Objectives

• Develop an understanding of how ERP systems improve the effectiveness of information systems in organizations
• Recognize the business benefits of ERP systems
• Understand the history and evolution of ERP

ERP Market

• One of the fastest growing markets in software industry
• 34.5% of companies with revenues over $1 billion plan to purchase or upgrade
• $180 billion in sales in 2002
• Maybe as much as $1 trillion by 2010

ERP Systems

• Major investment
  – Cost between $50,000 and $100,000,000+
• Variety of business justifications
  – Replace legacy systems
  – Reduce cycle times
  – Lower operating costs
  – Enables better management decisions
    • Real-time
    • On-line

What is ERP?

• Software tools
• Manages business systems
  – Supply chain, receiving, inventory, customer orders, production planning, shipping, accounting, HR
• Allows automation and integration of business processes
• Enables data and information sharing
• Enterprise-wide system
• Introduces “best practices”

Integrated Systems Approach

• Common set of applications
• Usually requires re-engineering business processes
  – Better alignment
• Limited customization
  – Easier upgrades
• Overcomes inefficiencies of independent systems
• Integrated data supports multiple business functions

<table>
<thead>
<tr>
<th>Table 1.2: Before and After ERP System Standpoint</th>
<th>Before ERP</th>
<th>After ERP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information systems</td>
<td>Stand-alone systems</td>
<td>Integrated systems</td>
</tr>
<tr>
<td>Coordination</td>
<td>Lack of coordination among business functions (e.g., miscommunication and delays)</td>
<td>Supports coordination across business functions</td>
</tr>
<tr>
<td>Databases</td>
<td>Non-integrated data, data have different meanings (e.g., customer, inventory) inconsistent data definitions</td>
<td>Integrated data, data have the same meaning across multiple functions</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Systems are maintained on a functional basis, communication difficult across companies</td>
<td>Uniform maintenance, changes affect multiple systems</td>
</tr>
<tr>
<td>Interfaces</td>
<td>Difficult to manage interfaces between systems</td>
<td>Common interfaces across systems</td>
</tr>
<tr>
<td>Information</td>
<td>Redundant, inconsistent information</td>
<td>Consistent, real-time information (e.g., about customers, vendors)</td>
</tr>
<tr>
<td>System interfaces</td>
<td>May not be state of the art</td>
<td>Rely on client-server model</td>
</tr>
<tr>
<td>Processes</td>
<td>Incompatible processes</td>
<td>Connected business processes which are bound together</td>
</tr>
<tr>
<td>Applications</td>
<td>Disparate applications (e.g., many different purchasing systems)</td>
<td>Single applications (e.g., entire purchasing system)</td>
</tr>
</tbody>
</table>
Overall Business Benefits

- Information
  - Maximizes information throughput
  - Provides timely information
  - Integrates information throughout supply chain
- Minimizes response time
- Pushes decision making down to lowest levels
- Reduces costs
- Cuts inventory
- Improves operating performance

Department Benefits

- Sales
  - Increased efficiency
    - Lower quotes, reduced lead time, improved responsiveness
- Manufacturing
  - Concurrent engineering
  - Faster design and production
- Data Service
  - Accurate customer service history and warranty information
- Accounts Payable
  - Suppliers paid accurately

Systems Benefits

- Eliminating legacy systems
  - Reduces incompatible data
  - Can cause fragmentation
- Allows sharing and monitoring of information across organization
- Foundation of eBusiness
  - Back-office functions
- Standardization
- Helps obtain and maintain competitive advantage
- Improved interactions with customers and suppliers

Design Alternatives

- "Vanilla" implementation
  - Complete vendor package
  - Benefits
    - Total integration across all functional areas
    - Re-engineering of all business processes
  - Deficits
    - Expensive
    - Time-consuming
- Selected ERP modules
  - Benefits
    - Less costly and time-consuming
  - Deficits
    - Lacks total integration of data
    - Limited applicability and use
Design Alternatives, continued

- Build in-house
  - Benefits
    - Can create system based on its needs
    - Competitors will not have access to similar system
  - Deficits
    - Time- and resource-consuming
    - Expensive
    - Risky
    - May not provide competitive advantage
- Maintain concurrent legacy systems
  - Benefits
    - Familiarity
  - Deficits
    - May be a competitive disadvantage

Cost-Benefit Analysis

- Net Present Value
  - Time value of money
  - 5-year timeframe for ERP
  - Non-recurring costs:
    - Hardware, software, consulting, training, implementation
  - Recurring expenses:
    - Licenses, maintenance, consulting, teams

Maintaining Competitive Advantages

- Implement ERP system better than competitors
- Migrate to new versions faster
- Use "vanilla" ERP for core systems and build customized modules for others
- Increase availability of operational data
- Better use of data for analysis

Challenges

- Realization of benefits
- On-time, on-budget implementations
- Applying multi-stage approach
  - Markus
    - Three phases: project, shakedown, and onward and upward phases
    - Business results not achieved until last phase
  - Parr and Shanks
    - Four phases: planning, re-engineering, design, and configuration and testing phases
    - Benefits not achieved until last two phases
  - Holland and Light
    - Benefits occur after implementation of advanced modules

Summary

- ERP systems can improve the effectiveness of organizations through automation and integration of business processes
- ERP systems allow data and information sharing across the organization
- Departmental benefits include increased efficiency, faster design and production, and accuracy
- Implementing an ERP system helps the organization obtain and maintain a competitive advantage