

Transitioning from legacy systems to an enterprise resource planning system:



Transitioning from Legacy Systems to an Enterprise Resource Planning

System: Benefits and Challenges William Ward Lewis CIS 537 Prof. R. Shi

June 16, 2008 Abstract: As a result of technological advancements, modern businesses seek new and improved methods of conducting their business processes. Systems have been designed to augment and manage core business functions such as production, accounting, procurement, and human resources. However, even with these systems in place, information is unreliable and inconsistent if they are on disparate platforms.

Enterprise Resource Planning (ERP) software tackles this problem by integrating business processes into a centralized system. This paper assesses the stages involved in transitioning from legacy systems to an ERP system. It highlights ERP benefits to businesses, as well as the success and challenges associated with its implementation. Table of Contents Part 1:

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DEFINING ENTERPRISE RESOURCE PLANNING SYSYTEMS Introduction Many successful modern businesses owe their success to computerized business systems. Since the emergence of computers, a series of systems have been developed to aid how people do business. For example, in the 1970s materials requirements planning (MRP) systems were used in manufacturing environments to control direct materials inventory. Similar systems were designed to manage sales and financial accounting in later years. The results of having more than one system to conduct various business functions are variances in data manipulation and information flow from one business function to the other. For example, having one system to manage procurement and having a different system to management financial accounting could cause inconsistencies in accounts payable and accounts receivable data.

For information consistency, businesses need to follow an integrated approach to their business processes. That is, one common system with a centralized data storage location. ERP systems provide businesses with this

option. This paper focuses on how businesses can transition from their legacy systems to an ERP system.

It starts by defining an ERP system and gives a brief history of ERP systems. Later, it examines the different steps involved with moving to an ERP system. It closes with the benefits of ERP systems and the challenges and success factors associated with transitioning to them. Most of the information that was used to compose this paper was taken from prior ERP articles, online reference tools, and ERP books. What is an ERP System? An ERP system integrates an organization's data and services in a single system. ERP systems combine computer hardware and software during the process of integration.

One thing most ERP systems have in common is the use of a single database that is used to store information for different system components. To obtain an ERP status, a given software package must successfully function as at least two systems. For example, a software package can hypothetically be considered an ERP system if it can execute human resources and financial functions. Even though this will accomplish the function of an ERP system, ERP applications typically support much larger business platforms (Wikipedia, 2007). ERP, in its entirety, provides a single database that stores all the data for its individual modules.

Some of the modules an ERP system supports include, but is not limited to:

- Manufacturing
- Supply Chain Management
- Financials
- Projects Human Resources
- Customer Relationship Management
- Data Warehouse

Table 1. 1 summarizes the various modules that an ERP application supports and the

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business functions that are carried out within each module. Table 1. 1 ERP modules and supported business functions

ERP Module	Supported Function
Manufacturing	Engineering, Bill of Material (BOM), Scheduling, Capacity Planning, Workflow Management, Quality Control, Cost Management, Manufacturing Process, Manufacturing Projects, Manufacturing Flow.

Supply Chain Management Inventory, Order Entry, Purchasing, Product Configuration, Supply Chain Planning, Supplier Scheduling, Inspection of goods, Claim Processing, Commission Calculation. Financials General Ledger, Cash Management, Accounts Payable, Accounts Receivable, Fixed Assets, Management Accounting Projects Costing, Billing, Time and Expense, Activity Management Human Resources Payroll, Training, Time and Attendance, Employee Rosters, Benefits Customer Relationship Management (CRM) Sales and Marketing, Commissions, Service, Customer Contact Management, Call Center Support Data Warehousing Supports various self service interfaces for customers, suppliers, and employees History of ERP Systems The concept of ERP evolved from manufacturing systems such as material requirements planning (MRP), and materials resource planning (MRP II). MRP systems were mainly used in the 1970s. MRP systems were utilized to schedule production processes in terms of creating schedules for the operations and purchases of raw materials as they were demanded in production (Wikipedia, 2007).

In the 1980s, MRP systems were enhanced with features to coordinate the manufacturing process through a product development life cycle; i. e. from product planning, parts purchasing, inventory control, to product distribution. This led to the concept of materials resource planning or MRPII (Wikipedia, 2007).

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ERP systems began to circulate in the late 1990s. This was when the model of routing and capacity planning became a major component of software architecture and activity within organizations (Wikipedia, 2007). Since its introduction to the market, ERP software has been used to integrate various business functions including manufacturing, logistics, distribution, inventory, shipping, invoicing, and accounting. Table 1.

2 illustrates the evolution of ERP software and the functions of its predecessors. Table 1. 2: Evolution of ERP systems

System	Year	Function
Inventory Management and Control (Reorder point)	1960s	Maintained the appropriate stock level in a warehouse
Materials Requirement Planning (MRP)	1970s	Scheduled production processes based on production demand
Manufacturing Resource Planning (MRP II)	1980s	Coordinated the life cycle of products manufacturing.
Enterprise Resource Planning (ERP)	1990s	Integrated business activities across functional departments

PART II THE ERP SYSTEM DESIGN PROCESS Unlike traditional software development and implementation who has 7 stages: Problem definition, Feasibility study, System analysis, System design, Detailed design, Implementation, and Maintenance, an ERP system implementation comprises of 6 stages: Planning, Requirements analysis, Design, Detailed Design, Implementation, and Maintenance and Continuous Improvement (Sumner, 2005). This section looks the various stages involved with an ERP system design and activities that are perform in each stage. Planning As with any system design or development, planning plays a vital role.

Proper planning dictates the success of a system design process; whereas, inadequate planning leads to its failure. ERP system design is no stranger to <https://assignbuster.com/transitioning-from-legacy-systems-to-an-enterprise-resource-planning-system/>

this philosophy. Sumner (2005), describes the ERP planning stage as the business justification stage. In the planning stage, the need to implement an ERP system is defined. This stage measures the tangible and intangible benefits that the system will bring to the business.

According to Sumner (2005), tangible and intangible benefits could include: inventory reduction, operating cost reduction, overdue accounts collection, process improvement, and cycle times reductions. Table 2. 1 outlines more tangible and intangible benefits that to consider in an ERP system design planning stage. Table 2. 1: Tangible and intangible benefits to consider in ERP system design planning (O'Leary, ERP)

Tangible Benefits	Intangible Benefits
Inventory reduction	Personnel reduction
Productivity improvements	Order Management improvements
Financial Close Cycle reduction	IT Cost reduction
Procurement Cost reduction	Cash Management reduction
Revenue/Profit increases	Transportation/Logistics Cost reductions
Maintenance reduction	On-Time Delivery
Information visibility	New improved processes
Customer responsiveness	Cost reduction
Integrating Standardization	Flexibility
Globalization	Business Performance

Supply/Demand Chain Requirements Analysis After successfully analyzing the underlying benefits an ERP system will bring to the business, the next step in the design process is requirements analysis. Some of the activities performed in this stage include analyzing the business process and specifying the processes that will be supported by the ERP package (Sumner, 2005).

Sumner (2005) indicated that will be important for organizations to select systems that that tailor their specific goals and competitive strategies, since <https://assignbuster.com/transitioning-from-legacy-systems-to-an-enterprise-resource-planning-system/>

they are buying into vendors' views of best practices during this stage.

Sumner (2005) also pointed out that ERP software vendors offer industry specific best practices. For example, chemical, oil, aerospace, etc. To successfully choose the right ERP software for your organization, a checklist of activities should be performed. These activities include creation of a vision, creation of a feature or function list, creation of a software candidate list, narrowing the field to four to six serious candidates, creation of the request for proposal, revision of the proposals, selection of two to three finalists, selection of the winner, justification of the investment, negotiation of the contract, running a pre-implementation pilot, validation of the justification (Sumner, 2005).

According to Sumner (2005) technology factors should also be considered. These factors include cost of technology, installation, user interfaces, upgradeability, computing environment, and personnel requirements. Design The design stage imposes the decision of re-engineering versus customization. When using the re-engineering approach, the ERP software package is selected as-is and the business process is redesigned to fit the package. On the contrary, when using the customization approach, the ERP software package is customized to fit the business process (Sumner, 2005).

The design process is critical because the decision of whether to use the re-engineering or customization approach can have benefits as well as disadvantages. For example, the organization may reap the all the benefits and impact of an ERP package by using the re-engineering approach.

However, using this approach may result in disruption of business, since the business must be redesigned to fit the package. In the same token, <https://assignbuster.com/transitioning-from-legacy-systems-to-an-enterprise-resource-planning-system/>

customizing the package may result to no business disruption. However, there will not be any major change in the business process.

Customization may also cause difficulties in upgrading to newer versions of the package (Sumner. 2005). Other approaches used in ERP system design include vanilla, single-vendor ERP with customization, in-house with supplementary ERP modules, and application service provider (ASP). However, Sumner (2005) illustrates that the best approach to use in the design stage is the vanilla approach.

This approach simulates the re-engineering approach. According to Sumner (2005), there are several benefits involved with using this approach. These benefits include ease of implementation, and better control of budget. Regardless of which approach that is used, the businesses benefit should be the main focus. That is, the choice should be made based on the extent to which a specific approach will benefit the business. For example, if the customization approach will yield more benefits than the vanilla or re-engineering approach, then it will be a sensible alternative to use this approach.

Detailed Design When the decision has been made on which approach is used in the ERP system design, it is now time for the detailed design. In this phase, the models, processes, and information supported by the system are selected. This phase involves interactive prototyping and extensive user involvement in determining the elements of system design (Sumner. 2005).

In this phase, the business process for each functional area is visited.

Sumner (2005) pointed out that best practices provide models that support <https://assignbuster.com/transitioning-from-legacy-systems-to-an-enterprise-resource-planning-system/>

each functional area. The process for using these best practices includes (Sumner, 2005, p. 47):

- “ Select applicable business processes
- Discard inapplicable business processes

When business processes are not matched up with the system, they serve as foundation for re-engineering

- Identify any areas not covered by the best practices and which may require the development of customized models. ”

Also, during the detailed design process, prototyping and extensive user involvement takes place. This is used to determine systems design elements.

Different ERP software vendors use different methods in determining these elements. For example, SAP uses the following design elements: organizational, master data, transactions, output, workflow, and reporting (Sumner, 2005). Implementation The implementation process mainly involves transporting data from the old system, building interfaces, implementing reports, test-driving the new systems and addressing design issues. This phase also address data ownership and security and end user training.

As with other phases of ERP system design, the implementation phase also uses several different strategies. These strategies include: cut-over or big bang, mini big bang phased by module, phased by site (Sumner, 2005). The cut-over and mini big bang strategies use a more drastic implementation whereas the phased by module and phased by site use a less drastic implementation. There are several risk factors to consider during implementation. These factors vary depending on the implementation strategy and the design consideration used.

For example, there could be lesser risks when using the phased approach as compared to using the big bang approach. Similarly, there could be lesser risk when applying the vanilla design approach as compared to applying customization to an ERP package.

Maintenance and Continuous Improvement

As with all systems, an ERP system needs to be maintained after successful design and implementation. During maintenance and continuous improvement, the following activities are performed: technical support, upgrades, and system enhancements.

Enhanced functionality is also added to existing modules. The ease of maintenance also depends on the system design decision. It will be easier to maintain the system when the vanilla approach was used in the design phase rather than customization.

PART III ERP BENEFITS

How ERP Benefits the Business

This section highlights the various benefits an ERP system introduces to the businesses. Some of ERP's benefits to the business include: the connection of heterogeneous business environments, and the minimization of IT support and cost. In this section, we will be discussing how ERP benefits some functional areas of the business.

Three functional business areas are visited and discussed; they are customer relationship management, materials management, and human resource management.

Customer Relationship Management (CRM)

A customer relationship is quite crucial to every business. Organizations need to have the ability to not only build their customer base, but also be capable of forecasting customers' buying trends as well as using a centralized method of handling customers' contacts, billings and payments. Businesses also need to use the right method of advertising in order to build their customer base. As far as <https://assignbuster.com/transitioning-from-legacy-systems-to-an-enterprise-resource-planning-system/>

CRM is concerned, ERP can be used to integrate several areas. Some of these areas are contact integration, product integration, quote and order management, and product, order, and invoice repository.

When CRM contact is integrated with ERP systems, customer contacts billing and shipping information is seamlessly synchronized. When this information is in sync, it is easy for business analysts to make forecasts on customers' buying or investments trends. Product integration makes the handling of part numbers, sales order, and bill of materials quite easier. Quote and order management integration makes it simple to upgrade existing quotes or forecasts to orders (Smith, 2007). ERP also uses a central repository for all orders and invoices. This provides a linkage to all purchase products and can be used as a tracking mechanism for past sales and purchases.

Human Resource Management ERP provides a common linkage between human resource, finance, and information technology. It provides several modules that collectively work together to form a human resource management system (HRMS). The modules of an HRMS include payroll, time and labor management, benefits administration, HR management, and recruiting (Wikipedia, 2007) The payroll module gathers information on employees' time and attendance and automates the payroll process. It also manages payroll related calculations such as deductions and taxes as well as the generation of pay checks and tax reports (Wikipedia, 2007). In addition, the payroll module integrates financial and time-keeping data to handle direct deposits and check payments.

The time and labor management module put together all time and labor related activities. This module is mainly use to analyze cost and efficiency metrics in an organization. The benefits administration module provides a centralized system of administering and tracking employees' participation in benefits programs. Examples of benefits programs include insurance, compensation, and profit sharing and retirement.

The benefits administration module track employees through their employment life cycle, that is, form the time they apply for a position to the time they retire. This module collects information such as demographic and addresses data, selection, training and development, capabilities and skills management, and compensation planning records (Wikipedia, 2007). ERP has made it possible for online and automated recruiting. With online recruiting, it is possible for HR to gather potential candidates for opened positions. This is made possible by the integration of talent management. Talent management provides the following benefits to the recruiting module (Wikipedia, 2007):

- “ The analyzing of personnel usage within an organization
- Identification of potential applicants
- Recruitment via company-facing listings
- Recruitment via online recruitment sites or publication that market to both recruiters and applicants”

Materials Management ERP benefits materials management by providing an inventory visibility thought the activities of direct and raw materials.

This includes inbound, receiving, order processing, storage, shipping and billing. The main functionalities of materials management modules in ERP systems are:

- Provides inbound and outbound visibility to inventory

- Provides a broad view of products; that is, on hand and in-transit products

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are visible to both shop floor workers and top executives •Track inventory levels at all locations of an enterprise •Provides a centralized location of suppliers' information and maintenance •Provides user interfaces that simplify procurement, inventory, and billing. PART IV ERP IMPLEMENTATION CHALLENGES Challenges Faced with Implementing and Maintaining an ERP System ERP offers a tremendous amount of benefits to businesses. However, studies have proven that a significant number of ERP projects have failed.

This section looks at some challenges associated with ERP implementation. Maurer (2006) put these challenges into three categories: human, finance, and technological. Generally, humans are resistant to change. This can pose some challenges to an ERP implementation especially if the project leaders don't get users involved. Maurer (2006) indicated that since ERP takes away the old way of doing things and introduces new ways, users tend to think that they are losing control. People get accustomed and master the use of their older systems and so they grow resistance when asked to get rid of them.

Another factor that challenges an ERP implementation is finance. ERP projects often requires large sum of capital, from \$500, 000 to hundreds of millions of dollars. The longer it takes to complete an ERP project, more money is prone to be spent. Some ERP projects fail because the budget gets exhausted before the end of the project. In an on online article, Champy (2005) mentions a project that was abandoned after an amount of \$200 million dollars was invested into it. Form a technology stand point, ERP projects tend to fail because of lack of skilled technology personnel and systems incompatibility.

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ERP projects are heavily technology orientated and thus require a significant amount of technical expertise. PART V ERP SUCCESS FACTORS Success Factors when Implementing an ERP System Even though the success rate in ERP implementation is quite low, there are several factors that lead to successful implementation. This section discusses the success factors. Kimberling (2006) lists and explains 7 critical success factors associated with an ERP project: focus on business processes and requirements first, focus on achieving a healthy ERP return on investment (ROI), strong project management and resource commitment, commitment firm company executives, take time to plan up front, ensure adequate training and change management, make sure you understand why you implementing ERP. Kimberling (2006) explains that companies often get tied up assessing the technical capabilities of ERP software and loses focus on the business benefits.

An ERP project will be successful is the primary focus is the benefits it will bring to the business. Also, the focus should be places on how much returns on investments. Kimberling (2006) argues that a successful ERP project “ entails establishing key performance measures, setting baseline targets for those measures, and tracking the performance after go-live” (Kimberling, 2007, para 4) Kimberling’s (2006) closing argument was that companies developed a clear understanding of their business objectives and ERP goals. This will aid in the judgment of whether or not to engage in an ERP project. Conclusion ERP systems us becoming increasingly popular in today’s businesses.

It provides modules that integrate functional and operational business processes. ERP became most popular in the 1990s. The concept of ERP was leveraged after manufacturing systems such as MRP and MRP II. Like most systems development and design, ERP follow a definitive system design methodology. The phases involved in an ERP system design process include planning, requirements analysis, design, detailed design, implementation,