

Critical Success Factors in ERP system implementation

Information Systems Design

Critical Success Factors (CSF) /1

- Definition: the concept of “Critical Success Factors” generically defines some “critical area of performance” (Daniel, 1961)
- The idea was introduced at the beginning of the ‘60s to answer the crisis of Executive IS.

Critical Success Factors (CSF) /2

- A broader and more complete definition was suggested by Rockart (1979) who defined CSF as:

“the **specific key business areas** in which the standard operational procedures should never be impeded or slowed in order to get the company healthy”.

CSF and ERP implementation

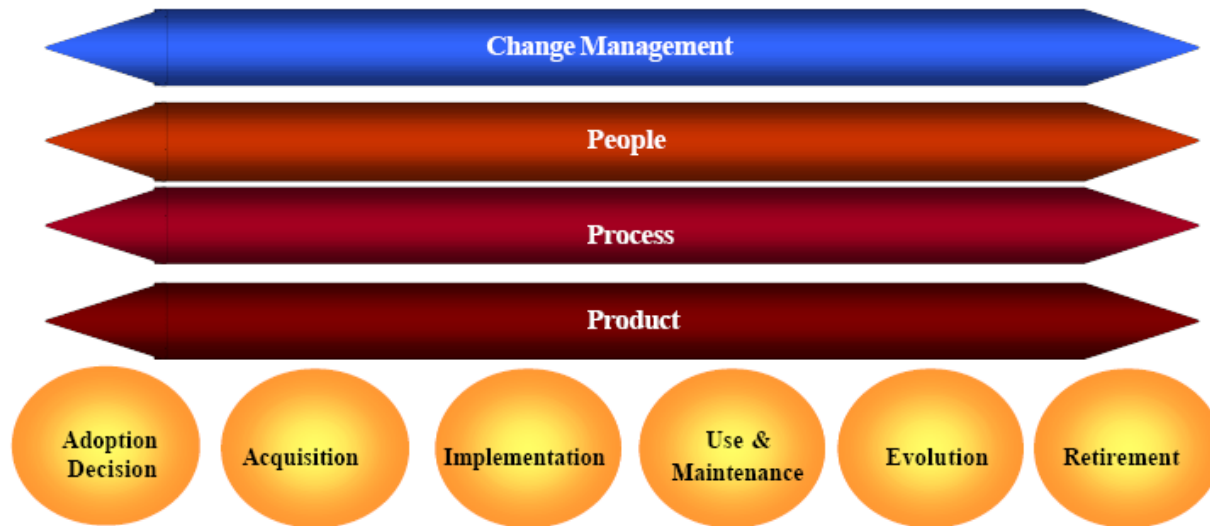
- Dealing with ERP implementation, a CSF can be defined as follows:

“the **key implementation activities/areas** in which the standard operational procedures should never been impeded or slowed in order to get a successful implementation”

Different approaches to the use of CSF in ERP implementation /1

Three main approaches classify the most important CSFs in ERP implementation by highlighting, alternatively:

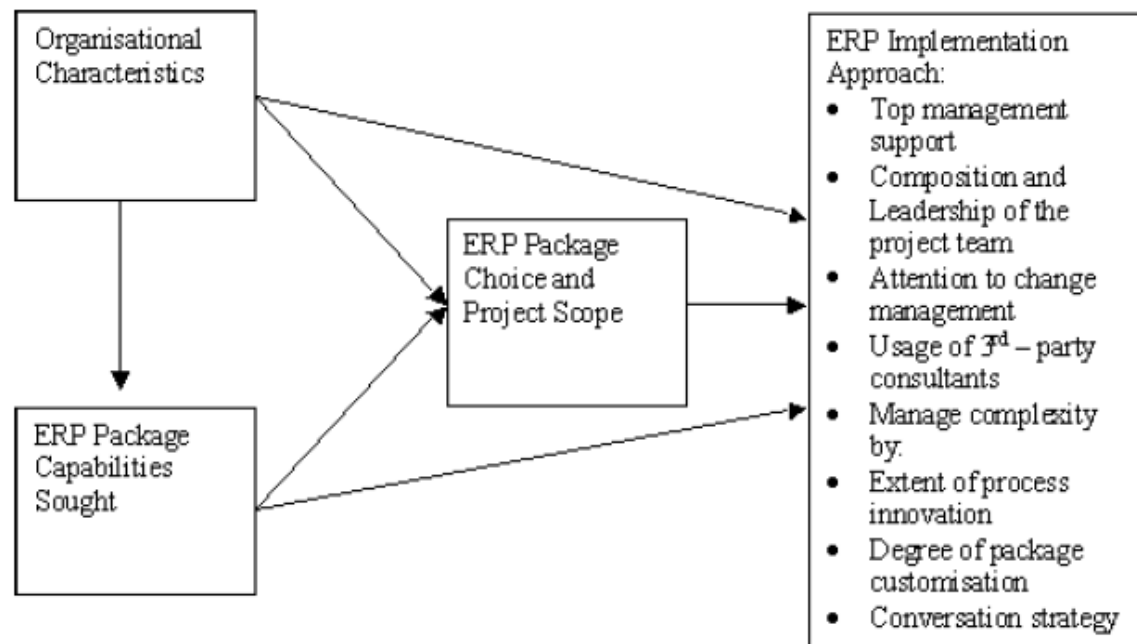
1. their *positioning along the ERP adoption cycle* (Esteves and Pastor, 1999, Markus and Tanis, 2000);



ERP contingency framework (Esteves & Pastor, 1999)

Different approaches to the use of CSF in ERP implementation /2

2. *the relationships between the identified CSFs and specific dimensions of ERP adoption (Motwani, et al., 2002, Umble, et al., 2003)*

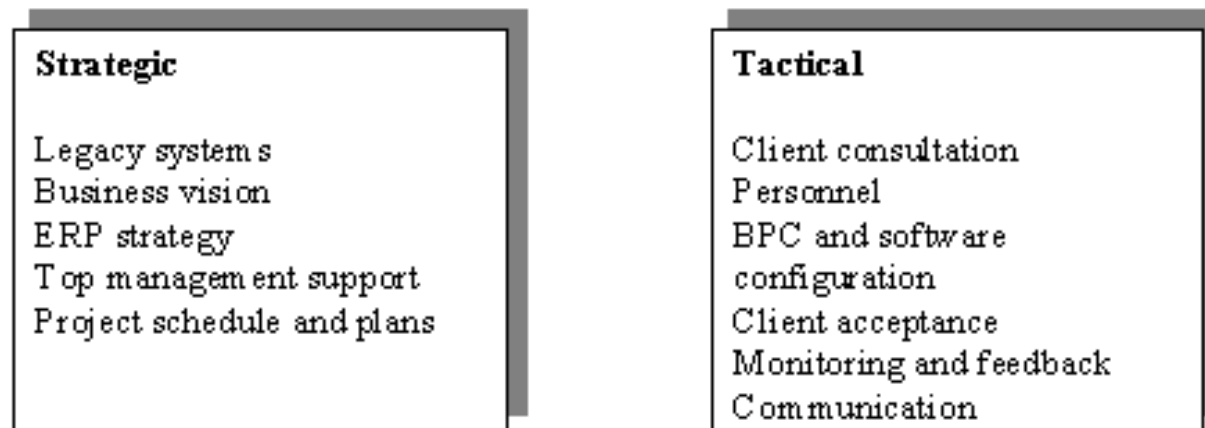


ERP Implementation Framework (Brown & Vessey, 1999)

Different approaches to the use of CSF in ERP implementation /3

3. the *strategic* or *tactical* role of CSFs in ERP adoption and implementation (Esteves and Pastor, 2000, Stefanou, 2001)

ERP Implementation process



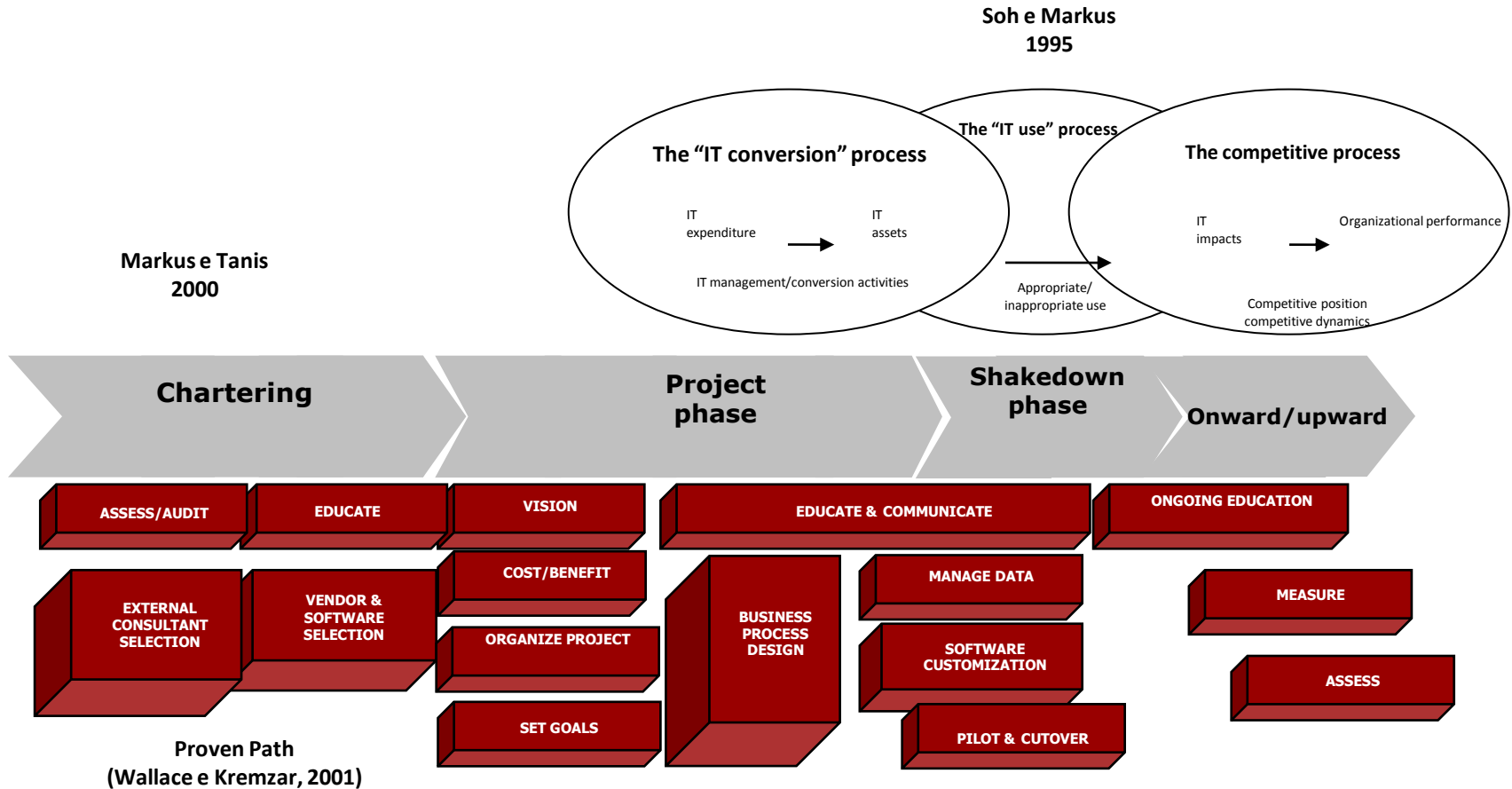
Strategic and tactical CSF (Holland & Light, 1999)

CSF: indicators, metrics and domain

In order to successfully define a CSF, it's necessary to identify:

- the indicators to evaluate the extent of fulfilment of each CSF
- The specific domain which the indicator refers to;
- The source which the data for the evaluation can be retrieved from;

The ERP project



Assess

PHASE	ROLES INVOLVED	FCS
Assess	<ul style="list-style-type: none">• Top Management• Project sponsor• Executive steering committee	<ul style="list-style-type: none">• Definition of tasks and responsibilities of the project sponsor• Business issues identification• Legacy System analysis• Definition of tasks and responsibilities of the executive steering committee• Fit between the new technology and the organizational characteristics• Verification of the proper internal IS skills



1. Strategic alignment verification
2. Project sponsor's role and profile
 1. CIO's support to project sponsor's efforts for legacy identification and analysis
3. Top management's characteristics (innovation)

Definition of tasks and responsibilities of the executive steering committee

- Delays in specific project milestones (↓, phase/activity, %)
- Unavailability of the resources allocated to the project (↓, global, %)
- Average time for the approval of the project team proposals (↓, global, time)

Indicator	Metric	Source	Domain
Unavailability of the resources allocated to the project	%	Project plan	Project team

Educate

PHASE	ROLES INVOLVED	FCS
Educate	<ul style="list-style-type: none">• Project sponsor• Top Management• Executive steering committee	<ul style="list-style-type: none">• Identification and comprehension of both the opportunities (threats) and the change related to ERP adoption



In-depth ERP knowledge

1. Business benefits
2. Technology issues
3. Issues related to human resources

External Consultant selection

PHASE	ROLES INVOLVED	FCS
External consultant Selection	<ul style="list-style-type: none"> • Project leader • Project sponsor • Executive steering committee 	<ul style="list-style-type: none"> • Ext. Consultant's selection



External consultant's requirements

1. Short term skills and reliability;
2. Long-lasting presence in the market;
3. Ability to share the company vision;
4. Experience and skills in the software market;
5. Project management skills;
6. In-depth knowledge of business process for similar firms (dimension/market);
7. In depth knowledge of the whole set of ERP functionalities;
8. In depth knowledge of the whole set of vendor's ERP;
9. Significant number of participation to successful ERP implementations

Vendor & software selection

PHASE	ROLES INVOLVED	CSF
Vendor & Software Selection	<ul style="list-style-type: none"> • Project leader • Project sponsor • Executive steering committee 	<ul style="list-style-type: none"> • ERP Vendor selection • ERP system selection

vendor's requirements

1. Company size and reputation;
2. Possible references;
3. Ability to share the company vision;
4. Skills developed in the customer's industry sector;
5. disponibilità di risorse qualificate;
6. In depth knowledge of the specific ERP processes;
7. Tech skills;
8. Project management skills;
9. Territorial comprehensiveness;
10. Number of implementations successfully completed in the last triennium;
11. Long-lasting presence in the market;
12. Experience and skills in the software market;
13. In-depth knowledge of business process for similar firms (dimension/market);

ERP requirements

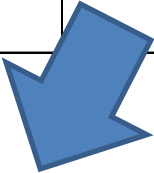
1. Demographic
2. Functionalities;
3. Procedures (best practice?);
4. Technology
 - Applicative architecture;
 - System modularity;
 - Extent of parametrization;
 - Tools and techniques available during implementation;
 - personalization;
 - Programming language;
 - Extent of integration;
 - Training skills and programs
 - Security
 - DBMS interfaces;
 - Data dictionary.

FCS: ERP System Selection

- Exceptions in handling customer's/supplier's orders (↓, module, %)
- Average time for order processing (↓, module, time)
- Average time for order processing – peak (↓, module, time)
- Concurrent users accepted by the system (↑, global, #)
- System availability(↑, global, %);
- Weekly OLTP transactions (↑, global, average #)

Vision

FASE	RUOLI COINVOLTI	FCS
Vision	<ul style="list-style-type: none">• Project sponsor• Executive steering committee• Top Management	<ul style="list-style-type: none">• Arrangement of the change plan (approach, scheme)



1. Pattern of change definition: it entails a decision regarding the extent of formalization of the tools/techniques the company makes use of during implementation (formal vs informal);
2. Organizational Readiness to change: the goal is to understand/identify the extent of assimilation of change by the whole organization and, in particular, of the most influent groups.
3. Management of change, namely the operative procedures the company wish to make use of in order to monitor and adjust :
 1. The dissatisfaction level
 2. The expectations of the people involved in the implementation

Cost & benefit

PHASE	ROLES INVOLVED	CSF
Cost/Benefit	<ul style="list-style-type: none">• Project sponsor• Executive steering committee	<ul style="list-style-type: none">• Correct and realistic definition of costs and budget allocation• Benefit(s) identification

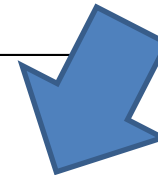


imply:

1. TCO evaluation (SW + HW + training..)
2. Realistic budget allocation
3. Benefits identification must be at a higher level with respect to operational metrics → emphasis on the strategic nature of the ERP project.

Organize Project

Phase	Roles involved	CSF
Organize Project	<ul style="list-style-type: none"> • Project Team • Project leader • Project sponsor • Executive steering committee • Vendor + ext. consultant 	<ul style="list-style-type: none"> • Project scope definition • Project leader's role and tasks identification • Clear and detailed project plan



1. "Scope of change" definition
 - Process change (continous vs radical improvement)
 - Numerosity of the procesess involved
 - Implementation strategy (big bang vs step by step)
2. The involvement of the most skilled HR (definition of tasks and responsibilities, new hirings if necessary)
3. A great implementation team →
 - Problem solving orientation;
 - Understanding of other team members' needs;
 - Acceptance of other team members' decisions
 - Exploitation of all the available information
 - Full time involvement of team members
4. avoid "scope creep" → perform non priority activities at the beginning of the project

CSF: Project Scope Definition

- Transaction covered by the ERP system (↑, module, %)
- Foreseen functionalities not implemented (↓, module, %)
- Shifting from the estimated budget (↓, global, module, %)
- Shifting from the amount of time estimated for ext. Consultants, applicative specialist and system analysts (↓, module, %)
- New hirings in IS department (↑, global, #)
- Unavailability of the resources allocated to the project (↓, global, %)

Set goals

PHASE	ROLES INVOLVED	CSF
Set Goals	<ul style="list-style-type: none">• Project leader• Project sponsor• Executive steering committee• Process/function owners	<ul style="list-style-type: none">• Detailed definition of the operative project goals• Formulation and communication of the performance expectations



1. Define real, sustainable and measurable goals, better if tied to specific performance indicators
2. Goals must be communicated to the whole organization
3. Facilitate the “management of expectations”

Business Process Design

PHASE	ROLES INVOLVED	CSF
Business Process Design	<ul style="list-style-type: none"> • Top Management • Process owner • Project leader • External consultants • Super users 	<ul style="list-style-type: none"> • Process owner and supers users identification • Reinforcement of the “business process” concept • BRP • Identification of the business process performance indicator

require:

1. BPR
 - Identification of the processes involved;
 - As-Is model;
 - To-Be model;
 - Gap Analysis.
2. Super users: acknowledged leadership and remarkable experience
3. Reinforcement of business process concept → “how the specific process can contribute to the whole process of business value creation ?”
4. To avoid “scope creep” → perform non priority activities at the beginning of the project



Communicate & Educate

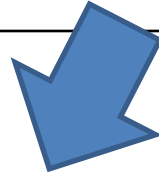
PHASE	ROLES INVOLVED	CSF
Communicate & Educate	<ul style="list-style-type: none"> • Application Specialist • Super Users • Project leader • Executive Committee • Project sponsor • Utente finale <p style="text-align: right;">Steering</p>	<ul style="list-style-type: none"> • Training plan definition (timing, subject, priorities) • Definition of a plan to communicate and share the project progress



1. Both Operational and change management perspective
2. Stimulate end-users' participation and knowledge (↓ resistance to change) by the development of formal meetings
3. Don't deal with generic benefits but with specific operational advantages
4. Stimulate and increase end-users' independence

Manage Data

PHASE	ROLES INVOLVED	CSF
Data Migration	<ul style="list-style-type: none">• Super Users• Application Specialist• Project leader• vendor's consultants	<ul style="list-style-type: none">• Data accuracy and integrity

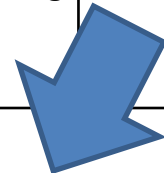


1. Definition of data migration procedures (manual, automated)
2. Definition/evaluation of data formats and specifications;
3. Compatibility between ERP and the existing legacy;
4. Development of data transfer interfaces
5. Priority assignment for data transfer;
6. Definition of both the person in charge of supervising data transfer and the its scheduling;
7. Verification of data integrity/accuracy;
8. End-users' Education on the priority of dealing with accurate:
 - accurate data
 - correct data entry procedures.

Software customization

Application Specialist: internal IS experts who take part to the project team and support the vendor's consultants

PHASE	ROLES INVOLVED	CSF
Software Installation & Customization	<ul style="list-style-type: none"> • Application Specialist • Super Users • Vendor's consultants • Project leader • Project sponsor • Executive Committee • Process owner <p style="text-align: right;">Steering</p>	<ul style="list-style-type: none"> • Definition of a software customization policy • Tight collaboration between Application Specialist, End users, Super Users and consultants during pilot and cutover



1. Team members' ability to preserve the customizations policies already defined in the BPD phase
2. Project leader's surveillance on:
 - Technical aspects such as form, report, application conversion, permissions;
 - Organizational aspects related to likely/eventual resistances due to losses of power (the support from both the project sponsor and the executive steering committees is fundamental in this phase)
3. Approbative and sanctionary power of ESC is due in this phase;

Pilot & Cutover

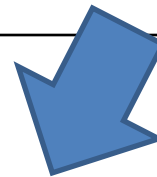
PHASE	ROLES INVOLVED	CSF
Pilot & Cut Over	<ul style="list-style-type: none">• Application Specialist• Super Users• Vendor's consultants• End users	<ul style="list-style-type: none">• Definition of a detailed and accurate plan for pilot and cutover



1. Release strategy (complete replacement or consecutive waves) to settle the time span in which the old and the ERP systems should coexist

Ongoing Education

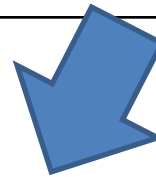
PHASE	ROLES INVOLVED	CSF
On-going Education	<ul style="list-style-type: none">• Project leader• Trainers• Super Users• End users	<ul style="list-style-type: none">• Definiton of a detailed training plan and budget allocation• Verification of the availability of End users as to training activities• Definition of a plan for training evaluation purposes• Criteria for trainers' selection• Definition of a plan for knowledge upkeep and extension



1. The project leader should be able assure the availability of all the resources appointed to training activities
2. Trainers should be:
 - Very communicative;
 - Highly experienced
 - Able to evaluate the progress of training → possible review of the training plan

Measure

PHASE	ROLES INVOLVED	CSF
Measure	<ul style="list-style-type: none">• Top Management• Middle management• Project leader	<ul style="list-style-type: none">• Evaluation of performance indicators



1. Define or make use of pre-determined performance indicators (better)

Assess

PHASE	ROLES INVOLVED	CSF
Assess	<ul style="list-style-type: none">• Executive Steering Committee• Project sponsor• Project leader• Process owners• Vendor• Ext. consultants	<ul style="list-style-type: none">• Arrangement of a possible corrective plan



1. Correct interpretation of what has been defined during the “set goals” phase
 - All the actors who took part in the “set goals” phase must be involved, plus the ext.consultants and so the vendor