



E-Business Strategy

Week 5: Enterprise Resource Planning (ERP)

Outline

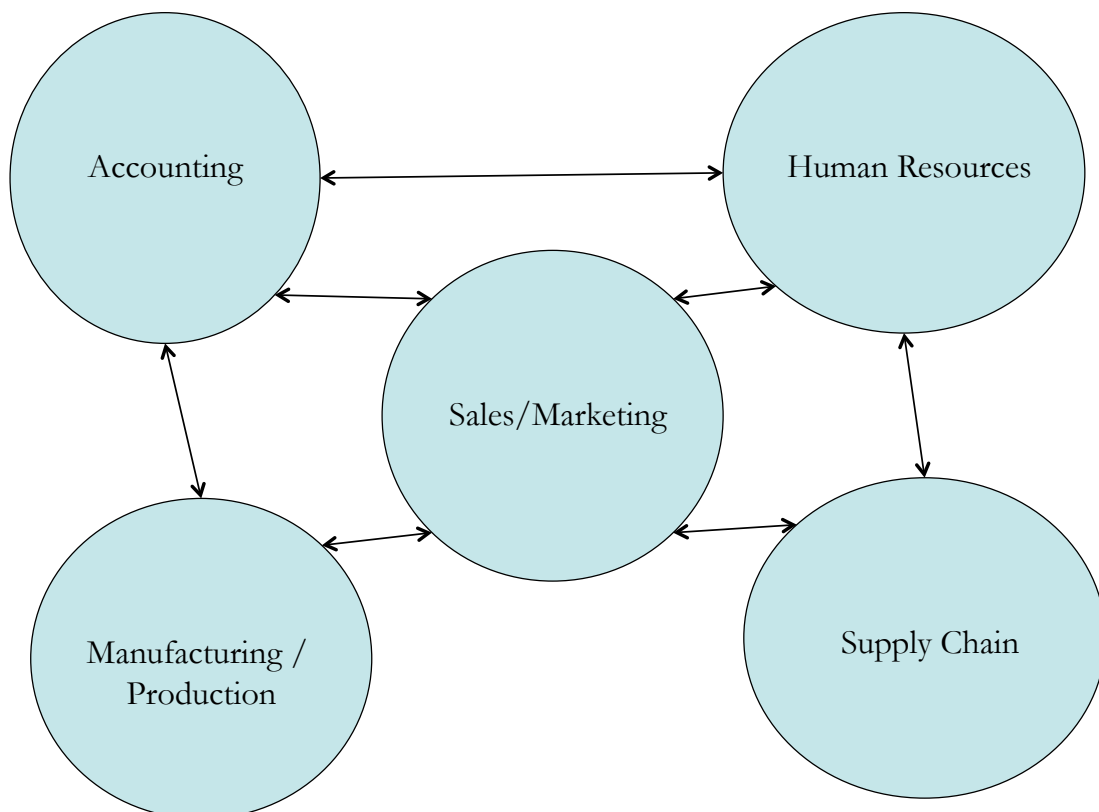
- Introduction to ERP
- ERP Development and Implementation
- Issues of Business Process Re-engineering
- Main Players in the ERP Software Market

What is Enterprise Resource Planning?

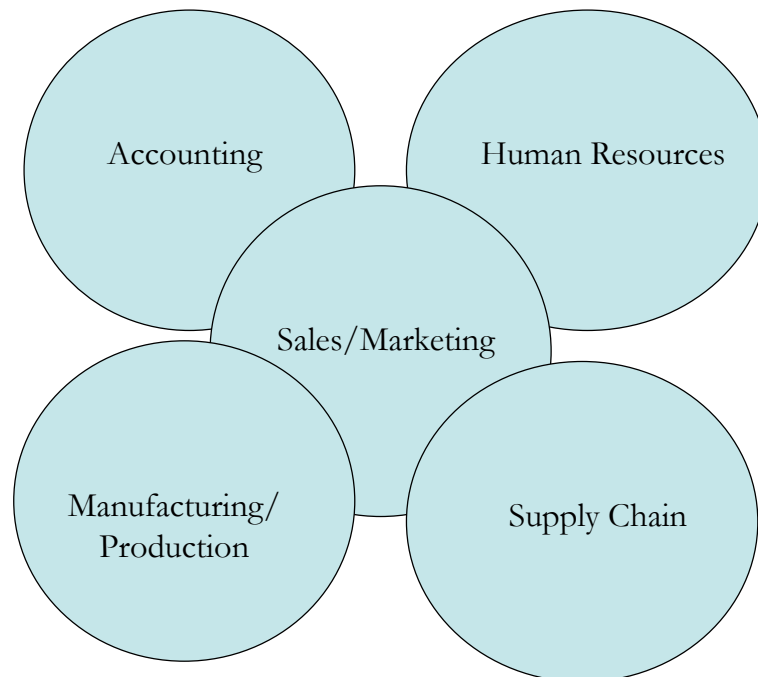
- ERP is the integration of all departments and functions across a company by the creation of an integrated suite of software programs that run on unified corporate, networked databases or via Cloud-sourced providers.



Pre-ERP



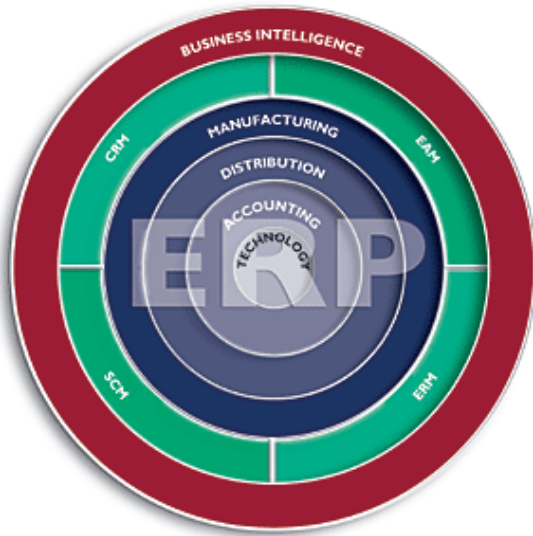
ERP



What can ERP do?

- ERP software systems: the back office information system applications that integrate, run, and partially automate everything from accounting to human resources and sales order processing – minimising duplication of information resources in separate departments.
- Typical applications include: manufacturing, logistics, distribution, inventory, shipping, and invoicing. (primarily concern operations or production aspects of business activities)

What can ERP do?



- ERP automates the tasks necessary to perform a business process
 - such as order fulfillment, which involves taking an order from a customer, shipping it and billing for it.
- Shares common data bases and business practices
- Produces information in real time; shares that information with all relevant departments.

Reasons for Implementing ERP

measured on 1-5 scale (5 best)

<i>Most important</i>	Avg	Small firms	Large firms
Replace legacy systems (i.e. various IS in different functional areas)	4.06	87%	90%
Simplify & standardise	3.85	72%	95%
Improve interactions-suppliers & customers	3.55	71%	76%
Gain strategic advantage	3.46	70%	92%

Reasons for Implementing ERP

measured on 1-5 scale (5 best)

<i>Less important</i>	Avg	Small firms	Large firms
Link to global activities	3.17	36%	74%
Keep up with competitors	2.99	42%	60%
Ease of upgrading systems	2.91	35%	54%
Restructure company organization	2.58	33%	35%

Enterprise Resource Planning (ERP)

- ☑ ERP modules include
 - ☑ Basic MRP (manufacturing resource planning)
 - ☑ Finance
 - ☑ Human resources
 - ☑ Supply chain management (SCM)
 - ☑ Customer relationship management (CRM)

Enterprise Resource Planning (ERP)

- ☑ ERP can be highly customized to meet specific business requirements

- ☑ ERP systems can be integrated with
 - ☑ Warehouse management
 - ☑ Logistics
 - ☑ Electronic catalogues
 - ☑ Quality management

Upon whom is ERP targeted?

- Owing to the expensive and time consuming processes involved in implementation, ERP is directed towards mid to large size corporations who are established.
- ERP is essentially targeted to the entire market.
- Its main focus is on Financial Services, Human resources, and Production/Manufacturing.

ERP Development and Implementation

What is a process?

‘a set of interrelated work activities characterized by specific inputs and value-added tasks that produce customer-focused outputs. Business processes consist of horizontal work flows that cut across several departments or functions.’

(Sethi & King 1998)

Core process maps

- Core process: fundamental processes employed to deliver value to customer
 - Process map: illustrates core processes and their interconnections
 - Probably contains 5–8 processes
 - Identifies process vision for organisation

Processes for a Non-ERP system

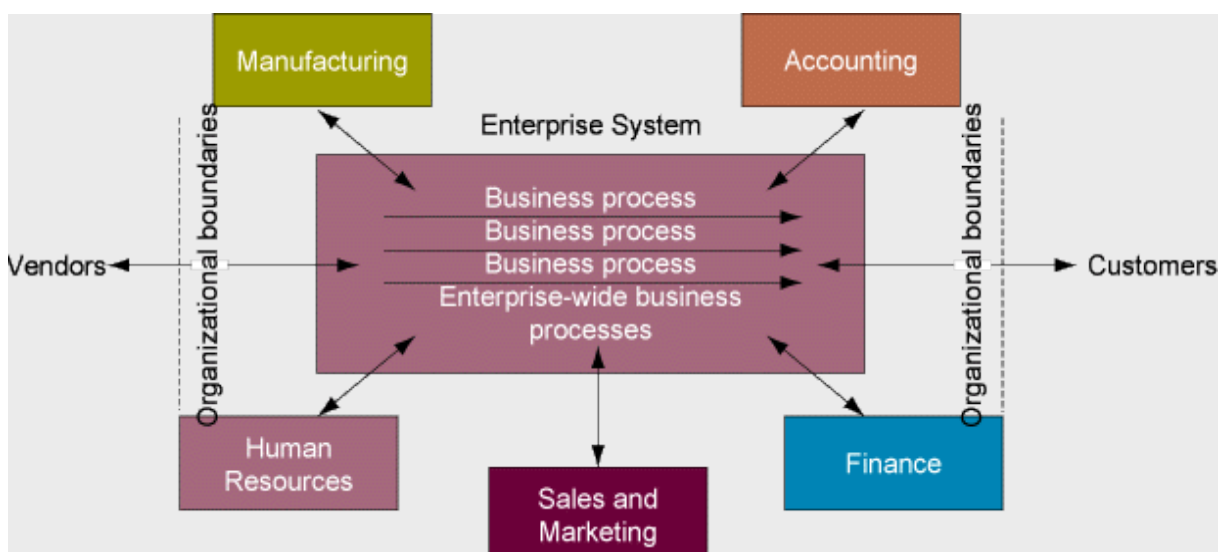
1. Salesperson enters customer order
2. Salesperson notifies CRM of order
3. CRM employee records order
4. Salesperson notifies accounting
5. Accounting employee records sale
6. Salesperson notifies warehouse
7. Warehouse employee records order
8. Warehouse employee notifies packing & shipping
9. Shipping employee records order
10. Shipping employee notifies procurement
11. Procurement employee records order for raw materials replacement
12. Procurement employee notifies production to make more
13. Production employee records order

Processes for a ERP Software

Integration of Various Sub-systems

1. Sales person enters customer order on sales order system (SOS)
2. SOS:
 1. Notifies CRM
 2. Notifies Accounting
 3. Records sale in Accounting System
 4. Notifies Warehouse
 5. Records order on Warehouse Management System (WMS)
3. WMS
 1. Notifies packing & shipping
 2. Records order on Packing and Shipping System (PSS)
4. PSS
 1. Notifies procurement
 2. Records order for raw materials with Procurement Management System (PMS)
5. PMS
 1. Notifies production to do work
 2. Enters manufacturing order on Production Planning System (PSS)

ERP and Enterprise Business Process



Implications

- Standard and structured work flow to follow and replace previous work flow
- Integrate the interrelated enterprise-wide work flow/business processes.
- Extensive use of UML & DFD, even 'domain specific software architecture' (DSSA, i.e. integration of all conventional process and data modeling)

Implementing ERP

- Holistic approach to implementation
- Need to re-engineer existing business processes to fit processes embedded in software
- Increasing use of web-enablement (Web 2.0, LDAP authentication, mobile apps) to support global availability of some applications
 - Supply chain, customer self-help and self-service, e-commerce applications, Internet marketing systems, sales force automation technologies

Development and Deployment of ERP

- An ERP system uses and is integrated with one or more relational database systems.
- The deployment of an ERP system can involve considerable business process analysis, employee retraining, and new end-user work procedures/flows.
- Because of the wide scope of application within the entire firm, ERP software systems rely on some of the largest bodies of software ever written.
- Developing such a complex and huge software system in a company usually involves an army of analysts, programmers, and users,
- ERP often requires a multi-million Dollar/Pounds/Euro project in itself for bigger companies.

Development & Implementation of ERP

- To implement ERP systems, companies often seek the help of an ERP vendor and/or of third-party consulting companies.
- Consulting in ERP involves two levels, namely business consulting and technical consulting.
 - A business consultant studies an organization's current business processes and matches them to the corresponding processes in the ERP system, thus 'configuring' the ERP system to the organization's needs.
 - Technical consulting often involves programming. Most ERP vendors allow customising their software to suit the business needs of their customer.
 - Professional Consulting Firms: Accenture, LogicCMG, Capgemini, PA Consulting

ERP success factors

- Success is not guaranteed
 - Many disappointments reported
- Good planning – IT and Business Alignment
 - Defining business needs
 - Understanding what/how ERP systems can do
 - Being clear on objectives and goals
 - Make sure IT strategy stays in line with the Business Strategy
- Good project management
 - Configuration decisions are auditable
- Good change management (training)
- Ongoing evaluation and review

ERP: Pros and Cons

Advantages of ERP

- Increase customer responsiveness
- Has an off-the-shelf software database
- Global enterprise wide information
- Provides integration of the supply-chain, production, and administration
- Can incorporate improved best processes into all departments
- Increases communication and collaboration between business units and sites
- Increase decision making capabilities
- May provide a strategic advantage



Disadvantages



- Is very expensive to purchase and even more so to customize
 - \$400,000 - \$300 million
 - Average = \$15 million
- Implementation may require major changes in the company and its processes
- Is so complex that many companies cannot adjust to it
- Involves an ongoing, possibly never ending, process for implementation and refinement
- Expertise is limited with ongoing staffing problems – many skills gaps generated.

Main ERP Vendors in the Market

Types of ERP Software

- There are many web-sites online that describe the different ERP software solutions and allows you to compare each of them for specific company needs:
 - Industry-specific
 - Company-specific
 - Business Functions specific

ASP IT Support for ERP

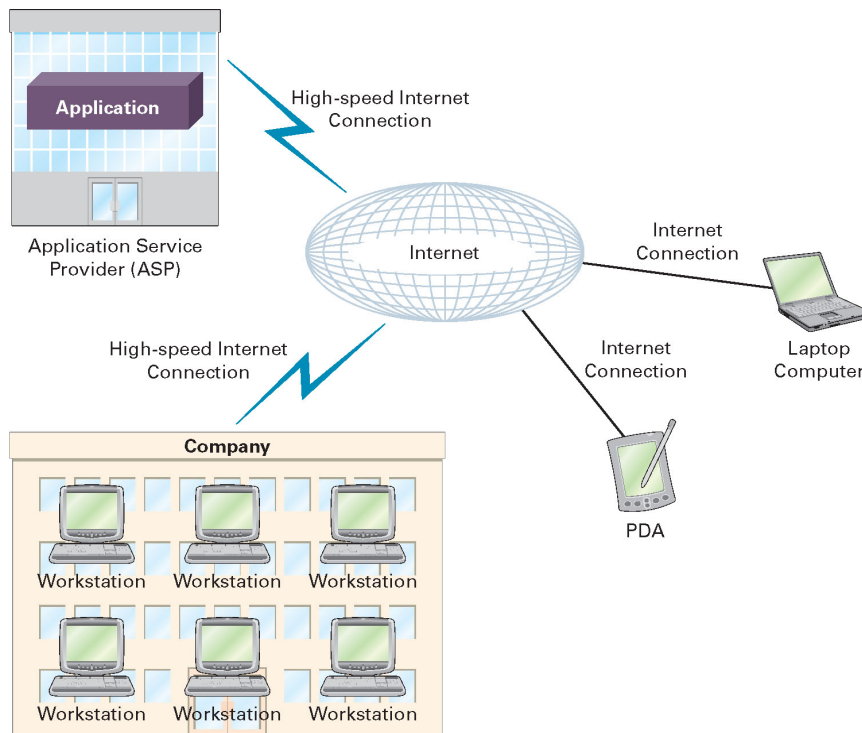


Figure 2.3

A Sample Application Service Provider (ASP) Infrastructure

Brief History of ERP Market

- In 1990 industry about \$1 billion
 - SAP, Baan, PeopleSoft, JDEdwards, Oracle, others
- Rapid growth in late 1990s
- Top 3 Mergers and/or Acquisitions in early 2000s
 - Peoplesoft bought JDEdwards;
 - Oracle bought Peoplesoft
 - SSA global bought Baan

Main Players

- SAP
- SSA +Baan
- Sage
- Lawson
- Great Plains
- Oracle + Peoplesoft
+JDEdwards
- Siebel



Four Main leaders

- Oracle
- People Soft
- Baan + SSA
- SAP



Oracle

- **Their services offer database management software (DBMS) and business process re-engineering.**
- **Products**
 - software applications that develop production tools
 - computer automated software
- **Focus on financial service, and information management solutions.**



People Soft

- Recently acquired JD Edwards /acquired by Oracle
 - US leading designer of applications for managing company operations across company networks
- Focus on Financial, Human Resource, and Manufacturing



Baan

- **Leading provider from Netherlands**
- **Recently acquired by SSA**
- **Products**
 - **Distribution**
 - **Inventory**
 - **Manufacturing**
 - **Project management**
- **One of few ERP companies that does not offer solutions for the financial services industry**
- **Major Clients: Boeing, Reynolds Aluminum, Mercedes Benz, . . .**

SAP



- SAP = Systems, Applications and Products
- Leading German Software Company
- One of the largest software houses in the World (behind Microsoft and Oracle)
- The Largest ERP vendor (SAP R/3 and mySAP ERP)
- Products: Product Distribution, Finance, Human Resources, Manufacturing, Operations Management, Product Lifecycle Management
- Focus on banking, insurance, and world wide financial services
- 80% Fortune 500 Companies use SAP
 - Major Clients: First Chicago, World Bank, Wells Fargo, UMB bank of Missouri, Allstate Corp . . .

Other Competitors

- Accura Software Inc.
- American Software Inc.
- Brain North America
- Datasul United States
- Epicor
- Friedman Corp.
- Geac Computer Corp
- Great Plains Software
- Infinium Software Inc.
- JBA International
- Lawson Software
- Lilly Software
- Microsoft BS
- Pivot Point Inc.
- Profit Key International
- Ross Systems
- Siebel
- Sage
- Visibility Inc.
- Western Date Systems

Niche ERP Market Leader Sage



- A world-leading supplier of accounting and business management software to SMEs.
- Main Products: accounting, payroll and HR, CRM and fixed assets management software.
- Some specialist applications for manufacturing and distribution, construction.
- Key Attractive Business Strategies:
 - Local Solutions in Local Markets
 - Industry Specific Solutions
- Clients: Almost 500,000 UK SMEs, more than 2.4 million USA & Canada SMEs businesses already rely on Sage; some big companies also use Sage, e.g. P&G UK.

Geographic Sales

	N. America	Europe	Asia/ Pacific	Total
SAP	\$3.008b	\$4.211b	\$0.945b	\$8.594b
PeopleS	\$2.160b	\$0.518b	\$0.115b	\$2.880b
Oracle	\$1.544b	\$0.612b	\$0.346b	\$2.663b
Sage	\$0.472b	\$0.491b	n/a	\$0.963b
Microsoft	\$0.688b	\$0.076b	\$0.024b	\$0.804b

Market Share (c. 2000)

	<u>ERP</u>	SCM	CRM	HCM	P&S	Total
SAP	<u>36%</u>	11%	14%	21%	15%	18%
PeopleSoft	<u>8%</u>	5%	5%	19%	8%	6%
Oracle	<u>12%</u>	6%	3%	7%	8%	6%
Combined	<u>20%</u>	11%	8%	26%	16%	12%
Sage-Best	<u>5%</u>	0	1%	2%	0	2%
Microsoft BS	<u>3%</u>	1%	2%	2%	0	2%
Total	<u>64%</u>	23%	25%	51%	31%	34%

References

Papers and Articles:

- Shehab et al (2004), „Enterprise resource planning: an integrative review”
- Martin et al (2005), “Business process re-engineering pays after enterprise resource planning”
- Two case studies (to be made available on Moodle)

Book:

- Chapter 14 of Barry Render and Jay Heizer (2006), Operations Management, 8th edition, Prentice Hall.

Website:

- www.sap.com