

# Culture Influence on Enterprise Planning Resource (ERP) Implementation In Saudi Arabia's Public Sector

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## Summary

Enterprise resource planning (ERP) is widely adopted among enterprises and organizations. In recent years, researchers have become increasingly interested in factors related to ERP implementation success. In this paper, top management members, IT professionals, and end-users were interviewed in the study. The study used Hofstede's main cultural dimensions as a theoretical framework to identify cultural characteristics and their influence on ERP implementation within public organizations in Saudi Arabia. The study followed a qualitative methodology approach to carry on the study to investigate the national culture characteristics in Saudi Arabia that may influence ERP implementation success. The study found some culturally related factors that could influence success in ERP implantation projects in Saudi Arabia..

## Keywords:

*ERP in Saudi Arabia, ERP case study, cultural influence on ERP.*

## 1. Introduction

Enterprise resource planning (ERP) is a common practice among enterprises and organizations. In recent years, researchers have become increasingly interested in factors that may arise from successful ERP implementation. The general factors that lead to the success or failure of ERP implementation are well known. However, culture also plays an important role in successful ERP implementation. Many organizations across the world that have failed to implement ERP systems or e-services have their cultures to blame [1]. Malik Saleh [2] conducted a study that examined the overall effectiveness of factors which are believed to lead to successful ERP implementation in public and private organizations in Saudi Arabia. At the end of the study, he concluded: "ERP implementation projects in the Saudi Arabia have been relatively unsuccessful."

A considerable amount of research has been done on how cultural influences may impact ERP implementation in many countries; however, no studies have been conducted in Saudi Arabia on this topic. The question remains: What is the cultural effect of ERP implementation's success or failure in Saudi Arabia's public organizations? We involved top-level management, IT (Information Technology) professionals, and end-users in this study that uses Hofstede's four main dimensions as the theoretical

framework to identify cultural characteristics and their respective influence on ERP implementation within some public organizations in Saudi Arabia. The study looks at two public sectors in Saudi Arabia, which are King Abdul-Aziz University and Prisons General Directorate, who recently adopted ERP and faced some challenges in its implementation

## 2. Background

### 2.1 Literature review

Many researchers closely studied and analyzed culture as a significant part of information technology success. Katharina and Abraham [5] state, "Information systems research has long acknowledged that cultural differences can inhibit the successful use of information technology." This research focuses on culture and how it can affect ERP implementation.

Previous findings have shown a country's specific culture affected an organization's ERP implementation success. According to Rabaai [6], China faced unsuccessful ERP implementation due to its societal culture. Celia [7] clearly illustrates this when she compared ERP practices between the United States and Hong Kong, explaining: "In the US culture, information was shared freely. In the Chinese culture, where the idea of 'non-openness' prevailed, information on the ERP was restricted to select users." As a result, we know culture plays a big role in successful ERP implementation.

Furthermore, some ERP systems are found to implement perfectly in some countries but fail in others. For example, a French ERP system failed to implement in China, but worked perfectly elsewhere. David [8] relays that failure stems from cultural reasons such as language, governance, and political and legal issues. Similarly, Celia [7] also looked at two cases from Italy and the United States and found differences in how each culture affects the ERP implementation process. In addition, two case studies of ERP implementation in Colombia and Switzerland were studied using three dimensions of Hofstede's theory [3].

This shows that researchers studied culture to identify its effects on ERP implementation projects in many countries, highlighting the importance of culture. As a developing country, Saudi Arabia has unique cultural beliefs and values, which means analyzing how culture affects ERP implementation in Saudi Arabia is especially important.

## 2.2 Theoretical framework

**Power Distance:** This dimension shows how willing people are to accept unequal power distribution within society or organizations. Societies with a high power-distance score are more accepting of a hierarchical order within the population without a need for justification. Rabaii [6] stated: "The combination of these dimension's values suggests a rule-based, risk-averse society where leaders are powerful, and in-group loyalties are strong and enduring."

Societies with lower power distance have more support and engagement between people in society [3]. Based on Hofstede's analysis of Saudi Arabia, Saudi Arabia has a high power-distance score of 95 (all rankings are on a 100-point scale), which shows that its society accepts a hierarchical order and is a rule-oriented country with a centralized decision-making structure [9]. This paper identifies the aspects of power distance that may affect ERP users or developers.

**Individualism versus Collectivism:** This dimension refers to whether people prefer to act as a group or individually. Individualism is described as "a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families," whereas collectivism is "a preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular in-group to look after them in exchange for unquestioning loyalty" [10]. Saudi Arabia scored 25, which means Saudi is a collectivistic society where leaders tend to consider relationships with people over other factors.

Alderahim, Sylvia, Jason, and Taizan [11] stated: "As part of the strong values towards group and family collectivism, leaders are expected to behave in a 'paternalistic' style and provide employment opportunities and privileges to the in-groups, family members, and relatives of their own and employees." This paper examines how this affects the work environment, ERP implementation success, and end-user satisfaction.

**Masculinity versus Femininity:** "Masculine society" represents a preference in achievement, assertiveness, and material gain for success. Cooperation, modesty, caring for quality of life, and aid for the weak are traits of feminine societies [10]. This dimension does not only refer to gender differences; in masculine societies, women prefer assertiveness. In contrast, men may prefer modesty in feminine societies [12]. Saudi Arabia is a masculine society

with a score of 60 according to Hofstede [10]. This paper considers how Saudi society, being relatively masculine, would affect people in the workplace.

**Uncertainty Avoidance:** Uncertainty avoidance is a measure of how willing society is to taking risks. Hofstede defines it as "the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity" [10]. Societies with a high uncertainty avoidance score are more comfortable with what they are used to and may not easily accept new ideas, with the opposite applying for lower-scoring societies [3]. Saudi Arabia scores 80, meaning Saudi Arabia is a conservative society and prefers established norms over change [10]. This paper identifies how end-users would react to systems changes in the business process

## 2.3 Entity I and Entity II

The first case is government entity located in Jeddah, would be referred to as Entity I. It was established in 1967 as a public university delivering higher education to both male and female students. Entity I has been growing rapidly in the last decade, with thirty-nine colleges, seven research centers, and nine deanships. It has over 150 academic undergraduate and postgraduate programs and is the only university in Saudi Arabia with unique academic programs such as Nuclear Engineering and Geology Meteorology. Entity I has adopted many systems such as HR, payroll, and budgeting. All systems were written in Cobol, worked on with the IBM mainframe and the database DB2. There was no business process to link these separate systems. Top management leaders realized that adopting ERP was a necessity for the university to automate business operations. Entity I officials decided on ERP/SAP implementation and created the E-Management unit, which linked directly to the Entity I vice president, who would supervise the project. However, the ERP implementation was not fully successful, which is why we felt this case would be good for identifying if Saudi culture was a factor that positively or negatively influences implementation.

Entity II is referred to the second case, previously one of the segments involving security affairs under the Ministry of Interior, became completely independent in 2006 and gained full authority with a dependent annual budget. Entity II has over 10,000 employees distributed over fifteen sub regional centers. In 2007, the general manager of Entity II decided to invest in a system that would automate thirteen departments such as inventory, warehouse, communication, training, HR, and accounting. Entity II contacted a private company that built these systems from scratch to integrate all modules together with one common DB. The project took about four years, and only three systems were successfully implemented

## 2.4 Analysis

**Power Distance:** In Entity I's case, the university president was excited for the project, so he created the e-management system, which directly linked to the vice president's office and began the project's initiation phase and supervised the ERP implementation project through every stage. Participant 1, head of the IT department and one of the stakeholders said, "top management support was significant." Similarly, Hateem, an IT professional on the project, agreed with Participant's praise of top management's support, saying, "We were happy of the support they provided and their interaction." It was very clear that all interviewees, regardless of position, had a united opinion about the level of support top management provided in the beginning of the ERP project. However, the vice president was replaced just before the customization phase began, and the support also changed. Participant 2 was another developer on the project, who said, "Changing the top manager affect negatively the project," and Mustafa added, "ERP failed because lack of leadership and commitment." Another common theme between the participants was that decision-making was centralized. Participant 1 showed that "it is not necessarily a bad thing centralized decisions was actually helpful."

On the other hand, top management at Entity II shared the same enthusiasm in showing full support to the project in its initiation phase. Participant 3, a business analyst on the project said, "the top management agreed on a \$ 7 million bid for IT infrastructure including ERP project." Full authority was given to the head of the IT department regarding the project unless a big modification was required for financial support. Entity II was a structured organization. Participant 4 was another business analyst, and he explained that the backbone structure had changed many times in two years, and the Ministry of Interior is the one who makes the change; therefore we must adopt. Thus, during the implementation process, the developers were asked to change many times, which caused confusion and missed deadlines. Centralized decision-making was an issue in ERP implementation at Entity II; for example, Participant 4 says, "most of the time, decisions are issued by the projects manager quickly who has the full authority."

**Individualism versus Collectivism:** Five total interviews were conducted with employees in the Electronic Management (EM) department at Entity I. This team was responsible for implementing the ERP project. From these interviews, it was clear that teamwork, open communication, and cooperation was of the utmost importance between the employees and contributed significantly to their success. The EM manager was particularly open to hearing any employee's opinion. One employee said: "(He was) Listening to our opinions, and consulting us in any decision he took. He didn't take the decision alone. He was discussing with us." Furthermore,

he added: "The manager of EM went to the top management after he listened to us. Usually, the manager of the EM would discuss the entire project with the top management, and employees would participate occasionally. But more notably, sometimes we all assemble with the top management to discuss all together." Another interviewee in the same department said: "Every morning, we met director manager and project manager." We noticed that the employees were enthusiastic during the project's onset, but the level of excitement dropped significantly when the person in charge of the ERP project changed. The first interviewee stated: "When the people (the top management) changed, the enthusiasm was just not the same anymore."

We asked interviewees about the team's goal, and one response was: "We were very enthusiastic. What we wanted the most was to realize success for this project, and all of us would have a part to play in it." Even though most interviewees shared the same goal of wanting the project to succeed, it was apparently that some employees tried to earn more credit for it than others. One interviewee said: "The credit of all our work was eventually given to the people on top." This kind of behavior, of fighting within the workplace for credit and achievement, is common within the public sector. Two interviewees said: "Some guys have tried to earn more credit than others, which is expected in the government sector." However, this behavior was not very common at Entity I. Most interviewees recognized that some employees were fighting for credit, but they were few and far between. Ultimately, their actions did not affect the project itself, as they were all working towards the shared goal of the project's success.

However, the situation regarding teamwork at Entity II is quite unlike the scenario at Entity I. One interviewee said: "Everyone searches for his own success, whether it be from the management side or from the stakeholder's side. Every group seeks to stand out and look better than other groups." That rampant behavior eventually led to a lack of communication between team members. For example, one interviewee explained that: "Any communication was really lost between us, and any requirements for the project were not collected properly as a result of this." In addition, he said: "While trying to communicate in a team, there was always someone trying to impose their own ideas, pushing for something specific and fighting to dominate the entire group." However, we conducted interviews with another interviewee from the same department, and found that they had a different opinion. When asked about teamwork communication within his department, he stated: "The success of one person is the success for the whole team, because every person have his own mission, and yet it's impossible for a person to do all of the project alone. The success of one person affects whole team's success by improving morale and social relations within the team. Overall, this competition had a positive effect on us."

Analyzing the interviews while considering the dimension of “individualism versus collectivism,” we noticed that the EM at Entity I had superb teamwork and communication, helped by the manager’s openness to discussion and ideas from the employees. They all shared the same goal, and this contributed significantly to each individual employee’s enthusiasm and drive for the project. However, there were a few noticeable incidents regarding some employees trying to earn more credit than others, but the incidents were infrequent, as the employees stated. We can say with confidence that the main reason for their loss of excitement in the project was due to the change in management. As for Entity II, at the beginning of the interviews, we felt the team members did not share the same goal of realizing success for the project, as everyone was looking towards their own individual success. However, the last few interviewees described the social relations within the team as amicable, with the success of each person having a positive effect on the team as a whole. Despite this, it is clear that communication between each team member at Entity II was in no way in the same league as that at Entity I. Their teamwork and synergy was negatively affected by each member’s pursuit of their own personal goals, which negatively affected the project they were working on.

**Masculinity versus Femininity (MAS):** As we have previously addressed, according to Hofstede’s dimensions of culture, Saudi Arabia is a masculine society with a score of 60. Therefore, we will now analyze how Saudi society, being relatively masculine, would affect the work environment and people of the ERP project at Entity I and Entity II. After conducting seven interviews at Entity I, we realized there were virtually no female participants. All interviewees agreed there were no females involved in decision making or other important roles within the ERP project. Three interviewees said: “No, there was almost no participation of females in this project, close to zero percent.” One interviewee explained the reason for the lack of females within the project as follows: “ERP implementation required too much work and travel. Due to cultural issues, females would have a much harder time doing this than men.”

However, at the end of the ERP project, some women were allowed to participate, but they had limited involvement in the project as their role was to provide training to female end-users. Two interviewees said: “Later on, there was some participation from them. Just for training other women, since it was more practical for them to do it.” Another interviewee said: “Females in the team were only put into training tasks.” The situation at Entity II is much the same as the one at Entity I. Not only was there practically no female involvement in the ERP project, it seems the entire public sector has little allowance for women. One interviewee mentioned: “There aren’t any women here because societal values in Saudi Arabia restrict women from working in the public sector.” Some

interviewees held a certain view towards the ability of women in their profession: “There are definitely women in the workplace, but much less women in IT. Most IT professionals are men.” From the documents we received from Entity I, we noticed six departments participated in the ERP system’s production, but in all of these documents, we could not find any other mention of female involvement in the project.

From analyzing these interviews and documents regarding the third dimension of culture, “masculinity versus femininity,” we can conclude that Hofstede was correct in giving Saudi Arabia a score of 60, as societal values reinforce traditional masculine ideals of male achievement in the workplace and leaving women with less opportunities. After conducting all the interviews and analyzing the documents from Entity I, we find that both examples of the public sector have no female involvement, and if there is any, it is only for training and not decision-making purposes, which shows females have no influence over the project. One main reason why females are barely involved is because of Saudi Arabian culture, where societal values dictate that women should not travel and work away from family for too long, so many occupations, such as the ERP project, are seen as beyond the grasp of women. This issue will negatively affect any project in Saudi Arabia’s public sector.

**Uncertainty Avoidance Index (UAI):** The fourth dimension of Hofstede’s framework is the Uncertainty Avoidance Index (UAI). This dimension covers sub dimensions such as user change resistance and risks taken by management. One point of view demonstrated by one interviewee was the issue of participation. He mentioned that “the problem is that there is no participation from the end-user.” In addition, he mentions the age difference between the manager and employee was a factor in the ERP project’s failure. He said, “End-users and head of departments were old (50 years old) so they said that they can’t learn this new system.” The age difference between management and the users may have an impact on the project’s implementation. Most end-users are older and would not like to move to the new ERP, which creates a gap in communication and shared knowledge, leading to different levels of understanding.

Moreover, since the project’s early stages, some end-users showed fear of the new system. The head of IT mentioned that, “they were incapable of finding solutions because they didn’t understand the nature of the project in the beginning.” In other words, lack of understanding of the project’s objectives boosted end-users’ fear. Importantly, top management paid less attention to these fears, which raised the level of resistance. As the interviewee mentioned, “Business owners played a major role in raising fears of failure.” Both of these reasons (misunderstanding the ERP perspectives and the effect of the age differences between

older managers and younger developers) showed up when we interviewed other people.

Two more issues regarding the change resistance were the issues of communication and trust. One interviewee mentioned that there was a conflict between the IT department manager in Entity I and the implementation team from the private firm. This led to miscommunication and trust issues between the end-user and the team. The last issue discussed by interviewees was the demanding daily tasks and insufficient amount of time to understand the basics of the project. One interviewee stated these issues led to the project's failure.

On the other hand, Entity II also had issues in the ERP project's implementation. One interviewee who worked as a system analyst summarized the change resistance issues in many points. He stated that "the end users don't believe the important of the ERP system." Moreover, they believed paper-based procedures are more useful than ERP. They have fears that the ERP could create errors and their data could be lost, therefore they think the safer option is to use paper. Another interviewee, who was a senior business analyst, agreed on these ideas and said, "they prefer using paper rather than ERP." Another issue mentioned in the interviews was that no consultant was involved in the project. There was a team with the company to execute the project, and it was based on their knowledge, but no consultant was present. One last interviewee, who was in charge of system quality, said one factor that increased the end-users' change resistance was that the end users were not really involved in the project. He said: "The end users should be involved, and their opinion should be considered, and after finishing the project there should be a feedback from the end users." Moreover, top management were not aware of the risks of end-user resistance, and therefore did not consider the end-users' opinions because the guidance came from top management.

### 3. Theoretical Framework

The study applied Hofstede's Dimensions of National Culture. Hofstede conducted empirical research studies for companies in fifty countries, analyzing behavior and identifying cultural dimensions or categories within them. Hofstede's dimensions [3] categorize into four cultural dimensions, which are power distance, individualism versus collectivism, masculinity versus femininity, and uncertainty avoidance. These dimensions were categorized specifically to show the similarities and differences between societies [3]. The four dimensions analyze cultural values to better understand any nation's culture.

### 4. METHODOLOGY AND ANALYSIS

A qualitative research method (case study) was conducted in this study to understand how national culture characteristics in Saudi Arabia influence ERP implementation based on Hosted Culture dimensions. Hosted Culture dimensions were obtained by examining ERP aspects within each cultural dimension. We believed examining case studies was the most appropriate method to study a phenomenon regarding ERP implementation in Saudi Arabia. We used both case studies as an empirical inquiry to examine the phenomena within a real-life context and to further explore the process of ERP implementation. This study investigated two case studies from two different public sectors in Saudi Arabia. These research sites were chosen based on two criteria: implementing an ERP system in the last six years, and whether or not the IT professionals were willing to participate in this study.

Interviews occurred and documents were provided for data collection. Interviews were conducted on fifteen employees from two chosen agencies, Entity I and Entity II. Ten interviews were conducted at Entity I and five interviews at Entity II. Each interview took between 15–40 minutes. During the interviews, we applied a triangulation of subjects to collect a variety of people representing diverse points of view. For instance, top-level management employees, IT professionals, ERP developers, and end-users were chosen in each agency. Semi structured interviews were used in this study to allow the interviewers to ask unplanned, flexible, and open-ended questions. Thus, semi structured interviews would help the researchers in reaching a better understating of the topic, which results in more reliable and valuable findings. Interviews were held and recorded through Skype, Google Hangout, or phone calls.

The researchers used documents collected from Entity I for triangulation purposes. This triangulation aimed to ensure the validity of data collected from the interviewees as well as giving the authors a different point of view to understand the cultural characteristics that may affect ERP implementation. Unfortunately, the authors were not able to acquire any documents from Entity II due to the sector's confidential nature. All transcribed interviews and documents were listed in the coding process.

The questions were sorted into groups during the coding process. The researchers looked for similar words, phrases, and concepts that appeared in both the interviews and documents. Thereafter, we carefully assigned codes to each quote. Some codes combined with others in a similar context. The researchers considered the analysis of the memos and notes that were taken during the interviews. We believed analytic memos help the researchers focus on data and develop concepts and themes.

After the coding and data analysis processes, the researchers identified patterns and themes, which were

categorized into four main categories, concluded from the data collected; those categories are summarized as follows:

1. Power distance positively influences ERP implementation
2. Teamwork collectivism positively influences ERP implementation
3. Masculinity negatively influences ERP implementation
4. Uncertainty avoidance negatively influences ERP implementation

We used the hermeneutic concepts to analyze the data. We believed the hermeneutic concepts would help the researchers study the phenomena of ERP implementation issues in a real-life context. The concepts increased the understanding of the relationship and impact of national culture characteristics on ERP implementation in Saudi Arabia. Moreover, hermeneutics guided the researchers to interpret different points of view from stockholders. Furthermore, hermeneutics were used to interpret the text analogue, including interview answers and documents. The text analogue can be any written text, conversation, or nonverbal communication [4]. For instance, we interpreted the decision-making letters and meeting documents to support our findings. We interpreted top-level management actions and end user behaviors from a text that was presented in the documents, which have meanings that can be read and interpreted.

## 5. RESULTS AND DISCUSSION

### 5.1 Power distance positively influences ERP implementation

Saudi Arabia is a rules-oriented country and centralized in making decisions. Most employees in both cases accept the organization's hierarchy, and do not feel the hierarchical structure could influence ERP implementation. For instance, the head of the IT department at Entity I and one of its stakeholders stated that "hierarchical structure is not necessarily a bad thing, centralized decisions were actually helpful." In a similar manner, a system analyst at Entity II said: "Most of the time, decisions are issued by the projects manager quickly and did not cause any delay." According to Hofstede, Saudi Arabia scored 95 on a Power-Distance scale. Although power distance showed a high score, a hierarchical structure in both projects showed a clearer positive influence. Another positive aspect of power distance is that the support from top management towards employees was still high in both cases.

### 5.2 Collectivism positively influences ERP implementation

Based on interviews from Entity I and Entity II employees, communication between teams and the project manager were positive. It seemed the project manager shared the same goals with other stakeholders. For example, one interviewee stated: "(He was) Listening to our opinions and consulting us in any decision he took. He didn't take the decision alone. He was discussing with us." At Entity II, the project was portrayed in a positive light. For instance, most interviewees shared the same goal of wanting the project to succeed. One interviewee said: "In my organization, the success of a person is the success for all team, because every person has his mission, and it's impossible for a person to do all the project." From this individualistic behavior, we can see that this case reflects Hofstede's low score in individualism (25 on a 100-point scale) by approving that Saudi's collectivism is restively high. Therefore, teamwork positively influences ERP implementation in both cases.

### 5.3 Masculinity negatively influences ERP implementation

We touched on how Saudi society, being relatively masculine, affects the work environment and people of the ERP project at Entity I and Entity II. In Entity I's case, after conducting seven interviews, we realized there were no female participants. All interviewees agreed that there were no females involved in decision making or other important roles within the ERP project. For example, a business analyst from Entity I explained, "ERP implementation required too much work and travel and due to cultural issues, females would have a much harder time doing this than men." We looked at some documents from Entity I to triangulate the interview findings, and we found that both public sectors under study had no female involvement, and if any were involved, it was only for training and not decision-making purposes. This shows they have no influence over IT projects. Therefore, the findings of our analysis of masculinity agree with Hofstede's relatively high score (60 on a 100-point scale) and therefore will affect ERP implementation in the public sector.

### 5.4 Uncertainty avoidance negatively influences ERP implementation

Our analysis shows a tremendous negative reaction toward adopting the ERP systems in both cases. In general, Saudi society veers away from changes, confirming Hofstede's high score on the uncertainty avoidance dimension with 80 on a 100-point scale. To illustrate, in the case of Entity I, business owners raised many fears toward using the ERP system for various reasons. For instance, the head of critical departments such as budgeting, finance, and HR were accustomed to a daily manual processing and were not willing to change it. One interviewee considered that as a factor in their eventual failure. He said, "End-users and

head of departments were old (50 years old) so they said that they can't learn this new system." Similarly, in Entity II's case, employees never had access to a fully integrated system before, and when the system was rolled out, they did not use it, but instead continued working on paper like they were used to. Therefore, uncertainty avoidance negatively influences ERP implementation.

## 6. CONCLUSION

This research paper used Hofstede's Dimensions of National Culture as a framework to examine the cultural impacts on ERP implementation in two public sectors in Saudi Arabia. The study showed a wide use of this framework to conduct similar research in different fields, and the authors considered every dimension, explaining how each contribute to the study. The study used qualitative methods (via case study) by interviewing fifteen employees over two public agencies (Entity I and Entity II) in Saudi Arabia who tried adopting the ERP system. Findings were triangulated by analyzing internal documents. We concluded that cultural factors have a strong influence on ERP implementation success in Saudi Arabia. Uncertainty avoidance and masculinity vs femininity have the most negative influence on the ERP implementation process. In conclusion, these issues would be helpful for any foreign ERP provider to consider before starting such projects in public sectors in Saudi Arabia. All information regarding the theoretical framework, the two organizations, or the detailed interview analysis are listed in the appendix section.

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