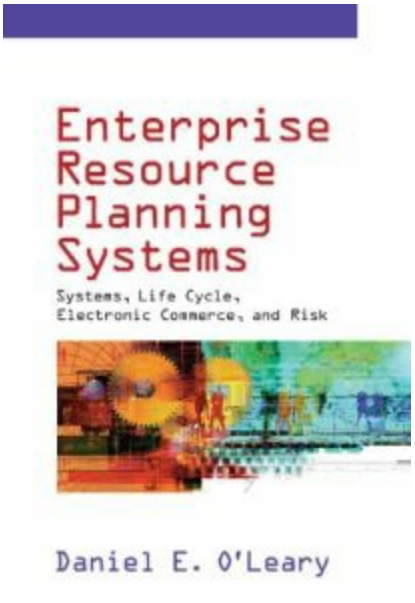

Book Enterprise Resource Planning Systems

Systems, Life Cycle, Electronic Commerce and Risk

Daniel E. O Leary
Cambridge UP, 2000

Recommendation

Because this is a dense read, you won't be surprised to learn that the author, Daniel E. O'Leary, is a Ph.D. If you don't have a conversational grasp of acronyms - including, but not limited to ERP, LAN, WAN, SMEs BOPSE, MAPs, SAP and BAAN - then you'll have to decode as you read. If you're actually interested in using the business resource known as "Enterprise Resource Planning," or ERP, your company should be grossing some $200 million a year, because ERP costs about $15 million to implement. While O'Leary makes a very compelling case in favor of ERP, citing integration of information infrastructure, real-time data, value creation and other wonderful attributes, this is a very expensive and risky resource to pursue. Companies such as Microsoft and Cisco had a hard time implementing it and even they have to worry about cost *BooksInShort* warns that this is serious tech for Big Money companies. Mom and Pop operations need not apply.

Take-Aways

- Enterprise Resource Planning (ERP) is expensive. It costs at least $15 million to implement.
- An ERP system can yield cost advantages from of the integration of information.
- ERP is so expensive that even Microsoft found some features cost-prohibitive.
- ERP is complicated. Because of its cost and complexity, higher-ups have to approve it.
- ERP means a massive restructuring of a company's infrastructure.
- Using ERP means taking a huge risk. Companies have gone bankrupt trying to use it.
- Companies find that they have to attain ERP to be competitive with rivals.
- Training is a very important component of ERP.
- ERP is a growing, thriving business.
- The world's biggest companies, such as Oracle, Microsoft and Cisco, utilize ERP.

Summary

Is ERP for Me?

Enterprise resource planning (ERP) systems are corporate marvels that are changing the business and information technology worlds in the following dimensions:

- ERP affects most major corporations in the world - A single ERP system is used by 60% of multinational firms. SAP, its producer, is conquering the world. Almost every important company is more or less in SAP's hands.
- ERP affects many small and medium enterprises (SMEs) - The impact is not limited to giant firms. By 1997 SAP expected 50% of its revenues to come from SMEs.
- ERP affects competitors' behavior - One quarter after Quantum Corp., a maker of hard drives, began using Oracle's Applications, its competitor, Western Digital, purchased the same apps.
- ERP affects business partner requirements - ERP firms operate in real-time and they expect the same thing from their partners.
- ERP has changed the nature of consulting firms - Services involving ERP packages generate one-third to one-half of the total consulting revenue at national professional services firms.
- ERP provides one of the primary tools for reengineering.
- ERP has diffused many "best practices" - ERP systems use best practices. One of SAP's products uses more than a thousand of them. Any firm that uses the product gains access to these practices.
- ERP gave client-server computing its first enterprise product - Client server products always offered many advantages, which could only be utilized when ERP started to grow.
- ERP has changed the nature of the information systems function - ERP replaces major portions of most firms' software. This moves the information system function from programmers to people who have the best knowledge of existing software.
- ERP has changed the nature of jobs in all functional areas - ERP changes the functional nature of all a company's jobs, such as manufacturing.
- ERP has experienced huge market growth - In 1998, the license revenue was $17.2 billion; in 2000 it was expected to be up to $24.3 billion.

> "ERP provides an information backbone that can provide a basis for building electronic commerce applications."

Enterprise resource planning systems give firms transaction-processing models that integrate into the firm's other activities, such as production planning and human resources. By implementing standard processes and a single database that spans the range of enterprise activities and locations, ERP systems provide integration across multiple locations and functional areas. As a result, ERP systems have led to improved decision-making capabilities that manifest themselves in a wide range of metrics, such as decreasing inventory (raw materials, in-process and finished goods), reducing personnel, speeding up the financial closing process and more.

> "One of the most important issues in the ERP engagement is training. An implementation will be a failure if the software runs perfectly, but employees don't know how to use it."

Thus, ERP can be used to help firms create value by changing the basic nature of organizations in several ways:

- ERP integrates firm activities.
- ERP employs best practices.
- ERP enables organizational standardization.
- ERP eliminates information asymmetries.
- ERP provides online and real-time information.
- ERP facilitates intra-organization communication and collaboration.

ERP Systems Background

ERP systems are computer-based systems designed to process an organization's transactions and facilitate integrated real-time planning, production and customer response. In particular, ERP systems generally provide packaged software designed for a client server environment, integrate the majority of a business's transactions and allow access to the data in real time.

> "The average cost of ownership for an ERP implementation is $15 million, typically at a cost of $53,320 per user."

The major ERP vendors are often referred to by the acronym BOPSE, which stands for BAAN, Oracle, Peoplesoft, SAP and J.D. Edwards. SAP, which stands for Systems, Applications and Products in Data Processing, has the largest market share, at some 30% to 60%. SAP is the world's fourth largest software supplier, trailing only Microsoft, Oracle and Computer Associates International.

Deciding To Go ERP

Corporations have used a number of rationales to make the decision to conduct enterprise resource planning, including technology rationales (year 2000 concerns), competitive rationales (to stay in business), business-process rationales (efficiency and productivity issues) and strategic rationales (customer service or quality).

> "Without sufficient resources, ERP creates huge business risk. Firms implementing an ERP may go bankrupt either because of the ERP or completely independent of the implementation."

Technology and competitive rationales provide only limited guidance in making the choices required to implement an ERP. You can use business-process and strategic rationales to guide the design of an ERP system and to evaluate its success, since they provide greater specificity and an improvement benchmark. Ultimately, if you want to gain corporate acceptance for ERP, you need to evaluate these rationales using both monetary and non-monetary measurements. Firms typically measure their reasoning this way, but some concern has arisen about the quality of the underlying data, and when to use it. Evaluating the success of an ERP project requires gathering information about cost throughout the life cycle of the project.

Choosing an ERP System

To choose an ERP system, firms typically conduct a requirements analysis or a gap analysis, or both. A requirements analysis is a review of system requirements for organizational models, artifacts and processes (MAPs). A gap analysis is a way to identify the gaps between what a company has and what it needs. Each analysis has advantages and disadvantages. Requirements analysis can replicate dated processes that should be reengineered. And, unless gap analysis is structured under an ERP, it may generate a best practices plan that isn't feasible.

> "Enterprise Resource Planning systems are computer-based systems designed to process an organization's transactions and facilitate integrated and real-time planning, production and customer response."

Enterprise resource planning software has an increasingly broad range of capabilities. As a result, instead of trying to conduct either requirements analysis or gap analysis, you can work with a consultant to choose a high quality ERP package that your consultant knows and has implemented elsewhere.

> "ERP systems provide integration across multiple locations. As a result, ERP systems have led to improved decision-making capabilities that manifest themselves in a wide range of metrics, such as decreased inventory, personnel reductions, speeding up the financial close process and others."

Requirements analysis and gap analysis focus primarily on functional characteristics; in so doing, they ignore a broad range of other factors. The factors that sometimes aren't considered under either approach include installation time, flexibility, user interface, upgradeability, computing environment, implementation personnel, day-to-day use and functionality.

Implementing ERP Systems

Two primary (and contrasting) approaches are used to implement ERP systems: "phased" and "big bang." In a full big-bang implementation, an entire suite of ERP applications is implemented at all of a firm's locations at the same time. Using big bang, in a matter of days, a company's system goes from using a test version to having the actual system in place handling transactions. Big bang requires simultaneous implementation of multiple modules.

> "Insufficient resources is one of the biggest risks affecting the decision of whether or not to do ERP, and the rationales used for making this decision can also result in business risk."

On the other hand, under the phased approach, modules are implemented one at a time or a group of modules are implemented in one location at a time. Phased implementations are sequential and consist of designing, developing, testing and installing different modules. Unlike a big-bang approach, phased implementation requires a firm to give substantial attention and maintenance to legacy (original) systems to facilitate integration with the new ERP system at each stage.

> "Depending on who you talk to, the primary ERP vendors are referred to as BOPSE (BAAN, Oracle, Peoplesoft, SAP and J. D. Edwards). Other ERP firms include, but are not limited to, Great Plains, Lawson, Platinum, QAD and Ross and Solomon."

Both methods have disadvantages. The disadvantages of the big-bang approach are that huge peak resources may be required, fewer resources will be available for a particular module and the risk of total system failure may be higher. Once the big bang is accomplished, a firm cannot go back to its legacy (original) system easily, and the time between development and implementation may be longer. The phased approach has different disadvantages, including heavy use of temporary interfaces, the need to maintain and revise legacy software, a higher risk of uninvolved and uncoordinated personnel, a higher risk of losing personnel to turnover, a longer installation period and higher total cost.

> "Enterprise resource planning systems are based on so-called best practices - the best way of doing processes. SAP's R/3 incorporates over a thousand of them. What this means is that any firm that installs R/3 has access to a wide range of best practices."

Which approach is optimal? Contingency models suggest that there is no generally optimal approach. You need to determine which method best complements your company's needs.

Stabilization and Training

After the ERP system goes live, your firm will still have a lot to do. Your implementation team must shepherd the firm through the stabilization period. Further, a structure organization is needed to run the ERP system day-to-day. After the system goes live, the firm must determine what needs to be done and redone. For example, data conversion, implementation compromises, process bottlenecks and documentation should all be evaluated to ensure that they continue to meet needs. Compare your plans to what actually happened to determine the extent of implementation compromises.

> "Not all ERP implementations are successful. Implementations succeed and fail for a number of different reasons."

Training is also critically important in setting up ERP. The easiest mistake to make is underestimating the time and cost of training end users. Your implementation will fail if the ERP software runs perfectly, but your employees don't know how to use it.

ERP Risk

Not all ERP implementations are successful. Implementations succeed and fail for a number of reasons. A number of elements add risk or failure to ERP implementations, so you need to use a professional framework to identify the risks that can lead to failure. Organizational risk is the greatest, followed by technical and business risks. Technical risk refers to the risks that arise largely from information processing and technology. Business risks derive from the firm's choice of MAPs (models, artifacts, processes), how those MAPs work in the organization and how well those MAPs facilitate interaction with your firms' partners.

Finding that you have insufficient resources is one of the biggest risks affecting the decision to implement ERP. The rationales used for making this decision can also result in business risk. Firms implementing an ERP may go bankrupt either because of the ERP or completely independent of its implementation. For example, FoxMeyer, which planned to spend $65 million for its SAP implementation, claimed in litigation that SAP was one reason that it went bankrupt.

About the Author

Daniel O'Leary received his Ph.D. from Case Western Reserve University and his MBA from the University of Michigan. He is a professor in the Marshall School of Business at the University of Southern California. He has published over 120 papers in a variety

of computer science, information systems and management science journals.