

# **Stakeholder Saliency in ERP Projects**

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The aim of this study is to examine stakeholder involvement in an Enterprise Resource Planning (ERP) System project that involves implementation and improvement of the implemented system. The study targets stakeholders, their classification, and their degree of importance during different phases of an ERP project life cycle, i.e. planning, implementation, stabilisation and improvement.

The study shows that stakeholder involvement and their saliency vary along the ERP project life cycle and during different work situations. The saliency of stakeholders could play a major role in decision-making in the ERP project. The Stakeholder Saliency model presents a typology of stakeholders that is appropriate for an information systems (IS) project including ERP projects. On the basis of the background knowledge, the thesis proceeds with a case study and analyses how stakeholders are involved in a five-year project to implement an ERP system in a telecom service providing company. The study identifies eight stakeholders or stakeholder groups that are involved in an ERP project and describes stakeholder saliency during different phases of the ERP project life cycle.

The thesis develops a stakeholder saliency matrix taking into account the characteristics, functions and saliency of each stakeholder or stakeholder group in a particular phase of ERP project life cycle.

Moreover, the thesis provides three recommendations related to the stakeholders for ERP projects. The recommendations include the use of Hybrids (employees having knowledge of business domain as well as information systems) in the ERP project team, the use of Project Management standards and the use of Agile methodology for ERP projects. These three recommendations give future directions to the thesis study and

promise a theory development with long-term scope, provided more time and research efforts are devoted.

Key words and terms: Enterprise system, Enterprise Resource Planning (ERP), ERP project, ERP project life cycle, Stakeholder, Stakeholder Identification, Stakeholder Classification, Stakeholder Saliency.

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## 1. Introduction

An Enterprise Resource Planning (ERP) system refers to packaged application software consolidating or integrating a range of business processes and business functions and managing data of an organisation into an integrative structure [Dahlén and Elfsson, 1999; Eskilsson et al., 2003; Klaus, Tai and Wang, 2014; Zach, 2012].

An ERP system is business management software. In the current scenario, an ERP application could be considered as a strategic investment to acquire competitive advantage and to reap benefits in terms of standardised processes and organisational management contributing to revenue and growth [Klaus et al., 2000; Hailu and Rahman, 2012].

### *1.1 Research Questions*

Every information system (IS) project has the involvement of a number of stakeholders or stakeholder groups. The organisations looking to implement an enterprise system face the possibility of having new or diverse groups of people or stakeholders, including global customers, external consultants and IT vendors. Each of these stakeholders has its own interests and it is upon the organisation to figure out the best possible ways to cater to these different (may be conflicting) interests.

First of all, we investigate the following research question:

*Research Question 1: Who are the different stakeholders involved in an ERP project?*

The context of the ERP systems diverge the study of stakeholders and their involvement from the conventional application of stakeholder salience theory on the implementation of information systems. This study covers a dimension of stakeholder involvement which is varied from the existing literature on stakeholder salience.

The degree of importance of each stakeholder or stakeholder group is a measure of the power, legitimacy and urgency attributes. This degree of importance is also known as stakeholder salience. This salience changes over the time and stage of the project. The

saliency directly influences the decision-making and the working of the project. Sathish et al. [2003] presented the stakeholder perspective of the implementation and management of enterprise systems. They made propositions based on the stakeholder saliency model of the stakeholder theory. They suggested application of the stakeholder saliency model to the actual cases of enterprise system implementation considering the differences of saliency under different circumstances like the life cycle stage. This will present a valuable insight on the role of stakeholders in influencing the enterprise system project and how the stakeholders should be managed.

We move on to the next research question as follows:

*Research Question 2: How does Stakeholder Saliency differ during different phases of an ERP project life cycle?*

In this thesis, stakeholder saliency is studied in the context of ERP systems. As such, stakeholders involved in an ERP project are identified and their saliency is studied further in the study. Since this study focuses on the stakeholder involvement in ERP systems rather than conventional software systems, the diversity of the two systems supports the understanding of the ERP system. The distinguished characteristics of an ERP system help us to narrow down the scope of the study from the huge research area of information systems.

## *1.2 Research Methodology*

The research methods used for this thesis work are: *literature review* and *case research*.

Literature review is always the initial step of any research work as it illustrates the importance of the research area and establishes the relevance of the research topic with the existing research.

A literature review helps the researcher perform a mapping of the existing and previously developed knowledge and initiatives in the field and is usually the initial step in any research and development enterprise [Mian et al., 2005].



The literature review establishes the concepts and paves the way for research questions. On the basis of the literature review, stakeholder involvement and attributes related to stakeholders that impact the relationships among them are studied.

Webster and Watson [2002] and Jarvinen [2008] advocated concept- centric approach to a literature review process. In this thesis, the study has been done around the concept of stakeholder identification, stakeholder profiling and stakeholder salience model. In the later part of the thesis, a stakeholder salience matrix has been compiled which is based on a logical approach of the stakeholder salience model. Furthermore, tables and figures have been used to communicate the findings of this thesis.

A literature review should cover relevant literature on the topic and should not be confined to one research methodology. The researcher should know the material, comprehend the material, analyse and evaluate it during the process of literature reviewing.

In this study, literature review was taken as the first research method. The author found that the literature on ERP research is very vast and has grown immensely during last two decades. Different data sources namely IEEE<sup>1</sup>, ACM Digital Library<sup>2</sup>, Emerald<sup>3</sup>, SpringerLink<sup>4</sup> and Wiley Online Library<sup>5</sup> were consulted to search the literature on ERP.

The case study and the author's experience and observations acted as the second research method. Even though some outcomes of this study were validated by the existing literature, some statements require criticism for their approval by the research community.

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<sup>1</sup> <http://ieeexplore.ieee.org>

<sup>2</sup> <http://dl.acm.org>

<sup>3</sup> <http://www.emeraldinsight.com>

<sup>4</sup> <http://link.springer.com>

<sup>5</sup> <http://onlinelibrary.wiley.com>

A case research study regarding a telecom service provider company implementing an ERP project is presented in this thesis. The case study elaborates the life cycle of the ERP project over the years and compares it with the ERP project life cycle (as described in this study). Cunningham [1997] presented case study principles for different types of cases. The case study presented in this thesis work is explanatory in type. Furthermore, the author tries to summarise the information with the help of tables and figures so that the literature remains coherent with an immaculate language. The data presented in terms of the customer base and the number of business process is huge which makes the case study eligible to form the basis of problem-solving approach and /or theory development.

One cannot generalise on the basis of a single case research as the case may be seen as arbitrary to some researchers and subjective to another group of researchers. A case study might be biased but it provides depth of knowledge, have high conceptual validity and helps in understanding of context and process [Flyvbjerg, 2006, 2011] .

### *1.3 Thesis Contribution*

The study targets *stakeholders* and their salience during different phases of an ERP project life cycle i.e. *planning, implementation, stabilisation and improvement* (as discussed in section 2.2). The motivation behind the topic is the changing importance of different stakeholders during different phases of an ERP project. This could be explained by stakeholder salience model of the stakeholder theory.

The study reviews the existing literature related to stakeholders in ERP projects and performs a gap analysis in the existing literature related to ERP research. The study identifies different stakeholders, analyses stakeholder salience of the identified stakeholders during different phases of ERP project life cycle. A stakeholder salience matrix is provided by the analysis done during the thesis work. The study also provides some recommendations related to ERP stakeholders that could be used for ERP projects.

Lanamäki and Stendal [2011] discussed mutual informing between academics and practitioners of information systems. They debated on the importance of the use of academic research in practice and vice versa and stressed on university collaborations, workshops and institutional changes. They advocated that the research in information systems should be relevant to the practitioners. Furthermore, they discussed that the diversity in knowledge forms and the different nature of motivation and experience between the practitioners and the academic researchers is a hindrance for the mutual informing. They presented a model that illustrated the differences between temporal and knowledge interests between academics and practitioners. The model described Information Systems as a cross-disciplinary applied field and explained that mutual informing would cross the boundaries existing within and between the two realms.

The model shown in Figure 1.1 has been adapted from the model presented by Lanamäki and Stendal [2011]. The *first* quadrant shows the cross-section between theory development and long-term scope, the *second* quadrant shows the cross-section between theory development and short-term scope. Similarly, the *third* quadrant shows the cross-section between problem solving and value creation and long-term scope while the *fourth* quadrant brings out the cross-section between problem solving and value creation and short-term scope. According to the model, a research could move in two ways i.e. from *first* to *fourth* quadrant or from *fourth* to *first* quadrant. With the investment of more time, the process of theory development and/or problem solving and value creation evolves to a long-term scope.

This research study tends to move from the *fourth* to the *first* quadrant of the model. The study is mainly in the *fourth* and the *third* quadrant. The author presents his ideas with a personal case research and contributes to theory development using the stakeholder salience matrix. The future directions and the need to validate the approach of the author have been described in the literature.

<b>Knowledge Interest</b>		<b>2<sup>nd</sup></b>	<b>1<sup>st</sup></b>
	Theory Development	Theory development & Short-term scope	Theory development & Long-term scope
		<b>4<sup>th</sup></b>	<b>3<sup>rd</sup></b>
	Problem solving and value creation	Problem solving and value creation & Short-term scope	Problem solving and value creation & Long-term scope
		Short-term scope	Long-term scope
		<b>Time</b>	

Figure 1.1: Research Scope relationship chart (Adapted from Differences Temporal and Knowledge Interests [Lanamäki and Stendal, 2011])

#### 1.4 Thesis Structure

The structure of thesis proceeds as follows:

*Chapter 2* grounds the concepts of ERP systems and ERP project life cycle. *Chapter 3* illustrates the related research on ERP systems and presents a review of the articles related to ERP research. *Chapter 4* is concerned with stakeholders. This chapter establishes the fundamentals of stakeholder concept and related attributes, with a focus on stakeholder involvement and relationship attributes describing the Stakeholder Salience model and typology of stakeholders. *Chapter 5* presents a case study about a telecom service provider implementing an ERP project. It gives a detailed account on the chronological events related to the ERP project in discussion. *Chapter 6* identifies

the stakeholders involved in an ERP project life cycle based on the reviewed literature and the case study presented in Chapter 5. *Chapter 7* is concerned with Stakeholder Saliency in an ERP project. It elaborates the change of saliency for different stakeholders or stakeholder groups during different phases of ERP project life cycle. *Chapter 8* discusses the stakeholder saliency matrix and the possible suggestions for handling ERP projects. *Chapters 9 and 10* conclude the work and discuss the limitation and the future work. It refers to the temporal and contextual limitations considered during the conduct of this study.

## **2. Enterprise Resource Planning Systems (ERP) and ERP project life cycle**

An Enterprise Resource Planning (ERP) system is a comprehensive, packaged software solution that is used to integrate business and technical (information related) functions of an organisation. It evolved from the Materials Resource Planning (MRP) software which was developed to efficiently calculate the materials needed by the firms [Klaus et al., 2000].

This chapter gives a detailed description about ERP systems through the established concepts in ERP research. Further, there is a detailed account on the definition of an ERP project life cycle. The concept of an ERP project life cycle paves the way for the study conducted throughout this thesis work.

### *2.1 ERP: An Introduction*

Businesses and Organisations round the globe have been making huge investments on Information Technology (IT) infrastructure or rather Information and Communications Technology (ICT) over last three decades to develop information systems that can handle their business processes. The investments on development of information systems have significantly increased over the last decade with the increased use of ERP software.

The basic goal of an ERP is to support and integrate all business functions, processes and units of an organisation and to create a system that is capable of providing up – to – date and relevant information to the decision makers, the employees and also the business partners [Michailidou et al., 2008].

An ERP system consists of business applications or modules, which links different business units of an organisation such as financial, accounting, manufacturing, and human resource into a tightly integrated, single system with a common platform for the flow of information across the entire business. However, ERP systems are characterized by high level of costs and complexity. The required high investment and the decision to

purchase and implement an ERP is one of the most important decisions management has to make [Shehab et al., 2004].

Examples of ERP systems are SAP<sup>6</sup> and Oracle<sup>7</sup> having the major portion of the ERP market share [Gartner Inc.]

ERP helps an organisation or enterprise to function better as a single entity rather than different individual departments and business functions by facilitating the flow of information across the organisation.

## 2.2 An ERP project life cycle

The life cycle of an ERP system project ought to be defined into phases or stages which are to choose ERP systems, customise them according to business process, stabilise the implemented ERP systems and then improve the stabilised system.

Shanks et al. [2000] presented a four phase model of an ERP project life cycle and they are the phases of *Planning, Implementation, Stabilisation and Improvement*, as shown in Figure 2.1.

The Planning phase includes activities like selection of the ERP software, identification of the project team, approval of finances and schedule and, allocation of hardware and human resource according to the approved schedule. It also includes more technical project focus of the design of the enterprise application (blue print of proposed application or project).

The Implementation phase includes the actual installation of ERP software, its customisation, business process re-engineering (BPR) and required hardware and organisational changes [Haddara and Zach, 2011]. BPR refers to the rethinking and redesigning of the existing resources, business processes and workflows of an organisation in order to reduce operational costs, improve customer service and to have a competitive advantage.

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<sup>6</sup> <http://www.sap.com>

<sup>7</sup> <http://www.oracle.com>

The Stabilisation phase refers to the use and maintenance of the implemented ERP system in such a way that the expected benefits are realised from the system. Reduction in operational costs, increase in competence of the employees, decrease in business process time and increase in system performance are focused in this phase.

The final phase is the Improvement phase that includes improvements to business process enabled by the implemented ERP system. These improvements can be incremental and based on feedbacks and opinions of the employees of the organisation working as the members of the Project Group, as Business Unit managers and those working as end-users of the implemented system. This phase may be extended to evolve the system by integrating with other applications and external systems.

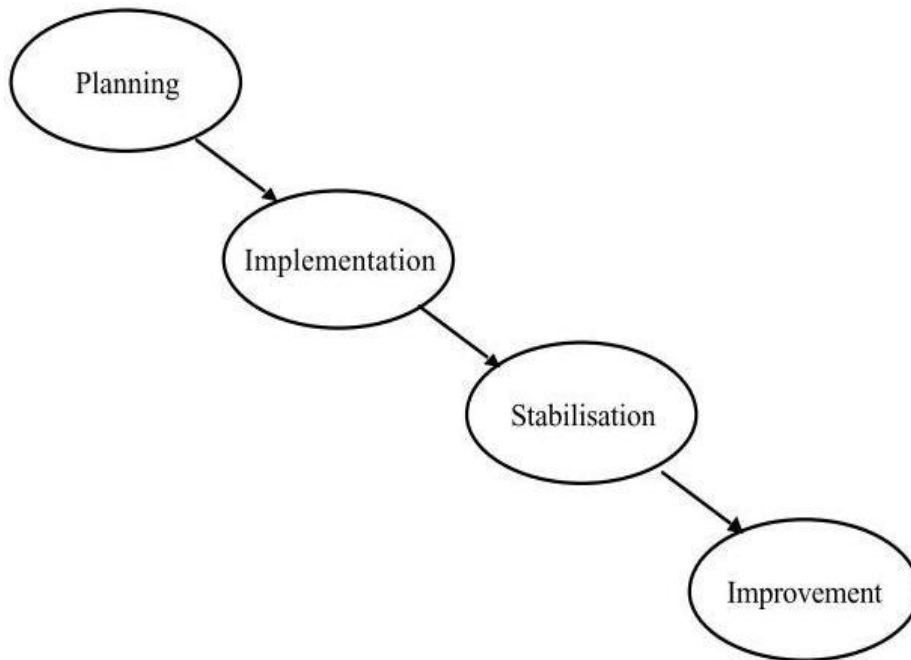


Figure 2.1: Synthesised Process Model for ERP Implementation [Shanks et al., 2000]

Hence, this synthesised model with planning, implementation, stabilisation and improvement phases could be considered as “*ERP project life cycle*” in this study.



### **3. Research on ERP systems**

Since this study focuses on stakeholders, their salience during different stages of ERP projects, it is important to establish the existing literature in ERP research related to stakeholders.

Nah et al. [2001] discussed 11 factors critical to ERP success: ERP teamwork and composition; change management program and culture; top management support; business plan and vision; BPR with minimum customisation; project management; monitoring and evaluation of performance; effective communication; software development, testing and troubleshooting; project champion; appropriate business and IT legacy systems.

In his survey of research on ERP related issues, Al-Mashari [2002] illustrated the taxonomy of ERP research to cover the major issues addressed in the ERP literature. The study explored future research avenues and highlighted dimensions related to ERP adoption, technical aspects of ERP and ERP in Information Systems (IS) curricula. The study is believed to cover the major issues in this important field. The taxonomy of ERP adoption research included ERP implementation and ERP integration and shows the imbalance between research on ERP implementation and integration. Operational, maintenance, management, and performance issues were not addressed very well. In today's context, the taxonomy lacks a number of issues in ERP research. For instance, e-commerce, resource sharing on cloud platform and other B2B and B2C concepts should be added to the taxonomy.

The integrative review presented by Shehab et al. [2004] highlighted some statements from previous research in their study related to customisation of the software to fit the existing process, costs (and hidden costs) of ERP implementations, increased quality customer satisfaction after ERP implementation, organisational impact of enterprise systems and economic and strategic justification of implementing an ERP project.

Shehab et al. quoted:

*“Although ERP packages provide generic off-the-shelf business and software solutions for customers, there is growing evidence that failure to adapt ERP packages that are implemented in companies with different corporate and national cultures, to fit these cultures, leads to projects that are expensive and overdue”* [Shehab et al., 2004].

Shehab et al. [2004] provided an evidence for an association between ERP implementation problems and the corporate culture. Therefore, a direct relation between the stakeholder involvement and ERP implementation issues could be established. Their literature review illustrated problems related to top management support, communication between stakeholders, implementation strategy, ERP teamwork and composition, project management, data accuracy, organisational size and complexity. These problems ultimately increase in project costs and delayed project delivery.

Furthermore, they advocated that ERP implementation and BPR activities should be closely connected. An organisation should customise its business processes to accommodate the functionalities of the ERP system if it helps in easier mapping of functionalities with the ERP software. Subramoniam et al. [2009] studied the extent of change in organisational processes versus the extent of change in software in ERP implementation based on the role of Business Process Re-engineering (BPR) in implementing ERP projects. They concluded from their study that simultaneous implementation of BPR and ERP was the most effective method in redesigning the business processes.

Mehrjerdi [2010] analysed risks for enterprise resource planning namely: high initial investment of ERP software, ERP software lack of flexibility to business process, high turnover rate for team members, heavy customisation, role of IT infrastructure, top management support, risks as a result of consultant action and high ROI.

In addition, the study implied that the managers should consider ERP system as a business solution and not another IT project. Furthermore, proper monitoring and evaluation of an implemented ERP system (i.e. during the post implementation stages of

an ERP project life cycle) could maximise the benefits of the ERP project by making the organisation more adaptable.

As suggested by Anderson et al. [2011], there is a significant focus on complementary changes in people, process and technology during an ERP implementation. The study considered two types of approaches for implementation i.e. traditional and accelerated. The traditional approach involved changes in strategy and operations in the organisation and took a longer time compared to the accelerated approach. In the accelerated approach, alignment of business process with the ERP is done by changing them may have changed.

Alter [2000] presented the comparison between IT and business perspectives on basic Information Systems concepts. He explained that there is no difference between IT perspective and business perspective regarding the definition of '*Stakeholders*'. Hence, the study conducted in this thesis work holds significance for both business professionals and IT professionals.

In his study, Ifinedo [2004] concluded that both IT professionals and business managers evaluate selected measures and ERP success dimensions in a similar manner. Moreover, there is an amicable climate in the organisation adopting ERP because the inputs given by IT professionals and users of the system are considered during the ERP processes.

Yu [2005] suggested that the installed ERP system is continuously working and improves over time and across the organisation. This study also emphasised the *education and training of end-users* across the organisation.

Zach [2012] showed that the primarily technical motivation for ERP system implementation is the root cause of customisation. Significant changes in business process are observed in the companies having continuous growth. These changes are to be captured by the ERP system and cause a need for the system customisation after 'going-live.'

It has been found that a significant number of articles based on ERP adoption and implementation are available. Some articles are purely based on critical success factors and help the researchers/practitioners to select the ERP software and give insights on Strategic Planning for ERP projects. Stakeholder involvement and the communication between different stakeholders group of an ERP project have been emphasised in a number of articles. The role of top management, end-users and the project managers have been brought forward in the ERP research. Some articles focused on BPR and tailored ERP systems. The articles by Al-Mashari [2002] and Shehab et al. [2004] are one of the most cited articles in the literature of ERP research. These articles paved the path for exploratory research in ERP and are believed to be the basis of the ERP research during the last decade.

On the other hand, Koh et al. [2006] discussed different aspects related to stakeholder involvement, customisation of ERP software according to the requirements and size of the organisation while presenting their study on Greek companies adopting ERP systems. The study compared the adoption and implementation of ERP systems in Greek companies with the same process in US and UK companies. This research also provided managerial implications. It informed the managers of the success/failure factors for ERP implementation and ERP integration explaining that ERP implementation and ERP integration were not identical. It also warned them that an uncertain time frame for ERP project deliverables and/or uncertain requirements and resources could not be handled by ERP systems.

In this respect, the article quoted:

*“The critical success/failure factors for ERP implementation lie in some key areas, namely: getting the right type of system **for the right type of business and the right size of enterprise**; ensuring excellent project management, **change** management, risk management and people management programmes are in place; managing BPR by changing the business process to fit the system process; and managing the process of hardware and software installation, data transfer and collection, and **customisation of modules for specific functional requirements (system implementation and customisation)**, understanding the benefits of and drivers for ERP implementation. In contrast, aspects related to ERP integration cover issues including operational management, uncertainty management; performance and evaluation; information and knowledge management; and intra-enterprise and inter-enterprise integration of ERP with other functions”* [Koh et al., 2006].

The results of the literature review of this thesis brought forward the existing gap in the literature of ERP research. ERP research does not contain much literature related to the Stabilisation and Improvement phases of ERP project life cycle. It has been found that there are very few articles discussing post- ERP implementation issues and improvement of the implemented ERP system. There is a gap in ERP research based on sustainability, agility and maintenance of the implemented ERP systems. Only a few articles expressed concerns over operational sustainability of ERP projects and on ability of implemented ERP systems to adapt to changing requirements. Meanwhile, no articles have been found that were focused on improving the implemented ERP system. Furthermore, no clear strategy or best practices for an ERP project life cycle have been suggested and/or validated in the current ERP research.

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## 4. Stakeholders

In software engineering, stakeholders have been defined as the people and organisations affected by the application [Conger, 1994] and as the people who have a stake or interest in the project [Cotterell and Hughes, 1995].

In other words, stakeholders are people or organisations who will be affected by the system and who have a direct or indirect influence on the system requirements [Sommerville and Kotonya, 1998]. The major stakeholder groups for an ERP project are Project Owners / Managers, Customers, Developers, Regulators, End Users, Domain Experts, other Integrated Systems, Vendors.

### *4.1 Stakeholder Saliency: Stakeholders and Relationship Attributes*

Mitchell et al. [1997] introduced the concept of Stakeholder Saliency. Stakeholder Saliency is the degree of importance or priority given by the project management to the claims made by the stakeholders or stakeholder groups. They proposed a theory of stakeholder identification and saliency based on the stakeholders possessing one or more relationship attributes i.e. power, urgency and legitimacy. They suggested that stakeholder attributes are variable, dynamic and socially constructed. In other words, the degree of each attribute is a result of multiple perceptions and may not be objective in nature [Sathish et al., 2003]. The project management heeds to the stakeholders whose claims are perceived to be more salient in terms of power, legitimacy and urgency [Agle and Mitchell, 1999; Mitchell et al., 1997].

*Power:* Power could be described as the ability to influence a decision or working of project/system. It is the extent to which a stakeholder can gain access to impose its will in the relationship with the organisation.

*Legitimacy:* Legitimacy refers to the moral obligation towards organisation. It can be considered as the perceived validity of a claim. It can be related to importance in terms

of time and resources. Though legitimacy may be defined and negotiated differently at different organisational levels, it should be taken into account while taking the decisions on the claim.

*Urgency*: Urgency could be defined as the extent of demand for immediate attention. It can be criticality and time urgency. It is believed that urgency exists when a relationship or claim is time-sensitive in nature and/or when that relationship or claim is critical to the stakeholder.

Mitchell et al. [1997] generated a typology of stakeholders concerning to their salience to the organisation as follows:

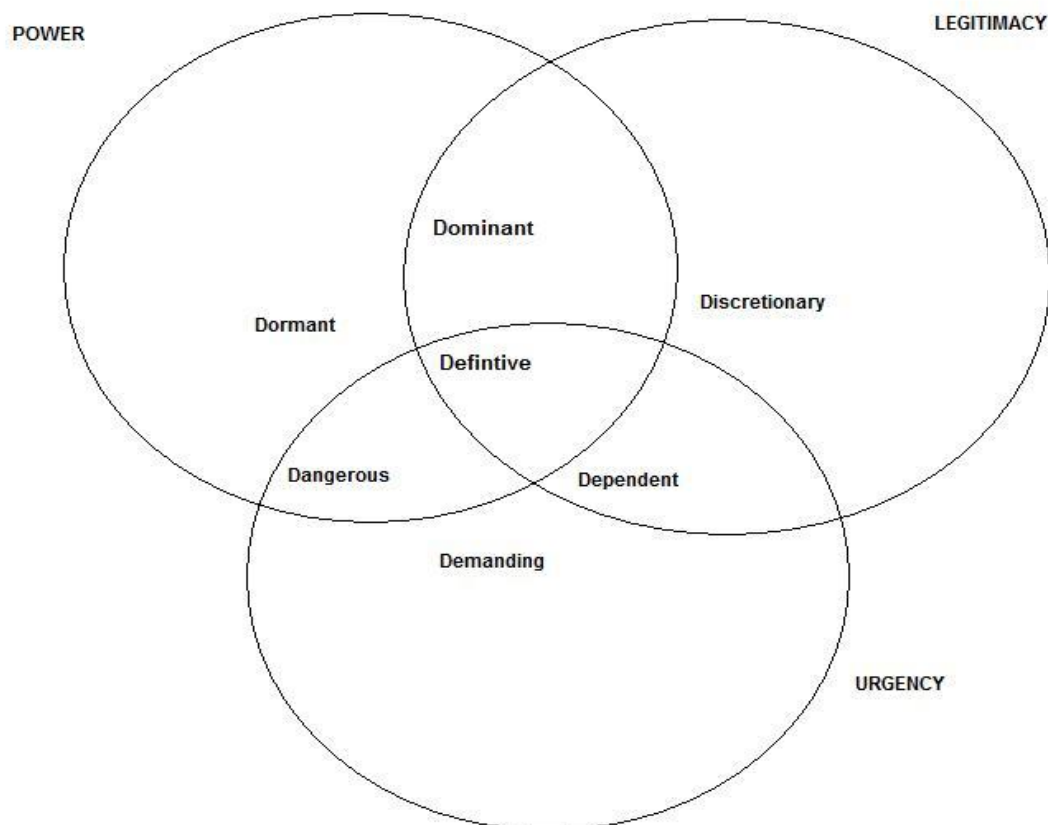


Figure 4.1: Stakeholder Typology adapted from Mitchell et al. [1997]

Aaltonen et al. [2008] suggested that both the interests of the stakeholders and the means through which they achieve their interests are critical for the success of a project. Stakeholder salience shapes strategies and managerial implications by presenting the criticality of the claims of the stakeholders.

Boonstra [2006] advocated the classification of ERP project stakeholders on the basis of power, legitimacy and urgency.

The study by Boonstra [2006] quoted:

*“A group has power to the extent it has access to coercive, utilitarian or normative means for imposing its will in the relationship. Legitimacy is a social good and more over-arching than individual self-perception and is shared amongst groups, communities or cultures. Urgency is based on time sensitivity and criticality.”*  
[Boonstra, 2006].

Figure 4.2 is a re-interpretation of the classification of ERP project stakeholders. The matrix serves as the basis of analysing the roles played by different stakeholders during different phases of ERP project life cycle in later part of this thesis study.

Type of Stakeholder	<i>Power</i>	<i>Legitimacy</i>	<i>Urgency</i>
<i>Dormant Stakeholders</i>	X		
<i>Discretionary Stakeholders</i>		X	
<i>Demanding Stakeholders</i>			X
<i>Dominant Stakeholders</i>	X	X	
<i>Dependent Stakeholders</i>		X	X
<i>Dangerous Stakeholders</i>	X		X
<i>Definitive Stakeholders</i>	X	X	X

Figure 4.2: Classification Matrix based on relationship attributes and Stakeholder typology (as shown in Figure 4.1)



Following is the description about each type of stakeholder:

*Dormant stakeholders* possess the power to impose their claim but their power remains unused due to lack of a legitimate relationship or urgency of their claim. They stay passive but have the potential of directly or indirectly affecting the organisation. They may have a potential to obstruct the standardisation process [Verheul, 2002]. For example, a person or group of individuals who can manipulate media attention. The reputation of a company could be in danger if some rumour or unauthorised information is leaked in the media or to the competitors.

*Discretionary stakeholders* possess legitimacy, but have no power to influence a decision or action and no urgent claims. For example, a research agency or a consulting firm projecting the future of an information system project. An organisation can follow the suggestions made by the research firm as they would be genuine, legitimate and based on facts, findings or research.

*Demanding stakeholders* are those with urgent claims, but having neither power nor legitimacy. For example, a group of employees who make demands for more salary or employee benefits. Though the demands could be urgent for the employees, the organisational management would check and scrutinise them according to the overall goals of the organisation. There is a high possibility that the demands are not considered by the management if they could not be proved as legitimate.

*Dominant stakeholders* possess both power and legitimacy. Their claims surely influence relationships and decisions. For example, non-executive directors or shareholders of an organisation could be dominant stakeholders. A retired CEO of an organisation could influence the decision of the Board of Directors and other shareholders. He can put forward his claims based on his expertise and experience.

*Dependent stakeholders* are not powerful, but have urgent and legitimate claims. These stakeholders have to depend on others to implement their action. As such, their value needs to be understood by other stakeholders so that they could influence the organisation. For example, an infrastructure department that needs financial approvals from the top management to purchase new hardware or software tools could be

dependent stakeholder. Even though their demands are urgent and legitimate and would benefit the system performance of the organisation, they do not have the power to procure the required hardware or tool on their own.

*Dangerous stakeholders* possess power and urgency but lack the factor of legitimacy. Their claims may be dangerous to the system as they can pressurise to implement their will. For example, a group of employees threatening for a strike is a dangerous stakeholder. If the Customer Care team or the ground-level labour refuses to serve the customers of the organisation, the customers would be annoyed. Moreover, the organisation could lose some of its customers due to bad customer service.

*Definitive stakeholders* possess all the three attributes i.e. power, legitimacy and urgency. They include the owners of the project. For example, a board of directors who have power, financial and technical resources. These stakeholders take ownership of the business processes and ensure that operational efficiency is maintained or gradually increased. They can take decisions and approve budget for a claim that they feel is legitimate and urgent.

## 5. Case Study: Implementing an ERP project for a telecom service provider company

The author has worked as an ERP Consultant for a consultancy service company to which we would refer to as Company T in this study. Over the years, the author had different roles and responsibilities being deputed at the *client location*, the data centre of the organisation adopting the ERP system. We would refer the organisation adopting the ERP system as Company B. It is a public sector organisation, which cater to the needs of around 55 million subscribers.

The author worked as a member of the *Project Group* and was in constant touch with the *Board of Management*. Being a functional consultant, the author was responsible for changes which result from modifications in the business processes of the organisation. The author also acted as one of the *super users* and later trained the employees of the organisation and other members of the Project Group. The author was the link between the External Consultancy and the organisation. Furthermore, the author worked with Migration and Roll-out teams during *go-live* of the ERP system implementation and then as a mentor to the Operations and Maintenance Team.

Company B was a telecom service provider and the project assignment involved deployment of Centralised Integrated Billing Systems with supporting technological and communication infrastructure. The project prepared Company B to face new challenges due to competition by providing effective and efficient Billing and Customer Care Solutions. The Planning phase of the project started when the management of Company B called for bids from different IT consultancy agencies to help them build and implement the customised system including ERP software. Company T won the bid and was assigned the contract for the implementation and maintenance of the new enterprise solution. The ERP software package named SAP Customer Relationship Management developed by the company SAP AG<sup>8</sup> was selected as the ERP software after recommendation by Company T. Company B has more than 80 business processes for

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<sup>8</sup> <http://www.sap.com>

its functioning and operations. All these business processes were to be mapped to the new convergent billing system with the help of enterprise software. The project not only promised revolutionary measures in the operational efficiency of the organisation but also in the organisational management. An approximate number of 96,000 employees were expected to be influenced by the project.

During the course of the requirements analysis, a team of Company T consultants from different application streams interacted with subject matter experts (SMEs), business process owners, IT staff and the senior management of Company B to understand the business processes and system requirements. This exercise continued ensuring the complete coverage of the defined scope for the project. The project included *adoption of ERP system, the integration of the ERP system with other vendors, the training of employees on the use of newly adopted system and the operations and maintenance of the implemented ERP system*. The inclusion of the ERP system meant transformation from the decentralised legacy system to a centralised modern system. Considering the amount of data and the work involved, a separate team called ‘Migration and Roll-out’ team was formed that was responsible for the migration of data of 55 million customers from legacy system to the SAP system, modifying it according to the needs of the business processes of Company B and enabling the system Go-Live to real time or production environment. The legacy system was more than 12 years old and was considered the first integrated telecom software application of the organisation comprising of billing, fault maintenance and customer related business processes. Each business unit of Company B had its own data and functioned independently with its own legacy system. Though all the business units used the same legacy system, the data and storage locations as well as the way of the operational models were different.

### *5.1 Company B and its organisational structure*

The network of Company B provided telecom services to subscribers in *four* zones and more than 300 geographical business units. Each business unit catered to the subscribers of its landline and broadband services of its designated geographical area. The aim was to centralise the whole customer relationship and billing system to *four* data centres, one data centre for each zone. The organisational structure included Chief General

Managers at zone level, and General Managers and Deputy General Managers at business unit level as shown in Figure 5.1. The team of General Managers, Deputy General Managers, hereby referred as Business unit managers were responsible for the needs of their business units. They were frequently contacted by the Corporate Management hereby referred as the Board of Management including decision makers of Company B and project owners from Company T. The Board of Management together with the Project Group geared up for the successful implementation of BPR and to move the project into the implementation phase. It was planned to roll-out the mass and critical business processes first and small and supplementary business processes in subsequent packages.

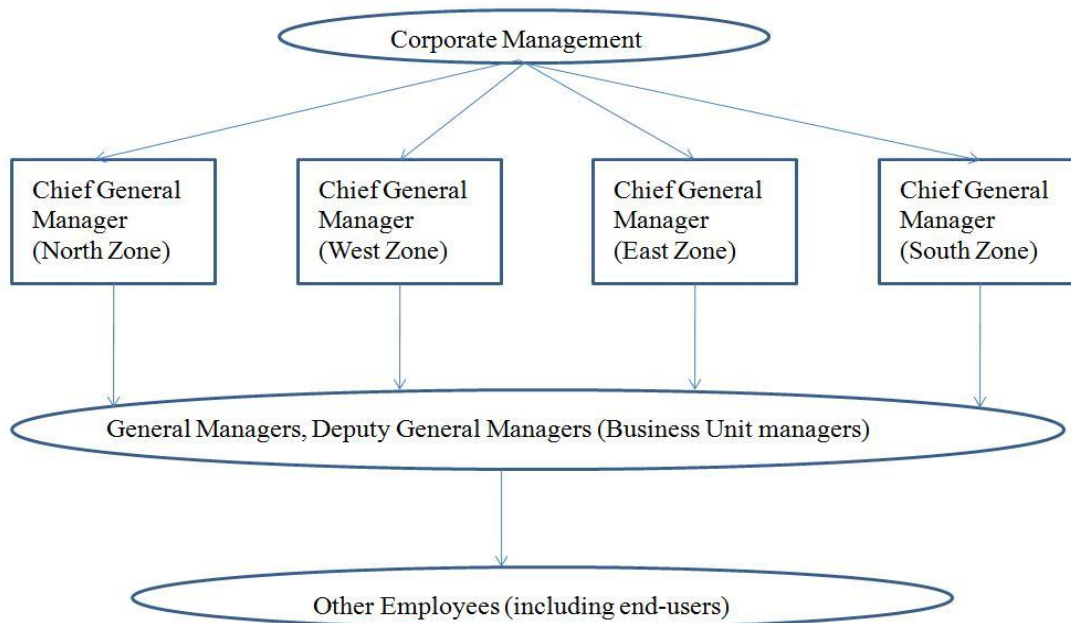


Figure 5.1: Organisational Structure of Company B

### 5.2 Strategy for adapting the ERP system for Company B

The higher management from Company B and Company T in cooperation with the Project Group and Business Unit managers formed a strategy for the ERP project. The strategy included steps based on maintaining the business goals of Company B. All the business units did not have to undergo transformation from the legacy to the new

integrated systems at the same time. They decided to implement only the important functionalities first and only in pilot business units so that they could get the initial response and feedback from the Business Unit managers. Some business units from each zone were selected randomly and were designated as pilot business units for the project.

The strategy for the ERP project is illustrated in Figure 5.2

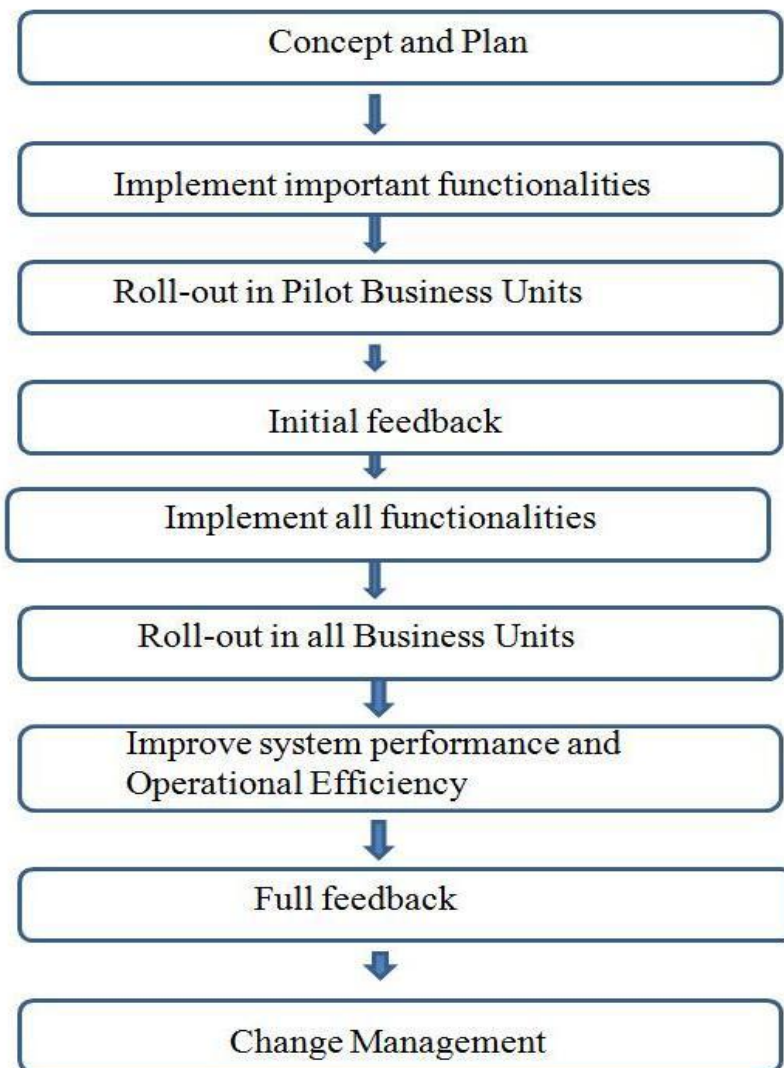


Figure 5.2: Step wise strategy for the ERP project

The strategy of the ERP project involved the completion of activities during different phases of the ERP project life cycle (as shown in Table 5.1). Company B intended to transform its operations and organisations to have a competitive advantage in the market with the help of the ERP system. It hired the expertise of the consulting company, Company T and planned the strategy for the ERP project. They selected important functionalities or business processes (approx. 50 out of 80 business processes) to be implemented using the ERP system in the first go. They decided to roll-out the ERP system in pilot business units only. The purpose of using pilot business units was to get immediate feedback of the new systems. Moreover, they would not involve all the manpower at a stretch in the implementation of the project. The Board of Management, the Project Group and the External Consultancy resolved for a timely and error free ERP implementation. They were ready with precautionary measures and plan to roll-back the ERP implementation in case the ERP system turned out to be a failure in the pilot business units.

The successful roll-out of the ERP system in the pilot business units gave confidence to the project owners to move ahead with implementation of all the business processes and roll-out the customised ERP system in all the business units. The Implementation phase of the ERP project witnessed support from Business Unit managers and overall acceptance to new the system by the employees at the ground level.

During the Stabilisation and the Improvement phases, the strategy focused on improving operational efficiency by reducing business process times. Furthermore, knowledge transfer among the Project Group, Operations and Maintenance Team and the end-users was a major part of the strategy during these phases. The stakeholders worked for improving the system on the basis of the full feedback received from the ground level and business unit managers. They decided to use Change Management practices to remove system issues and to improve business processes.

Year of the Project	<i>Activities performed</i>	<i>Phase of ERP project life cycle</i>
<i>First Year</i>	Finalise system requirements specifications Adoption of the ERP software Identification of the Project Group Approval of finances Approval of project schedule Allocation of hardware and infrastructure Allocation of IT and support staff Customisation of the ERP software Business Process Re-engineering	Planning
<i>Second Year</i>	Migrate data from legacy system to the ERP system Roll-out the customised ERP system to pilot business units Monitor and improve the performance of the live system Train employees acting as end-users Get feedback from business unit managers	Implementation
<i>Third Year</i>	Roll-out the customised ERP system to all business units Change in the organisational roles of employees Increase the strength of the support team Monitor and improve the performance of the live system Train employees acting as end-users Get feedback from business unit managers	Implementation
<i>Fourth Year</i>	Correction of inaccurate or improper migrated data System performance tuning Reduction in operational costs Knowledge transfer from Super Users Train employees acting as end-users Implement suggestions given by business unit managers Improvement in efficiency of business processes	Stabilisation
<i>Fifth Year onwards</i>	Implement suggestions given by Business Unit managers Change management after the ERP implementation Plan Disaster Recovery Decision on annual maintenance contract (AMC)	Improvement

Table 5.1: List of the important activities performed during the ERP project by Company B and Company T



The activities performed by the project team during the project lifecycle are given in Table 5.1. They are further presented with the help of stakeholder profiles during each phase in the following sub sections.

### *5.2.1 The Planning phase*

During the *first* year of the project implementation phase, the decision makers of Company B had meetings with the Project Owners assigned by Company T. The tailoring of ERP software was recommended along with some changes in business processes of Company B to suit the adopted ERP software. Considering the scale of the application to be developed and the complications involved with the tailoring of the ERP software, it took several months for the Board of Management and the Project Group to discuss and debate on whether the system should be configured according to the business process of Company B or whether the business processes should be altered according to the needs of the ERP software. They finally agreed on a set of requirements which were documented in a *systems requirements specifications* [SRS] document that further served as the basis of blue print and system architectural design. Once the customised software was ready, the Project Group presented demos to the Board of Management and installed the applications in a test environment. The testing environment included test servers, users from the Board of Management and the Project Group. A sample data was migrated by the Migration and Roll-out Team to the test servers to conduct the testing process. After a series of testing sessions and corrections had been made, the software was considered ready to be rolled out to the live (production servers) environment.

Table 5.2 illustrates the stakeholder profiles in the Planning phase of the ERP project. The Board of Management had an aspiring attitude towards the project. It believed that the project would transform the organisation in a positive way and there would be an overall increase in operational efficiency. The lack of expertise in ERP served as the constraint for the Board of Management profile.

The major interest of the Project Group in the Planning phase was to finalise the requirements and implementation strategy. The group was also keen in business process re-engineering and thus, wanted business processes to become compatible according to the ERP software.

The External Consultancy had a helping attitude during the Planning phase. It helped the Board of Management in decision making and planning the blue print of the ERP project. However, the External Consultancy was dependent on the Board of Management for the actual approvals of decisions and budget.

Business Unit managers had a very loyal attitude towards the Board of Management and thus blindly trusted its vision about the project. Their role was to instruct the other employees according to the directions given by the Board of Management.

The stakeholder group of employees as end-users had a deep trust in the legacy system. They did not welcome the plans of the organisation to implement the ERP system and replace the legacy system.

The Migration and Roll-out Team had the goal of error free migration of data from legacy to the ERP system. Although this team was not very active in the Planning phase, yet it chalked out the migration and roll-out plans with the Board of Management and the Project Group.

Operations and Maintenance Team seemed to be inactive during the Planning phase. Meanwhile it was involved with the Project Group for knowledge sharing sessions.

The attitude of IS department was responsible as they owned the setup and maintenance of the infrastructure. They recommended the Project Group and the Board of Management for procurement of the required software and hardware.

<b>Stakeholder Group</b>	<b>Major Value</b>	<b>Attitudes</b>	<b>Major Interests</b>	<b>Constraints</b>
Board of Management	a) Decision making power b) Project ownership	New ERP project would transform the organisation	Implementation of suitable ERP software and its customisation according to business processes	Lack of expertise in ERP
Project Group	Experts of technology, domain and business functions	ERP projects should involve business process re-engineering	Plan the ERP project according to SRS document and finalise implementation strategy	Need approvals for budget and system requirements specifications
External Consultancy	Expertise in ERP software and ERP projects	Help the client to take decisions and prepare strategy for the ERP project	Plan and Implement ERP project with the client	Budget and manpower constraints
Business Unit Managers	a) Cooperation to the Board of Management b) Owners of business processes	Whatever the Board of Management thinks is correct	a) Streamline business processes b) Instruct other employees	Dependent on Board of Management for decision-making
Employees as End Users	Form the ground level staff and emotional labour	The legacy system is the best	Work as end users of the legacy system	No power for decision making
Migration and Roll-out Team	Smooth migration and roll-out of ERP software to business units	Accurate data migration and roll-out should be the goal	Error free data conversion and data migration	Dependent on Board of Management and Project Group
Operations and Maintenance Team	Support Group for end users of the ERP system	Become a mediator between end users and Project Group	a) Help end users with system issues b) Report severe system issues to Project Group	Dependent on Project Group for complete knowledge about the system
IS Department	Expertise in hardware, setting up of data centres and system administration	Responsibility and ownership of system performance	Monitor and maintain the ERP system for optimum performance and efficient business activities	Dependent on Board of Management for finance and approvals

Table 5.2: Stakeholder Profiles during the Planning Phase

### 5.2.2 *The Implementation phase: Year One*

The implementation phase lasted *two* years. During the *second* year of the project life cycle, the Board of Management decided to migrate and roll-out the customised ERP software in eight pilot business units. The Migration and Roll-out Team was assigned the task of migration of data and go-live of the ERP system while the Operations and Maintenance Team was assigned the task of getting the feedback of the live software and reporting back the irregularities to the Project Group and respective Business Unit managers. The Migration and Roll-out Team reviewed the inventory of applications in the legacy system and developed a plan to migrate according to each business unit while maintaining a central master data of all business units for the SAP CRM system. The master data targeted the information of each subscriber in one consolidated system. It comprised of data related to customer management, order management, sales and marketing, and product management. Scripts and batch processes were developed for the migration of data in accordance to the fields and formats accepted by the ERP software (SAP CRM). Since the data was very huge, an estimate of two days per business unit was given by the team to the Board of Management and the Business unit managers. This required a total shut down of the legacy system in each particular business unit for two days in order to synchronise the data between the legacy and the live system. The conversion of data and its migration demanded a coalition of the IS department, the Migration and Roll-out Team and the Business Unit managers in order to ensure a high accuracy of the migrated data. Such a triad worked intensely in each of the business units to make it happen.

While the new system was being implemented, there was a section of employees having a strong disagreement with the change in the system. They were emotionally attached to the existing integrated system in use since they learnt to use the system efficiently over the years. They believed that the current systems were sufficiently fit for the purpose and had run for several years. They also thought that the success or failure of the new system would serve as a merit or demerit for the company management. They would be able to revert back to the legacy system in case the new system would turn out to be a failure. On the other hand, the management and the Business Unit managers were very

optimistic and believed that they could reap benefits from the new system immediately. The Business Unit managers welcomed the change in business processes and were confident of training their subordinates and their employees so that they could become acclimatised to the change.

Some specific problems arose during the go-live of pilot business units. Examples of such problems were data input errors, demand for key users and support personnel, poor performance, and negative reactions from the employees. The reasons behind these problems were lack of knowledge, experience and training of the employees. Although, the training of end-users was included in the scope of the project, yet no initial training was imparted to the end-users of the system in individual business units. These problems impacted the customer service of Company B as the employees took a lot of time to make data entries and run the required business process. There was a decrease in the efficiency of the employees as witnessed by the prolonged process cycle times, reduced inventory levels and increased operational costs. It was sometimes difficult to trace the cause of the problems due to insufficient IT staff at the ground level. Such a huge impact on the organisational performance was not expected at that stage of the project. Furthermore, this demoralised other business units to accept the new system. This affected the willingness of the organisation to continue and to roll out the system to other business units. However, after some meetings of the Board of Management, the Project Group and the Business unit managers, the Operations and Maintenance Team at data centre was strengthened and pressed into action as the support group for the go-live business units. The IS department changed the settings for the ERP software and the firewall to accommodate the high number of active users during peak working hours. This helped a lot in improving system performance and decreased the number of server downtimes. After a few weeks of explanation and adaptation, the system worked well. Moreover, some members of the Project Group were given additional responsibilities to raise the competence level of the Operations and Maintenance Team so that it could easily handle queries and support the Business unit managers and employees at ground level.

<b>Stakeholder Group</b>	<b>Major Value</b>	<b>Attitudes</b>	<b>Major Interests</b>	<b>Constraints</b>
Board of Management	a) Decision making power b) Project ownership	New ERP project would transform the organisation	Implement new ERP system in all business units	Lack of expertise in ERP
Project Group	Experts of technology, domain and business functions	Implementation should be done in pilot business units first	a) Map all business processes to the ERP system b) Complete implementation of customised ERP software	Need approvals for budget and system requirements specifications
External Consultancy	Expertise in ERP software and ERP projects	Help the client to take decisions and prepare strategy for the ERP project	Implement the ERP project in all business units	Budget and manpower constraints
Business Unit Managers	a) Cooperation to the Board of Management b) Owners of business processes	Whatever the Board of Management thinks is correct	a) Help in migration and roll-out b) Convince end users to use new ERP system	Dependent on Board of Management for decision-making
Employees as End Users	Form the ground level staff and emotional labour	Reject the new ERP system	Need training to use the newly implemented system	No power for decision making
Migration and Roll-out Team	Smooth migration and roll-out of ERP software to business units	Accurate data migration and roll-out should be the goal	Migrate and roll-out new system to pilot and then all business units	Dependent on IS department for downtimes and batch process
Operations and Maintenance Team	Support Group for end users of the ERP system	Become a mediator between end users and Project Group	a) Help end users with system issues b) Report severe system issues to Project Group	Dependent on Project Group for complete knowledge about the system
IS Department	Expertise in hardware, setting up of data centres and system administration	Responsibility and ownership of system performance	Monitor and maintain the ERP system for optimum performance and efficient business activities	Dependent on Board of Management for finance and approvals

Table 5.3: Stakeholder Profiles during the Implementation Phase

### 5.2.3 *The Implementation phase: Year Two*

At the beginning of the *third* year of the project life cycle, the Board of Management together with the Project Group had regular meetings with the Business Unit managers. In these meetings, Business Unit managers of the units for which roll-out was planned in future, were also invited. After several rounds of talks among these stakeholders, it was decided to roll-out the ERP software throughout all the business units. The Project Group had to restart its activities to discuss and realise company-wide implementation. The important questions were whether a) to implement the other business processes first; b) to roll-out the main application in all the remaining business units; or c) to do both a) and b) at the same time. This issue led to extensive discussions during the meetings. All the options required more IT staff, more people in the Project Group, more people in the Operations and Maintenance Team and more training to the employees of the business units. There was a conflict of interest on this issue between Company B and Company T. Company B wanted the company-wide implementation of the new system as soon as possible while stressing upon the training imparted to the employees. Company T wanted to implement the remaining business processes and roll-out the full functionality of the system. It did not want its trained personnel to train the employees of Company B and devote much time for support of the live business units. Company B knew that it was crucial to continue the project and to implement the system to the other business units. It could reap the full benefits of the enterprise solution and reduce the average costs per user only after implementing the system with all the packages and replacing the individual legacy system in each business unit. After some weeks of stagnation and a series of negotiations, the Board of Management discussed the progress of the project and decided to dedicate some of its IT staff to the Operations and Maintenance Team. From Company T, some individuals from the Project Group were given extra responsibilities to mentor the Operations and Maintenance Team. Company B demanded extra support from Company T until all the business units went live, to which Company T agreed. Therefore, it was formulated to implement all the business processes of Company B with the ERP software and to roll-out the new system in the remaining business units at the same time.

With each addition of live business unit, the workload at data centre for the Operations and Maintenance Team increased. There were concerns related to the accuracy of the data due to which the service orders seemed to fail. On a complete analysis, it was known that there were discrepancies during the data migration. These discrepancies were of three types: i) data was not available in the source (legacy) system; ii) data was not present in the target (live) system; and iii) data was not available as per correct format required by the ERP software. Additionally, there were more support calls and queries for which more staff was need. Furthermore, the members of Operations and Maintenance Team were not trained enough to tackle all the technical issues and had to consult the Project Group now and then. There were conflicts among the teams regarding the ownership of the tasks. A degrading system performance in the production environment and a rise in the number of failed service orders led to blame games among different teams. Consequently, a sense of dissatisfaction developed among the Business unit managers, the Operations and Maintenance Team and the employees who worked as end-users of the system. The Project Group had already rolled out all the functionality and incorporated all the business processes of Company B as mentioned in the system requirements specifications. By the end of the *third* year of the project life cycle, all the business units were migrated to the new ERP software and the whole organisation started working on the newly implemented ERP system.

Table 5.3 illustrates the stakeholder profiles during the Implementation phase of the ERP project. The major interest of the Board of Management in this phase was to implement the customised ERP software in all the business units. There was no change in attitude of the Board of Management. It still believed that the ERP project would transform the organisation for better operational efficiency. Besides, the focus was more on the implementation of the new ERP software.

The Project Group became very active and took ownership of the implementation of the ERP software. Nevertheless, the Project Group was cautious and decided to roll-out the ERP system to pilot business units in the earlier stage and moving on to the remaining



business units once all the issues for the pilot business units had been addressed. However, the Project Group was dependent on the Board of Management for approvals.

The External Consultancy continued to help the Board of Management and the Project Group during the Implementation phase. However, it had budget and manpower constraints when roll-out of all the remaining business units was under process. As such, there was no change in the attitude of this stakeholder group but a shortage of manpower was foreseen.

The Business Unit managers continued to communicate with the ground-level employees and convince them to accept the decision of the Corporate Management of rolling-out the new system. They acted as mediators between the Board of Management and the ground labour.

The stakeholder group of end-users expressed the need of training in order to use the new system. The attitude of the end-users was reluctant to use the ERP system as they were accustomed to the legacy system and they did not want to use the software without a proper training.

The Migration and Roll-out Team had a huge responsibility of data migration and roll-out of the ERP software in all the business units. Its major interest was to complete timely and error free migration and roll-out.

The Operations and Maintenance Team became a mediator between the Project Group and end-users. It also became the channel for knowledge transfer from the Project Group to the other employees of the organisation. Its major value was to become a support group and first point of contact for the end-users.

The IS Team continued to take the ownership of system administration and system performance during the Implementation phase. It remained the pivotal point for infrastructure services and system performance issues. It coordinated with the Migration and Roll-out Team and the Project Group for the implementation of the ERP software in all the business units.

#### 5.2.4 *The Stabilisation phase*

The Stabilisation phase of the project started in the *fourth* year when the Board of Management urged the Project Group to stabilise the system by finding and correcting the loopholes. This included a plan of discussion with Business unit managers on the accuracy of the data and performance of the system. Some members of the Project Group were deputed with the Operations and Maintenance Team at data centre in order to have a knowledge transfer. The Super Users were instructed to train the Operations and Maintenance Team so that its members could become technically sound and ready to resolve support tickets raised by the users. A number of training sessions were organised for employees as end-users so that they could follow correct business processes and correct data could be entered in the system. After a few weeks, the employees started accepting the new system and were more eager to learn about it. Although the enterprise system meant more central control and less autonomy of the business units, the units welcomed the change as it was helping them to complete service orders in less time and in an efficient way. This resulted in new initiatives to reduce/eliminate issues at ground level. The business units started to function independently and there were fewer calls to the support group. Meanwhile, the Board of Management kept track of organisational performance with the help of integrated Business Intelligence and noticed a reasonable cost of operation. The board felt a need to focus on cost control and efficient operational processes by using management information provided by Business Intelligence. It worked out some business processes that should be reconfigured and suggested moving the project to the Improvement phase.

Table 5.4 summarises the stakeholder profiles during the Stabilisation phase. The Board of Management was satisfied with the completion of implementation phase and wanted to reduce the operational costs and business process completion time during the Stabilisation phase. It maintained its optimistic attitude and firm belief in the project.

The Project Group geared up for bug fixes in the system. It believed that it was the right time to stabilise the system. It addressed the issues raised as a feedback on the implemented ERP system.

The External Consultancy helped in stabilising the ERP system by contributing in the bug fixing. However, it started to distant itself from the ERP project. Its primary aim during the Stabilisation phase was to quickly train the employees of Company B and then handover the project completely to them. It followed the contract conditions and wanted to complete all the requirements as soon as possible.

There was a change in the attitude of the Business Unit managers during the Stabilisation phase. They felt the need of voicing the feedback of the end-users to the Project Group and the Board of Management. On one hand, they motivated the end-users to accept the new system and get acquainted to the same. On the other hand, they collected the feedback from other employees of the organisation and conveyed the same to the Board of Management.

The stakeholder group of employees working as end-users to the system started accepting the system. More training and proper support by the Operations and Maintenance Team built up their confidence to work with the new system. The attitude became more accepting from being reluctant in the earlier phases of the ERP project.

The Operations and Maintenance Team was very active during the Stabilisation phase. The members of this team learnt more from the Project Group and used the knowledge to solve the issues of the end-users.

The IS Team continued to support the project with the same commitment.

<b>Stakeholder Group</b>	<b>Major Value</b>	<b>Attitudes</b>	<b>Major Interests</b>	<b>Constraints</b>
Board of Management	a) Decision making power b) Project ownership	New ERP project would transform the organisation	Reduced operational costs and business process time	Lack of expertise in ERP
Project Group	Experts of technology, domain and business functions	Time to stabilise the system by bug fixes	Stabilise the implemented system by addressing issues	Need approvals for budget and change requests
External Consultancy	Expertise in ERP software and ERP projects	Help the client to take decisions and implement strategy for the ERP project	Provide stable ERP system to the client and train its employees to work on their own	Contract terms and conditions
Business Unit Managers	a) Cooperation to the Board of Management b) Owners of business processes	Feedback of the ERP system should reach the Board of Management	a) Involve other employees to get trained with the new system b) Get feedback from employees	Dependent on Board of Management for decision-making
Employees as End Users	Form the ground level staff and emotional labour	Have to learn the new system	Training required for ERP software	No power for decision making
Migration and Roll-out Team	Smooth migration and roll-out of ERP software to business units	Accurate data migration and roll-out should be the goal	To correct data discrepancy	Pressure for speedy data correction
Operations and Maintenance Team	Support Group for end users of the ERP system	Become a mediator between end users and Project Group	a) Help end users with system issues b) Get trained from Project Group	Dependent on Project Group for complete knowledge about the system
IS Department	Expertise in hardware, setting up of data centres and system administration	Responsibility and ownership of system performance	Monitor and maintain the ERP system for optimum performance and efficient business activities	Dependent on Board of Management for finance and approvals

Table 5.4: Stakeholder Profiles during the Stabilisation Phase

### *5.2.5 The Improvement phase*

The Project Group was not very active at the beginning of the Improvement phase and Company T decided to release some of its employees, thereby reducing the size of the Project Group and the Operation and Maintenance team. Even the project owners in the Board of Management did not pay attention to the new demands of Company B. This kind of behaviour was not expected by the management of Company B. Company T rejected most of the demands of Company B to change the business processes in the ERP system. It advocated that all the functionality as per SRS document were configured and the ERP software was customised according to those specifications. On the other hand, Company B was keen to use the newly implemented ERP system to recover the investment cost of the project at the earliest. The management of Company B stressed active participation by Company T to modify and streamline the business processes according to the ERP system. The management of Company B proposed to integrate the ERP system with other domains of the organisation such as invoice, warranty and finance. This was not acceptable to Company T within the running contract.

Change Management was the key of the Improvement phase. Company B and Company T mutually agreed to have Change Management adopted for any new change besides the SRS document. This could be done with or without further financial implications depending upon the nature of the Change Request (CR). A Change Request could be raised by the management of Company B or Business unit managers. This request would be approved by the Project Group for technical feasibility and the Board of Management for financial implications before the start of its actual implementation. Moreover, the two organisations signed Annual Maintenance Contracts (AMCs) to avoid any conflicts in the future. The AMC included a specific number of CRs that could be accepted and implemented in the year. As such, the implemented system improved by considering the suggestions given by different stakeholders and CRs over the years.

The project is still continuing and the plan of Company B to integrate the implemented ERP system with other domains of the organisation is in process.

Table 5.5 illustrates the stakeholder profiles during the Improvement phase of the project. The Board of Management wanted to use the stabilised system for competitive advantage by improving the business process and following better management practices. The attitude of the Board of Management became more visionary. It decided to take proactive steps for the improvement of the system and also accepted to make additions to the contract and raising the CRs.

The Project Group continued to improve the efficiency of the system by working on the issues raised by the Operations and Maintenance Team and ultimately by the end-users.

The External Consultancy was keen on completing the tasks and contract formalities during the Improvement phase. It was not interested in the improvement activities as suggested by the Board of Management and/or the Project Group. It wanted to completely handover the project so that it could take new projects from other clients and use its resources on the new assignments

The Business Unit managers now provided feedback and suggestions on improved business processes to the Board of Management. They voiced the opinion and requirements of the end-users and also convinced the Board of Management for the CRs.

The group of employees as end-users realised that the new ERP system was a good one and will help the organisation to have a competitive advantages. The knowledge transfer, advanced training and proper support of the Operations and Maintenance Team made them confident to resolve the issues at ground level. There was a complete transformation of the attitude of the end-users from Planning to Improvement phase.

There were no major activities for the Migration and Roll-out Team and it seemed to be non-existent during the Improvement phase of the project.

The Operations and Maintenance Team and the IS Team continued their support and commitment to ensure resolution of issues and maintenance of the system performance respectively.

<b>Stakeholder Group</b>	<b>Major Value</b>	<b>Attitudes</b>	<b>Major Interests</b>	<b>Constraints</b>
Board of Management	a) Decision making power b) Project ownership	Use the stabilised system for competitive advantage	Improve the system and adopt Change Management practices	Lack of expertise in ERP
Project Group	Experts of technology, domain and business functions	Improvement of ERP system on the basis of feedback from end -users	Fix the issues reported by Operations and Maintenance Team	Need approvals for budget and change requests
External Consultancy	Expertise in ERP software and ERP projects	The tasks as per contract guidelines have been completed	a) Finish the project activities b) Fully hand over the project to the client	Budget and manpower constraints
Business Unit Managers	a) Cooperation to the Board of Management b) Owners of business processes	Business processes could be improved using the ERP system	Convince the Board of Management for Change requests related to business processes	Dependent on Board of Management for decision-making
Employees as End Users	Form the ground level staff and emotional labour	ERP system is good and now we know its capabilities	Get trained for ERP support and resolve issues at ground level	No power for decision making
Migration and Roll-out Team	Smooth migration and roll-out of ERP software to business units	Tasks for migration and roll-out are now over	Help other teams in smooth operations	No major activities
Operations and Maintenance Team	Support Group for end users of the ERP system	Get training from super-users and solve issues independently	Replace Project Group by receiving complete ERP training	Dependent on Project Group for trainings
IS Department	Expertise in hardware, setting up of data centres and system administration	Responsibility and ownership of system performance	Monitor and maintain the ERP system for optimum performance and efficient business activities	Dependent on Board of Management for finance and approvals

Table 5.5: Stakeholder Profiles during the Improvement Phase

## **6. Identified Stakeholders in an ERP project life cycle.**

Organisational structure is an important aspect in conjugation with the transformation to an ERP system. As such, employees of the organisation interact with the ERP software for different purposes. Moreover, the work situations and technical competence as per the organisational structure defined in the ERP system is different. The workflows designed for various business processes of an organisation in the tailored ERP software are dependent on the organisational structure defined in the system. Thus, organisational structure changes in the actual functioning of the organisation are evident.

In this case, employees of an organisation have different roles which may be managerial (top and mid-level management), related to technical expertise (project group) or as end-users. The different work situations have been observed during the case study mentioned in Chapter 5.

Sharp et al. [1999] provided an approach to identify stakeholders in requirements engineering. The approach addresses the importance of recognising baseline stakeholders and then exploring the network of stakeholders around the baseline stakeholders. Although, the approach suggested a five step procedure to identify the stakeholders, it expressed the need of customisation in each step due to different kinds of involvement of the stakeholders. The approach also mentioned the overlapping of stakeholders. In this study, the same approach could not be applied since there is no development of software. Only the tailoring/customisation of the ERP software according to business processes and workflows, is involved. Furthermore, there is no need to look for legislators, auditors and regulators because all these factors are related the vendor providing the ERP software (SAP as per the case study in Chapter 5). The organisation adopting the ERP software would get the system updates and required support from the ERP software vendor which is a part of the procurement package of the ERP software. Hence, only the stakeholders as users, developers and decision-makers have been considered in this study.

The users of the ERP system may be primary, secondary and tertiary depending on the frequency of their contact with the system and likeliness of the impact of the system. It



is assumed that users are the individuals or group of individuals who will interact with the systems and control them directly. In the context of ERP systems, the employees of the organisation having direct interaction with the customers become end-users of the system. These employees work on the ground level and constitute the emotional labour for the organisation [Steinberg and Figart, 1999; Wharton, 1999]

Developers could include programmers, testers, designers, analysts and consultants. They are the stakeholders who realise the requirements by developing / customising the software or implementing the information system. Corresponding to developers, ERP system implementation is done by the Project Group. A Project Group may consist of programmers, consultants, subject matter experts (SMEs), domain experts, business analysts, etc. It includes a group of individuals who are Super Users of the ERP system. Super Users [Skok et al., 2000] are experts in configuring ERP software and also the best performers in their functions and departments. Some developers or end users work along with the Super Users after initial training and then get to learn during the process of becoming future Super Users.

Decision makers are a group of individuals (from the Client and the External Consultancy) who control the decisions of the organisation and / or the development of the software or information system. These may include project owners, financial controllers, executing officers and top management of the organisations involved in the development of the software or information system. Analogous to decision makers, an ERP system implementation project has a Board of Management consisting of the organisation adopting the ERP system and its business partners (consultancies, vendors, etc.) which is responsible for taking all the major decisions regarding the choice of ERP software, business process reengineering, maintenance contracts and financial implications. The Board of Management provides requirements to the Project Group and is critical to the success or failure of an enterprise implementation.

Ifinedo and Nahar [2006] discussed organisational stakeholders and differentiated the 'top management' from 'mid-level management'. Mid-level management included individuals or group of individuals such as managers of business units and process owners, who take care of the operational aspects of business. The views of these two

groups of stakeholders differ regarding accuracy, reliability and overall productivity. Both the groups have same organisational objectives but have different organisational roles. As such, we need to distinguish mid-level management or Business Unit managers as a separate group of stakeholders for an enterprise implementation.

Skok et al. [2000] examined the power of external consultants to affect an ERP project. It was felt that the impact of a consulting firm could be too great and it was important to transfer the knowledge of consultants in-house. It was also found that the influence of the External Consultancy was not only due to their ERP knowledge and experience but also because the Business Unit managers were too busy in their day to day tasks that they could not be innovative with ideas. The external consultancies would intend to finish their job as quickly as possible so that they could move to the next client. They might follow their own agenda or business strategy which is entirely different from the client's strategy of implementation the ERP system. They usually convince the client to follow their strategy so that they can implement the client requirements with very less workforce.

In the case of an organisation migrating from a legacy system to an ERP system, it may involve a huge process of migration and roll-out. The time and effort needed to migrate and roll-out would depend on the amount of data in the legacy system and the customisation of business processes in accordance with the ERP system. A Migration and Roll-out Team could be formed in such scenarios to own this activity completely. The process may include running of batches and scripts for long hours so that the data could be migrated with accuracy and reliability.

In ERP projects, the role of end-users usually changes from the direct participants of the requirements phase to passive ones who only accept the implemented software. These problems reduce the motivation of the end-users and the efforts made by them to participate in post-implementation phases, thereby decreasing the potential of the ERP system. Therefore, a co-aligned stakeholder support for the end-users would enhance their ERP performance [Tai and Wang, 2014]. From the author's experience and thought process, it could be proposed to have an Operations and Maintenance Team

which acts as a support group during the Implementation phase of the ERP project life cycle and later handles the AMCs after the implementation of the ERP system.

Meanwhile, the importance of IS team should not be neglected in the ERP system lifecycle. The IS team is involved in Disaster Recovery (DR), Solution Stack and Data Centre requirements. During the planning phase, the IS department is responsible for procurement of the ERP software, creation of administrative users, calculation of hardware requirement according to the projected system load (no. of users, robustness, etc.) and setting up of data centres. During the implementation phase, the IS team provides the required hardware to various teams (e.g. migration) to run their batch processes and provides the required down times. The IS team is responsible for system performance and space issues. The IS team not only installs the ERP software on the servers but also act as System Administrator. The detailed account on functioning and responsibilities of IS team is beyond the scope of this study. Nevertheless, the IS department always remains a critical stakeholder group in any ERP project life cycle.

Based on the afore presented validations and the case study as discussed in Chapter 5, the following stakeholders could be identified for the ERP project life cycle:

- i) Employees as End Users
- ii) Project Group
- iii) Board of Management
- iv) Business Unit Managers
- v) External Consultancy
- vi) Migration and Roll-out Team
- vii) Operations and Maintenance Team
- viii) IS Department

It is possible that the stakeholders or stakeholder groups look for different attributes during different phases of ERP project life cycle. Thus, their relationships with other

stakeholders or stakeholder groups would also differ and change accordingly. This can be illustrated by few examples from the case study in Chapter 5.

- a) Migration and Roll-out teams, Business Unit managers and IS department formed a triad to migrate the data from the legacy system to the new system. This involved long running scripts, long system downtimes and poor operational efficiency. This kind of activity could be possible only before the system went live. Thus, any such activity in future would possible raise a conflict among these stakeholders. The IS department would not provide system downtime or hardware resources during the production hours. Similarly, Business Unit managers would be dissatisfied to allow any such activity because it would affect the operational efficiency.
- b) The External Consultancy (Company T) and the higher management of the organisation (Company B) implementing the ERP software were in synergy during the planning, implementation and stabilisation phases of the project. However, during the improvement phase, they entered into a state of conflict on the issue of human resource.
- c) The employees as end-users did not accept the newly implemented system and showed reluctance in learning about the new system. They wanted system to be very user friendly and flexible to their demands. As the time progressed, the same end-users got acquainted to the system and also started working efficiently. They started supporting the new system as the project moved from the implementation to the stabilisation phase as they received more training about the new system and support from the Operations and Maintenance Team.

## 7. Stakeholder Salience in an ERP project life cycle

In section 4.1, the classification of stakeholders on the basis of relationship attributes has been discussed. The stakeholders may be dormant, discretionary, demanding, dominant, dependent, dangerous or definitive. Different stakeholders or stakeholder groups possess one or more attributes among power, urgency and legitimacy during a particular phase of the ERP project life cycle. They play different roles to influence the project in different phases of the ERP project life cycle. They differ in their relationship attributes during the different phases and work situations and thus, differ in their salience.

As discussed in the case study in Chapter 5, there were different work situations for the stakeholders involved. The amount of work and the type of work they performed was different in each phase of the project.

### 7.1 Board of Management

Carpenter and Geletkanycz [2004] studied various aspects of the composition of Top Management Team referred to as the Board of Management in this thesis work. They reviewed the literature based on the research on the top management and presented contextual effects on the composition of the Top Management Team. They synthesised that the effects of executives exist in every setting including matured and newly founded firms, profit-making agencies as well as public sector organisations.

The Board of Management always possesses the attribute of power because it is the decision making body and approves budget for the project activities. In the case study, the Board of Management acted as a *definitive stakeholder* during the planning phase of the project. It was responsible for all the activities of the planning phase and possessed all the three relationship attributes i.e. power, legitimacy and urgency. During the implementation phase, the Board of Management allowed the ERP Project Group including Super Users to take charge of the project and implement the planned ERP customisation. It allowed the Project Group to work independently and assisted in the tailoring of the ERP software by attending interviews. Therefore, the Board of Management helped in the business process re-engineering process. It possessed power

and legitimacy attributes and thus, acted as a *dominant stakeholder*. As the project progressed to the stabilisation phase, the Board of Management decreased its interference on the project matters and allowed other stakeholders and stakeholder groups to become more active. While the project was being stabilised, the Board of Management did not put forward any claims and observed the improvement in operational efficiency and reduced business process times. As such, the Board of Management had the salience of a *dormant stakeholder* during the stabilisation phase. After the rise of conflict between Company B and Company T at the beginning of the improvement phase, the Board of Management took urgent steps and agreed on AMC. It also urged its employees to provide feedback and suggest improvements in the implemented systems. The Board of Management became active again with the Change Management process and possessed the power, legitimacy and urgency attributes. It initiated a drive for the improvement of the system so that the dependencies of the External Consultancy could be minimised. Thus, the Board of Management acted as a *definitive stakeholder*.

### 7.2 IS Department

The IS department is always dependent on the Board of Management and lacks power in decision making. It provides legitimate and urgent claims in order to support proper and efficient functioning of the ERP system. Even though, the IS department makes urgent and legitimate demands for more hardware resource, it should validate its claim and get the approval of the Board of Management before its procurement. As such, the IS department remains as a *dependent stakeholder* throughout the ERP project life cycle.

### 7.3 Project Group

The Project Group performs different activities during the different phases of the ERP project life cycle. It works under different work situations and thus, possesses one or more relationship attributes during each phase of the ERP project life cycle. As observed during the case study, the Project Group acted as a *dependent stakeholder* during the planning phase. The Project Group gathered requirements, prepared plans for

BPR, interviewed business process owners and proposed their configuration and implementation strategy to the Board of Management. It finalised the system requirements specifications document before tailoring the ERP software after the consent from the Board of Management and Business Unit managers. There were no major changes in the SRS document since Company B did not want to change the business processes that existed from more than 20 years and formed the backbone of its operations. Despite having all the expertise and competence to configure the ERP software, the Project Group was dependent on other stakeholders and approval of the Board of Management. As such, it lacked the relationship attribute of power. During the implementation phase, the Project Group was allowed to function independently and consequently, it was able to configure and implement the ERP system to all the business units. During that time, the Project Group possessed all the three relationship attributes and had salience of a *definitive stakeholder*. The Project Group continued its activities as *discretionary stakeholder* during the stabilisation and improvement phases of the project. It addressed changes to the system and reconfiguration of the business processes only after approval from the Board of Management. Since most of the members of the Project Group acted as support group or mentored the Operations and Maintenance Team, there was no time urgency for the reconfiguration requests.

#### *7.4 Business Unit managers*

As per the case study, the Business Unit managers could be considered as business process owners. The stakeholder group of Business Unit managers acted as *discretionary stakeholders* during the planning phase of the ERP project life cycle and as *dominant stakeholders* during the implementation phase. The Business Unit managers assured successful migration and roll-out of the new system in all the business units. They possessed the attributes of power and legitimacy while the implementation phase continued. During the stabilisation phase, the Business Unit managers demanded for improvement in the implemented system and also stressed on modification in some business processes. These modifications were backed up by the employees working as end-users who could not convey their feedback directly to the Project Group and the Board of Management. They represented their demands to the Board of Management

through feedbacks and meetings but their claims lacked legitimacy and urgency. Thus, they had the salience of *demanding stakeholders* while the stabilisation phase was in progress. While the project moved to the improvement phase, their demands showed urgency and seemed legitimate. They were able to prove the validity of their demands when the Board of Management also took initiatives to improve the system and adopted the means of change management. However, they lacked the attribute of power and were dependent on the Board of Management for fulfilment of their demands. Therefore, they continued to act as *dependent stakeholders*.

### 7.5 External Consultancy

Every external consultancy has its own business models and its own way of working. The consulting firms would like to finish the job as quickly as possible so that it could engage its consultants to the next assignment. Their importance and salience as stakeholders during an ERP project depends on the percentage of their ownership in the project. In the case of Company B, the consulting firm Company T was solely responsible for the implementation, stabilisation and training of employees during the course of ERP project life cycle. An active participation by the management and the consultants of Company T was witnessed in the case study. A supporting factor for this activeness was the independence granted by Company B [the Client] to design and implement the new ERP system. The selection and procurement of the ERP software was done with recommendations of Company T. As such, Company T also possessed the power attribute during the project. During the planning and implementation phases, the External Consultancy had the salience of *definitive stakeholder* as it acquired the attributes of power, urgency and legitimacy. While the project moved from the implementation phase to the stabilisation phase, the External Consultancy did not use the power factor. Moreover, it transferred some of its employees from the Project Group to Operations and Maintenance Team and to mentor the end-users. It did not entertain any urgent claims and acted as a *discretionary stakeholder*. At the beginning of the improvement phase, Company T had implemented all the requirements as per the SRS document and had also completed trainings for the employees of Company B. The management of Company T decided to reduce the number of consultants by releasing



some experts from the project. Since the improvement of the system was not a part of the contract with Company B, the demands of Company B were not taken seriously by the management of Company T. Furthermore, Company B demanded for an immediate contract for maintenance from Company B. Hence, the External Consultancy (Company T) acted as a *demanding stakeholder*. In the case of a negative response from Company B, the External Consultancy would have left the project and have acted as a *dangerous stakeholder*.

#### *7.6 Migration and Roll-out Team*

The Migration and Roll-out Team possessed the attribute of power until the new system was implemented in all the business units. It acted as a *dormant stakeholder* during the planning phase. Its power was of no use because it did not know when the system would be rolled out. During the implementation phase, the Migration and Roll-out Team worked actively and efficiently with Business Unit managers and the IS team to migrate the data from the legacy system to the new system and then to roll-out the tailored ERP system in all the business units. It acquired the attributes of legitimacy and urgency along with the power attribute and became a *definitive stakeholder*. By the time the project moved to the stabilisation phase, the activities of the Migration and Roll-out Team have almost completed. Nevertheless, the Migration and Roll-out Team continued to function since some inaccuracy in the migrated data was detected. The team corrected the data but had to depend on Business Unit managers and the IS department to provide them downtime so that it could re-migrate the corrected data. Therefore, the Migration and Roll-out Team acted as a *dependent stakeholder* during the stabilisation phase. During the improvement phase, the team became dormant again and acted as *dormant stakeholder*. It should be noted that the Migration and Roll-out Team could act as a *dangerous stakeholder* during the stabilisation or the improvement phase in the case of missing or incompatible legacy system data. It would have been very difficult to use batch runs or scripts in order to add/modify the live data.

### 7.7 Employees as end-users

The employees working as end-users constituted the emotional labour for the organisation as they had the maximum social and emotional interaction with the subscribers. Being at the ground level, they knew what exactly the implemented system was lacking and which functionalities needed improvement [Steinberg and Figart, 1999; Wharton, 1999]. Moreover, they had to face the subscribers face-to-face and bear their dissatisfaction in the service due to the change of the integrated system. This emotional labour did not support the transformation from the legacy system to the ERP system. They believed that the new system would turn out to be a failure and that the legacy system was capable enough to meet all the future business demands of Company B. Thus, even before the system was implemented, the employees acted as *demanding stakeholders*. They did not have power and their demands were not legitimate. While the ERP system was being implemented, the employees who were end-users showed reluctance to use the new system. They were not experts and found difficulties in running their business process cycles. Due to their reluctance and inability to cope up with the new system, the employees as end-users demanded urgent changes in the system. This threatened the operational performance of Company B and there was a dip in organisational efficiency during the implementation phase of the project. As such, the employees working as end-users to the ERP system had the salience of *dangerous stakeholders*. This was observed in all business units and the Board of Management had to stress on user training in the subsequent phases of the project. The employees continued to demand for training and easier user interface but their demands were considered illegitimate to call for any action. Therefore, the stakeholder group of employees as end-users acted as *demanding stakeholders*. During the improvement phase, the employees had already been trained with the new system and have taken knowledge transfer from the Super Users. Moreover, they had a very good support group and an efficient Operations and Maintenance Team to help them with their queries. They forwarded their concerns to the Business Unit managers and the Board of Management and demanded improvement in the implemented system. Their demands were considered legitimate due their expertise and working knowledge of the system. Since they worked on the ground level, they could easily explain the flaws of the system

and throw light on the areas needing improvement. The employees as end-users acted as *dependent stakeholders* because they need the support of Business Unit managers, the Operations and Maintenance Team or the Board of Management to validate their claims.

### *7.8 Operations and Maintenance Team*

The Operations and Maintenance [O&M] team lacked the complete knowledge about the project and had to depend on the Project Group for technical expertise during the planning and implementation phases. The members of the O&M team had to consult the Super Users in order to provide an efficient support to the newly migrated business units. The claims of the O&M team were legitimate and urgent but were supposed to be validated by the Project Group and/or the Board of Management before any action could be taken. Therefore, the O&M team acted as *dependent stakeholder* for the initial two phases of the project. The team was joined by some members of the Project Group during the stabilisation phase. There was a knowledge transfer from the experts to the members of the O&M team. As such, the O&M team acquired the attributes of power, urgency and legitimacy to become a *definitive stakeholder* during the stabilisation phase. The team made suggestions to the Board of Management and the Project Group for the improvement of the implemented system since it did not possess the power to implement those suggestions. Hence, it had the salience of a *dependent stakeholder* during the improvement phase of the project.

The following chart summarises the salience of the stakeholders that were identified in Chapter 6 of this study during the planning, implementation, stabilisation and improvement phases of the ERP project life cycle as witnessed during the case study (described in Chapter 5).

Stakeholder or Stakeholder Group	<i>Planning</i>	<i>Implementation</i>	<i>Stabilisation</i>	<i>Improvement</i>
<i>Board of Management</i>	Definitive	Dominant	Dormant	Definitive
<i>Project Group</i>	Dependent	Definitive	Discretionary	Discretionary
<i>IS Department</i>	Dependent	Dependent	Dependent	Dependent
<i>Business Unit Managers</i>	Discretionary	Dominant	Demanding	Dependent
<i>External Consultancy</i>	Definitive	Definitive	Discretionary	Demanding
<i>Migration and Roll-out Team</i>	Dormant	Definitive	Dependent	Dormant
<i>Employees as End Users</i>	Demanding	Dangerous	Demanding	Dependent
<i>Operations and Maintenance Team</i>	Dependent	Dependent	Definitive	Dependent

Figure 7.1: Stakeholder Salience Matrix for different phases of ERP project life cycle

The stakeholder salience matrix is an application of stakeholder salience model during the different phases of the case study presented. As discussed earlier, stakeholder salience is dynamic and constructed according to the context of the project. Thus, the salience matrix would have a high tendency to change according to the demands of the ERP project, scale of the ERP project and the organisational situations. The application of this salience matrix requires further analysis through exploratory studies and a number of exemplary cases of ERP project life cycle.

## 8. Discussion

The ERP research is a very vast field and would continue to be in limelight with increase in adoption of ERP software and customised integration of complex systems with ERP. The research in this field may be taken into consideration with either of IT or business perspectives. The work of information system professionals is taken into account for the IT perspective while the business perspective deals with business professionals who think that information systems are necessary part of business operations.

For an ERP project life cycle, both the business and IT perspective should be considered since an ERP package is business management software. It is used for storing and managing data from every step of the business processes with the help of a number of integrated applications.

### *8.1 Stakeholder Salience Matrix*

The study provided a simplified matrix for the classification of ERP stakeholders based on the stakeholder salience model (refer Figure 4.1). This matrix could be very useful during requirements elicitation process as it would allow the requirements engineering professionals to identify and classify various stakeholders on the basis of these relationship attributes. The study identified eight stakeholders or stakeholder groups who are involved during the four phases of an ERP project life cycle. The identification of some of the stakeholders was validated by the existing literature in ERP research while the others were supported by author's own experience with ERP project life cycle as a practitioner.

This thesis further provided a stakeholder salience (refer Figure 7.1) matrix based on the case study presented in Chapter 5. The simplified matrix based on the relationship attributes of power, legitimacy and urgency was applied on the eight types of identified stakeholders or stakeholder groups. The resulted stakeholder salience matrix proves to be very informative with respect to project management. Such a salience matrix would allow the project management to note down the stakeholders or stakeholder groups that

could become a limiting factor in the success of an ERP project life cycle. Furthermore, same employees could be assigned different tasks and responsibilities according to their prospective salience during the different phases of the ERP project life cycle.

### *8.2 Recommendations related to stakeholders in ERP projects*

Koh et al. [2006] advised the managers of the projects adopting ERP systems that they should not over-estimate the capabilities of ERP systems and ERP systems could not deal with uncertain time frame or uncertain requirements.

The problems related to stakeholders could be due to system issues, application issues, communication issues, training issues, time issues, organisational issues [Allen, 2008; Momoh et al., 2010]. During the course of this study, it has been observed that the relationships among the stakeholders and the roles played by each stakeholder or stakeholder group become the driving force for the success of an ERP system project. The more positive relationships, more is surety of ERP success.

From the discussion, it could be inferred that the problems due to stakeholders are reflected through the following:

- Lack of proper communication to convey the vision and expectations of the ERP system implementation.
- Delay of scheduled implementation.
- Lack of training or competence of employees working as end-users to match the requirements of the ERP system.
- Reduced operational efficiency due to long process times and poor ERP.
- Differences in attitude of different organisational members [Diefenbach, 2007] .

Skok et al. [2000] commented about a balanced IS and business team for ERP implementation. They stressed the need of hybrids – the individuals who have both IT and business knowledge. They quoted as follows about the hybrids:

*“They have the ability to ask questions and not to accept the professional judgement of business or technical people as easily as somebody does without the hybrid skills and knowledge. By recruiting staff with hybrid skills, an organization will need fewer people on the project, resulting in fewer conflicts between the business and IS people.”* [Skok et al., 2000]

These hybrids could be one of the solutions to the problems caused due to stakeholders during an ERP project life cycle. The balanced team consisting of the hybrids and the Board of Management would minimise the organisational and training issues. A highly competent team would ensure reduced or minimal application and system issues.

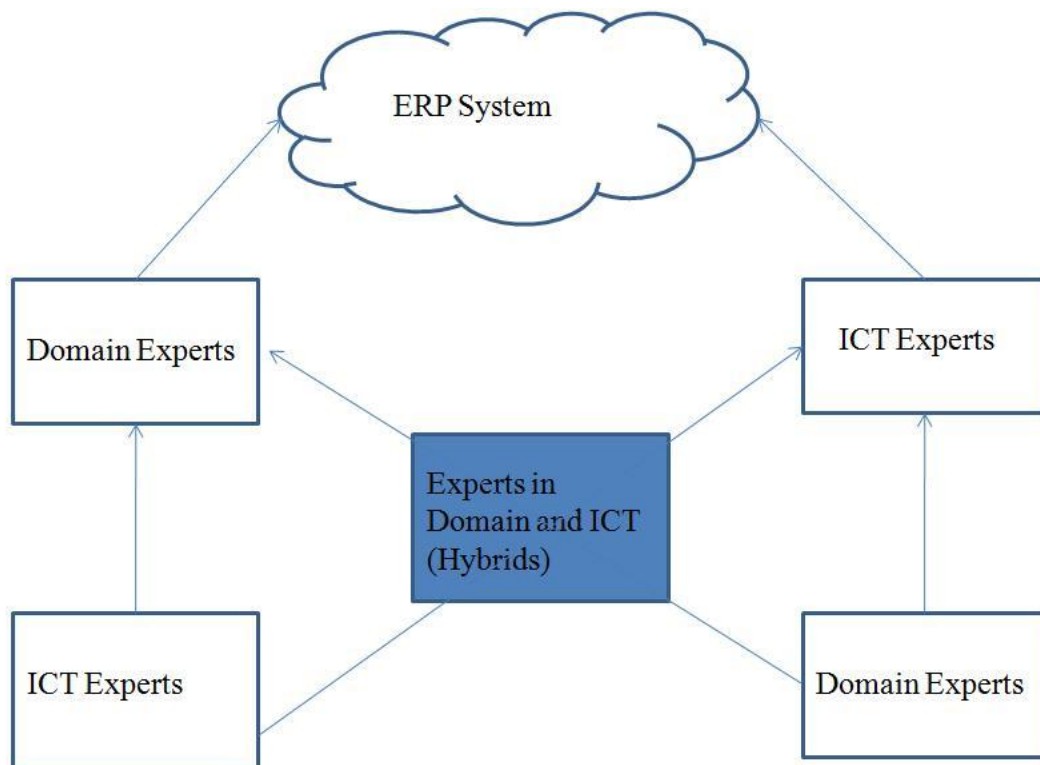


Figure 8.1: An illustration of Domain and ICT experts in an ERP system project

The above figure (Figure 8.1) describes the cross-section between the working knowledge of domain experts and ICT experts. It is believed that the ICT experts learn the domain area while the domain experts learn the ICT possibilities. Therefore, the result of the complete learning process among the domain and ICT experts would evolve the hybrids during the different phases of ERP project life cycle.

An efficient project management is the other recommendation to address the issues related to stakeholders. The salience matrix explained in this thesis work could be used by the project management team to assess the relationship attributes possessed by different stakeholders or stakeholder groups. The project management techniques would help to standardise tasks and to ensure proper utilisation of available resources.

Carton et al. [2008] applied the PMBOK framework to ERP projects. The PMBOK framework is a set of standards and recommendations concerning management best practices. The Project Management Institute, PMI<sup>9</sup> provides services related to education and certification to project managers and is a globally accepted organisation and publishes the PMBOK Guide. The author is a student member of PMI and recommends the use of the PMBOK Guide for ERP projects [PMI.org, 2013].

The knowledge areas of project management standards i.e. project integration management, project quality management, project scope management, project cost management, project time management, project human resource management, project communications management, project risk management and project procurement management would ensure elimination of issues related to stakeholders and might lead to best practices for ERP projects.

The information systems could be classified in the following contexts:

	<b>Standard</b>	<b>Non-Standard</b>
<b>Centralised</b>	Centralised - Standard	Centralised - Non-Standard
<b>Decentralised</b>	Decentralised - Standard	Decentralised - Non- Standard

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<sup>9</sup> <http://www.pmi.org>



The most significant effect of ERP is standardisation. Most of the aspects like organisational structure, business processes, human resource management, knowledge management, customer oriented and vendor oriented relationships could be standardised using ERP. However, this standardisation should not interfere with organisational adaptability or adversely affect the agility. In the case study presented, the business processes of Company B were standardised and the information system (ERP) was centralised to four data centres.

Agile paradigm during ERP project life cycle or Agile in ERP is another recommendation to tackle stakeholder related problems in ERP projects. The Agile principles form the basis of critical success factors (CSFs) for ERP projects. A number of instances have been found in the reviewed literature (refer Appendix 1) where Agile methodology referring to lightweight, adaptive and iterative approach has been successfully used for ERP implementations. For instance, Pair Programming has been one of the popular development methodologies for customising ERP software [Meszaros and Aston, 2007]. The Agile paradigm would add flexibility and openness to change unlike conventional ERP settings where the requirements remain frozen and the stakeholders commit to the frozen requirements till the end of the project [Daneva and Ahituv, 2012].

Jovicic [2012] suggested iterative approach for ERP projects and took the upgrade of the ERP system into consideration. He recommended that Agile based ERP implementation would minimise best practice violations and produce good quality implementations, thereby reducing the maintenance efforts of ERP systems.

The use of Agile in ERP would definitely include focus on communication, iteration, adaptability, customer requirements, training and competence of individuals, integration and self –organised teams [Umar, 2005; Subramoniam et al., 2009; Françoise et al., 2009; Mishra and Mishra, 2011]

## 9. Conclusion

The study is carried out by examining the research questions:

*Q1. Who are the different stakeholders involved in an ERP project?*

*Q2. How does Stakeholder Saliency differ during different phases of an ERP project life cycle?*

The literature review identified a gap in ERP research related to the literature based on post ERP implementation scenarios. ERP research does not contain much literature related to Stabilisation and Improvement phases of an ERP project life cycle as described in this study. There is a gap in ERP research based on sustainability, agility and maintenance of the implemented ERP systems.

The section 4.1 described the analysis done on the classification of stakeholders given by Boonstra [2006]. The outcome of this analysis is a simplified matrix for classification of stakeholders involved in ERP project life cycle on the basis of relationship attributes of power, legitimacy and urgency attributes. However, the simplified matrix could be criticised as mere re-interpretation of the existing classification. Nevertheless, the simplified matrix proves to serve as a part of requirements elicitation process.

The case of a telecom service provider implementing an ERP system is presented in Chapter 5 explaining all the important events in a chronological order. The case study acts as an illustration to the ERP project life cycle discussed in section 2.2 and a comparison between stages of the ERP project and phases of ERP project life cycle is also presented. The case study elaborates the activities completed during each phase of the ERP project and the issues faced during each of them. It describes the tasks performed by different stakeholders over the years to plan, implement, stabilise and improve the ERP system as a project story. The case study further helps in identification of stakeholders involved during an ERP project life cycle (discussed in Chapter 6) and the saliency of identified stakeholders (discussed in Chapter 7).

On the basis of personal work experience with ERP systems, the case study and reviewed literature on stakeholder, *eight* stakeholders or stakeholder groups are identified for an ERP project i.e. *Board of Management, Project Group, IS department, Business Unit managers, Employees as end-users, Operations and Maintenance Team, Migration and Roll-out Team and External Consultancy.*

These identified stakeholders perform different roles during different phases of ERP projects based on the relationship attributes they possess during a particular phase. An illustrative analysis of salience of the stakeholders is presented in Chapter 7 in the form of stakeholder salience matrix.

The study further discussed that problems related to stakeholders could be due to a number of issues related to application, time, training and organisational structure. The possible solutions in the form of a balanced ERP team (consisting of hybrids), project management standards and the use of Agile methodology are explained.

On a critical note, this thesis study presents a number of assertions that need to be validated by exploratory study. The ideas presented in this study are based on opinions of the author. Therefore, they could be multiple voices or competing narratives and opinions for the same assertions [Dawson, 2005; Darke et al., 1998]. Moreover, the critique for the competing narratives would be apt for the case study presented in Chapter 5, which is a personal case research.

## 10. Limitations and Future Work

Although the study addressed all the research questions, yet there were some temporal and contextual limitations. Since the literature in ERP research is very vast, this study limits according to following:

- The study considers literature published in the last decade and focuses on the literature published in last 10-15 years in order to have relevance with the current trends in the field of enterprise resource planning.
- The research on ERP systems includes the domains of supply chain management, logistics and manufacturing. It has been observed that separate fields of study cater to research demands in these domains. A significant number of journals are also available specific to research on these areas of interest. This study does not include the context of supply chain management, logistics and manufacturing functional areas.

Besides the contextual limitations, temporal limitations exist regarding some statements and the criticism of the stakeholder classification matrix and the stakeholder salience matrix. Some of the deductions and validations are based on the author's experience and observations. Therefore, an exploratory study is necessary to validate the outcomes of this study.

The further research would involve a questionnaire survey to a large number of researchers and practitioners related to the field of ERP. The questionnaire would explore both the conceptual and practical issues related to the stakeholders in ERP projects.

Future research would identify explanatory cases to justify and validate certain points or issues related to stakeholder involvement during ERP project life cycle. Furthermore, it would deeply investigate the problems related to stakeholder involvement and measures to counter those problems. The study provided two important directions to look for solutions to problems regarding ERP stakeholders i.e. *use of project management standards* and *use of Agile paradigm* in ERP projects.

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**List of articles on Agile in ERP**

<b>Item Title</b>	<b>Publication Title</b>	<b>Publication Year</b>	<b>Item DOI</b>	<b>Database</b>
What agile ERP consultants think of requirements engineering for inter-organizational ERP Systems: Insights from a Focus Group in BeNeLux	16th International Conference on Evaluation & Assessment in Software Engineering [EASE 2012]	2012	10.1049/ic.2012.0037	IEEE Digital Library
Multi-perspective enterprise modeling: foundational concepts, prospects and future research challenges	Software & Systems Modeling	2012	10.1007/s10270-012-0273-9	SpringerLink
Agile ERP systems development: a technical perspective	Proceedings of the 5th India Software Engineering Conference	2012	10.1145/2134254.2134266	ACM Digital Library
Identifying reasons for ERP system customization in SMEs: a multiple case study	Journal of Enterprise Information Management	2012	10.1108/17410391211265142	Emerald
The impact of ERP implementation on organizational capabilities and firm performance	Benchmarking: An International Journal	2012	10.1108/14635771211258043	Emerald

Implementing enterprise resource planning systems: organizational performance and the duration of the implementation	Information Technology and Management	2011	10.1007/s10799-011-0102-9	SpringerLink
Complex software project development: agile methods adoption	Journal of Software Maintenance and Evolution: Research and Practice	2011	10.1002/smr.528	Wiley Online Library
Software tools for requirements management in an ERP system context	Proceedings of the 2010 ACM Symposium on Applied Computing	2010	10.1145/1774088.1774123	ACM Digital Library
Enterprise resource planning: risk and benefit analysis	Business Strategy Series	2010	10.1108/17515631011080722	Emerald
Challenges in enterprise resource planning implementation: state-of-the-art	Business Process Management Journal	2010	10.1108/14637151011065919	Emerald
Management of requirements in ERP development: a comparison between proprietary and open source ERP	Proceedings of the 2009 ACM symposium on Applied Computing	2009	10.1145/1529282.1529642	ACM Digital Library
The role of BPR in the implementation of ERP systems	Business Process Management Journal	2009	10.1108/14637150910987892	Emerald
ERP implementation through critical success factors' management	Business Process Management Journal	2009	10.1108/14637150910960620	Emerald

Using the ANP approach in selecting and benchmarking ERP systems	Benchmarking: An International Journal	2008	10.1108/14635770810903196	Emerald
Agile ERP: "You don't know what you've got 'till it's gone!" Could enterprise resource planning create a competitive advantage for small businesses?	Agile Conference [AGILE], 2007	2007	10.1109/AGILE.2007.9	IEEE Digital Library
An exploratory study of enterprise resource planning adoption in Greek companies	Benchmarking: An International Journal	2007	10.1108/14635770710730937	Emerald
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Are ERP systems a source of competitive advantage?	Information Systems Frontiers	2005	10.1007/s10796-005-2768-1	SpringerLink
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ERP II: a conceptual framework for next-generation enterprise systems?	Industrial Management & Data Systems	2005	10.1108/02635570510575225	Emerald
	Journal of Enterprise Information Management	2005	10.1108/17410390510609626	Emerald

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Enterprise resource planning: An integrative review	Business Process Management Journal	2004	10.1108/14637150410548056	Emerald
Enterprise resource planning [ERP] systems: a research agenda	Industrial Management & Data Systems	2002	10.1108/02635570210421354	Emerald
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