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# ERP SYSTEMS SELECTION AND IMPLEMENTATION: A CROSS-CULTURAL APPROACH

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## Abstract

*Of the many issues that warrant research on enterprise resource planning systems (ERP), one of the least researched is the process of selecting the ERP package. Perhaps the major reason for this is that a few giant companies, which market their products as “systems that fit all”, dominate the ERP market. Given this argument, companies rarely engage in a true selection process that can be an object of research. One of the premises of our paper is that ERP systems are not all the same and that in order to genuinely find a system that is appropriate for an organization, a true selection process needs to be undertaken. Following a literature review that sets this research in context, we use case study data from the US and Israel to compare and contrast the selection and implementation process of ERP systems in the two cultures. The unique patterns of system selection and implementation that emerge from the two case studies are discussed as examples of decision making patterns typical of the two cultures. The discussion and conclusions section explores the implications from this research to broader issues pertinent to ERP selection and implementation across cultures.*

## Introduction

ERP system is a generic term for an integrated enterprise computing system (Waston and Schneider 1999). Typically, ERP systems consist of a number of integrated applications such as manufacturing, logistics, distribution, accounting, marketing, finance, and human resources.

There are a number of challenges that are associated with the implementation of ERP systems and which make this area particularly interesting as a research area. First, relative to other systems, ERP systems are expensive. Consequently, the decision to purchase them is rather complex. In contrast to other systems, ERP systems involve the whole organization and require a combination of technical and human expertise to select, develop and implement successfully. Finally, in contrast to other information systems, the implementation of ERP systems involves a re-engineering of business processes, and, as a result is associated with a major organizational culture change. This change often leads to failure of the project to meet expected deadlines and/or deliver the expected results. The combined effect of the above factors makes the implementation of ERP systems a particularly complex and, as a result, highly interesting area of research.

Of the many issues that warrant research on ERP, one of the least researched is the process of selection of the ERP package. Perhaps the major reason for this is that the ERP market is dominated by a few “giant” companies which market their products as one system fits-all. Given this argument, companies rarely engage in a true selection process that can be an object of research. It is our belief that this argument does not reflect reality. ERP systems are not all the same, and, as a result, in order to genuinely find a system that is appropriate for an organization, a true selection process needs to be undertaken. Another underlying assumption of this paper is that the nature of the selection process undertaken by a company is likely to be affected by a range of issues, including the national culture of the country where the project takes place. To explore this assumption, we use case study data from the US and Israel that focuses on the selection and implementation of ERP systems in two similar organizations. The discussion and conclusions section explores the implications from the case studies to broader issues pertinent to ERP implementation across cultures, proposing a set of possible directions for future research.

## Literature Review

A review of the literature on the implementation of ERP systems within organizations reveals that it can be categorized into two major approaches.

First is the **process approach**, which deals with the process of implementing ERP systems. The studies in this category focus on understanding how the change process triggered by the implementation of ERP systems actually emerges, develops and grows or terminates over time (Markus and Robey, 1988; Van de Ven and Huber, 1990). In the process approach, ERP implementation may be seen as a sequence of stages or phases in which related activities occur (Deloitte Consulting, 1998, Markus, Tanis and Van Fenema, 2000; Ross and Vitale, 2000).

Second is the **factors approach**. This approach, which dominates the ERP literature, focuses on the factors that affect or are affected by the ERP project. This approach can be divided into two sub-areas.

The first is studies that look at the **critical success factors** for ERP implementation. The studies that take this approach tend to define success in terms of project characteristics, such as meeting project deadlines, working within budget, and sustaining harmonious relationships among the various participants involved in the ERP implementation. The research on critical success factors lists top management support of the ERP project team and the implementation process, effective full time project team staffed with top business and information technology people, and commitment to change throughout the organization as a whole, as the most important factors associated with the success of ERP projects (Brown and Vaessy, 1999; Constantinos, 1999; Sumner, 1999; Wilcocks and Sykes, 2000 and others).

Another sub-area within the factors research approach deals with the value that companies generate from their ERP systems. In this respect, the factors that researchers have identified as the key benefits from ERP projects include: clarification of managerial objectives, development of structures and expertise to manage across functions, and the emergence of clearer accountability processes within the organization (Deloitte Consulting, 1998).

One of the major weaknesses in the literature on ERP success factors is that it is somewhat tautological. This is because the success factors are often similar to the benefits from ERP systems. Thus, organizational issues such as top management support and commitment to the ERP project are seen as both factors that predict success and ones that are an outcome of it. Also, most of the factors that have been identified as either determinants or outcomes of a successful ERP implementation are organizational or social in nature, thus neglecting economic or operational issues. Most importantly, most of the factors identified by previous research are not unique to the ERP area and are not embedded in rich conceptual frameworks specific to the ERP area.

As mentioned earlier, one of the areas that are relatively missing in the research on ERP implementation is the issue of selection. A possible explanation to this puzzling phenomenon is that the ERP market is dominated by a relatively small number of giant companies, who market their products as “generic”. As a result, and despite the significant strategic risk that is involved in purchasing and implementing an ERP system, companies are implicitly discouraged by vendors from engaging in a true selection process. One of the issues that may explain why a company will choose to engage in a “true” selection process, we believe, is national culture. In other words, while some national cultures may encourage their members to invest organizational in a thorough selection process, others may discourage this process. In the following sections of this paper, we present case study data that were collected in two distinctly different cultures, the US and Israel. The case studies are discussed as examples of decision making patterns typical of the two cultures.

## Methodology

The major goal of this research was to use case study data to identify different patterns of decision making pertaining to the selection of ERP systems in Israel and the US. The case study approach was perceived as appropriate for this research because of the complexity of the issues that are involved in purchasing ERP systems. Data collection emphasized both economic and social aspects of the selection process across cultures in an attempt to identify the unique decision making patterns in each culture.

### *Sample*

Initially, ten organizations that have implemented ERP systems in each culture have been identified and their support for the research was tentatively ascertained. In both cultures, the researchers solicited the support of the manufacturing associations in the region in which the study was to be undertaken to identify similar size organizations in similar industries. Following initial

correspondence and telephone communication with the ten organizations, five organizations have been identified as most appropriate for this research, based on their stage of ERP implementation, and their manufacturing industry. The five organizations represented five different industries, including, the metal industry, security industry, electronic industry, and the computer industry. Even though all ten organizations have been investigated, for the purpose of this paper, only data from TWO organizations (one in Israel and one in the US) are presented. These two organizations displayed decision making patterns pertaining to the ERP selection process that were representative of the other organizations in their respective cultures. As such, they were deemed “typical” of their respective cultures.

In each of the initial participating organizations the following application areas have been identified.

- a) Management accounting (product costing, profitability analysis, cost control)
- b) Purchasing/materials requirements planning
- c) Production control and scheduling
- d) Quoting/customer order management

### ***Interview Structure***

Based on Orlikowsky, 1993, an interview schedule which included a range of open-ended questions was put together. The questions focused on the following topics:

- 1) Details about the organization: (size, number of employees, finances, structure,)
- 2) Environmental Context (customers, competitors, technologies, major business processes, corporate strategies, culture of the firm)
- 3) IS Context (role of IS in the firm, IS structure and operations, IS policies and practices, IS staff)
- 4) Conditions for adopting and using the ERP system (Motivation to purchase, expectations from the system, the system’s major components, expectations about the performance of the various components and their links with each other, the use of consultants, the role of the consultant)
- 5) Adopting and using the ERP system (acquiring the ERP system, changing business policies and practices in accordance with the system, changing the business structure and operations, changing the IS role within the firm, linking the system with electronic commerce technologies). In relation to the above, respondents were asked to “chart the development of the project over time, with comments on the “who”, “when”, “how”, “where”, and “why” aspects of EACH stage of the implementation process
- 6) Consequences of adopting and using the ERP system (users reactions, management reactions, strategic impacts, perceptions of benefit from the various components of the system).

### ***Data Collection***

During the first and second phases of data collection, interviews with members of the participating organizations as to their use of ERP applications in these areas have been undertaken. All key managers for the above functional areas were interviewed.

- 1. The first phase included initial contact and a first round of interviews with representatives of the two organizations. During this phase (conducted in March, 2001), detailed information about the organization as a whole (size, industry, environment) was collected. The names and job descriptions of managers directly involved with the implementation of the various ERP applications were gauged and initial interviews were held with each one of them. During these initial interviews, managers received a copy of the survey instrument and were asked to prepare additional archival information to be collected during the second phase of the research.
- 2. The second phase (May, July, 2001) included repeated interviews with the same individuals who have been identified in the first round as key players in the ERP implementation. During the second round of interviews, these people were met with and issues outlined in the Orlikowsky framework were discussed with them. All interviews were tape recorded by the investigators.

The two investigators listened to the tapes and transcribed the data, incorporating, when relevant, other materials that were collected on the site. The data was synthesized into “stories” to fit different emphases. Thus, the two case studies that are presented in the following sections, were written with the specific intention of highlighting issues relevant to the selection of the ERP package, particularly in the context of a cross-cultural comparison.

When synthesizing the data from the two case studies, we relied on Hofstede (1980) work, in which based on the distribution of 116,000 questionnaires to employees of IBM in over 40 countries, he identified four dimensions that distinguish different cultures (Hofstede, 1980), adding a fifth dimension at a later point in time (Hofstede, 1994a, 1994B). Four of the Hofstede dimensions are relevant to our study: (1) Power Distance; (2) Uncertainty Avoidance; (3) Individualism/Collectivism; and (4) Masculinity/Femininity. Table 1 presents Hofstede Data on these dimensions for the American and Israeli cultures. The reader might note that the two cultures differ on all four dimensions.

The following section presents a brief description of each of the four dimensions. These descriptions are important because the data in the following section is organized around these dimensions.

**Table 1. Hofstede Data for the US and Israel**

Country	Power Distance	Uncertainty Avoidance	Individualism/Collectivism	Masculinity/Femininity
USA	40	46	91	62
Israel	13	81	54	47

**Power Distance** – This dimension is defined by Hofstede as relating to the extent to which a society accepts that power in institutions and organizations is distributed unequally. Thus while some cultures like the Philippines, Venezuela, and India take steps to emphasize the gaps in power between superiors and subordinates, other cultures, like Denmark, Sweden and Austria try as much as they can to minimize the extent to which organization members are perceived to be unequal. As table 1 indicates, while the US is medium on this dimension, Israel is relatively very low.

**Uncertainty Avoidance** – This dimension is defined by Hofstede as relating to the extent to which a society feels threatened by uncertain and ambiguous situations and tries to avoid them. Thus, while some cultures like Japan, Portugal, and Greece take steps to discourage their members from engaging in uncertain and ambiguous situations, other cultures like Singapore, Denmark, and Hong Kong actively encourage their members to engage in such activities. As table 1 indicates, while the US is medium on this dimension, suggesting an average propensity for risk aversion, the Israeli culture is very high on this dimension, suggesting a high degree of risk aversion or a low degree of risk taking.

**Individualism/collectivism:** Individualism is defined by Hofstede as relating to a loosely knit social framework in which people emphasise only the care of themselves and their immediate family. In contrast, collectivism relates to social framework where people emphasize the co-dependency between individuals and their groups (with the group extending beyond the immediate nuclear family). Examples of cultures that are relatively high on individualism are Australia, Holland, and, New Zealanders, while examples of cultures that are relatively low on individualism (or high on collectivism) are Colombia, Pakistan, and Taiwan. As table 1 indicates, while the US is relatively high on individualism, Israel is much lower on individualism or high on collectivism.

**Femininity/Masculinity:** This dimension was defined by Hofstede as relating to the extent to which the dominant societal values are characterised by assertiveness, acquisition of money and “things”, and not caring for others and for one’s quality of life. Examples of cultures that were found by Hofstede to be high on Masculinity (or low on Femininity) are Japan, Venezuela, and Italy, while examples of culture that were found to be low on Masculinity (or high on Femininity) are Sweden, Norway, and Denmark. Again, as table 1 indicates, while the US is relatively high on Masculinity, Israel is relatively low on Masculinity or high on Femininity.

## Case Studies

### *The Israeli Case*

**The company** – The company in Israel which is the subject matter of his case study is a medium size company with 300 employees and about 100 million dollars annual profit. The company produces electronic elements for the building industry and is a leader in its industry. The company has been in business for over 50 years.

The ERP project was initiated in 1987. This company was not the first in the industry to implement such a system and was determined to do it well.

**Power Distance** – The project was assigned to the company’s controller, with a strong endorsement from the company’s president who was fully involved in the implementation. The controller invited the purchasing manager, the production manager, and the inventory manager to become members of a steering committee that supervised the implementation. In addition, they invited the shop floor managers to become involved directly with the project once the initial decision to purchase the package was made – Note – the planning and decision making was highly egalitarian, reflecting the relatively low score for Power distance (13) for Israel.

**Uncertainty Avoidance** – Once the steering committee made the initial decision to purchase an ERP package, they hired a consultant to help with the information needs identification and the software selection process. The consultant met with all functional managers who were members of the steering committee, as well as, most of their subordinate line managers. Based on a detailed study of the organizational administrative and production processes, a detailed RFP was prepared. The RFP was sent to fifteen software vendors in Israel, requesting a detailed proposal from them that addresses all the components of the RFP. Once their responses were received, the consultant and the controller met with the sales representatives of the vendors for an initial screening. This resulted in four software vendors being short listed. At this time, a test data was prepared by the consultant and the controller to reflect all activities of the company. This test data was sent to each of the four “finalists”, requesting that they implement the test data in their system. A team consisting of the consultant, controller, purchasing manager, and production manager visited each software vendor for a thorough evaluation of each software package, based on the detailed RFP. Based on this evaluation, one software package was selected. Once the selection decision was made, a very detailed training and implementation plan was put together. Note, the detailed selection process was very much in line with the Israeli culture which is relatively high on uncertainty avoidance (81).

**Individualism/Collectivism** – Once the project started, line managers at all levels were invited to a series of training sessions with their subordinates. The training was conducted on a departmental basis, with a strong emphasis during the training, on the particular production process that the team was responsible for. During the training, employees were reassured that no one will be fired as a result of the project. Also, during the training, employees at all levels were invited to share ideas on how to improve the system. These ideas were promptly incorporated in the specific component of the system that the department was responsible for. Note, the training process reflected the relatively low score on Individualism (or high score on collectivism) (54) typical of the Israeli culture.

**Masculinity/Femininity** – The training in Israel took place at the vendor’s headquarters. The trainees were housed in a hotel next to the vendors’ headquarters for the training week, with their families invited to stay in the resort hotel for the weekend. During the implementation, the Israeli employees were reassured that as a result of the implementation their life at work will be more enjoyable and this was one of the major incentives for them to participate enthusiastically in the project. As a result of this the project in the Israeli company was highly successful. Note, the emphasis on employees’ well-being and the inclusion of their families in the implementation process is in line with the Israeli lower score on masculinity (relative to the US), which is 47.

### ***The American Case***

**The company** – the Company that is the subject matter of this case study is also a medium size one, with 400 employees and about a 100 million dollars annual profit. This company produces electronic parts for the automotive industry in Detroit and, like its Israeli counterpart is also considered one of the major players in the industry. The ERP project was initiated in 1990. Here too, the company was not the first in its industry to implement an ERP system and for this reason was determined to be as successful with the project as its competitors.

**Power Distance** – The project was assigned to the company’s Vice President, who right at the start involved one of his deputies, the CIO and delegated most of the planning work to him. The CEO was marginally involved. The heads of production, purchasing and inventory management were invited to a number of meetings, where the project was presented to them by the CIO, but no formal steering committee was established to supervise the CIO in his search for the best ERP system. The only consultation that the CIO carried out in the initial stages was with his superior. Note – relative to the Israeli case, the planning and decision making was hierarchical, with the Deputy CEO conducting the initial search for the package with the CIO and without intensive interaction with the other functional managers, reflecting the relatively higher score for the US on Power distance (40 relative to 13 in Israel).

**Uncertainty Avoidance** – Once the initial decision to purchase an ERP package was made by the Deputy CEO, he consulted on the matter with the CEO and gained his support for the project. It was at that point in time that the decision to undertake the search was discussed with the other deputy CEO’s. Following a detailed presentation from the Deputy CEO (with some input from the CIO), the project was given the green light. Next, the CIO hired a consultant to help with the information needs identification and

the software selection process. Over a two week period, the consultant met with all functional managers and based on input from them, prepared an RFP. The consultant was associated with a particular vendor of ERP systems and recommended that the company purchase the package from them, promising a “special deal” that would not be possible otherwise. He advised the company against spending precious resources on approaching other vendors, informing them that the vendor that he was associated with had a generic package that with minor modifications would be perfect for them. Based on the consultant’s recommendation and after some consultation with the CEO’s of other companies who implemented that same package (successfully), the deputy CEO decided to launch the project, reporting the decision and the special price that has been obtained to the CEO. Note, decision to accept the consultant recommendation without a thorough investigation into other options is very much in line with the relatively lower score on uncertainty avoidance for the US (46 relative to 81 in Israel).

**Individualism/Collectivism** – Very much like the case in Israel, once the project started, line managers at all levels were invited to a series of training sessions with their subordinates. The training was conducted on a departmental basis, with a strong emphasis during the training, on the particular production process that the team was responsible for. In contrast to the Israeli case, however, during the training, employees were NOT reassured that no one will be fired as a result of the project. Quite the contrary, the system was promoted as a way to “streamline” processes. When some line managers appeared to be less than enthusiastic about the project, they were promptly replaced by others. Some of the new comers were recruited specifically because they worked for a competitor who had implemented the same ERP package purchased by the company. Note, the training process reflected the high score on Individualism typical of the US culture (91 relative to 54 in Israel)

**Masculinity/Femininity** – The training in the US took place in the company’s training facilities, with representatives of the vendor company conducting the process with support for the company’s IT unit. The training lasted a week and was conducted on a part time basis during work hours, with trainees taking turns in the training while still conducting their regular duties. During the training, employees were told that the project will result in higher profitability for the company but not necessarily a lighter load for them, as it was expected that the company will downsize as a result of the project. As expected, employees in the American case, were less than enthusiastic about the project. The implementation was not completed on schedule and ended up costing significantly more than expected. Note, the manner in which the project was managed in the US relative to Israel, with the strong emphasis on efficiency for the company and a much lesser emphasis on quality life issues for the employees is in line with the American much higher score on Masculinity (62 for the US, 47 for Israel).

## Conclusions

This research used a qualitative approach to explore the effect of national culture on the process of selection of an ERP package. As a case study based research, it was not intended to TEST the hypothesis that culture makes a difference. Instead, this investigation was based on the assumption that culture does make a difference, and, then, attempted to demonstrate how the differences that can be found in the decision making patterns of companies in the two cultures (the US and Israel) can be linked to the culture profiles of the two cultures as proposed by Hofstede.

Given that this was the objective of this paper, here are some of the conclusions that can be drawn from the findings:

1. **Culture does make a difference to HOW ERP systems are implemented.** As indicated in the cases, culture can affect all stages of the ERP project including the planning, selection, training and initial implementation. Furthermore, the findings from this research demonstrate that culture makes a difference in ways that are predicted by the Hofstede model, namely, when a culture is high on a particular dimension, the manner in which its managers make decisions that are related to the selection and implementation of an ERP package are consistent with what would be expected given this culture’s profile. In our case, it was expected that the Israeli decision making process would be more egalitarian (low on Power Distance), more careful (high on Uncertainty Avoidance), more shared among different levels in the organization (low on individual) and more in line with the employees life style concerns (low on Masculinity), relative to the US. The findings from the two cases confirmed these expectations. Please note that the one case study from each culture does not allow us to conclude that ALL companies in each of the two cultures would follow the patterns that have been highlighted in this paper. It is quite possible that a larger sample of companies from each of the two cultures would reflect different patterns within each culture.
2. **Culture makes a difference to the OUTCOME of the ERP project.** The findings from this research suggest that the accumulative effect of the various aspects of the decision making process can result in different outcomes. Thus, while the accumulative effect of the various decisions undertaken by the managers in Israel was positive in that the project met all expectations, this was not the case in the US where the project had a less than successful outcome. It is important to note, however, that the outcome in the US was NOT a failure. The project was still completed even though it exceeded the expected budget and did not end by the expected deadline. Of course, it is impossible, based on just two cases to link the success or

failure outcome in the two cultures to the decision making patterns undertaken by the managers. In order to establish such a cause and effect relationship, one would need to consider a much larger number of cases in each culture.

3. **Some decision making patterns may be more appropriate for some cultures.** Given that the two case studies describe two distinct decision making styles, the question arises whether these styles are dependent on independent of culture. Thus one can speculate that the decision making process undertaken by the Israeli managers may be appropriate for companies in a range of cultures, including ones that significantly differ from the Israeli culture. On the other hand, one can argue that the only reason that the Israeli managers were able to undertake this particular approach to ERP selection was BECAUSE the project took place in Israel. Again, in order to resolve this issue one would have to consider a much larger sample of case studies from a range of cultures.

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