

Assessing ERP Risks and Rewards

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INTRODUCTION

Enterprise resource planning (ERP) systems claim to meet the information needs of organizations. These off-the-shelf software packages replace hard to maintain solutions created by IS departments or older off-the-shelf packages that often provided only piecemeal solutions to an organization's information needs. ERP systems evolved from material requirements planning (MRP) systems and manufacturing resources planning (MRP II) systems. ERP serves the entire enterprise, not just manufacturing and inventory control as with its predecessors. ERP integrates information for the entire organization in a single database. But ERP implementations are often complex and experience serious problems. Failures, abandoned projects, and general dissatisfaction have been well publicized in the business press. ERP systems are "expensive and difficult to implement, often imposing their own logic on a company's strategy and existing culture" (Pozzebon, 2000, p. 1015).

BACKGROUND

Three characteristics distinguish ERP implementations from other IT projects (Somers, Ragowsky, Nelson, & Stern, 2001).

- ERP systems are "profoundly complex pieces of software, and installing them requires large investments of money, time and expertise (Davenport, 1998, p. 122).
- The packages may require changes in business processes and procedure, induce customization, and leave the implementing firm dependent on a vendor for support and updates (Lucas, Walton, & Ginsberg, 1988).
- The adopting firm is usually required to reengineer its business processes. As a result, the project must be managed as a broad program of organizational change rather than a software implementation (Markus & Tanis, 2000; Somers et al., 2001).

Despite these risks, global firms annually spent \$10 billion on ERP software and another \$10 billion on consultants to implement the systems in the late 1990s (Davenport, 1998). An AMR study estimated 2001 firm spending on ERP systems at \$47 billion (Cotteleer, 2002). CIOs identified ERP as a

leading application and technology development in a 2005 survey (Luftman, Kempaiah, & Nash, 2006).

This article will discuss the benefits firms expect to realize by adopting ERP systems, why some firms do not adopt these systems, risks associated with ERP implementation, some well-publicized ERP failures, risk management tools, and future trends in ERP implementation.

WHY DO FIRMS ADOPT ERP?

Firms adopt ERP for technical and business reasons. The technical reasons include reducing systems operating costs, solving specific problems such as Y2K, accommodating increased system capacity, and solving maintenance problems with legacy systems. Business reasons may include presenting a single face to the customer, quoting realistic delivery times, accommodating business growth, improvement of business processes, standardization of data, reduction of inventory carrying costs, and elimination of delays in filling orders (Markus & Tanis, 2000).

The rapid growth of the commercial market for ERP is attributed to the following factors (Watson & Schneider, 1999):

- Use of the popular client/server platform
- Can be used as an enabler for reengineering projects
- Y2K compliant
- Marketed to CEOs and CFOs as "strategic solutions" rather than as transaction processing software
- A way to outsource a significant part of the IS function (Watson & Schneider, 1999)

Advantages of ERP systems include (Rashid, Hossain, & Patrick, 2002):

- Reliable information access by using a single database
- Avoiding multiple data entries, reducing cost, and improving accuracy
- Delivery and cycle time reduction minimizing delays in reporting
- Cost reduction including time saving and improved controls
- Easy adaptability with business process options based on best practices easy to adapt

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- Improved scalability
- Improved maintenance with long-term vendor contracts
- Global outreach with extensions to modules such as CRM and SCM
- E-commerce and e-business capabilities

An example of a decision to adopt an ERP system is provided by Geneva Pharmaceuticals, a manufacturer of generic drugs. Faced with eroding margins and continuing price pressure, the existing systems were proving inadequate. Data shared across business units had to be re-keyed, resulting in frequent errors. Data were locked in “functional silos” and did not support new processes. Geneva adopted ERP to solve the following problems:

- “implement best practices in business processes,
- integrate data across business units (hence reduce re-keying and maintenance costs),
- enforce data standardization (to reduce software maintenance costs),
- integrate well with new technologies or systems of acquired companies,
- provide scalability with growing product and customer base, and be Y2K (year 2000) compliant.” (Bhattacharjee, 2000, p. 12)

A survey of Fortune 1000 firms identified organizational changes following ERP implementations, including (Jones & Young, 2006):

- Greater collaboration among functional areas in divisions
- Reorganization of processes
- Greater integration of processes across the organization
- Reduced silo behavior within divisions of the organization
- Reduced costs of operations
- Reduced silo behaviors across the organization
- Greater collaboration across divisions of the organization
- Greater integration of processes within divisions.

In addition, Jones and Young (2006) found people have a better view of the big picture, utilize more teamwork, and are more receptive to change.

With the identification of the prospective benefits of ERP, why have some firms not adopted ERP?

WHY DO FIRMS NOT ADOPT ERP?

Markus and Tanis (2000) identified three broad categories of reasons why firms that otherwise have all or some of the

reasons to adopt ERP systems, do not adopt it, or only adopt ERP in part. These firms may adopt only certain modules and rely on legacy systems or new custom systems for their needs. Other firms may begin an implementation only to discontinue it for a variety of reasons. The reasons are:

1. Lack of feature-function fit
2. Company growth, strategic flexibility, and decentralized decision-making
3. Availability of alternatives to increase systems integration

Lack of feature-function fit may be due to the design of most ERP for discrete manufacturing. Many companies have specialized processes common to their industry, which may not be solved by the best practices embedded in ERP systems. The various modules may not fully support process manufacturing industries such as food processing and paper manufacturing, project industries such as aerospace, or industries that manufacture products with dimensionality such as clothing or footwear (Markus & Tanis, 2000). As the ERP market becomes saturated, vendors are designing packages for industries that were previously viewed as too complex.

Companies concerned with maintaining rapid growth rates, those needing strategic flexibility, and those without a top down decision-making style may be non-adopters or partial adopters of ERP systems. Dell Computer Corp. planned full implementation of SAP R/3 but discontinued the implementation after installing the human resource module. Dell's CIO expressed concern with the software's ability to keep pace with Dell's extraordinary growth rate. Visio, a software company subsequently acquired by Microsoft, expressed concern with the ability of SAP to handle the frequent changes it required to its sales analysis and commission requirements (Markus & Tanis, 2000, p. 29).

The experiences of Dell and Visio focus on the need for efficiency and flexibility in dealing with the external environment and internal processes. In a stable environment, mechanistic structures are appropriate consisting of “high degrees of standardization, formalization, specialization and hierarchy” (Newell, Huang, Galliers, & Pan, 2003). In a dynamic environment, organic structures are needed to enable organizations to be flexible to change products, processes, and structures. In these organizations, low levels of standardization, formalization, specialization, and hierarchy are most appropriate. ERP may maximize organizational efficiency at the cost of flexibility (Newell et al., 2003). The result may be an inability to respond quickly to changes in the environment, reducing the firm's competitiveness.

Organizational culture may also be a factor in non-adoption or partial adoption of ERP systems. Kraft Foods Inc. was highly decentralized but slowly moving to a one-company philosophy. ERP was regarded as culturally inappropriate with this strategy (Markus & Tanis, 2000).

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