ERP Implementation Approaches: Pitfalls, Critical Success Factors and organizational analysis

CIS 8670 Enterprise Systems and ERP Implementation
An ERP Systems implementation is not just another application development project. It is a business transformation project.
Top Ten Mistakes

#10: Believing it all ends at the “Go Live” date

#9: Not planning for, and minimizing, the interim performance dip after start up

#8: Missing the point; failing to balance implementation/integration needs with the BUSINESS needs

#7: Being late in addressing the data requirements
   E.g., architecture, standards, cleansing, integrity, security,

#6: Staffing badly
   Not using ‘A’ team players from the consulting, business, project management and executive teams.
Top Ten Mistakes (continued)

#5: Starting without a committed, and effective, senior governance council in place; one with an executive champion

#4: Choosing a competent systems integrator and then ignoring its advice

#3: Creating a solution incompatible with the organization’s culture

#2: Treating it as merely a technical implementation and not a business process change process

#1: Starting without a clear business case that will be reviewed and updated continuously
Intractable ERP - why?

• Two characteristics make ERP difficult
  1. The *generality* of ERP products
     Whether manufacturing or transportation, they can be used by *anyone*
  2. Enormous Complexity

• Leads to two issues
  1. Potential problems
     - Reliability, ‘big-bang’ seduction vs. over customization, cultural misfits
  2. Hidden costs
     - Training, transition, scheduling and morale


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Potential Problems

1. Reliability
   ◦ A single system upon which all depends

2. Big-Bang
   ◦ ERP interface with the world, problems rarely understood until stressed by use

3. Over eager customization
   ◦ A *huge* effort that results in the loss of standardization
   ◦ Creating new code with testing and maintenance requirements

4. Cultural misfits
   ◦ ERP with streamlined payroll and processes may make execs happy; but for others the benefits are hard to discern
   ◦ Change, uncertainty, inconvenient re-training increased work all demand
Hidden Costs

- Training
  - Technical and job processes
  - Generally underestimated

- Transition costs
  - A business transformation
  - Data conversion; process conversion

- Prolonged schedule
  - Plans are subject to change and surprise; so are the bills
  - Consultants should typically be mapped to a shared overrun strategy and to an exit strategy
Hidden Costs cont’d

- Sparing the best
  - The best people must be on the engagement
  - Consultants, executives, other business and IT personnel

- Delayed ROI-delayed benefits
  - Large upfront costs and delayed benefits
  - Implementation often followed by a bump in personnel and costs
  - Post-ERP depression
    - A long, hard slog with high expectations
    - Followed by problems and ungrateful system users and others impacted by the system changes requires even more hard work
What constitutes ‘success’ of an ERP Project?

- Is it defined by
  - Technical goals or Business goals?

- Actually it is more complicated along three dimensions
  - Success: Technical vs. comprehensive
  - Product: monolithic vs. unitized
  - Process: big-bang vs. Incremental rollout
Model-based Architecting

- Recognizes different stakeholders each with different, and conflicting objectives may exist in any project setting
- Provides three models to distinguish the various stakeholder’s goals
  - Clients
  - Software requirements
  - System developers
- Three models
  - ‘Success’ model
  - Product model
  - Process model
‘Success’ Model

• Is the overall, high-level objective set that made the project happen
  • Technical success
    • Looks at the implementation of the technical (i.e., the applications systems)
    • Little consideration of the adaptation of the business to the new realities
    • ROI tends to be low
      versus ...
  • Comprehensive success
    • Aims at an organizational redesign/streamlining
    • New processes, ways of organizing & working
    • Higher ROI
Product Model

- Describes the highest level of the software architecture
  - Monolithic success
    - A single, comprehensive ERP controlling every or many business aspects; sans 3rd party software versus ...
  - Unitized success
    - Implement/build distinct cooperating system implementations
    - ERP or 3rd party, like legacy systems
    - Requires interfacing
    - With the right process model could be relatively painless
Process Model

- Describes how the system is implemented and how the stakeholders are prepared for the process
  - Big-Bang
    - Big-risk; but takes the pain in a single big hit
    - Systems errors but also user errors; learning time is required
    - Often followed by period of much reduced productivity versus
  - Incremental
    - Step-by-step or stages release
    - Allows for learning
    - Requires attentiveness to project fatigue
Case Vignettes

- Hershey Foods
  - Increases the pace of implementation in mid-process trying to go-live with three modules
  - The problems overwhelmed employees and implementers
  - Could not meet holiday demand & lost millions in sales

- Jo-Ann Stores
  - Scrapped legacy systems in favor of SAP R/3 and other ERP products
  - But with some unproven modules

- Fox-Meyer Corp.
  - Bet the company and lost when a budgeted $35 Million implementation became >$64 Million and never completed

- W.W. Grainger, Inc.
  - Ran into bugs trying to misfit manufacturing modules for distribution business
  - 4 years over budgeted time and greater than double the project $ budget
More on Cultural Misfits

- Conceptual structures are built into ERP software architecture

Assumptions include organizational forms and goals as:
Hierarchical
Rational
Consensual
Developmental
Organizations have layers of embedded assumptions

Symbolic: organigram, titles

Deep: the way we do things, the evolution of organizational design

Core: Values, shared beliefs, culture

Figure 1: Layers of Social Structures in Organizations
## Competing Values in Organizational Culture (Quinn and McGrath, 1985)

<table>
<thead>
<tr>
<th>ASPECT</th>
<th>HIERARCHICAL</th>
<th>RATIONAL</th>
<th>CONSENSUAL</th>
<th>DEVELOPMENTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational orientation</td>
<td>Stability and control</td>
<td>Productivity and efficiency</td>
<td>Cohesion and morale</td>
<td>Flexibility, adaptability and readiness</td>
</tr>
<tr>
<td>Organizational objectives</td>
<td>Execution of regulations</td>
<td>Pursuit of objectives</td>
<td>Group maintenance</td>
<td>Growth and development</td>
</tr>
<tr>
<td>Organizational structure</td>
<td>Routine tasks and technology; formal rules and policies</td>
<td>Complex tasks; Responsibilities based on expertise</td>
<td>Complex tasks; Collaborative work groups</td>
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</tr>
<tr>
<td>Base of power</td>
<td>Knowledge of organizational rules &amp; procedures</td>
<td>Competence</td>
<td>Ability to cultivate relationships</td>
<td>Values</td>
</tr>
<tr>
<td>Decision making</td>
<td>Top-down pronouncements</td>
<td>Goal-centered, systematic and analytical</td>
<td>Participatory, deliberative</td>
<td>Organic, intuitive</td>
</tr>
<tr>
<td>Leadership style</td>
<td>Dominance, conservative, cautious</td>
<td>Rational achiever, goal oriented</td>
<td>Team builder; concerned, supportive</td>
<td>Idealistic, risk oriented, empowering</td>
</tr>
<tr>
<td>Compliance</td>
<td>Monitoring and control</td>
<td>Contractual agreement</td>
<td>Commitment to process</td>
<td>Commitment to values</td>
</tr>
<tr>
<td>Evaluation of members</td>
<td>Adherence to rules</td>
<td>Level of productivity</td>
<td>Quality of relationships</td>
<td>Intensity of effort</td>
</tr>
<tr>
<td>Orientation to change</td>
<td>Resistant (orientated to maintaining the status quo)</td>
<td>Open to goal driven change</td>
<td>Open to change</td>
<td>Change is embraced as part of growth</td>
</tr>
</tbody>
</table>
Where does SAP/R3 fit in this framework?

- SAP documentation shows it to
  - Embody assumptions of **hierarchical** and **rational** organizational forms
  - The **organization** is understood as “a **system of formal rules**, behavioral and functional activities that guarantee the efficient and effective performance by people and machines.”
    - Behavioral rules: control behavior of people
    - Function rules: control and manipulate objects
SAP architecture and implementation methods

- Three layers
  - Center: central data repository
  - Next: set of application modules for each functional area
  - Outermost: user interface management system

- The R/3 Reference Model is the central organizing mechanism upon which the implementation methodology is built.
R/3 Reference Model Hierarchically organized

- **Organizational View**
  - Organization Units
  - Task and role Responsibilities

- **Communications view**
  - Organizational Communication Paths
  - Communications Processes

- **Function view**
  - Function models (Financial, HT, Materials Management, etc.)

- **Process view**
  - Process models (Order Management, Production Planning, etc.)

- **Information flow view**
  - Information flow models

- **Data view**
  - Data bases (customers, suppliers, products, etc.)
Implementation methods (stages)

- Privileges organizational and business process structures in the SAP software

- **Stage 1, Organization Mapping:**
  - Map the management structure of the company organization onto an organization hierarchy.
  - Include all functions of the company.
  - The organization hierarchy must match the SAP/R3 organizational model.
  - This information is used to define the appropriate codes for organizational units, and set up the chart of accounts (the legal responsibility structure).
Implementation methods (2)

- **Stage 2, Business Process Mapping:**
  - Map the company’s business processes and identify where they fit in the organization hierarchy.
  - Reconcile the company’s business process map with the SAP R/3 reference model.
  - Using the R/3 Process Selection Matrix in the R/3 Reference Model identify the SAP business processes that will be implemented.
Stage 3, **Requirements Mapping:**
- For each business process that will be implemented, develop a process scenario.
- A process scenario describes the activities of the business process and their relationships, order of execution and information flow.
- The business scenario is later mapped to the SAP Business Workflow Engine.
Implementation stages (4)

- **Stage 4, Define Task-Process Matrix:**
  - Using the scenarios identify the tasks and the role responsible for each task
  - For each business process/task
    - group and define the user the profiles
Implications for a project (1)

• When the organization is not of the hierarchical or rational type
  • Fundamental changes to its structures will be required

• ERP Implementation Methodologies
  • Need to be extended to deal with organization culture and design

• ERP implementation teams
  • Need to be staffed with specialists trained in organizational development approaches, culture and change management.
Implications for organizational implementation

- **Consensual and development** type organizations
  - On the short end of the stick
  - They have to change core values and organizational structures
  - Expect substantial resistance
  - Will require a complete transformation of:
    - work processes,
    - management practices,
    - culture,
    - decision making processes,
    - modes of communication and
    - social interaction
Implications for implementation *Practice*

- The focus historically has been upon requirements determination and application configuration
  - Approaches have been inadequate
  - New approaches are required
  - Change management certainly
    - Best where there is congruence between ERP and organizational type
    - but it is not enough
- Organizational values analysis
- Increased involvement by top management
  - Estimating change process and analysis before implementation begins
Lessons from cases

- Must establish a win-win relationship with ALL stakeholders
  - The client and the consultant
  - Management and employees
  - Suppliers and company

- Tight management of milestones events and

- Change management
Summary: Critical Success Factors

- Commitment from top management
- Empowered teams with ability to make decisions
- Strong project management leadership and project management skills
- Adaptable organization that can respond to challenges
- Defined business direction-know the goals of the project
- Best people = best results