the

implementation with the tax bureau and other government agencies became a recurrent theme in subsequent interviews. As the implementation progressed the Finance Manager continued to maintain close liaison with these agencies to promote their acceptance of SAP. A closer contact with the government agencies would enhance the credibility and trust of the results coming from SAP. A firm working relationship between company employees and those in local government were essential to the chances of SAP being accepted externally. It could be argued that the trust built through *guanxi* is transferred to greater acceptance of SAP's reports by the Chinese government agencies. This is important because "State bureaus and government officials have traditionally used their discretionary power to authorize/support or forbid/hinder commerce" (Martinsons, 2008:337). The case study has demonstrated that relying on personal arrangements is very important especially since government agencies in China have a lot of "discretionary authority" (Martinsons, 2008:335). This aspect of the findings also confirmed the belief that in China it is the quality of the relationships between people that matters and determines what happens, not the influence of a formal and impersonal system (Furnham, 2005).

#### **5.4 AN OVERVIEW OF THE RESEARCH**

At the beginning of this chapter it was established that this research has fulfilled its objectives. Following on from this, the overview of the research will support this claim by uniting the research approach with the findings.

This research was established as being exploratory in its approach because little is known about the potential impact of Chinese culture on a Western-developed ERP system implementation. While there is evidence of research in the literature that has examined the use of national factors involving different legal, economic, social and political perspectives in relation to ERP implementations, it appears very few studies have been extended to include specific national cultural values. Further, support for the adoption of an exploratory approach comes from the very limited availability of examples of a qualitative approach in this area. This is because most of the studies that had used Hofstede's (1980) theory had adopted a quantitative approach (Ford et al., 2003). It is



proposed that the adoption of an exploratory approach could establish the basis for future research.

The findings in the case study, such as the positive influences of the high power distance in Chinese culture on the acceptance of a Western-designed ERP system at ElevatorTech clearly established the importance of national culture as a factor in IS implementation. It confirmed national culture is critical to ERP implementation in multi-national settings (Burch, 2006; Rajapakse & Seddon, 2005; Sheu et al., 2004b; Soh & Sia, 2004; Waarts & Everdingen, 2005; Yen & Sheu, 2004). In examining the implementation of a Western-developed ERP system in a Chinese environment, this research has demonstrated that it represented a cross-cultural phenomenon where there was a cultural movement at a national level. This supports the view that when “the implementing organization is from a different country than that of the ERP package’s main markets, country level differences need to be identified” (Soh & Sia, 2004:379).

Adoption of a national cultural perspective in this research was reinforced by the fact that most of the findings reflected the underlying characteristics of Chinese culture. These included the influence of Confucian philosophy on the Chinese values of relationships (guanxi), emphasis on harmony and the role of hierarchy.

Hofstede’s (1980) National Cultural Dimensions has been widely used in studies of cross-cultural movement (Kocsis, 2005). It also proved to be useful in this research because it reflected the specific Chinese cultural values. Simplicity of use was another reason for the application of this theory, and in addition “lies in its clarity and parsimony in isolating cultural-general dimensions” (Fang, 2003: 363). For the purpose of this research using this framework as a lens, three of the four National Cultural Dimensions were applied: power distance, collectivism and uncertainty avoidance. It was an appropriate choice when it aptly captured many aspects of Chinese cultural values which were influential during the implementation.

For example, the way in which high power distance was used to enforce the uptake of ERP at ElevatorTech. This confirmed Hofstede's view that in a culture with a high power distance, decisions can be made by superiors with little resistance from their subordinates. This high power distance can work to the benefit of multinational companies where the transfer of technology is mandatory. In addition, the findings of this research demonstrated that a further dimension, collectivism, overrode individual interest, becoming an important tool to understand why the Chinese values of relationships and harmony were particularly high.

During this research it was recognized that context plays an important part in effecting the behavior of the informants during the implementation. Previous studies of ERP implementation at a national level showed that environmental factors such as language, economic, legal and political structure can have an impact (Avison & Malaurent, 2007; Hawking, 2007; Sheu et al., 2004a). However, because the theory of National Cultural Dimensions (Hofstede, 1980) ignores the context in which the implementation takes place, the Situated Culture theory (Weisinger & Salipante, 2000) was used to address this issue. In support of this, few studies have examined the combined effects of Chinese environment and the interplay of specific national cultural values on an ERP implementation, especially from a user perspective. Further, Situated Culture theory "holds that cultural understanding is locally situated, behavioral and embedded in everyday, socially negotiated work practices" (Weisinger & Trauth, 2002:306). In this research it aided the appreciation of the challenges informants faced in adapting SAP to their local work practices and provided a better understanding of their behaviour. The situation at ElevatorTech is confirmation that ERP with its "encapsulated reusable best business practices" (Rasmy et al., 2005:3), may not be "best practice" in a Chinese environment. Within the case study, informants relied on their relationships and initiative to make SAP work in their environment. For example, they used their relationships with external agencies to make SAP accepted by government agencies. This is contrary to a report that employee commitment to an organisation is low in a collectivistic culture (Rajapakse & Seddon, 2005). These findings further confirmed the value of Situated

Culture theory “to a better understanding of contextualism in the cross-cultural IT environment” (Weisinger & Trauth, 2002:306).

In summary, this research has shown that by using three of the four Cultural Dimensions of Hofstede as well as the theory of Situated Culture proved to be beneficial in gaining an understanding of both cultural and situational factors.

A single interpretive case study was used to explore the impact of culture during the implementation of a Western-developed ERP system in a multi-national company based in Shanghai. This approach provided an insight into the experiences and thoughts of the people on the ground affected by this implementation. For example, it showed that while the implementation of an ERP system had introduced new elements into their work practices and created new challenges for the informants, they did not see these changes and challenges in terms of cultural differences and mismatches. Instead, they saw it as a change that must be addressed.

While it is acknowledged that a quantitative approach can make a contribution because of its positivist framework, it often leads to the need to “hypothesize differences in level or form of constructs; hypothesize different relationships between the construct and specific outcomes; and test specifically for those hypothesized differences.”(Gales, 2003:136-137). The outcome often results in an attempt to explain implementation problems as evidence of cultural differences. While these findings can be valuable, often issues important to the participants are not considered in the hypothesis or questions. This highlights that a quantitative approach has shortcomings in “depth and breadth that needed urgent attention” (Molla & Loukis, 2005:10).

To address this shortcoming this research has applied a qualitative method to provide an in-depth insight into the real issues impacting a SAP implementation in China. It enabled informants to reveal their individual experiences and feelings about the challenges confronting them. This was to an extent that it was observed that when responding to sensitive issues, informants tended to speak softly or laugh, so indicating their personal

unease. This implies that direct contact allowed the capture of subtle messages, providing an understanding of their reactions and behaviours during the implementation. The findings of this research have supported the use of a qualitative approach, providing a better understanding of the problems associated with a SAP implementation in an Asian environment. It confirmed this approach was appropriate in terms of soliciting more meaningful data (Gamble & Gibson, 1999; Vaughan, 1999) and highly suited for a study of social and cultural phenomena (Kaplan & Maxwell, 1994). It also confirmed that a qualitative approach can provide a better understanding of “social phenomena than would be obtained from purely quantitative data” (Silverman, 2000:8).

In line with a qualitative approach this research adopted interviews as the principal data collection technique. The informants included users from different departments and positions in the company, as well as people from SAP IT teams, including the two SAP project leaders, consultants and IT members. The interviews were unstructured wherein they were asked to describe their experiences with the SAP implementation. This reinforces the desire in this research to achieve a free and open approach to data collection. The interviews were conducted on two occasions, beginning from the time the informants were prepared for the implementation and following on to their initial contact with SAP in their work environment. The prolonged contact with informants supported the view that in the Chinese culture unless you have gained the trust of the informants, it is unlikely they will let you in on their feelings and talk about sensitive issues especially if it has to do with management.

Further, outside the immediate work environment, having lunch together, working in the same location with some of the informants, or simple things like taking the same bus ride home help promote essential relationships. This can make a considerable difference in terms of making informants more comfortable and open during interviews. For example, second interviews were generally lengthier and informants were observed to be more relaxed and candid about their experiences. It has been recommended that the interviewer must instil trust in the informants before the informant feels comfortable about revealing information (Speziale & Carpenter, 2003).

The usefulness of a qualitative method in this research was confirmed in the findings where informants were more concerned about their obligation to the company to make SAP work than to the deficiencies of the SAP system. The findings in the case study confirmed that results from a method that does not impose any prior structure or categorization can aid informants to discuss reactions, opinions and behaviour on any particular issue (Ghauri & Gronhaug, 2002; Hitchcock & Hughes, 1995).

In addition to the interviews, the use of non-participant observations, field notes and documentation were found to be a beneficial supplement to the interview data in this research. For example, it would not have been possible to discover how informants used different approaches to the use of SAP had they not been observed in their daily work.

The Seven Steps of Phenomenological Analysis (Colaizzi, 1978) was adopted to analyse the qualitative data gathered during this research. While it is acknowledged that this approach has not been widely used and tested in IS research, it has been extensively used in other disciplines. In particular: nursing (Magnussen et al., 2008), psychology (Moustakas, 1994), education (Stone, 1978) and management (Sanders, 1982). However, the philosophical principles underlying Colaizzi's (1978) method, namely phenomenology have been used in IS evaluation (Introna & Ilharco, 2004), games analysis (Mallon & Webb, 2006), Business Process Reengineering (BPR) (Moreno Jr., 2001), culture and team dynamics (Harmer, 2003) and developing Web-based IS (Pradip & Jacob, 2004). The steps described in Colaizzi's (1978) framework are not exclusive to that method, similar steps are also found in other methods (Hitchcock & Hughes, 1995; Strauss & Corbin, 1998). However, these other methods do not spell out the process in such clarity. Data analysis and coding can be complex and daunting, especially given the immense amount of information gleaned from qualitative interviews. The Colaizzi (1978) method with its emphasis on steps can help manage data effectively and rigorously.

In this research, Colaizzi's (1978) framework provided a much needed systematic framework to guide the analysis and helped summarize the major aspects of the implementation from a Chinese perspective. It provided a step by step guide through the data analysis and it has been acknowledged as the most user-friendly of the qualitative analysis methods (Mapp, 2008). It offered a clear prescriptive process that could be easily followed to ensure a rigorous data analysis. Another advantage of Colaizzi's (1978) method was that it encouraged the completion of each step in sequence, thereby ensuring that the analysis had gone through a rigorous process. In this research it was used to reduce collected data from the interviews, so revealing patterns, features, attributes and meanings the informants experienced during the implementation. In addition the Seven Steps Framework of Colaizzi (1978) has been acknowledged in cultural research (Harris, 2003; Magnussen et al., 2008; Suhoza, 2006). Further, Colaizzi's (1978) method calls for the transformation of naïve descriptions of informants and the implicit aspects of each meaning unit to those that could be easily understood (Colaizzi, 1978). This was particularly relevant in the present research because many informants who were to be direct users of this system were non-English speaking. Accordingly, this assisted in addressing what could have been a problematic issue, and allowed analyses where non-English language was used, thereby allowing the production of a rich description which otherwise would not have been possible.

Overall, the application of the Seven Steps framework (Colaizzi, 1978) made it possible to bring out the thematic structures representing the informant's experiences of adopting and using SAP in their work practices. Nine key themes were identified, and for the purpose of presenting these findings the three cultural dimensions: power distance, collectivism and uncertainty avoidance were used to frame the result to provide clarity from which conclusions could be drawn.

The main finding in this research indicated that culture had a positive effect on the ERP implementation at ElevatorTech. The findings showed that even though there were new uncertainties created from the Chinese business environment and new elements in the work environment, there was little resistance to the implementation. This outcome is contrary to reports that countries with a high uncertainty avoidance culture are less likely to adopt new technology. On the basis of the above finding it may be that local environment conditions rather than cultural factors can contribute to implementation problems. Accordingly, there is a need to factor in time for the users to adapt to the system.

The findings also showed that power distance contributed to the positive outcome of the implementation. It was evident in the case study that management's objective to implement the SAP ERP system was made easier by the high power distance factor in Chinese culture. This is contrary to reports that countries with a high power distance are more likely to reject the system (Rajapakse & Seddon, 2005). This aspect of the findings indicated that a strong hierarchical culture such as high power distance prevented informants from resisting the implementation. This implies that culture, instead of being an obstacle to the implementation was in fact a facilitator.

Within ElevatorTech, the informant's sense of obligation to the company and to their group had a positive effect on the implementation. A strong sense of maintaining the cultural dimension of social harmony also contributed to a smoother implementation of SAP. The need for the maintenance of social harmony proved to be instrumental in overcoming conflicts that arose during the implementation and also assisted in reaching consensus during the many meetings called to address problems. Relationships between company employees and those in local government enhanced the chances of SAP being accepted externally.

It has been argued in the literature that collectivism has a negative impact on a ERP implementation, because people in a collectivistic culture are less likely to make an effort to learn and understand the software (Rajapakse & Seddon, 2005). Contrary to this view the findings in the case study indicated that the Chinese employee's sense of obligation to the organisation inherent in their relationships actually made it imperative for the informants to learn and use SAP in their daily work. They felt bound to the value of obligation and this value is in the roots of their culture. Culture has been identified as one of the important factors influencing the success of ERP systems (Chadhar & Rahmati, 2004; Leidner & Kayworth, 2006; Rajapakse & Seddon, 2005).

While prior research has revealed that Western-developed ERP systems were not suitable for the Chinese market (Wang et al., 2005), the research reported in this thesis has important implications for the study of culture as a form of facilitator their successful implementation. This research demonstrated that it is possible to maintain the integrity of the ERP system by relying on the people to adapt, and appropriate it to their local work environment. This finding could have implications for multinational companies seeking to transfer their home country ERP systems to their foreign subsidiaries. If the implementation is approached appropriately, then culture can be used as a positive facilitative factor to help with the implementation instead of being an impediment.

### **5.5 *COMPARISON WITH EXISTING RESEARCH***

Based on the above section the aim now is to make a comparison with previous research that has shared the same topic as addressed in this thesis approached from a national culture perspective. That is, in making this comparison this section will show that the scope and approach used have proved fruitful in achieving the goal of establishing areas for future research. A further aim is to demonstrate that defining this current research as exploratory has been vindicated. Before proceeding into this discussion, it must be acknowledged that there are a number of perspectives on the influences of culture on ERP implementation (Boersma & Kingma, 2005; Krumbholz et al., 2000; Liang et al., 2004; Martinsons, 2004; Molla & Loukis, 2005; Newman & Zhao, 2008; Palomino Murcia & Whitley, 2007; Rajapakse & Seddon, 2005; Soh et al., 2000; Van Everdingen



& Waarts, 2003; Zhou-Sivunen, 2005), however only a small number specifically used the national culture perspective.

A review of recent literature identified work in the area of ERP implementation in a foreign environment that has shared the commonality of a national cultural perspective (Van Everdingen & Waarts, 2003; Rajapakse & Seddon, 2005; Palomino Murcia & Whitley, 2007). These included Van Everdingen and Waarts (2003) multi-country study on the adoption of an ERP system and the effects of national culture; Rajapakse and Seddon (2005) paper on ERP adoption in developing countries in Asia; Palomino Murcia and Whitley's (2007) paper on the effects of national culture on ERP implementation. Including the present research, all four studies drew on the National Cultural Dimensions (Hofstede, 1980). However, it is necessary to determine the extent to which these have been applied in each study. For each of the reference papers this issue will now be examined.

The first reference paper, Van Everdingen and Waarts (2003), used all four cultural dimensions, namely collectivism, power distance, uncertainty avoidance, femininity and masculinity and added one more recently identified: Long-term vs. Short-term (Hofstede & Bond, 1990). Only two dimensions, collectivism and power distance, were applied in the second paper (Rajapakse and Seddon, 2005). The third paper (Palomino Murcia and Whitley, 2007), used three dimensions, namely, collectivism, power distance and uncertainty avoidance. The research presented in this present thesis applied three of the dimensions: collectivism, power distance and uncertainty avoidance.

In continuing the above comparison it is necessary to further pursue the application of National Cultural Dimensions and how they influenced the various research findings. The findings of the first paper by Van Everdingen and Waarts (2003) were that higher levels of uncertainty avoidance, masculinity and power distance dimensions negatively influenced the ERP adoption and implementation decisions, while higher levels of long-term cultural dimension had a significant positive influence. The main finding in the second paper was that the case studies revealed a clash of cultural forces in power

distance and individualism/collectivism between those cultural values and assumptions embedded in Western ERP products and those of the Asian adoptees. These clashes were used to explain some of the problems in ERP adoption in developing countries in Asia. The findings in the third paper showed that high power distance had a negative impact on ERP implementation. This was attributed to a reluctance of users to put forward their ideas and innovations. Further, the people involved in the ERP implementation preferred to be consulted before making decisions, so extending the implementation timeframe. In relation to high uncertainty avoidance they found that it resulted in poor punctuality as a demonstration of lack of respect for the consultants. This had a negative impact on the ERP system implementation. Collectivism was found to have had no influence.

In the present research, all three cultural dimensions were found to have a positive effect. Collectivism was important for group cohesion and maintaining harmonious working relationships which assisted in expediting the implementation. In regard to power distance this dimension was found to have a positive effect because management used this dimension to enforce SAP use and acceptance. In regard to the dimension of low uncertainty avoidance, user acceptance of SAP in the case study was attributed to their acceptance of uncertainty and ambiguity in their environment. In China, rapid economic growth and the progress of industrialization and introduction of technology has exposed informants to changes and new ideas from other countries.

In summary, the findings of the research examined claimed different impacts of the influences of the National Cultural Dimensions. For collectivism there was a diversity of findings. From a negative perspective, Van Everdingen and Waarts (2003) found that collectivism was linked with longer or delayed decision making processes which negatively affected the ERP implementation progress (Van Everdingen & Waarts, 2003). Collectivism was also linked with low employee commitment and low acceptance of change (Rajapakse & Seddon, 2005). On a more neutral side, collectivism was found to have no effect on ERP implementation (Palomino Murcia & Whitley, 2007). In this research collectivism, with its emphasis on group cohesion, was found to have had a positive effect on the implementation of SAP.

For the first three papers power distance was found to be negatively associated with the ERP implementation. In the first it was linked to subordinates taking less initiatives (Van Everdingen & Waarts, 2003). Its influence was found to be similar in the third reference research where power distance was shown to be linked to a lower tendency of users to come forward with new ideas and innovations (Palomino Murcia & Whitley, 2007). While still finding a negative influence on ERP implementation from this cultural dimension the second reference paper attributed it to a centralized decision-making structure and low level of accountability and discipline in Asia (Rajapakse & Seddon, 2005). Once again in the present research this dimension was found to be a positive influence, where management used their power to enforce acceptance of the software.

In two of the papers referred to above, the third dimension, high uncertainty avoidance, was negatively associated with ERP implementation. The first linked it to a constraint of innovation (Van Everdingen & Waarts, 2003), while the Palomino Murcia and Whitley (2007) paper linked it to poor punctuality and a difficult working atmosphere (Palomino Murcia & Whitley, 2007). This dimension was not applied in the second example of research (Rajapakse & Seddon, 2005). In the present research it was found that low uncertainty avoidance was closely aligned with low resistance to change, a characteristic of the Chinese culture. Accordingly, it was a positive influence on the acceptance of the SAP implementation.

The fourth cultural dimension, masculinity and femininity, was only applied in one example (Van Everdingen & Waarts, 2003). While it was hypothesized that innovation was more likely in countries with high masculinity this was found not to be the case (Van Everdingen & Waarts, 2003). Their statistical results showed that high femininity have a significant negative impact on ERP acceptance. The same authors also used the newly identified dimension of long-term versus short term orientation. They found the long-term dimension had a positive influence on ERP implementation.

All three papers concluded that culture had a negative impact on ERP implementation or penetration. In contrast, the present study found that culture had a positive impact on the implementation of a Western-developed ERP system. Apart from the different influences of cultural dimensions, variation in the results must also be considered in terms of the research objectives, the country being studied, participants, methodology, analysis technique and environment.

Each of the papers reviewed had a different objective. The first examined the adoption of ERP systems in ten European countries. The second endeavoured to explain the low adoption of ERP in Asia, while the third endeavoured to examine the problems with ERP implementations in Switzerland and Colombia. The present research explored the impact of culture on ERP implementation in China.

The few studies that have been conducted on the topic of ERP implementation from a national cultural perspective have been undertaken in a diversity of geographic locations. These are: 10 European countries (Van Everdingen & Waarts, 2003), Sri-Lanka (Rajapakse & Seddon, 2005) and Switzerland and Colombia (Palomino Murcia & Whitley, 2007). The present research has added a Chinese perspective.

The differences in outcome can also be attributed to the positional levels of the people from whom the data were collected. The participants in the research of Van Everdingen and Waarts (2003) were mainly from management levels. It could be argued that such participants will differ in their views from those at an operational level and more likely to directly experience the impact of the implementation. The Palomino Murcia and Whitley (2007) data on the user's perspective on the implementation were gathered from a third-person account and not directly from the user's perspectives. This included ERP developers and consultants (Palomino Murcia & Whitley, 2007). Once again, those at the operational level were ignored. As with the Rajapakse and Seddon's (2005) paper, this current research had a focus on people directly affected by the implementation. The majority were users at clerical, shop floor and middle management levels while others were from the SAP implementation team, including the project leaders and IT team.

In terms of methodology, including the present research, two papers used a qualitative approach (Palomino Murcia & Whitley, 2007). Van Everdingen and Waarts (2003) used a quantitative approach, while Rajapakse and Seddon (2005) used a mixed method involving both qualitative and quantitative approaches. For both the present research and the Rajapakse and Seddon (2005) paper a case study approach was employed. In the adoption of a qualitative approach, Palomino Murcia and Whitley (2007) used interviews that involved emails and telephones contacts as well as face-to-face contact. In the present research face-to-face interviews were used fulfilling the aim of gathering information based on the actual experiences of the proposed users of the software. Van Everdingen and Waarts (2003) distributed surveys to a range of industries located in different countries, while Rajapakse and Seddon (2005) employed interviews as well as surveys for data collection.

In analysing the data, Palomino Murcia and Whitley (2007) used a mixed analysis method that drew on the principles of data reduction (Miles & Huberman, 1994) as well as grouping the data into three straight-forward themes of “organisation”, “team project” and “individual users”. The present research followed a highly structured data analysis method: the Seven Steps of Phenomenological Analysis (Colaizzi, 1978) for analysing qualitative data. Van Everdingen and Waarts (2003) used statistical analyses: correlations and multiple regression. For data analysis Rajapakse and Seddon (2005) used open coding, classifying and pattern matching (Miles & Huberman, 1994).

In the research examples examined in this section the environmental context was not considered. In this research Situated Culture Theory (Weisinger & Salipante, 2000) was used in addition to the National Cultural Dimensions (Hofstede, 1980) to enhance the understanding of the Chinese environment and its impact on the informants. Its usefulness was confirmed in the findings in terms of how the context or the environment in China played a part in the implementation which in turn could be used to explain some of the behaviour of the informants. A lack of understanding of the environment could possibly have led to the perception of cultural differences as the cause of implementation

problems, whereas in this study, these were found to be more likely caused by environmental factors and the deficiencies and inflexibility of the SAP software.

The above section has been beneficial in highlighting the complexity of the factors that can be involved in cultural studies that examined ERP implementation in a foreign environment. It has demonstrated the diversity of approaches that have been used in the reference papers that have adopted a national perspective of culture. Further, it has offered a comparison between the present research and the references papers. Finally, it has highlighted that the present research has extended to take into account the environmental factors that were obviously important in this research.

## **5.6 CONCLUSIONS**

The primary purpose of this research was to study the impact of the implementation of a Western-developed ERP system (SAP) in an Asian environment from the local Chinese perspective. The finding of this research was that culture had a positive influence on the implementation.

The National Cultural Dimensions (Hofstede, 1980) were used as a lens to obtain a meaningful insight that drew together cultural values and the ERP implementation. The findings of this research reinforced the usefulness of Hofstede's theory in understanding how the Chinese cultural values of collectivism, power distance and uncertainty avoidance came into play during the SAP implementation. The findings reflected an understanding of the underlying characteristics of Chinese culture including the influence of Confucian philosophy on the Chinese values of relationships (guanxi), the emphasis on harmony and the role of hierarchy.

In reporting the main finding of this research it needs to be acknowledged that no single dimension influenced the outcome exclusively. Within this research all three dimensions interacted to form this result. In the Chinese culture, high power distance has close relationships with the collectivism dimensions. Within the collectivist dimension individuals learn to respect and fit into the hierarchy because the Chinese culture values harmony in interpersonal relationships (Cheng, 1987). A good example of the interactive effects of these cultural dimensions was the way in which high power distance facilitated the uptake of SAP and when applied in combination with collectivism overrode individual interest during the implementation and thus significantly assisted in the process of organisational acceptance of the software in ElevatorTech. In addition, when ambiguous or uncertain situations arose during the implementation, the relatively high uncertainty avoidance level mediated the negative effects in the work environment. Employees in ElevatorTech were found to adjust to the SAP system through their Guanxi or relationships with other employees to make it more acceptable for use in their daily work. In times of change and uncertainty, Chinese information networks and relationships can provide the stability needed for an ERP implementation. For example, to reduce uncertainties, employees in ElevatorTech were found to form close relationships with external agencies so as to alleviate any negative effects that could have been created by the implementation. This research extends previous studies by highlighting the collective effects of the relationships between the three Cultural Dimensions. This becomes evident when considering the interaction between power distance and collectivism. The findings from the case study showed uncertainty avoidance behaviour also came into play along with power distance and collectivism to alleviate the uncertainties surrounding the implementations. This suggests that the influence of culture may be less straightforward.

In addition it was recognised that external environmental factors played an important role during the software implementation. These included the influences of government, customers, and other external reporting requirements. To address these contextual issues Situated Culture Theory (Weisinger & Salipante, 2000) was used in this research. The findings in the case study indicated that this theory with its emphasis on the need to

understand the context provided a means of identifying the obstacles faced by the users through an understanding of their overall work environment. “if you do not understand the context you will always misinterpret the embedded situation to a greater or lesser extent” (Holden & Von Kortzfleisch, 2004:129). This proved to be important because it showed that environmental factors and deficiencies in SAP to meet local reporting needs can create more uncertainties for the Chinese employees in ElevatorTech.

In the academic literature, few studies have examined ways to incorporate new ideas and technology from other cultures into their environment (He et al., 1997; Wang & Chen, 2006a). In contrast the present research has investigated this concept, and through the case study provided a clear insight into how this was achieved. The findings showed that using Chinese cultural values was a more appropriate strategy for the acceptance of a Western-developed ERP system than trying to change the Chinese culture or adapt it to fit those of the system. Further, using a qualitative approach with unstructured interviews enabled informants to freely identify issues important to them that took into consideration their environment, the events they faced and the resultant behaviour. This provided a greater understanding of the influence of their culture and its links with the National Cultural Dimensions (Hofstede, 1980). This has served to reinforce the notion that a qualitative method was appropriate for this study. It allowed a comprehensive understanding of the problems associated with the SAP implementation in a foreign environment. The findings provided new insights into an appreciation of different cultural values and an understanding on how employees at ElevatorTech intuitively applied their cultural values as problem-solving tools. As such this presents opportunities for future research with a focus on how culture could be used to support the implementation of new technologies.



### **5.7 REVIEW OF LIMITATIONS**

Previously time and financial constraints were mentioned as potential limitations of this research. While it would have been desirable to extend this research to a longitudinal study to extend to the post-implementation stage, these limitations made it impossible. While this was unavoidable it did preclude an opportunity to determine whether the strong collectivism of the Chinese culture of the informants persisted over the long term. It is also possible that the outward appearance of harmony in the workplace belied a complex set of social relationships that might not have been detectable during the fieldwork.

It was acknowledged in Chapter 3 that a single interpretive case study can have limitations. This was true in this research. Undoubtedly, the interpretation of the data may include bias based on the beliefs and values of the researcher. However, in recognizing that this could occur, care was taken to minimize its effect on the outcome. In addition, a single interpretive case study cannot be generalized to the wider population.

### **5.8 REVIEW OF CONTRIBUTIONS**

At the beginning of this thesis it was stated that this research would make contributions to theory and practice in the IS field. In this section this proposal will now be reviewed.

The objective of this research was to examine the implementation of a Western-developed ERP system from a local Chinese informant's perspective. The aim was to provide a deeper understanding of the dynamics of the local culture within this environment. The research was conducted based on an exploratory approach that examined the situation from a qualitative perspective. This applied three of the four National Cultural Dimension (Hofstede, 1980) and the Theory of Situated Culture (Weisinger & Salipante, 2000) to examine the combined effects of the Chinese environment and the interplay of specific national cultural values during the software implementation in ElevatorTech. With the completion of this research the contributions it has made will now be presented.

### 5.8.1. CONTRIBUTIONS TO THEORY

From a theoretical perspective this research has shown that Situated Culture Theory provided a complementary research perspective to National Cultural Dimensions Theory.

National Cultural Dimensions Theory (Hofstede, 1980) has been widely cited in IS studies (Ford et al., 2003). While it is acknowledged that this theory can contribute to knowledge on the impact of culture on ERP implementations, like any theory, it has its limitations and weaknesses. More specifically, it assumes that culture is static over time and that the culture within a nation to be homogenous (Myers & Tan, 2002). It is possible that this can have an impact on research findings. For instance, a review of recent studies that had used only Cultural Dimensions Theory (Hofstede, 1980) to examine the impact of culture on ERP implementations has shown that the outcome often resulted in an attempt to explain implementation problems as evidence of cultural differences (Van Everdingen & Waarts, 2003; Palomino, Murcia & Whitley, 2007). The findings in the case study have served to suggest that other theories should be incorporated to accomplish a more representative account of the impact of culture on ERP implementations. In this regard, the findings in the present case study clearly showed that Situated Culture Theory (Weisinger & Salipante, 2000) complemented the National Cultural Dimensions Theory (Hofstede, 1980). It extended the focus on the behaviour of the Chinese employees in the cultural context of their work environment so addressing the traditional Hofstede's (1980) view based on static cultural assumptions.

Further, the case study illustrated that using Situated Culture Theory (Weisinger & Salipante, 2000) together with Hofstede's (1980) theory, it is possible to get beneath the surface of the three Cultural Dimensions (Hofstede, 1980): power distance, collectivism and uncertainty avoidance, to the level of actual negotiated behaviours influenced by contextual factors. The reliance of Chinese businesses on hard documentation influenced how individualism/collectivism, power distance, and uncertainty avoidance played out during the SAP implementation. The need of employees at ElevatorTech for certainty was largely influenced by new work requirements and challenges that confronted them during the implementation.

Situated Culture Theory (Weisinger & Salipante, 2000) complemented the application of Cultural Dimensions Theory (Hofstede, 1980) to help understand the influences of contextual factors and relate these to specific national cultural values during the ERP implementation. It provided a means “to gain a better understanding of contextualism in the cross-cultural IT environment” (Weisinger & Trauth, 2002:306). This contribution was demonstrated in the result showing how a specific situation could be meaningful to the Chinese people and effect how they behaved. For example local environmental conditions and the deficiencies in SAP required users to use the software differently in ways to which the developer originally anticipated. In summary, this research has contributed to theory by analysing this case study in the context of a specific Chinese environment. It has demonstrated how the employees in the case study used their traditional cultural values when work and local environment pressures came into play during the implementation. This has served to highlight the need to understand local laws, cultural variations and practices in China and cautioned against attributing implementation problems to culture. This is an important contribution because few studies have examined the combined effects of the Chinese business environment and the interplay of specific national cultural values on an ERP implementation, specifically from a user perspective.

To the best of the author’s knowledge, this research is the first study to conduct such a theoretical and empirical examination on this topic combining the application of National Cultural Dimensions (Hofstede, 1980) and Situated Culture Theory (Weisinger & Salipante, 2000). In addition, the application of an exploratory and qualitative approach has made a contribution to theory. As exploratory research focussed on a national culture perspective this study has achieved its objective and established the basis for future research (Neuman, 1980). The use of a qualitative approach has added to knowledge in the IS field where little attention has been paid in relation to the implementation of a foreign developed ERP system in an Asian work environment. In summary, this research has made some valuable contributions to theory.

### **5.8.2. CONTRIBUTIONS TO PRACTICE**

Little is known about ERP implementation in developing countries (Molla & Loukis, 2005) especially in the Asian region (Hawking, 2007). This research has contributed by providing additional knowledge by means of a unique insight into the dynamics of Chinese culture through an examination of the implementation of a Western-developed ERP system from the perspective of local Chinese informants.

From a practical perspective this research has shown that culture did not cause rejection of a Western-developed ERP system in a Chinese work environment. Rather, it had a positive effect on the implementation at ElevatorTech.

For the purpose of explaining this contribution each of the three specific areas will be presented according to the Cultural Dimension (Hofstede, 1980) as applied in this research:

Power distance was obviously a highly influential factor to achieve management objectives in relationship to the SAP implementation at ElevatorTech. The strong hierarchical culture prevalent at ElevatorTech prevented the proposed users in the case study from not accepting the SAP implementation. The strongly entrenched Chinese cultural trait of collectivism that embodies a sense of obligation, a desire to maintain social harmony and consensus-building also facilitated the acceptance of the ERP system. The strong sense of maintaining social harmony was instrumental in overcoming conflicts that arose during the implementation. It also assisted in reaching consensus to changes during the many meetings called to address deficiencies the informants identified in the software. Users relied on Guanxi for working through relationships with colleagues to mitigate the uncertainty surrounding the implementation. This research supports that the three Cultural Dimensions (Hofstede, 1980) of high power distance, collectivism and uncertainty avoidance, instead of being obstacles to the implementation were in fact facilitators.

A search of the literature revealed that the effect of high power distance that resulted in low resistance from users has either been ignored (e.g. Newman & Zhao, 2008) or not studied. Consequently this aspect of the present research can be claimed as making a contribution to information system research that is focussed in this specific area of cultural issues in technology adoption.

Further, this research supported the view that the Chinese cultural value of obligation (a sub-set of the cultural dimension of collectivism) had a powerful influence on the behaviour of the informants as well as having a positive impact on the efficiency and effectiveness of the SAP implementation. In particular, this sense of obligation explained why informants in the case study were willing to endure hard work during the ‘painful’ SAP implementation process. Although this sense of obligation is one of the most important aspects of Chinese culture (Scarborough, 1998), few IS research studies have recognised its influence on the Chinese employees’ attitude to learning and using a new technology. As far as can be determined, none of the existing research has taken this Chinese value of obligation into consideration during an ERP implementation. Therefore, this offers potential for future work.

In relation to the third and final cultural dimension, studies on the influence of uncertainty avoidance in IS research have been criticised for dealing with this dimension in an abstract and unspecified way (Ford et al., 2003). The present research addressed this deficiency by examining uncertainty avoidance in specific situations during the SAP implementation at ElevatorTech. This demonstrated that informants’ need for certainty was largely influenced by new work requirements and challenges that confronted them during the implementation. Informants managed these uncertainties by relying on their Guanxi or relationships to moderate the environmental effects that hindered the software implementation. It is also a very worthwhile contribution because currently there is a lack of relevant research reports and knowledge of the actual problems and challenges faced by informants during an ERP implementation (Zhang et al., 2004). The above finding contributed by questioning reports that ERP systems are not suitable in an Asian

environment (Rajapakse & Seddon, 2005) or that ERP systems can reduce uncertainty among users (Hwang, 2005).

The findings in this study showed that there are practical implication in understanding how local culture can enhance the effectiveness and efficiency of implementing a Western-developed ERP system in China. Millions of dollars have been invested in ERP systems to help companies gain a competitive advantage. The objective of ERP is to integrate operations across different operational and functional areas. However, these investments may not reach their highest level of efficiency if this is prevented. For proposed users throughout the organisation to accept the SAP system it is important for top management and managers of Chinese businesses to exercise their considerable power to motivate their employees to accept new technology. Another key issue of practical importance is understanding how local culture can be an effective means of managing conflict and change during the implementation process. This practical contribution can also be of value to practitioners charged with overseeing an implementation in a similar environment.

Another important practical contribution relates to the finding that there was a misfit between the Western-developed SAP system and the Chinese work environment. The case study showed that it could not accommodate local Chinese taxation requirements or cater for external business requirements, confirming previous reports (Ghosh, 2002; Krumbholz & Maiden, 2000; Molla & Loukis, 2005). This has important implications for management because it means that factors outside the scope of project management can come into play during the implementation. In the case study management had to rely on their employees to overcome the deficiencies of the SAP system identified at ElevatorTech to make it work in the local business environment. It highlighted that that there is a need for management to understand that SAP may be unable to address local business needs and this must be taken into account when choosing a foreign ERP system.

### **5.9 SUGGESTIONS FOR FURTHER WORK**

In this section, based on the experience of having conducted this research, some suggestions will be made for areas worthy of investigation. Firstly, there is an opportunity to address a limitation that has been acknowledged in this research. This implies conducting a similar case study but extending it longitudinally, so that the implementation could be followed through to the post-implementation stage. This proposal has support because it can only be assumed that informants at ElevatorTech remained steadfast in their resolve to accept SAP and its challenges. In the present research this could not be confirmed or disclaimed.

The aim of this research was on the impact of culture on a Western-developed ERP system in a Chinese environment. The findings in the case study showed that the SAP system introduced changes in work practices which caused uncertainties, particularly painful and significant in a high uncertainty avoidance culture such as China. However, few studies have been carried out to examine this issue. This suggests a possibility for future research.

The findings in the case study revealed that the Chinese cultural values of high power distance and sense of obligation did positively impact on the implementation of a Western-developed ERP system in China. A search of the literature has shown that little or no research has been conducted to study how these could have been influential factors in such an implementation. This, therefore is worthy of further research. Given the rapid expansion of Chinese industry and its increasing involvement in the global economy, such research could serve to increase understanding of the influence of local culture and provide a practical guide for future research in this area.

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**APPENDIX 1**  
**ETHICS APPROVAL**

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**HUMAN RESEARCH ETHICS COMMITTEE (TASMANIA) NETWORK**

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**MINIMAL RISK APPLICATION APPROVAL**

8 March 2005

AssocProf Carol Pollard  
Information Systems  
Private Bag 87  
Hobart

**H8259: Enterprise resource planning implementation in a large multi-national organisation in China.**

Dear AssocProf Pollard

Acting on a mandate from the Tasmania Social Sciences HREC, the Chair of the committee considered and approved the above project on 08 March 2005.

All committees operating under the Human Research Ethics Committee (Tasmania) Network are registered and required to comply with the *National Statement on the Ethical Conduct in Research involving Humans 1999* (NHMRC guidelines).

Therefore, the Chief Investigator's responsibility is to ensure that:

- 1) All researchers listed on the application comply with HREC approved application.
- 2) Modifications to the application do not proceed until approval is obtained in writing from the HREC.
- 3) The confidentiality and anonymity of all research subjects is maintained at all times, except as required by law.
- 4) Clause 2.37 of the National Statement states:  
*An HREC shall, as a condition of approval of each protocol, require that researchers immediately report anything which might warrant review of ethical approval of the protocol, including:*
  - a) *Serious or unexpected adverse effects on participants;*
  - b) *Proposed changes in the application; and*
  - c) *Unforeseen events that might affect continued ethical acceptability of the project.*

The report must be lodged within 24 hours of the event to the Ethics Executive Officer who will report to the Chairs.

- 5) All participants must be provided with the current Information Sheet and Consent form as approved by the Ethics Committee.

- 6) The Committee is notified if any investigators are added to, or cease involvement with, the project.
- 7) This study has approval for four years contingent upon annual review. An *Annual Report* is to be provided on the anniversary date of your approval. Your first report is due 08 March 2006. You will be sent a courtesy reminder by email closer to this due date.

Clause 2.35 of the National Statement states:

*As a minimum an HREC must require at regular periods, at least annually, reports from principal researchers on matters including:*

- a) Progress to date or outcome in case of completed research;*
  - b) Maintenance and security of records;*
  - c) Compliance with the approved protocol, and*
  - d) Compliance with any conditions of approval.*
- 8) A *Final Report* and a copy of the published material, either in full or abstract, must be provided at the end of project.

Yours sincerely



for Amanda McAully  
(Executive Officer)

**APPENDIX 2**  
**FUNDING APPROVAL**

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**REQUEST FOR RHD CANDIDATE  
SMALL RESEARCH GRANT**

**ENTERPRISE RESOURCE  
PLANNING IMPLEMENTATION IN  
A LARGE MULTI-NATIONAL  
ORGANISATION IN CHINA**

**SUBMITTED BY**

**RHD CANDIDATE  
YAN NEE ANG  
OCT 2004**

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## 1. Introduction

Millions of dollars has been spent worldwide on Enterprise Resource Planning (ERP) systems. However, research shows that one in four ERP projects is over budget, approximately 20% of ERP systems are terminated before implementation is completed and more that one third of respondents surveyed by Computer World (2001) felt that ERP failed to achieve their business objectives. ERP has not delivered its promise to support many different business processes designed to enhance the competitive nature of organisations through the provisions of accurate and timely information for strategic decision-making, business process improvement and strong customer focus. None of the current literature really addresses the problems inherent in implementation of ERP systems. Most of the literature focuses on factors that may lead to successful (or failure) in implementing ERP systems. As such, they posit that the technology itself is without fault, which contradicts the bases of this research. We posit that embedded in ERP systems are *ideologies* and *philosophies* that are sometimes very different from the values held by the members of the organisations into which they are being implemented. Through new ways of thinking, we seek to contribute to the knowledge of how technologies impact on culture (not culture on technology) and enhance the literature on theorising embedded ideologies and philosophies in the ERP systems, which have rarely been discussed.

## 2. Research Objective

The aim of this research is to understand how the embedded ideologies and philosophies in ERP systems impact not only on the business processes but also on the values and culture of those people that were empowered (or imprisoned) by the technology, to establish 'best business practices' for organisations to follow and to provide a pre- and post-implementation audit of the SAP implementation at  using an Action Research approach.

The purpose of this paper is to request funding to conduct an in-depth case study of ERP systems implementation in ~~Seabrook~~ Group, a multi-national organisation currently planning implementation of SAP, a large ERP system developed in Germany. We would like to stress the importance of seizing this once in a lifetime opportunity to gather firsthand data on real time practice of ERP systems



implementation (a new kind of laboratories) in which we can empirically test various theories and hypotheses.

### **3. The Opportunity**

Thanks to Professor Peter Marshall (Woolworth's Chair in Information Technology and Systems), a rare opportunity, through his contacts with Mr. [REDACTED] of the [REDACTED] has arisen to observe such implementation process through [REDACTED] Group (a [REDACTED]-based company) is one of the world's leading suppliers of escalators (largest in Europe and second largest in the world). The decision was made in late September to go ahead with the implementation of SAP (an ERP systems) into China using the Asia Pacific shared service expertise from Hong Kong and Sydney. They will also be using AP knowledge to facilitate the convergence on the Europe standard configuration. We are very honoured to have been invited to participate in this project. However, it would involve a substantial amount of time spent in the field to gather data. This will involve travelling to Hong Kong to meet with the current Chief IT Manager of [REDACTED] [REDACTED] who is based in Hong Kong and Mr. [REDACTED] Chief Financial Officer of [REDACTED] in China) who is based in Shanghai (China).

Currently, Assoc. Prof. Carol Pollard is working with the Dean of Graduate Studies (Pro-Vice chancellor for research) and UTAS's International Office to gain the necessary permissions and go through the necessary procedures to enable research in China. It is very important that we comply with the Chinese government's rules and regulation with regard to data gathering. In conjunction with that, Assoc. Prof. Pollard has placed a request for a search for research funding through Danielle Ryrie in the Research Development Office. We have been anxiously awaiting news from both offices (i.e. research procedures and availability of funding) to confirm our participation in the project with [REDACTED] has been most kind to offer high level clearance for the research candidate to access both the people and time of the stakeholders and they are excited to start the processes as early as December 2004. Hence, we can understand why they are anxiously awaiting news about the availability of the candidate (i.e. Yan Nee Ang) to kick off the discussion and start familiarisation on the ground level. We cannot stress enough that time is of the essence in securing the support from both offices (in research and funding)..

Without the support of either one of these departments, this opportunity will run aground before it has even started.

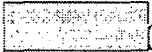
#### **4. Funding Profile**

We are still awaiting news on the availability of funds (internal and external). As of now, no fund has yet been allocated to this research project. As such we seek the assistance from the research committee for funds to cover airfare and accommodation expenses in the interim to kick off the project. The estimated budget is attached below under the heading 'proposed budget', we have also included a request by the candidate (a full fee paying student) for hardship allowances to cover partial meals and transportation cost (proposed budget).

#### **5. Proposed Budget**

The candidate requests a sum of \$6621 to get started for phase one of the SAP implementation project. Another \$13,296 will also be needed down the track (a total of 16 months period), to track the life cycle of the project and conduct interviews and observation and then transcribe the interview. This funding request is focused on the necessary travel and face to face meeting/observation of the stakeholders involved in this project, namely to Hong Kong and China. The projected budget is presented in Appendix A

#### **6. Conclusion**

The estimated budget of \$6621 is based on the cheapest quotes available from STA budget accommodation. We hope by providing these estimates we could start the initial stages of the project and enable a timeframe, which we could coordinate with our counterpart in  (especially the SAP implementation team). As such we seek urgently your assistance and approval of the budget and we look forward to a positive response from the Faculty Research Committee in support of this important RHD project.

Soft Plan				
Month	No. of Days	Associated cost Details	Projected expenses	AUD\$
Dec	3	Field work in Hong Kong	Airfare	1739
			Accomodation	360
			Meals	60
			Transportation	30
		<b>Sub total</b>		<b>2189</b>
Dec-Jan	21	Field work in Shanghai	Airfare	2143
			Accomodation	1659
			Meals	420
			Transportation	210
		<b>Sub total</b>		<b>4432</b>
April	21	Field work in Shanghai	Airfare	2143
			Accomodation	1659
			Meals	420
			Transportation	210
		<b>Sub total</b>		<b>4432</b>
June	21	Field work in Shanghai	Airfare	2143
			Accomodation	1659
			Meals	420
			Transportation	210
		<b>Sub total</b>		<b>4432</b>
Sept	21	Field work in Shanghai	Airfare	2143
			Accomodation	1659
			Meals	420
			Transportation	210
		<b>Sub total</b>		<b>4432</b>
		<b>Total</b>		<b>19917</b>
Notes: Accomodation in Hong Kong is budgeted at \$120 per night (staying at Standford Hote				
Accomodation in Shanghai is budgeted at \$79 per night (Zhao An Hotel Shanghai, 19				
Meals are budgeted at \$20 per day				
Transportation is budgeted at \$10 per day				

**APPENDIX 3  
TRANSCRIBER**

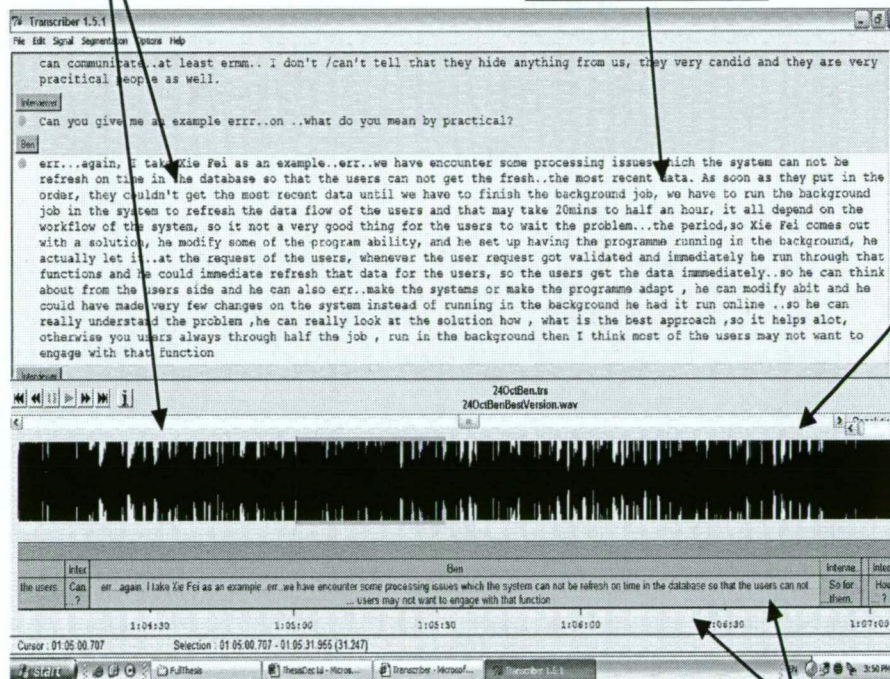
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## Increasing Transparency between Audio and Transcript through “Transcriber”

Increase credibility. Easy to check visual against audio.

Allow visual on the transcript.

Listening to audio recordings while transcribing.



Tracked by time and segmentations.

**APPENDIX 4**  
**EXTRACT OF TRANSCRIPTION**

Program of  
Transcribed by Yan Nee, version 3 of 080218

Interviewer

Could you tell me the role you play in SAP Implementation?

CL

My responsibility lies in being FICO key users

Interviewer

Could you tell me what are these responsibilities?

CL

My main role start from the testing SAP part, I talk to [FICO modular leader] mostly because I'm more familiar with "ON" and "MR" part of the process. I communicate mostly with FICO leader to tell her what our current processes are. This will help her a bit at the beginning on the design. The following condition, my role as a key user is to firstly understand inside SAP how the process goes in the FICO modular. This is because once SAP goes live it will have significant effect on our side, that is the way we do our job now, how it will change when SAP comes online.

Interviewer

Do you feel any difference between the business flow in SAP and the way it is done in the company right now?

CL

Firstly, the SAP will enhance the process flow. This is because the way we do things now are more localised, like account permit such as cash and etc are based on local model. But once SAP is online what we are using now are very localised model based on China's categorisation of account but once it comes to SAP we are totally using a global kind of account. For this it could be said that there is a big difference because we were

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approaching it from the local then do a matching to process it through but now we start from the global and then change it to local, I think this is the biggest difference.

Interviewer

Could you tell me what are changes at the local side? [with reference to the change in the flow from global to local]

CL

From local side I felt the flow have been reversed but from the global side it has become more convenient. But the biggest problem I felt will be when it comes to the local side. SAP in China has a lot of previous cases but I didn't know how they function but for us if we go from global to local. Because the report produced is automated to generate global report but on the local side, you know because in our country enterprises are categorized into different levels such as A level or B level as a form of control. But when they come and check our company, for example our company's account our account came from global report therefore when they check our account I don't know whether will there is any problem. This is one of the biggest problem and I had continuously speak to them about this but they explain to me that now because the global can be changed to local report , including [pin zhen] could be change to local. However, my opinion on the report on the account produced such as the one on recording of account and hand [shou] account have problem and I'm not very sure/clear what will be the final outcome of this.

Interviewer

How do you handle this problem?

CL

Inside SAP it allow the process to automatically process through the design in matching. But the concept is a bit different because local design category [subject] is totally different from global. For example in global, it only need to know only one particular expenses but in local it also knows administrative expenses, petty expenses, training expenses, in global it may only contain only one but in local it will be separated into three

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different expenses. Right now we have the consultant helping us through the processes, we also communicate with the financial bureau to come often and have a look whether we have fulfil their requirements.

Interviewer

Have they [financial Bureau] came and have a look?

CL

They ever came once before we when live [with SAP]. We have informed them because during that time they [financial bureau] wanted to see our account but we have not...[use SAP]and we were still using the old system, thus we told them because the old system is not very good and that the information that came out is also not very clear, they agree and said yes, "ok we wait for you...we will come and see your account when SAP is online". We also told them to come and see us frequently in between [before going live]and not wait until SAP came online and there's problem. They also agreed to come and look. I felt that maybe because I worry a bit too much, because SAP in China, there are a lot of companies in China they also have SAP, so if they did not meet this kind of problem then we should not have too big a problem. When we go through the flow, the report is produced in once instant...from local to global...it will be more clear now because right now we are using too many manual procedure.

Interviewer

How much time do you usually spend on reports?

CL

ermm...we spend about 6 days for them to produce the report. After they finish, on our side we still have to process, so it takes about 10 days.

Interviewer

Is SAP any help to you?

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CL

Because right now they are a lot of manually check things and because right now the way we do things they are separated, the branches they have their own system and on our side we use BPACs. Branches they use local...at the last stage when we do the consolidation, we have to match each individual report and then reconcile/process the report. In between we spend too much time. In SAP because its the same platform, everything is together, if I could easily chose to reconcile the report that I chose [meaning she don't have to do matching anymore] hence it has become more centralized so we save on checking and matching.

Interviewer

How much time was spent communicating with FICO Modular leader on the project?

CL

In that sense not much, the most is about one day to one and a half days, not much because I'm busy with my daily job. Too busy, it only when they needed input from me or when they want to hear my opinion such as how we are doing certain jobs and how in the future it will look like.

Interviewer

How do you feel about SAP?

CL

Some of the things compared to now have changed and its different but majority leans towards...[phone rang]

Interviewer

How has SAP affected you?

CL

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I will spend more time on the analysis because originally every month its the same very rush, the report is very rush, rush, once its rush out because the local deadline is around 6 or 7 and normally after consolidating the report for the 6 or 7 report we produce management report on the 10th because in these three days [i.e. from 7 to 10 of the month] its very rush because there are a lot of information [instances]...we found that a lot of area where we found is not right or why this month the sales is very low, we have to spend time collecting these information and ask them to come over because we can go directly there to see things , as I said there are a lot of manual work and each of the have their own old account hiding this side and hiding that side , in the future once SAP becomes online there are a lot of things are shared. For example in this contract I can see clearly where things are from and whether did they do a good job or not. Right now we have to rush the report, it could be just an excel spreadsheet just for calculation of figures we don't have much time to analyse it why the figure is like this. For example, it's possible that our base cost is high but why the base cost is high and where, there is no in-depth analysis, in future it is we can have more time to look at this area. This is also an important direction that we should go. Because things like booking a lot of time is manually done it is best that its automated and it also does not allow error. It is hope that this [SAP] will improve our quality because if the time is very rush, I basically don't have time to analyse the material that I've got. Right now I'm using normalised way to analyse but if I have more time I could find out a better way to analyse the data, I felt that we need time.

Interviewer

Why is it important?

CL

Right now the way I do it is I try to catch the most important one, the one with the biggest difference. I felt that once SAP is online, because right now I'm only catching the biggest difference in the analysis but when SAP is online it could display all the differences, the difference and the associated information could come out also its better. Because if you only catch the big one you will see on effect but its not big, within it may

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be the case where they change the figure you will feel a big difference. For example in one product line, this month the difference is only ten thousand but within it there might be a lot of information, it possible that some contract make a loss of 50 thousand and another contract make profit of 60 thousand the difference is 10 thousand, normally if the difference is 10 thousand, in the normal case I won't look at it.

Interviewer

When you found out the differences what did you do?

CL

Financial department, the main one is financial, that is to say because the main thing I face is internal finance, the main thing I analyse is the base [operating] cost and also things related to AR [Account receivable]. In the present time I will check who is the one that prepare this report and tell this person the area that seems inaccurate and this person have to find out the relevant department, for example like cost, they will go and approach logistic department. Usually if there is a big difference its usually big project, they will go and check the invoices, these sort of things are their job. Because right now the cycle between local and global there may be misunderstanding or miscommunication, more time is spend to clarify. Sometime if the information that I've received from my colleague and I felt its not very accurate I will go directly to find that person but this type of cases is not very often. There are cases like this, for example is the figure doesn't match its possible I will go directly to look for that person. I hope to hear from that person his/her explanation. Because there are unavoidable situation where you have cases where they try to hide and they tell you this and that, if I find it unreasonable I will go directly to find the person.

Interviewer

How do you feel about the changes you have to make to use SAP ?

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CL

I feel that because we are an organisation, this kind of structure, its possible at head office level when it comes to report I'm the one that does it but in actual case at the lower level finance like their FOCN also require them to do the report, so in other offices there are some jobs are double [meaning duplicate]. In the future I believe we still have because the organisation structure is here because this information, its possible, for me I can say when you guys finish give it to me and I just match it but there is no time for this as these are parallel, its possible they have not finish at their end and its definite they had to do it at my end. Because of the procedure in the organisation, like a said the head office may rush this and one more at the operation side they also have to rush this but if at the last if the organisation has change, the information that I produce could also product for other department its like that. I also felt that once SAP is online, the head office will not only be one person like me its possible there will be two person and they could provide all the information on the FOC, because FO for their management report, they have many report. Because at the head office, there some FO reports that we don't need, that means at the head office level is not needed but for themselves they still need to do this thing. Thats why I feel that the head office will at the same time do all this report.

Interviewer

So did you highlight this problem with your boss?

CL

err...not yet [laughter...] because right now we only talk about accounting that is booking is centralise including those at the branch they will all come over here to do.

Interviewer

What did you do when you have questions about the SAP system?

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CL

There is a share information on the net, I didn't look at it much but during that time when I saw it I straight away link this up. But if I have any problem I will straight away go to FICO modular leader.

Interviewer

Do you feel that the information in the intranet be able to satisfied your enquires?

CL

Right now its not very clear yet, maybe in future when the project has finish and this could go to the IT side, I will go directly to find IT. Because right now SAP demand is very high or more accurate thing, thus, its possible of the high accuracy, the first period will face some problem. For example, their side might not be familiar and because in between they are linked, everyone will find it hard to communicate because everyone is not familiar [with the system] and not normalise and also once there are problem on this side, immediately the problem will go to another modular, during this time it could be chaotic. But when things become normalised it should be alright.

End of Interview

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**APPENDIX 5**  
**EXHAUSTIVE DESCRIPTION**

### Example of Exhaustive Descriptions

There are a lot of entries, key in different data in different systems to upgrade and prepare the required information for the management report. Also there is a lot of expectation for SAP. However, in the process of improving the business flow in the organization, we also need negotiate, such as increasing manpower or new ways of improving the solution. This is because of the procedure in the organisation and the differences in Field Operations (FO), there are many difference types of management reports. There some FO reports that are not needed, but for individual FOs they still need to produce their own reports. Also because right now the cycle between local and global is different, there may be misunderstanding or miscommunication, more time is spend to clarify. The accuracy of the report is very important for everyone. This is because the current SAP only keep up to 5 decimal points while CLD keep up to 2 decimal point, that is why CLD and SAP system can not be linked. On another note we are still using BPAC, we are using profit centre to differentiate.

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**APPENDIX 6**  
**IT WORKSHOP PRESENTATION**

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## SAP Implementation In China: Preliminary Assessment

Presented by Miss Yan Nee Ang, PhD Candidate  
School of Information Systems, University of Tasmania

WORK-IN-PROGRESS



### CULTURE

- Proximity of Culture Translate to Easier Technology Transfer?
  - Asia Pacific Team (reducing language barriers)
  - Guided by Past and Historical Experience In IT Implementation In Asia Pacific
  - Transferring values of AP IT team to China Team (Committed to meeting deadline/schedule; Hard working; commitment to project and long hours and untold sacrifices)

### COMPLEXITY

- Top Down Analysis Vs. Bottom Up Analysis
  - Process vs. Sales Orientation
  - Long Term Benefits Vs. Short Term Benefits
  - Quality Vs. Available Resources
  - Different workflow at branch level
  - Obligation towards branch level vs. HQ level
    - » Issues on time taken away from work
    - » Availability of Resources/Incentives for added responsibility

### COMPLEXITY

- Key People Leaving
- "Too many new concepts to remember"
- Tracking Changes
- Taking ownership of workflow (Impact on design as no one takes responsibility of giving data)
- Matching local requirements with HQ requirements
  - Business Processes were driven by customers; by local legal requirements and by local accounting practices.
- Managing Users perception
  - E.g. HQ is always giving them more work but did not compensate with resources
  - Unable to visualise the values added to the branch level

## DILEMMAS

- Daily Ops Requirements Vs. Actual Participation
  - Planned 40% participation
  - Realised 10% participation
    - Possible Reasons
      - Heavy Workload (e.g. growing market), obligation to branches vs. obligation to HQ
- Possible Impact
  - Group Cohesiveness
    - Problem identification and problem resolution
    - Increase complexity in project control

## GROUND ISSUES

- Overtime
- Rolling back schedule
- Keep morals up
- Managing expectations of users

## HOW TO MANAGE THESE COMPLEXITIES?

- Institutional Support-IT governance
  - Policies and Resources
- Normative and Cognitive Control

## THANK YOU

For any questions, please sent email to:

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APPENDIX 7  
FINDINGS DIAGRAM WITHOUT TRANSFORMATION

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APPENDIX 7  
FINDINGS DIAGRAM WITHOUT TRANSFORMATION

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## FINDINGS DIAGRAM WITHOUT TRANSFORMATION

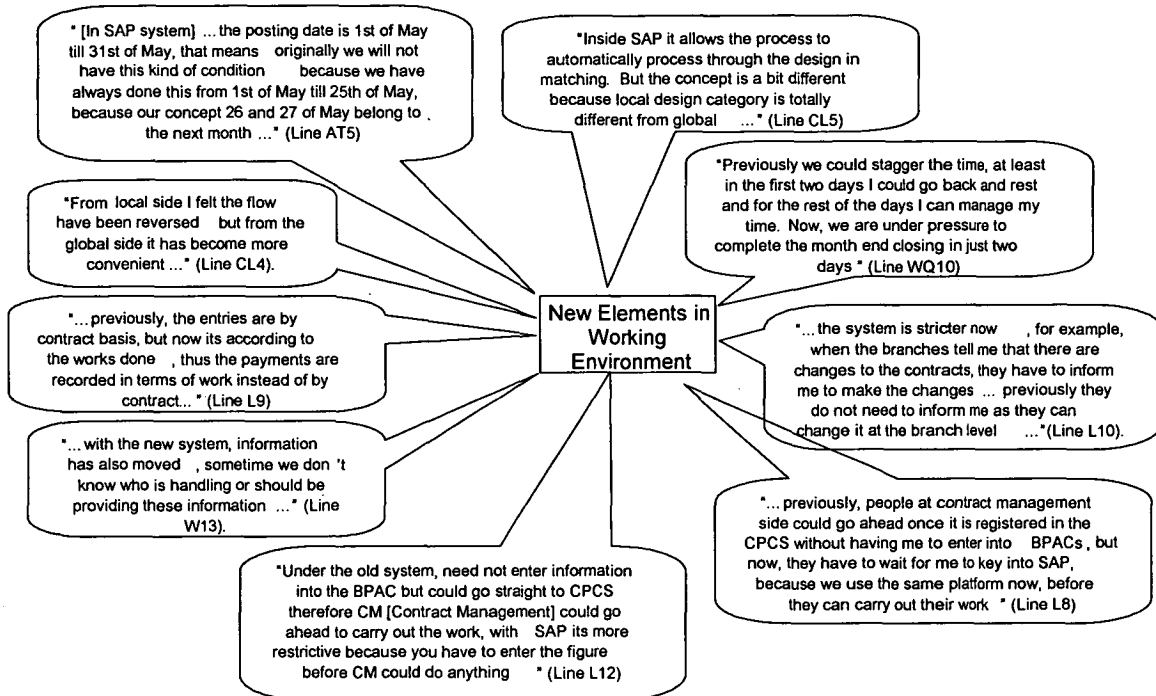


Figure 4-1 New Elements in Work Environment

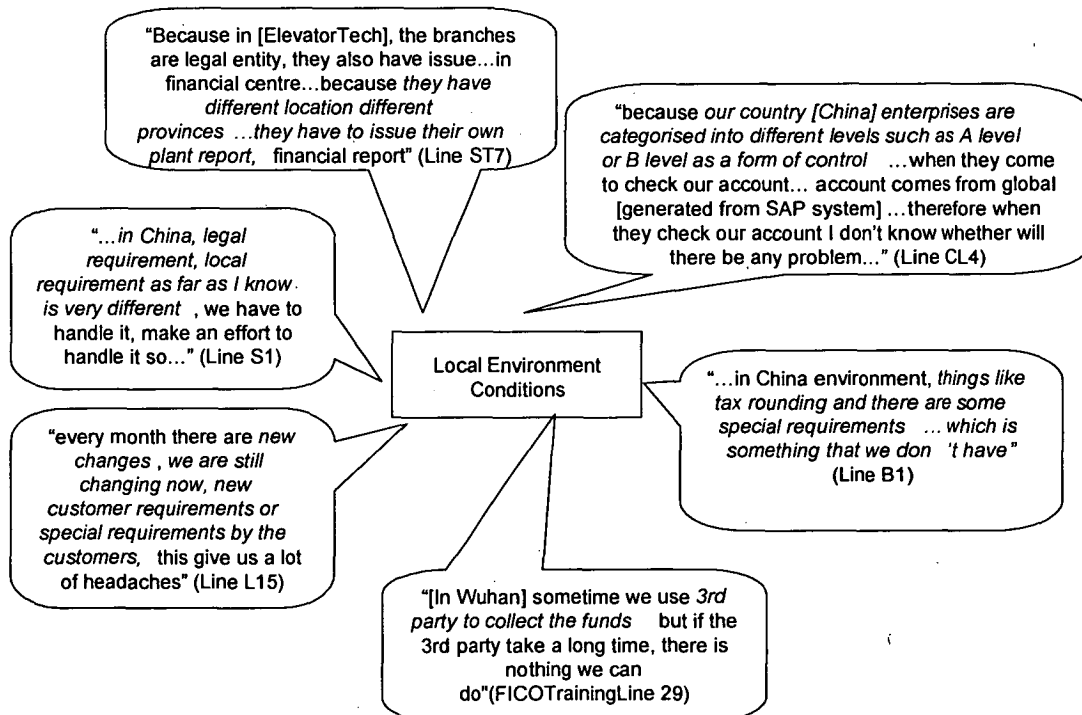


Figure 4-2 Local Environment Conditions

## FINDINGS DIAGRAM WITHOUT TRANSFORMATION

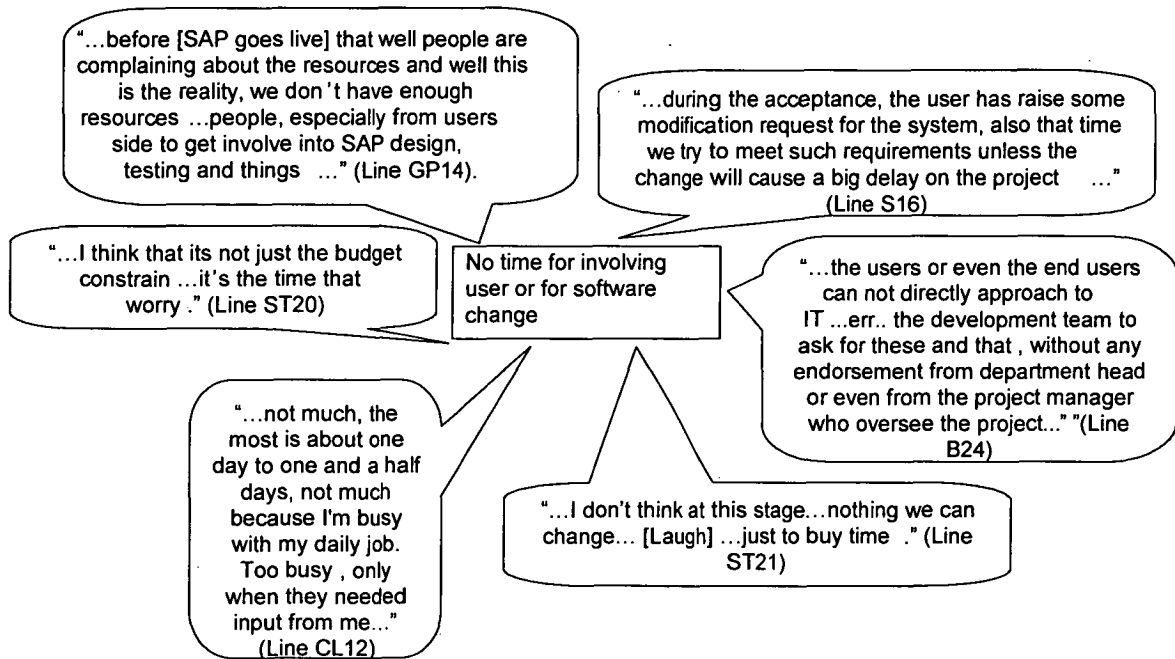


Figure 4-3 No Time for Involving User or for Software Change

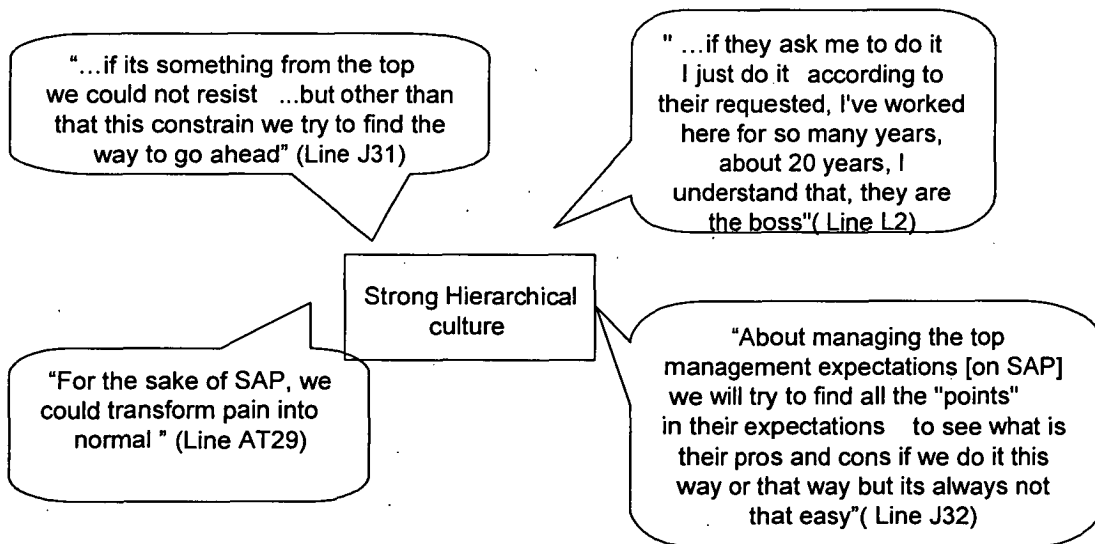


Figure 4-4 Strong Hierarchical Culture

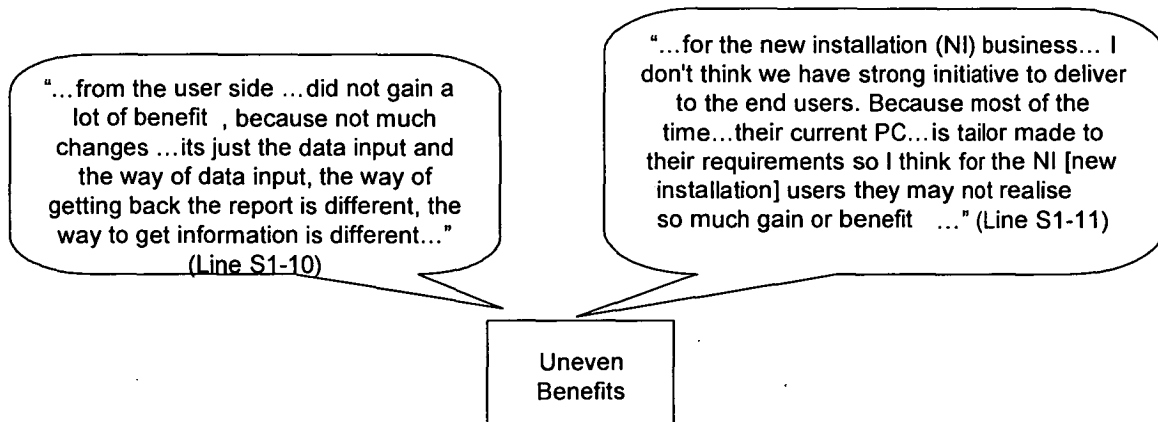


Figure 4-5 Uneven Benefits

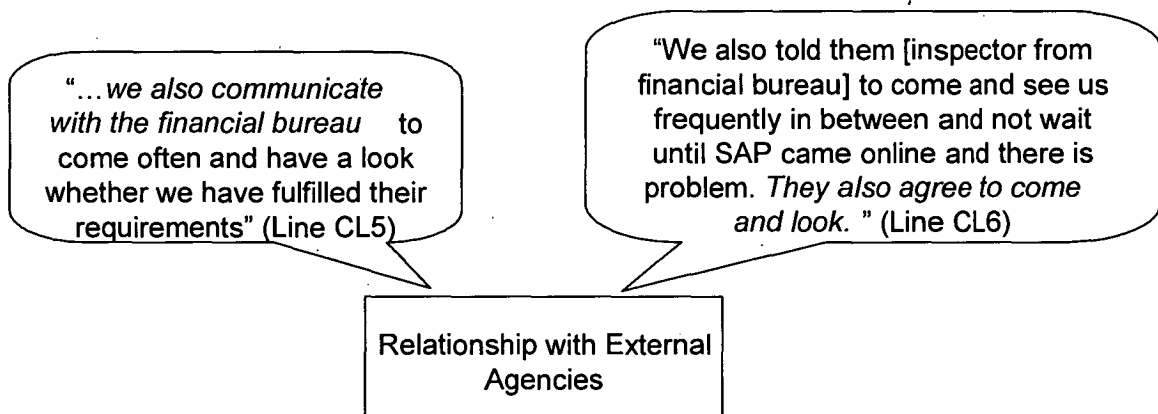


Figure 4-6 Relationships with External Agencies

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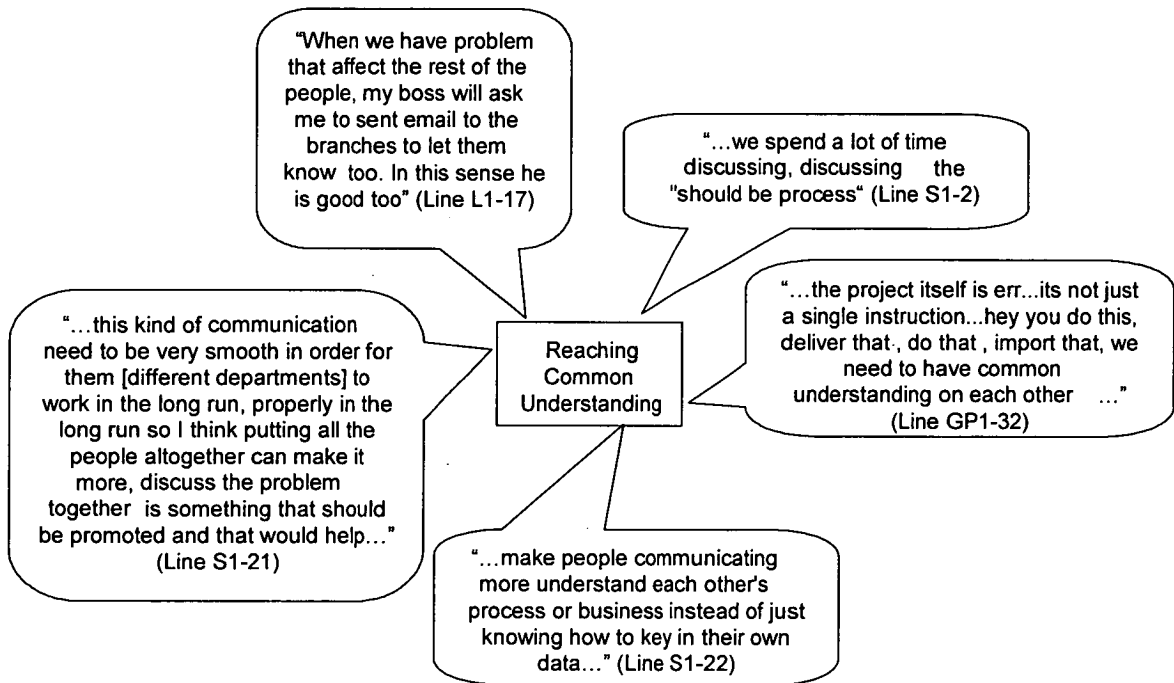


Figure 4-7 Reaching Common Understanding