ERP Selection

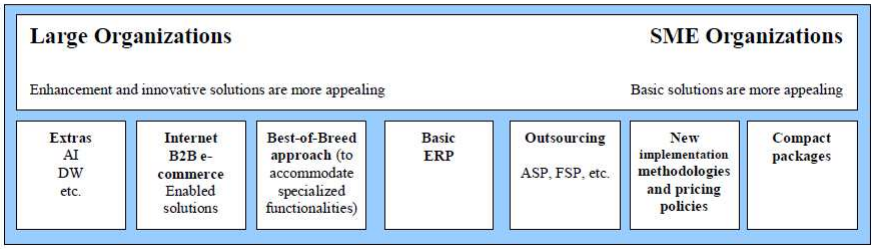
Dr. N. Abdolvand

ERP

ERP Selection

- Because of the large number of systems available on the market, it is difficult and time-consuming for a company to choose the "right" system.
- factors have become increasingly important for a successful ERP implementation, including
  - Predetermined corporate goals
  - the system functionality
  - Adequate preparation of the organization for the new system
  - Simple and effective customization
  - Appropriate planning and management of the implementation project

Figure 1: Different ERP strategies for SME and large organizations



Selecting ERP

- Since most companies are not experienced in selecting and implementing an ERP system, they usually enlist the services of a consulting firm specialized in this task
- A common approach is to set up a project team that starts by developing a requirements specification and deriving a checklist from the specification.
  - Based on the checklist, requests for proposal (RFP) are issued.
- The project team evaluates the quotations and prepares the final system selection.

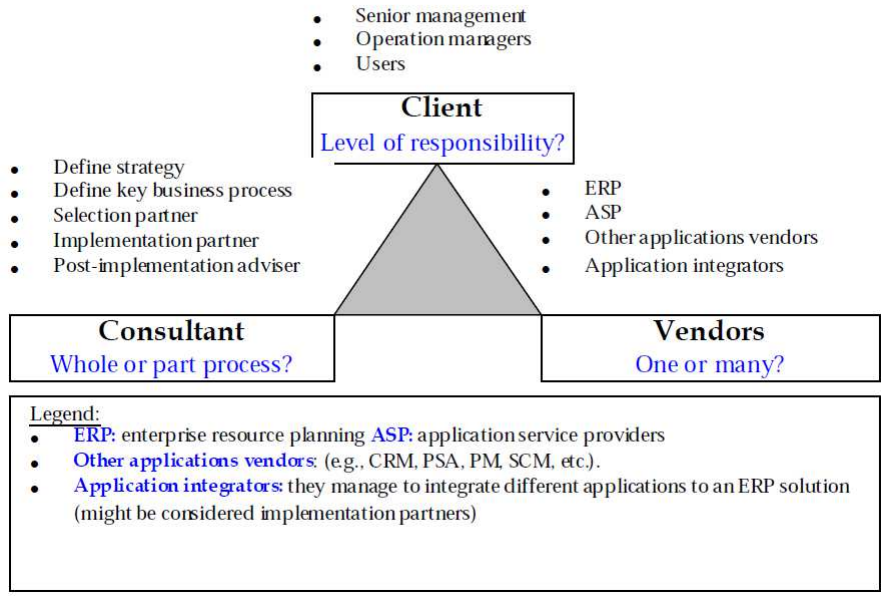
Project Team

- A typical project team is composed of
  - (a) employees from the company departments involved who know the functional requirements,
  - (b) IT personnel who will have to run and administer the system later, and
  - (c) external consultants who have experience in selecting and implementing ERP systems from projects with other clients.

Table 5: A summary of the tasks of internal stakeholders involved in the selection of ERP systems

Internal Stakeholders	Tasks in selecting ERP
Top Management	1. to set organisation-wide objectives for ERP selection; 2. to specify criteria to be used for the ERP project selection and approval; 3. to review the implication of technical developments to ensure advantage is taken of tem; and, 4. to set up a mechanism to review regularly the effectiveness of current activities, specifying objectives and establishing procedure to ensure adequate communication within the enterprise.
Uses	1. to ensure that user requirements are met, to gain user commitment and to avoid user resistance; 2. to take active participation in project selection and approval of technical approach proposed by network designers; and, 3. to improve understanding of the role and contribution of a technology such as ERP.
IS personnel	1. to provide necessary assistance to help top management and users solve related problems; 2. to recruit and provide opportunities for career development networking professional; and, 3. to develop understanding of the overall business operations.

Figure 2: Stakeholders involved in the selection and implementation of ERP



Checklists

- The main purpose of a checklist is to unify the different ways ERP systems are presented by their vendors, allowing the customer to compare the systems.
  - This is not easy to do, because most of the vendors' descriptions are marketing oriented and emphasize the strengths, not the weaknesses
- A checklist comprises many different criteria related to the business processes or functions the company wants to be supported
- These criteria must be provided in a very detailed way in order to realistically map the company's requirements
  - Long check list vs. short checklist

Checklist example

Ref	Software Product Functionality	Field Type	*Supplier 1 Product 1*	*Supplier 2 Product 2*	*Supplier 3 Product 3*
	⋮				
49	Manufacturing planning & scheduling:				
50	Regenerative schedule	Y/N	Y	Y	Y
51	Incremental schedule	Y/N	Y	Y	Y
52	Resources/constraints that can be modeled:				
53	Labor	Y/N	Y	Y	Y
54	Machines	Y/N	Y	Y	Y
55	Tools	Y/N	Y	Y	Y
56	Subcontractors	Y/N	Y	Y	Y
57	Materials	Y/N	Y	Y	Y
58	Shelf life of product	Y/N	N	Y	Y
59	Warehouse capacity	Y/N	N	Y	Y
60	Transportation	Y/N	N	Y	Y
61	Work centers – machine/labor combination	Y/N	Y	Y	Y
62	Multiple plant sourcing	Y/N	Y	Y	Y
63	All of the above, simultaneously	Y/N	N	Y	Y

Checklist example

64	Modeling capabilities:				
65	Setup time	Y/N	Y	Y	Y
66	Run time	Y/N	Y	Y	Y
67	Wait time	Y/N	Y	Y	Y
68	Move time	Y/N	Y	Y	Y
69	Multiple time fences	Y/N	Y	Y	Y
70	Substitute resources/materials	Y/N	Y	Y	Y
71	Alternate routings i.e. machines	Y/N	Y	Y	Y
72	Rate-based modeling	Y/N	Y	Y	Y
73	Fixed-duration modeling	Y/N	Y	Y	Y
74	Infinite capacity planning	Y/N	Y	Y	Y
75	Finite capacity planning	Y/N	Y	Y	Y
76	Floating bottlenecks	Y/N	Y	Y	Y
77	By-products	Y/N	Y	Y	Y
78	Co-products	Y/N	Y	Y	Y
79	Variable production by part by machine	Y/N	Y	Y	Y
80	Operation overlapping	Y/N	Y	Y	Y
81	Split operations	Y/N	Y	Y	Y
82	Assigns tooling to operation	Y/N	Y	Y	Y
83	Schedule constrained by tooling availability	Y/N	Y	Y	Y
84	Variable delay to force op to start at start of shift	Y/N	N	Y	Y
85	Supports synchronization of operations	Y/N	Y	Y	Y
86	Maintains high utilization of bottlenecks	Y/N	Y	Y	Y
87	Supports sequence-dependent scheduling of setups	Y/N	Y	Y	Y
88	Supports scheduling of development jobs	Y/N	Y	Y	Y
89	Supports scheduling of maintenance jobs	Y/N	Y	Y	Y
90	Rules-based approach for sequencing	Y/N	Y	Y	Y

Checklist example

91	Distribution & inventory planning				
92	Supply network definition:				
93	Supplier	Y/N	Y	Y	N
94	Plant	Y/N	Y	Y	N
95	Distribution center	Y/N	Y	Y	N
96	Customer location	Y/N	N	Y	N
97	Supply network planning tools:	Y/N	N	Y	N
98	Linear programming	Y/N	N	Y	N
99	Heuristics	Y/N	N	Y	N
100	Multi-plant sourcing logic	Y/N	N	Y	N
101	Optimize truckloads	Y/N	N	Y	N
102	Prodn sourcing, inventory build, transport balancing	Y/N	N	Y	N
103	Global supply chain design.	Y/N	Y	Y	N
104	Rules-based order fulfilment	Y/N	Y	Y	Y
105	First come/first served	Y/N	Y	N	Y
106	Fair share deployment	Y/N	Y	Y	Y
107	Prioritized allocation	Y/N	Y	Y	Y
108	Forecast consumption rules	Y/N	N	Y	N
⋮					

The Selection Criteria

The selection criteria used in the process at the investigated companies

Selection criteria	Used	Considered	Not used
Current market position and long term sustainability and viability of market of ERP system;	75%	20%	5%
The alignment and/or the capability for adjustment of the potential ERP system to the specific industrial sector or business area;	88%	8%	5%
Financial and business parameters of potential vendor;	50%	18%	33%
The degree of dedication of rival enterprises to implementation and application of ERP solutions;	10%	15%	75%
Interoperability, capability for integration to other legacy systems to be kept in operation;	35%	50%	15%
The applied technologies for data management, software and information processing;	28%	23%	50%
The support provided by the vendor at the introduction and operation of the system;	78%	23%	0%
The costs and options for maintenance, upgrade, update and adaptation to the changing legal environment;	75%	20%	5%
Language versions, localization opportunities in the case of multi-national, global companies;	43%	33%	25%

Existence of country specific solutions in some business areas (e.g. Accounting);	40%	43%	18%
IT-networking capability of the ERP system to be adjusted to the recent state of the decentralization-centralization demand.	40%	53%	8%
The new system is pre-condition to realize the business strategy plan;	58%	23%	20%
The new IS provides better reliability, higher service level for customers;	10%	58%	33%
To increase efficiency and to make more transparent to the business process within the business group ;	70%	20%	10%
The system should support the business planning and consequently the cost-efficiency ;	83%	18%	0%
The system should provide support for serving the clients;	48%	45%	8%
IS creates the opportunity for an integrated system.	83%	13%	5%

RFP

- A typical request for proposals lists questions regarding:
  - System functionality (i.e., checklist)
  - Hardware and software requirements (including nonfunctional requirements, such as response time, scalability, etc.)
  - Organization of service and support, servicelevel agreement
  - User training and help features (e.g., hotline, help desk)
  - Cost (license, upgrade, maintenance, training, etc.)
  - Legal issues (contract, indemnification, liability, etc.)

Analysis

- When the company receives the vendors' proposals, the project team has to evaluate the proposals and decide which would be the best system for the company
- to come to a decision, the products must be evaluated with regard to the benefits the company expects from certain features, and the drawbacks from missing other features
- Various methods and models are used for selection
  - Decision making approaches
    - MADM
    - AHP
  - Financial Analysis
  - Utility-value analysis

Utility Value Analysis

- In a utility-value analysis, a small number of criteria important for management decisions are established and weighted.
  1. agree upon which criteria to use and
  2. agree upon their relative importance (by weighting the criteria).
  3. evaluate the candidate systems using the criteria.

Utility Value Analysis - Example

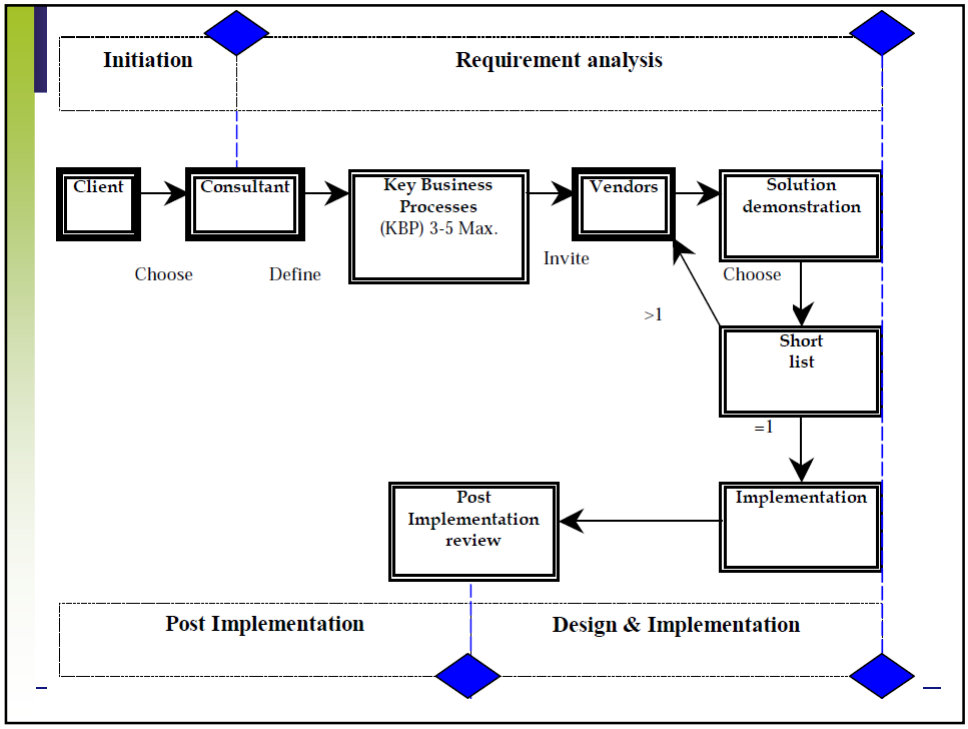
a Aggregated evaluation results

Criterion	Product assessment		
	System A	System B	System C
System functionality	70%	90%	60%
Non-functional requirements	very good	OK	quite good
Cost (license, hw/sw, maintenance)	1,200,000	1,750,000	1,150,000
Customization effort	10 pm	4 pm	12 pm
Technical service & support	excellent	average	mediocre
User training & help	average	good	good
Reference installations	26	> 500	80

pm = person months

Utility Value Analysis - Example

Criterion	Weight (%)	Points from product assessment		
		System A	System B	System C
System functionality	30	7	9	6
Non-functional requirements	10	9	6	8
Cost (license, hw/sw, maintenance)	20	5	2	5
Customization effort	20	4	7	3
Technical service & support	10	10	5	4
User training & help	5	5	7	7
Reference installations	5	2	10	5
Total	100	615	645	520


Initiation
Requirement analysis
Client
Consultant
Key Business Processes (KBP) 3-5 Max.
Vendors
Solution demonstration
Choose
Define
Invite
Choose
>1
Short list
=1
Implementation
Post Implementation review
Post Implementation
Design & Implementation


Questions?