

National differences and ERP implementation: issues and challenges

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Abstract

Multinational ERP implementation introduces another dimension of complexity—national differences—into the already complex nature of ERP implementation in the context of global information management. This study reviewed several issues critical to the success of international ERP implementation. Using both case research and secondary data, we examined ERP implementation at several multinational companies in the US, Taiwan, China, and Europe. Our primary purpose was to investigate the dimensions of national differences and how they affect ERP implementation practices across nations. Our findings suggest that language, culture, politics, government regulations, management style, and labor skills impact various ERP implementation practices at different countries. Understanding such effects will enable companies to be more proactive in planning project budget and duration.

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1. Introduction

An ERP is an information system that manages, through integration, all aspects of a business including production planning, purchasing, manufacturing, sales, distribution, accounting, and customer service [1]. In the past few years, ERP has become a “must have” system for many firms to improve competitiveness. More than 60% of US companies have installed or planned to install a packaged ERP system [2]. The popularity of ERP systems is also evidenced by its sales exceeding \$30 billion in 2002, an increase of 300% since the late 1990s.

Information managed by ERP systems can play an active role in international supply chain systems to gain

a competitive advantage [3]. Take a simple ERP function as an example. When a sales person for a multinational company enters an order from a customer in any location in the world, the transaction data can permeate the entire supply chain's (including suppliers') information system. The system updates the inventory of parts and supplies automatically, changing the production schedules of overseas facilities and balance sheets at headquarters as well. Thus, the employees of different departments in various countries quickly have the information needed to complete the processing of their jobs. Feedback is fast and efficient. From this information the sales person can inform customers of updated delivery dates, and the managers can receive accurate inventory status immediately. ERP facilitates the enterprise-wide integration of information by tying together suppliers, distributors, and customers without geographical restrictions. To summarize, an ERP system provides multinational organizations with extensive information and coordination of supply chain functions. In this vein, Davenport [43] notes, “for the first time ever, information will flow

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seamlessly across diverse business functions, business units and geographic boundaries”.

While companies worldwide have made substantial investments in the installation of ERP systems, implementation has proven to be unexpectedly difficult, and final benefits have been uncertain. Several researchers have concluded that failures are usually the result of business problems instead of technical difficulties [4–6]. The technical aspect of installing ERP systems is undoubtedly critical, but the management aspect of ERP systems could have an even greater impact on the success of the system or use. Davenport [4], Bowersox et al. [7], and Jacobs and Whybark [8] asserted that ERP was not only a software package but also “a way of doing business”. There is no single “best process” to do business as ERP systems assume. “Misfits”, the gap between the functionality offered by ERP systems and that required by the adopting company, would arise from country-specific or company-specific requirements [9]. These misfits can be related to data format, operating procedures, and output format, which force companies to make package and/or organizational adaptation during the implementation process. Studies indicate that no ERP implementation can succeed without resolving those misfits [9,10]. Even worse, firms can lose their source of competitive advantage by adopting ERP systems that do not fit their business strategies [4].

2. Multinational and multi-site ERP implementation

In practice, the magnitude and impact of such misfits will be even stronger when ERP is implemented across multiple facilities with national differences. Multisite ERP implementation costs more, takes longer, and fails more often due to the emergent technical as well as to organizational elements (complexity of module integration among multiple sites, organizational conflict, politics, etc.). Using the furniture industry as a reference, Jacobs and Whybark [8] illustrated how ERP implementation at multiple facilities could lead to disaster unless the differences in corporate culture, production methods, and customer demand could be reconciled. Markus et al. [11] also recognized the complexities of multisite ERP implementation. When organizations are geographically dispersed, implementing ERP systems involves unique technical and managerial challenges.

If facilities are located in different countries, national differences such as national culture, language, management style, politics, regulations, customs, etc. can affect “the way of doing business” [12,13]. Previous studies have already suggested that these national differences have an impact on different areas of information technology such as technology transfer between different countries [14], global information infrastructure building [15,16], global information management [17], the role of technology [18], global technology planning, adoption and implementation

[19], and others [18,20,21]. In line with these studies, we contend that no universal ERP system can be implemented in different countries successfully without resolving misfits resulting from national differences. The business models, including operating processes underlying most ERP software packages, reflect European and US industry practices. Such operating processes are likely to be different in Asian countries, having evolved in a different cultural, economic, and regulatory environment. As an example, Soh et al. [9] studied ERP implementation practices in a hospital in Singapore and cautioned about potential cultural incongruence in implementing ERP in Asia. Potential misfits could arise from areas including data format, operational procedures (e.g., billing and collection), and output format. Resolving such misfits has required extra implementation time and expense.

Recently several major POM and IS journals such as *Communications of the ACM* (e.g., [22]), *European Journal of Operational Research* (e.g., [23]), *The DATA BASE for Advances in Information Systems* (e.g., [24]), and *Information Systems Frontier* (e.g., [25]) have dealt with ERP implementation issues, but none of the articles from the special issues directly addresses national differences and cultural issues in their studies. The literature has not offered comprehensive studies of dimensions of national differences and how they affect the ERP implementation. Without resolving national differences, organizations are unlikely to apply ERP successfully in integrating the international supply chain systems. Understanding such effects will enable companies to be more proactive in planning for multinational ERP implementation. Specifically we are interested in the following research questions:

1. Which aspect of multinational ERP implementation is affected by national differences? How and why is it affected?
2. What factors of national differences affect multinational ERP implementation practices? How and why do they affect the implementation?

The next section describes the research methodology used to collect data from six companies that have implemented ERP in multiple countries including US, Taiwan and China, Norway, and several European countries.

3. Research design

We used both case study [26,27] and secondary data research method [28,29] to collect necessary data in this project. Case research involves the integration of data gained from organizations of similar nature which have implemented ERP, while the secondary data analysis uses literature review on multinational ERP implementation in Europe.

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