ERP Projects: Key Success Factors and Risk of Failure A Proposed Model of Governance of Enterprise Resource Planning

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ABSTRACT
The ERP (Enterprise Resource Planning) is a major innovation in the Field of Information Systems and Organization Management. Including their ability to make the organization more integrated and consistent, and absolute control of information. But the implementation of these projects remains a disturbing adventure that may lead to success or deadly failure of the organization that is embarking on this project. The aims of this article are to determine the necessary critical success factors for the ERP and causes of failures,through a comparative study of large organizations that have adopted ERP , for addressing the convergence and divergence points in implementation ERP. Such a study will allow us to develop a governance model for ERP

Keywords
Enterprise Resource Planning (ERP); key success factors ; Governance of information systems; ERP Project Management

1. INTRODUCTION
The ERP (Enterprise Resource Planning) have known for some years a high demand by modern organizations. Indeed, research in books and articles dealing with the ERP Shed the lights upon the relevance and the need of implementing these in innovative projects, including their ability to make the organization more integrated, absolute control of information. Benefits of ERP can be classified into five groups (Shang and Sed-don 2000)[1]: operational (to reduce costs and cycle times, and improve productivity), managerial (human resource management, decision making ,strategic (medium decisions and business growth), ,technological (technology and business flexibility, cost reduction technology and organizational (support facilitating organizational change, creating a shared vision).

implementing an ERP within an organization is not easy,it's a complex project and a risky. Failures are not always known,

but have often proved to be real human and financial disasters: "Capron et al (1995) and Davenport(1998) reported several cases of companies that failed in the implementation of an ERP. Among these,we find Fox Meyer Drug, Dell computer, Dow Chemical.These failures are caused mainly by insufficient and the lack of certain prerequisites for the successful implementation of ERP. (Capron and al,1995 ; Davenport,1998; Bootta-Genoulaz et al, 2005) "

To illustrate the importance of these failures in businesses we can Present some figures from a study by the Standish Group called"Chaos Chronicles "[2]on a 8380 sample IT projects and over 800 companies:

- 16% of implementations are considered to be completely successful.
- 31% of projects in progress are aborted.
- 53% end up being delivered at the cost of many sacrifices both in terms of cost, schedule or expectations.

From a methodological standpoint, our work will come in four parts. we will first introduce the concept of ERP: its principles and foundations, and then in a second part we will present the key factors of success and causes of failure. Followed by the methodological approach to research and a summary of the organizations studied that make up our case study.Finally we will try to present and analyze the results of our study, this path will lead us to a later thinking about a model on the implementation of ERP.

We can present our problem in which we try to answer through this article: what model of good practice that allows us to be successful in ERP projects?

2. THE ERP CONCEPT, FOUNDATIONS AND PRINCIPLES
Reix (2004), defines ERP as a "a computer application configurable, modular and integrated, which aims to bring together and optimize management processes of the company by providing a single repository and relying on standard business rules."This definition highlights the standard of this software.[3] The founding principle of ERP is to build software applications (payroll, accounting, inventory management,the

[1] Lorraine J. Staehr, La Trobe University, Australia, Achieving Business Benefits from a Global ERP Implementation , Managing Worldwide Operations & Communications with Information Technology 449

[2] Les échecs des ERP – Groupe Delannoy, Devedjian, Hellouin – ERP 3

[3] Fleur-Anne Blain(2006),http://fablain.developpez.com/tutoriel/presenterp/

decision supporter e-commerce ...) in a modular way(between the independent modules)while sharing a basic single, common data.This creates an important difference with the previous situation (tailor existing applications before the ERP) because the data supposed is standardized and shared, thus eliminating multiple entries.

The other principle that characterizes an ERP is the systematic use of what is called a workflow engine (which is not always visible to the user), and which, when a data is entered into the information system , the spread in all modules of the system in use, according to a programming predefined.

3. THE KEY SUCCESS FACTORS AND RISK OF FAILURE OF ERP PROJECTS

Some organization speak about increase of productivity (the case of Filpack),others speak of failure or semi failure:Fox Meyer Drug(Diederich 1998), Boeing (Stein 1997), ASF (Coa t and Favier1999), Dell (Davenport 1998) ... If the questions on the key success factors of ERP deployment are analyzed and frequently asked questions, they are rarely studied in a neutral and comprehensive way. (Vincent and Gharbi, 2004)

Morley (2000) states in this respect that the majority of project failures in information systems were not a cause related to the technical difficulty,that is what our research is focused on the managerial component

Based on the feedback reported in the literature on firms that have adopted an integrated information system,we present in the following the key success factors needed to be considered by the organization that decided to put into up an ERP system

Table 1. Table key success factors of ERP projects

key success factors	References
Top management support: Top management support must provide guidance to teams for implementation and monitoring of project progress.	Al-Mashari et al. (2003); (Umble et al., 2003); Zhang et al. (2002)
Business plan and vision : A business plan and clear vision are necessary to guide the project throughout the life cycle of ERP. It begins with a conceptualization of goals and possible ways to achieve them.	Loh and Koh (2004); Schwalbe, (2000); Somers and Nelson (2004); Nah (2003)
Business Process Reengineering : Organizations must change their processes to fit the software in order to reduce the level of customization	Davison (2002); Hammer and Champy (2001); Somers and Nelson (2004); Nah (2003); Murray and Coffin (2001)
Effective Project management: the implementation of ERP requires the mastery of multidisciplinary competencies and flawless project management	Zhang et al.,(2002); Somers and Nelson (2004); Remus (2006); Loh and Koh, (2004);Mandal et Gunasekaran, 2003
Teamwork and composition: The ERP team should involve the best people in the organization. It requires effort and cooperation of experts Technical and commercial as well as end users	Loh and Koh (2004); Al-Mashari et al., (2006); Remus (2006); Nah (2003); Rosario (2000)
ERP system Selection: The selection of an ERP system is a difficult and long-term process, an organization should choose a supplier capable to provide a flexible ERP system.	Wei and Wang (2004); Shehab et al., (2004); Everdingen et al. (2000); Sprott (2000)
User involvement: User participation is one of the most critical factors of success in ERP projects, their involvement increases their satisfaction and acceptance of ERP tool	Esteves et al., (2003); Zhang el at (2002)
Training: Key users have new roles and must acquire new skills quickly.[4] train users to use the ERP is important because it's not easy to use even with good computer skills	(Woo 2007); Nah et al., (2003); Zhang et al. (2002)

If the ERP offers a number of advantages, it is also built-in constraints and risks as recalled Markus and Tanis (2000), we then present a list of possible brakes that affect the success of the ERP project :

Table 2. Table factors of ERP project failures

Factors of ERP project failures
The gap between the tool and the needs of organization
legal risk
Organizational culture
Resistance to change (rejection of the tool by Users)
Lack of skills (internal and external)
Social risk: feeling of control of the activities, downsizing. The ERP systems are known to be killers of jobs. More recently, the Michelin case and its 7500 jobs lost in Europecoincides with the introduction of an ERP, Oracle, in addition to automating the manufacture of tires[5]
Risk linked to project complexity: number of users, multiplesites of the organization)
Inadequate planning of the budget and timelines
Modification of ERP (specific developments)
Misallocation of access rights (open access to features andsensitive transaction
Poor settings:-errors when setting or configuration can causemalfunctions tough.[6]

, Présentation générale des ERP et leur architecture modulaire,Date de publication : 07/11/2006.

[4] LEMAIRE LAIRE (2003) ,systèmes de gestion integrés :des technologies a risques ? l'impact des PGI sur l'emploi et le travail,editions LIAISONS, ,p 44

[5] LEMAIRE LAIRE (2003),op.cit,p125

[6] LEMAIRE LAIRE (2003),op.cit,p46

4. TOWARDS A MODEL OF ERP GOVERNANCE

We Can associate with key success an other factor that we consider very important one for successful ERP projects.This factor is the governance of information systems, including implementationof standards for good practices recognized and validated internationally such as Cobit, ITIL, PMBOK etc ...

These benchmarks allow the optimization,rationalization, risk control and the economic value of technology resources includingERP

the contribution of governance in ERP projects: the alignment of the ERP on the overall business strategy which avoids the gap between the tool and business .It ensures that ERP brings out the expected benefits of the strategic plan, risk management and a good knowledge of the requirement conformity.The better management of the ERP is to optimize the good investment , and also the performance measurement of ERP,which requires tracking and monitoring the outcome of this project

5. METHODOLOGICAL APPROACH TO RESEARCH

We have combined the two approaches: Hypothetical-Deductive and Empirical inductive. Building our model by back and forth between theory and field. In this sense, our approach can be characterized as constructivist.

We have opted to use both methods (qualitative and quantitative), which in our case, complement each other. Both methods have advantages and disadvantages.Their use together will increase the validity and reliability of research.

Initially, we implemented the qualitative study using the technique of the interview with people responsible for implementing the system. All those interviewed were in positions of leadership information systems. For this, some questions were put to them: what was the process of choosing their software, the integrator and consultants, What are the technical and organizational issues encountered during their ERP project? What are the key stages of their ERP projetct ? Was it necessary to transform and reorganize the processes of the organization? What questions should we answer before implementing an ERP?

This step, referred to exploratory and descriptive, allow us to have knowledge of the organizations studied. In addition, it will allow the preparation of the quantitative survey questionnaire.

Thus the quantitative survey will be conducted in a second time, by a questionnaire to all organizations. The purpose of this survey will be firstly descriptive, in addition to the qualitative study results and other confirmatory model to be developed.

We can summarize the research methodology in the following stages: Exploratory Qualitative Study, Results of the qualitative study (Proposed Model), Quantitative survey by questionnaire and descriptive and confirmatory results of the quantitative survey

We briefly present below the organizations studied in this study:

Table 3. Table the organizations studied

ONE (The National Office of Electricity)	ONDA (The National Office of Airports)	SONASID (the national society of the steel industry)
reference operator in the electricity sector in Morocco	The first independe nt establishment of airport management in Morocco.	The Moroccan leade r of steel long products for the construction and industry (concrete reinforcing bars & rods).

6. PROPOSAL AND MODEL ASSUMPTIONS RELATING TO THE ACQUISITION AND IMPLEMENTATION OF ERP

6.1 A proposed model for the acquisition and implementation of ERP

Our model, which will be proposed, is built on three levels:
Level 1: Governance of information systems: including the application of its standards (ITIL, COBIT, PMBOK ...).
Level 2: ERP project management: based on the techniques of project management and implementation of the repository of governance in IS Project Management (PMBOK), you can manage all aspects of the project:
- Management of Managerial dimension:

- Study and Analysis Contract
- Drafting of specifications agreeing on specifications
- Definition of the scope and objectives of the ERP Project.
- Time management
- costs Management (cost of software, Training,integration)
- Management Competence Centre: team
- Technical and Functional competence team available

-Management Technical dimension:

- Setting
-Choice of the architecture of ERP
-Limitation of specific developments
-Data Migration
-Safety, permission management and accées updates.
-During the stages of the project, we must implement a quality plan and communication.

Level 3: The basic key success factors consideration of these factors (support from Top management, study convergence: Need of the organization, Choice of ERP, Business Process Reengineering, Choosing experienced consultants and integrators, involvement users, Training Plan, Change Management) enables the success of all organizations that decide to engage in this project (ERP) structuring and carrying value.

So, to summarize we can say that using a governance approach allows to manage our ERP project taking into account the key factors of basic key success factors

The following diagram shows our model:

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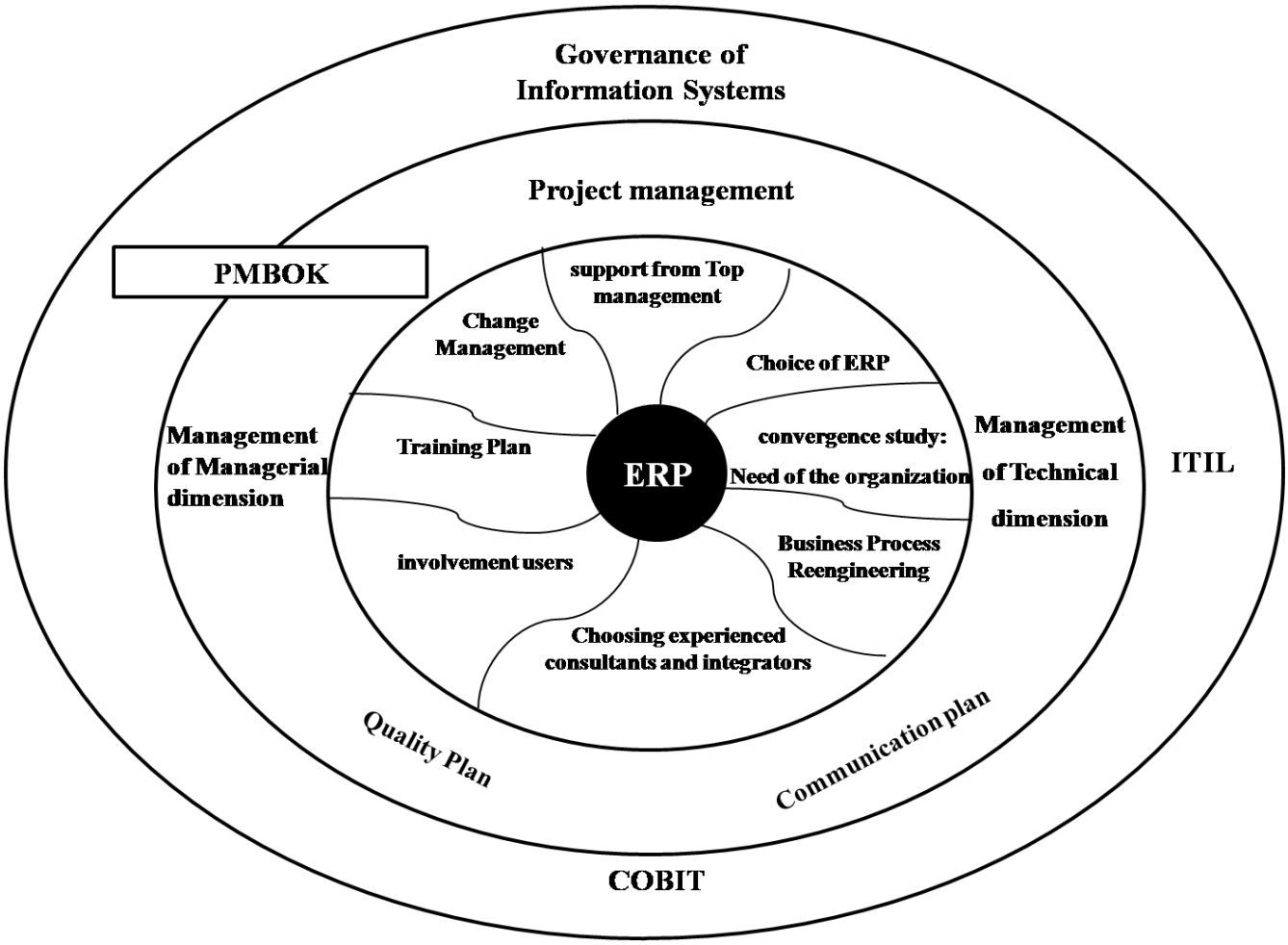

Fig 1: Governance model for ERP

6.2 Model assumptions and results of the quantitative study: model validation

A model must be tested. It is therefore necessary to speculate who will face the ground realities in the quantitative questionnaire survey.

All interviews conducted with managers of information systems and responsible for implementing the ERP was used to evaluate the model components.

In interviews.we asked interviewees what importance they assigned to each implimentation factors, we noted each factor on a scale of 0 to 10 depending on the focus. A score of 0 means that this factor not at all important. A score of 10 means that the importance shall be given to this factor. A score above 5 implies that this factor was significant.

These assumptions relate to key success factors of ERP projects:

Table 4. Table results of the quantitative study model validation

Hypot -heses	Key success factors of ERP projects (recommendations)studied by organizations	ONDA	SONASID	ONE
H1	Realization of a real survey of the needs of the organization	9	8	10
H2	Selection and choice of ERP	8	10	6
H3	Visiting companies that already use the same tool	7	10	5
H4	Choosing an experienced integrator	8	10	9
H5	Choice of experienced consultants	8	10	9
H6	Study Contract: version change, pricing providers before committing.	8	10	8
H7	Editing detailed specifications	7	8	10
H8	Framing (Clear goals and objectives) strategic and operational: consider the ERP project as a major project that may directly influence the health of the organization	8	10	10
H9	Planning and project management (management of all its dimensions)	7	8	10
H10	Establishment of a Quality Plan	8	10	10
H11	Integration of all project costs (cost of software, training,integration ...)	7	7	8
H12	Top management support	9	10	10
H13	Change management	8	10	8
H14	BPR: Business Process Reengineering	8	10	10
H15	Establishment of a communication plan	9	10	8
H16	Establishment of a training plan (users and system administrators)	9	10	8
H17	Involvement of Users	9	10	8
H18	Center of competence (competent team mixed business and technical)	9	8	10
H19	Project Teams competent	9	10	8
H20	Choice of architecture of ERP	7	10	8
H21	Limitation of specific developments (customization)	8	10	9
H22	Management of data migration	8	10	8
H23	good Setting	9	10	8
H24	Security, leave, management and update accées	9	10	8
H25	Using of referentials of governance of information systems	8	9	9
H26	PMBOK	8	9	9
H27	COBIT	7	10	7
H28	ITIL	9	8	8

Our research will continue in two directions:
-Expanding the list of key factors necessary for the acquisition and implementation of ERP.
-The design of a repository of good practice for the implementation and use of ERP in organizations.

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