



# A comprehensive study of the relationship between enterprise resource planning selection criteria and enterprise resource planning system success

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## ABSTRACT

We developed a conceptual framework for investigating how ERP selection criteria are linked to system quality and the service provided by suppliers and consultants, and thus how these influenced ERP implementation success. Through a cross-sectional survey of the top 5000 largest companies in Taiwan, using a balanced scorecard concept and path analysis, we showed that four system selection criteria (consultant's suggestion, a certified high-stability system, compatibility between the system and the business process, and the provision of best practices) were positively related to system quality. Three supplier selection criteria (international market position, training support by the supplier and supplier technical support and experience) had a significant influence on supplier service quality, and two consultant selection criteria (consultant's ERP implementation experience in a similar industry and consultant's support after going live) were related to consultant service quality. However, we found that most organizations did not consider all these criteria when implementing ERP systems. Our study also suggested that enhanced system quality and service quality could increase user perspective and ERP success.

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## 1. Introduction

An ERP system is an integrated information technology (IT) that uses common databases and consistent cross-functional information flow to allow organizations to integrate information from different departments and locations. Their availability has prompted many small and medium sized organizations to shift their IT strategies from in-house development to purchasing application software [10]. Clearly, ERP systems can enhance business operations. However, there are several difficulties that must be overcome for the successful implementation of an ERP system [5]. The company must be aware of the factors that influence the success of its implementation to prevent failures.

The perceived characteristics of the product play a major role in the final decision of companies considering buying an ERP system [1]. In choosing a specific system, organizations use a variety of criteria to determine the most suitable one for them. Several previous papers on ERP system selection have discussed the major criteria for the evaluation of the best implementation processes [3,22]. These have shown the differences in the characteristics of the available ERP systems and suppliers but the work has mainly been confined to the ERP selection criteria. Few studies have

examined the relationship between ERP selection criteria and ERP system success among Taiwanese companies.

The selection of an ERP system involves more than interviewing a few suppliers. After deciding that an ERP is right for the company, choosing the most suitable supplier becomes important. The correct supplier will become a long-term partner. Furthermore, ERP suppliers must incorporate the latest IT trends in their systems to remain competitive [20]. During the ERP implementation process, most organizations collaborate with their ERP suppliers and/or consultants. These suppliers and consultants are external facilitators that affect ERP success [25]. ERP suppliers and consultants help not only in improving the quality of the ERP products, but also in ensuring user knowledge and involvement.

Most research to date has considered only ERP suppliers, ERP systems, or ERP consultants, or two of these; seldom have all three been considered simultaneously in their effect on the success of ERP implementation. Furthermore, the research has mainly discussed the pre-implementation stage; few researchers have done further investigation on subsequent effects, such as the influence that the selection criteria have on the success of the organization.

We therefore decided to develop a conceptual framework for investigating how ERP selection criteria are linked to system quality and service quality and thus influence ERP system implementation success. Our study adopted a cross-sectional survey of the top 5000 largest companies in Taiwan to examine the influence of various ERP selection criteria.

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2. Literature review

2.1. Pre-implementation consideration factors

The factors that underlie ERP system success are not the same as those that determine implementation success. For the former, selecting the right solution is critical, whereas the latter depends on software and hardware characteristics. Organizations usually treat system suppliers and implementation consultants as major external support. It is therefore important that consultants and suppliers understand the business and translate the ERP requirements to the organizational and process levels [17]. In this stage the determination of pre-implementation factors, such as ERP system selection criteria, ERP supplier selection criteria, and ERP consultant selection criteria, are critical.

2.1.1. ERP system selection criteria

The characteristics of the ERP system should match the criteria used by the company to select an IS. Youakim and Jean [26] pointed out that risk management is an important part of every successful business model when dealing with socio-economic changes. Also, security concerns play a major role in minimizing risk by protecting a business' intangible resources and knowledge. Therefore, risk management and security control might be considered major factors that should be used to evaluate system quality. Functionality, system reliability, and fit with the systems of parent and/or other allied organizations were found to be the three most important criteria by Kumar et al. [14]. In an overlapping study, Birdogan and Kemal used 17 selection criteria as the determinants of ERP package selection: fit with parent organization systems, cross-module integration, compatibility with other systems, references of the vendor, vision, functionally, system reliability, consultancy, technical aspects, implementation time, methodology of the software, market position of the vendor, ease of customization, best fit with organizational structure, service and support, and cost and domain knowledge of the vendor. Based on a review of the criteria used in prior studies, we chose eleven ERP system selection criteria as the most important for our study:

- a) consultant's suggestions,
- b) flexibility in adjusting demands according to business requirements,
- c) a complete mechanism for risk management and security control,
- d) the ability to integrate different platforms and data,
- e) ERP systems that are used by customers and suppliers,
- f) ease of integration with other systems (e.g., CRM and SCM),
- g) a certified high-stability system,
- h) ease of use and maintenance,
- i) compatibility between the system and the business process,
- j) the provision of best practices, and
- k) implementation time.

Table 1 summarizes the literature on the ERP system selection criteria.

**H1a–H1k.** ERP system selection criteria (a–k) is positively correlated with ERP system quality

**H2a–H2k.** ERP system selection criteria (a–k) is positively correlated with net benefits.

2.1.2. ERP supplier selection criteria

In addition to the ERP system selection criteria, the selection of the system supplier also affects ERP system success. Here, primary considerations generally includes the need for extended technical

**Table 1**  
Results of the literature review of ERP system selection criteria.

Selection criteria	References
a. Consultant's suggestions	[3]
b. Flexibility in adjusting demands according to business requirements	[3,14]
c. A complete mechanism for risk management and security control	[26]
d. The ability to integrate different platforms and data	[3,14]
e. ERP systems that are used by customers and suppliers	[3]
f. Ease of integration with other systems (e.g., CRM and SCM)	[3,14,21]
g. A certified high-stability system	[3,14]
h. Ease of use and maintenance	[3]
i. Compatibility between the system and the business process	[3,5]
j. The provision of best practices	[14]
k. Implementation time	[3]

assistance, emergency maintenance, updates, service responsiveness, solutions provision, design, customization support, and user training [27]. Some companies also place emphasis on learning from past experience and service infrastructure when selecting their ERP system. Thus, among the supplier evaluation process criteria, consideration should be given to supplier reputation, financial stability, and supplier vision. Moreover, sales references and the internationality of the supplier may be important in the selection process. As Somers and Nelson [19] mention, many projects have failed due to a lack of proper training support during the ERP implementation process. Finally, to cope with technical or other problems during installation, implementation, or go-live periods, companies need support from suppliers in terms of IT expertise and domain knowledge. Verville and Haltingen proposed three supplier evaluation criteria: size, financial stability, and reputation. From these suggestions, we selected six criteria as for our study:

- a) international market position,
- b) a good reputation in the field,
- c) training support by the supplier,
- d) financial position,
- e) technical support and experience, and
- f) support for maintaining and updating the system after going live.

Table 2 summarizes the results of the literature review on ERP supplier selection criteria.

**H3a–H3f.** ERP supplier selection criteria (a–f) is positively correlated with ERP supplier service quality.

**H4a–H4f.** ERP supplier selection criteria (a–f) is positively correlated with net benefits.

2.1.3. ERP implementation consultant selection criteria

Many organizations use external consulting organizations to help them in the ERP selection and implementation process and in the technical evaluation of the chosen solution. Consultants are not only well trained in ERP implementation methodologies but also

**Table 2**  
Results of the literature review of ERP supplier selection criteria.

Selection criteria	References
a. International market position	[3,14]
b. A good reputation in the field	[3,14,22]
c. Training support by the supplier	[14,19,27]
d. Financial position	[22]
e. Technical support and experience	[3,14,21,23,27]
f. Support for maintaining and updating the system after going live	[3,14,27]

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