Development of a user-resistance-aware framework for implementing Enterprise Resource Planning systems

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Candidate Declaration

I hereby declare that:

1. I have not been enrolled for another award of the University, or other academic or professional organisation, whilst undertaking my research degree.

2. None of the material contained in the thesis has been used in any other submission for an academic award.

3. I am aware of and understand the University's policy on plagiarism and certify that this thesis is my own work. The use of all published or other sources of material consulted have been properly and fully acknowledged.
   Part of the work described in this thesis has been previously published by the author in:

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4. The work undertaken towards the thesis has been conducted in accordance with the SHU Principles of Integrity in Research and the SHU Research Ethics Policy.

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Abstract

Although Enterprise Resource Planning (ERP) systems are one of the most important developments in corporate information systems, their implementation process is usually problematic, and many challenges in different aspects come along during the implementation of these large integrated systems. Amongst them, the human-related issues potentially affect ERP implementation projects and decrease their success rate dramatically. Numerous studies have shown that user resistance is the most influential failure factor for such projects.

Existing ERP implementation process models usually cover the technical aspects and steps of the implementation and do not face the human-related aspects of the process such as resistance to the new system and processes, and organisational conflicts and politics which arise during this huge organisational change. Also, the extant theories of resistance to IS implementation largely adopt a narrow approach to dealing with user resistance and, hence, the solutions provided by them are fragmented and cannot present a holistic approach to our problem (i.e. understanding and dealing with human resistance in the process of implementing ERP systems).

This research proposes to use change management body of knowledge as an overarching perspective to deal with resistance in the process of ERP implementation which could provide a more holistic and coherent approach to understand and address such problem, and could enrich the implementation process models in terms of encountering human-related issues (i.e. user resistance).

Accordingly, the Kotter's change model was identified as an appropriate model for such projects, particularly due to the role of power and politics in the system implementation process. The study maps Kotter's change

model with ERP implementation process models, and introduces a user-resistance-aware framework. To improve this framework, the theories of resistance to information systems implementation are reviewed, and sources of resistance and also the strategies suggested by each theory are categorised according to the process stages.

The framework is evaluated and improved through conducting three case studies, during which it is also investigated that how people's reactions (resistance instances) to the new system could be mapped chronologically against the implementation stages.

The final framework mainly helps in understanding the complexity of the issues and improving the change readiness, and can be used as a practical guide for companies and IT project managers. It encourages the organisations to proactively deal with the situation and hence, help people cope with the new routines and environment more conveniently and smoothly, which ultimately improve the success rate of adopting such systems.

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1 Introduction

Enterprise Resource Planning (ERP) systems are one of the most important developments in corporate information systems (ISs) (Davenport, 1998). However, their implementation process is usually problematic, which has resulted in a significantly low success rate in ERP implementation projects (Lapointe and Rivard, 2005; Motwani et al., 2008). This research addresses the challenges that ERP implementation projects encounter due to user resistance.

1.1. Motivation

As one of the co-founders and the former CEO of Raydana Software Engineering Company for 8 years (2002-2010), which is now one of the top three ERP providers in Iran, I was extensively involved in several ERP implementation projects and experienced the difficulties of such projects. I realised that many of these difficulties considerably centred around human-related issues. In most of those projects, the management level decided to implement an ERP system (i.e., intended for a huge change in the organisation), but was unable to manage the changes properly, and thus, evident user resistance raised in the working environment, which resulted in either project failure or severe troubles during the project. My

perception was that proper management of change would effectively prevent most of the resistances (or reduce them) and hence improve the implementation process.

ERP systems are large business software packages that impose *standardised procedures* on the input, use and dissemination of data across an organisation, and integrate business processes and associated workflows (O'Leary, 2000; Dery et al., 2006a). Therefore, implementing an ERP system fundamentally requires alignment with the standard processes prescribed by the (target) ERP system (Grabot, 2008; Al-Mashari, 2001). Such alighments typically involve significant business process reengineering efforts (Moon, 2007) that imply new work modules and job descriptions, and new work structures and procedures (Kallinikos, 2004). The users of an ERP system (i.e., organisation's employees) are usually obliged to change their behaviour and follow the new process requirements (Boudreau and Robey, 2005). Moreover, ERP implementation may also cause changes in intra-organisational power distribution (Markus, 1983; Lapointe and Rivard, 2005).

By definition, each change sets into question an existing, possibly stable and perhaps satisfying situation, both at the individual and organisational level. Therefore, it may arouse resistance which may have different origins (Grabot, 2008). A potentially high degree of change can raise severe levels of negative human affections and their side-effects through resistance and/or lack of acceptance (Razavi and Ahamad, 2011). Such resistances potentially affect ERP implementation projects and decrease their success rate dramatically (Lapointe and Rivard, 2005; Motwani et al., 2008). Even more, numerous studies have shown that they are the most influential failure factor for such projects (Peszynski, 2006; Razavi and Ahamad, 2011).

Considering ERP implementation as a huge *organisational change*, this research addresses the challenges that an ERP implementation project encounters in human-side of the organisation, particularly due to the changes associated with ERP implementations. It proposes to improve the

change management aspects of ERP Implementation process models to facilitate applying these tools in such projects.

1.2. Background and Research Gap

The issue of user resistance in implementation of information systems (IS) has been substantially considered and investigated, for a long time, in the IS literature (e.g., Markus, 1983; Lapointe and Rivard, 2005; 2010). However, the reports demonstrate that many of IS projects fail due to user resistance (e.g., Panorama Consulting Group, 2016; 2011; Peszynski, 2006; Razavi and Ahamad, 2011), which indicates there is still a gap between the knowledge and practice in the field. Evidently, the project managers of such projects are not equipped with the effective tools and techniques which help them either avoid or overcome user resistance during the implementation process.

On one hand, the solutions presented by the extant theories of resistance to IS implementation (e.g., Joshi, 1991; Beaudry and Pinsonneault, 2005; 2010; Klaus and Blanton, 2010) do not provide a holistic approach to understanding and dealing with human resistance in the process of implementation. They largely adopt a narrow approach to dealing with user resistance, e.g., by focusing on specific type of resistance (e.g., Kim and Kankanhalli, 2009). On the other hand, existing ERP implementation process models (e.g., Parr and Shanks, 2001; Ehie and Madsen, 2005) usually cover the technical aspects and steps of the implementation and do not consider the human-related aspects, such as resistance to the new system, and organisational conflicts which arise during this huge organisational change.

1.3. Research Proposal

Considering that the user resistance mainly happens due to the changes that information systems (i.e., ERP systems in the context of this thesis) have been bringing to the organisation (Markus, 1983; Lapointe and

Rivard, 2005), the change management body of knowledge, both change process theories and implementation models, is argued to be a promising approach to address the aforementioned challenges.

This research proposes to use change management knowledge as an overarching perspective to deal with resistance in the process of ERP implementation, which could provide a holistic and coherent approach to understand and address such problems. It also explores the sources of resistance that the theories have spotted and the correspondent actions they have recommended, which would contribute to the proposed overarching approach.

This research takes a look into the process of ERP implementation from the lens of change and resistance. It studies the process of implementing ERP systems as a huge-scaled organisational change effort; the implementation leads to an organisational transformation from the old ways of doing the jobs in the organisation to the new system. The research investigates how change management concepts could contribute and help in managing human-related problems (i.e. resistance) in such specific changes. The application of the change management body of knowledge in the context of ERP implementation, to the best of our knowledge, has not been well considered and studied, as will be discussed thoroughly in the literature review section.

In this context, on one hand, this study suggests taking an appropriate change management process model, for ERP implementation projects, and then, adapting and integrating it into the general ERP implementation process model, which results in a base theoretical framework. Employing change management literature, the theoretical framework provides several necessary steps that should be taken before and during the implementation process in order to minimise human resistance.

On the other hand, this study suggests considering and exploiting the strategies recommended by the theories of resistance that are specifically provided for the implementation of information systems, for encountering

particular types of resistances. Such strategies would enrich the theoretical framework with detailed and, possibly, context-aware actions.

The thesis introduces a *resistance-aware* framework for implementing ERP systems that consists of an enriched ERP implementation process model, a set of recommended strategies and measures to encounter resistance in such projects, and a collection of patterns explaining the behaviour of the users throughout the implementation project, that helps the managers to properly deal with their resistance.

1.4. Research Objectives

The main objective of this research is "to investigate the factors that enable IT project managers to minimise user resistance during ERP implementation projects", and eventually its aim is to develop a *user-resistance-aware* framework that the company and IT project managers can use as a practical guide throughout an ERP implementation project. Accordingly, the specific objectives of this thesis are to:

1. Investigate change management theories and identify the proper change process model for managing resistance in ERP implementation projects.
2. Identify the pattern for matching the steps of the change process model and the technical ERP implementation process model.
3. Analyse and identify the categories and severity of resistances over time (i.e., the technical implementation stages).
4. Introduce a resistance-aware ERP implementation process model that specifies the detailed necessary steps for preventing or overcoming resistance in an ERP implementation project.

1.5. The Conceptual Framework

This thesis presents a user-resistance-aware framework for implementing ERP systems by integrating Kotter's (1996; 2014) change model with the general ERP implementation process model, developed based on existing

models (e.g., Bancroft et al., 1998; Ross, 1998; Parr and Shanks, 2001; Ehie and Madsen, 2005), and the sources of resistance and the strategies suggested by the extant theories of resistance to IS implementation

The Kotter's change model, that recently gained much support as the most appropriate approach in implementing organisational change (e.g., Gallos, 2006; Burnes, 2009), was chosen as an appropriate model for ERP implementation projects, because of its popularity, ease of use, and also particularly the role of power and politics which are identified as critical factors in a healthy implementation, as ERP implementation likely alters power balance in the organisation (Kemppainen, 2004; McAdam and Galloway, 2005); power and politics are of the main concerns in the Kotter's model. This issue will be discussed in the literature review section. Kotter's change model is also promising as it assumes that the overall direction of change is decided by the senior managers (like what happens in an ERP implementation project), in contrast to its implementation that is carried out by the empowered managers and employees (Burnes, 2009).

Kotter's (1996; 2014) model introduces a number of steps that have to be taken for any successful change. These steps are mapped and then integrated with ERP implementation process models leading to the resistance-aware framework. To improve the framework, the theories of resistance to information systems implementation are reviewed. Accordingly, the sources of resistance and the strategies suggested by each theory are categorised with respect to the technical implementation process stages. Moreover, the recognised resistances in each model are also categorised according to the main two general resistance groups, namely political and psychological (Bagheri *et al*., 2014), which helps understanding the resistance atmosphere in each implementation stage.

Accordingly, the developed framework offers an enriched ERP implementation process model which suggests the actions should be taken by the organisation in each phase to properly manage the human side of the implementation process and avoid or overcome the probable resistance instances. It also presents what type of resistance should be expected in

each stage of the process and helps the implementation managers to become aware and ready for them.

1.6. Research Result

After forming the conceptual framework, the research looks for evaluating and refining the conceptual framework extracted from the literature. Here, the key aim is to explore the stock of knowledge held by the project management board in the process of implementing ERP systems, with respect to what has been reviewed in the literature.

In this regard, in evaluating the conceptual framework, by studying three cases, the research looks for the answers to four main questions:

(i) Is there any evidence to show that the Kotter change steps (the adopted change management process model in the framework) have been taken during the successful ERP case implementation instances? (explicitly or implicitly by tracing its recommended steps across the implementation period)

(ii) If so, could any pattern for matching the steps of the two processes (change implementation process and technical process of implementing ERP systems) be found in successful ERP implementation processes?

(iii) How could the captured people's reactions (resistance instances) be mapped chronologically against the aforementioned steps? (in terms of resistance category and behaviour)

(iv) Could such resistance instances be mapped to the change coping cycle as the framework suggests?

The research case studies acknowledge that the steps of Kotter's change model could be observed throughout ERP implementation projects. These steps happen consecutively as the implementation process moves forward and follow an identical pattern with respect to the implementation process. The case studies also suggest that the instances of resistance are mostly

psychologically-driven in the earlier phases of the implementation and they become more politically-driven as the projects move forwards when the impact of the new routines on the organisational power balance becomes clearer.

More prominently, the studies show that, in a successful implementation project, the severity of the resistance behaviour goes up until it reaches to its maximum in the "actual implementation" phase, and then it declines as the managers succeed in convincing people to cope with the changes introduced by the new system. This behaviour reconciles the Carnall's (2003) change coping cycle, that discusses how people cope with any change effort, which emphasises the use of proper measures in managing changes and dealing with people to avoid aggressive resistance from key players which would result in failure. These observations help project managers understand and deal with people's reaction in a better way.

The proposed framework supports senior managers during the implementation of ERP systems and offers practical guidance and help, which reduce the level of variability experienced by organisations adopting ERP software. The framework assists the organisations and such process managers in helping people cope with the new system and its consequences in a more convenient way, which ultimately improve the success rate of adopting ERP systems.

1.7. Research Method

The study adopts a neo-empiricist approach (Johnson and Clark, 2006) to research and is carried out using case studies: three ERP implementation projects have been investigated and scrutinised in the context of this research. In addition to the available artefacts such as project documentation and organisational charts, the experiences of managers, in different levels, are collected via interviews, following an inductive approach (Bryman and Bell, 2011; Creswell, 2009). Employing the pattern-matching data analysis strategy, our intra-case analysis pinpoints the patterns that support or contradict the proposed initial framework. The

study is then complemented by an inter-case analysis, that identifies similar patterns spanning across the cases. The intended result is a refined framework that can be offered as a practical tool for managers to have a resistance-aware ERP implementation process.

In the first step, considering the existing literature and theories, a dedicated theoretical framework was created by 1) mapping steps of the selected change process model (Kotter's model (1996; 2014)), and 2) charting the types of user resistance to IS implementation and the recommended strategies to deal with them, against the stages of the ERP implementation process model. This initial framework was then evaluated and improved based on case studies.

To achieve the main objective of the research, there is a need to understand how and why people react to the implementation of a new system in order to find a more proper way of doing the job (i.e. implementing the new system). In so doing, it was necessary to understand the process from the perspective of the *actors* and get access to their interpretation of what has happened. The researcher collected (by interview) the experiences of senior managers, IT project managers, and the team managers, who had faced the reactions directly, throughout an ERP implementation project. Three (successful) ERP implementation process from different client organisations in different areas were studied, and their information was collected.

Basically, the aforementioned four main questions were investigated. These provided the basis on which a set of question themes were defined for the interviews.

The interview question themes were organised with respect to the three main phases in an ERP implementation process which focused on the essential aspects that are acknowledged in a change process. The interview responses were coded regarding the main research questions, in that each transcript was divided into a number of meaningful segments (i.e., evidence) that were mapped to the implementation stages and the change steps, simultaneously (resulted in a matrix). Also, instances of resistance

were extracted (identified) from the transcripts and then categorised regarding their types (i.e., psychological and political), and mapped into the different stages of the implementation process, which demonstrates the emerging pattern relating the types and severity of resistance over the implementation stages. Accordingly, the initial theoretical framework was revised and improved based on our findings in the case studies and the final framework was presented.

1.8. Thesis Structure

Chapter 2 provides a thorough review of the literature related to this research divided into two parts: ERP systems and the issue of user resistance (Section 2.1) and managing change in change management (CM) body of knowledge (Section 2.2). Section 2.1.1 explains ERP systems and their role in an organisation, and Section 2.1.2 describes how EPR implementation affects the human side of the organisation and vice versa. In Section 2.1.3, the existing ERP implementation process models are introduced and their main shortcomings in the context of this research are discussed. The theories of resistance to the implementation of information systems (IS) are introduced in Section 2.1.4. In the context of the change management body of knowledge, Section 2.2.1 considers change and the nature of human responses, and Section 2.2.2 explains existing change process models and different types of change. In Section 2.2.3, the proper change model for ERP implementation projects is selected.

Section 2.3 introduces our conceptual framework for managing resistance in the process of implementing ERP systems. Section 2.3.1 explains how the framework is formed based the general implementation process and the chosen change model. In Section 2.3.2, the framework is improved using the theories of resistance to information systems implementation.

Chapter 3 explains the research methodology, in detail, and how data is collected and analysed throughout the study. Section 3.1 defines detailed research questions. In Section 3.2, the philosophical perspective of this research is specified. Section 3.3 defines the approach of this research to

be qualitative, and then, in Section 3.4, qualitative research methodologies in the field of IS are reviewed. The research design for the case studies, the role of the literature in this research, the interview protocol, and the coding and data analysis process are respectively, explained in Section 3.5, 3.6, 3.7, and 3.8.

Chapter 4 introduces our three case studies and presents the with-in case analysis with respect to the main research questions, introduced in Section 3.1.

Chapter 5 examines and improves the initial framework with respect to the data collected in the case studies using cross-case analysis. Section 5.2 and 5.3, respectively, discuss our findings related to 1) tracing the change steps in implementation processes, and 2) identifying user resistances throughout the implementation process. Finally, in Section 5.4, the final framework is presented.

Chapter 6 summarises the main contributions of the research, discusses them in the context of the research objectives, and finally suggests areas of future work.

2

Literature Review and Forming the Conceptual Framework

As one of the most important developments in corporate information systems (Monk and Wagner, 2013; Davenport, 1998), ERPs have been described to provide many benefits for organisations such as reduced procurement costs, smaller inventories, and improved operational efficiency, (e.g. Monk and Wagner, 2013; Davenport, 1998l; Yen and Sheu, 2004; Bergström and Stehn, 2005). However, their implementation is usually problematic, and many challenges in different aspects such as proper software solution selection, project management, process reengineering, and organisational change management come along, are experienced during the implementation of these large integrated systems.

This research addresses the challenges that an ERP implementation project encounters in human-side of the organisation through applying change management concepts and tools, and develop change management aspects of ERP Implementation process models to facilitate applying these tools in such projects.

As will be discussed later, the human-related issues potentially affect ERP implementation projects and decrease their success rate dramatically (Lapointe and Rivard, 2005; Motwani et al., 2008). Even more, numerous studies have shown that this resistance is the most influential failure factor for such projects (Peszynski, 2006; Razavi and Ahamad, 2011).

For example, a survey of 264 organisations from 64 countries around the world indicated that user resistance is the first-ranked challenge for the implementation of enterprise resource planning (ERP) systems and 63-percent of companies experienced difficulty in addressing process and organisational change issues (Panorama Consulting Group, 2011). This indicates that while the most critical challenges during ERP implementation concern the support for change and relate to arisen resistance (Grabot, 2008), companies frequently underestimate the importance of organisational change management and often do not give it the attention which is required for an ERP implementation.

This research focuses on the importance of human agency - the capacity of individuals to act independently and based on their will (Rogers *et al*., 2013), in the process of implementing ERP systems. It highlights the role of employees and their reaction in this process. Existing ERP implementation process models (e.g., Ehie and Madsen, 2005; Bancroft *et al.*, 1998; Ross, 1998; Parr and Shanks, 2001) just cover the technical aspects and steps of the implementation and do not face the human side of the process such as resistance to the new system and processes, and organisational conflicts and politics which arise during the implementation project. This research tries to identify and suggest effective change management related strategies, actions and interventions which could improve and empower the extant ERP implementation process models in encountering such dimensions of the implementation projects.

In order to utilise the change management tools and capabilities in implementing ERP systems, the literature in both areas is reviewed. Thus, the literature review begins with an introduction to Enterprise Resource Planning (ERP) systems and highlights their benefits and impacts on the

organisation, some of which could be destructive in the case of not caring, especially for the human side of the organisation. The next section outlines ERP Implementation and its challenges as a huge change in organisations. It focuses on the importance of human agency in the process of implementing ERP systems, highlights the role of employees and their reaction in this process, and introduces some origins of resistance, which may be arisen in the organisation. The section then studies the process of implementing ERP systems and its stages as a business project. It continues with reviewing extant theories of resistance to IS implementation, highlighting their main shortfalls from the viewpoint of this research and suggesting the study's solution for addressing the issue of resistance during the process of implementing ERP systems.

The change management section of the literature review begins with a discussion of the background to the change management paradigm and its attention to the importance of involving people in the process of change in order to increase the likelihood of its acceptance. It provides a discussion about the nature of change, people's reaction to it and how they get to cope with it. Then, the research moves towards the exploration of the main categories for approaching change management in the literature - planned and emergent, and explain their characteristics which help to specify a view concerning this particular change in the organisation and selecting an appropriate change model for ERP implementation processes.

The last section of this chapter forms a conceptual framework for managing resistance in the process of implementing ERP systems by establishing a bridge between the two areas. It first combines the selected change management model with the ERP implementation model. To improve the resulted model, the main factors extracted from the extant theories of resistance to information systems implementation and also the strategies suggested by each theory are categorised according to the process stages. The resulted framework provides a basis for applying change management mechanisms, actions, and interventions to improve and empower the extant ERP implementation process models in encountering concerns (i.e. resistances) related to the human aspect of the implementation processes.

This model is gradually improved and finalised through next steps, including evaluations, interviews and case studies.

2.1. ERP systems and the issue of user resistance in the implementation process

2.1.1. ERP systems and organisations

Enterprise Resource Planning (ERP) systems are one of the most important developments in corporate information systems (Monk and Wagner, 2013; Davenport, 1998). ERPs are business software packages that impose standardised procedures on the input, use and dissemination of data across an organisation, and integrate business processes and associated workflows. They incorporate a range of modules such as financial and accounting, human resource management, sales and distribution, manufacturing and logistics functions (Dery *et al.*, 2006a).

Historically, businesses have had organisational structures that separated the functional areas. The main functional areas are generally including: Marketing and Sales, Supply Chain Management, Accounting and Finance, and Human Resources (Monk and Wagner, 2013). In a company separating functional areas in this way, Marketing and Sales might be completely isolated from Supply Chain Management, even though the Marketing and Sales staff sell what the employees in Supply Chain Management procure and produce.

The functional business model shown in Figure 2-1 illustrates the concept of silos of information. In this model, there is no direct information flow between the lower operating levels. In contrast, the exchange of information between operating groups is handled by top management, which might not be knowledgeable about an individual functional area.

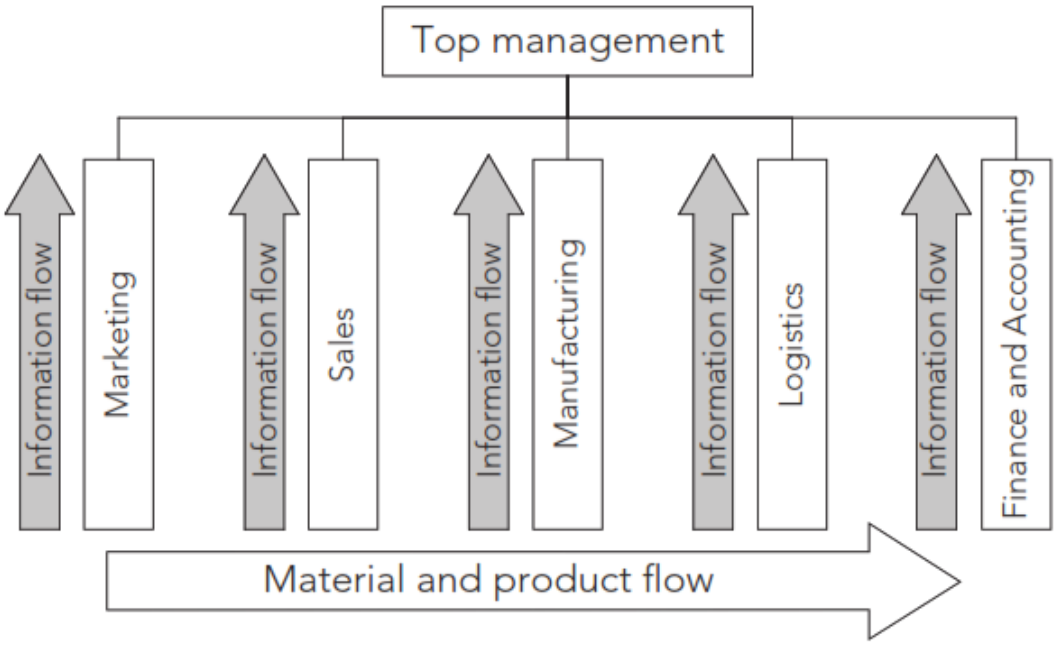

Figure 2-1. Information and material flow in a functional business model by Monk and Wagner (2013)

Actually, functional areas are interdependent, each requiring data from the others. The better a company can integrate the activities of each functional area, the more successful it will be in today's highly competitive environment and fulfilling its customers' demands (Monk and Wagner, 2013). In fact, a business is rather a set of cross-functional processes, as illustrated in Figure 2-2. In this model, information flows between the operating groups without top management's involvement; and the flow of information and management activity is "horizontal" across functions, align with business processes, and in line with the flow of materials and products. A business process is a collection of activities that takes one or more kinds of input and creates an output, such as a report or forecast, that is of value to the customer. Sharing data effectively and efficiently between and within functional areas leads to more efficient business processes (Monk and Wagner, 2013). ERP software supports the efficient operation of business processes by integrating tasks related to sales, marketing, manufacturing, logistics, accounting, and staffing throughout a business. This cross-functional integration is the heart of an ERP system (Monk and Wagner, 2013).

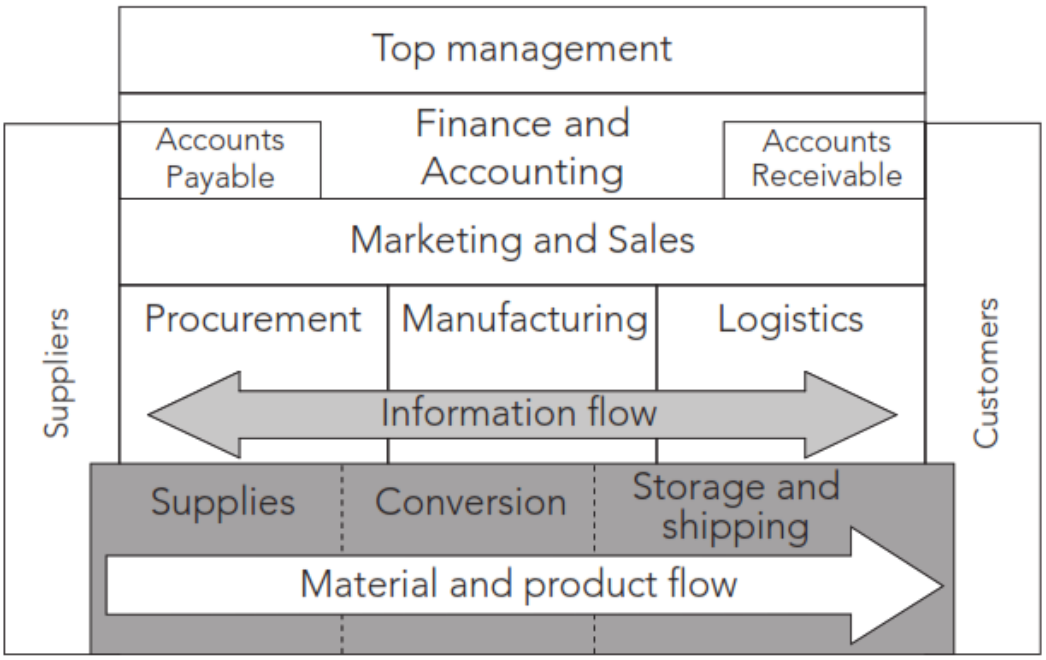

Figure 2-2. Information and material flows in a process business model by Monk and Wagner (2013)

In this regard, according to Kallinikos (2004), ERP systems, by the standardisation of information requirements and information processing and sharing data through a single common database, provide inter-modular transference of data and the related operations across modules (i.e. cross-functional processes).

In this respect, ERP systems can be used as an administrative framework for planning, conducting and monitoring a broad range of functionally segmented operations in ways that both accommodate in real time the cross-functional interdependencies underlying these operations, and also enable their later retracing and control (Monk and Wagner, 2013; Kallinikos, 2004; Dery *et al.*, 2006a; O'Leary ,2000).

The ERP applications can be traced back to and have evolved from Materials Requirement Planning (MRP) and Manufacturing Resource Planning (MRP II) systems (Basoglu *et al.*, 2007). In the 1970s, Materials Requirement Planning (MRP) systems helped organisations in getting material on hand when needed for production or sales. The four primary information outputs provided by the MRP module include informing organisation about: (1) when to place an order, (2) how much to be

ordered, (3) who the supplier should be and (4) when the items be delivered to the organisation (Wallace and Kremzar, 2001).

By the 1980s, manufacturers realized that in addition to inventory-tracking, they needed software that could also forecast inventory requirements and perform capacity planning. In this regard, the next step in ERP's history is called Manufacturing Resourcing Planning or MRP II. These systems in addition to planning the manufacture of products and ordering inventory could schedule and monitor the execution of production plans (Summer, 2005). In the late 1980s, under the influence of increasing market competition, company managers required more flexibility and rapid decision making. The emergence of the BPR concept (Business Process Reengineering) in the shade of Michael Hammer's 1993 revolutionary book, Reengineering the Corporation, stimulated managers to see the importance of managing business processes and began to view ERP software as a solution to business problems (Monk and Wagner, 2013).

The term "Enterprise Resource Planning" was created by The Gartner Group, for a concept they developed in the 1990s for the next generation of Manufacturing Resource Planning (MRP II) systems. The term was conceptualised to integrate software applications of manufacturing beyond MRP II to other functions such as finance and human resources (Kumar *et al.*, 2003; Basoglu *et al.*, 2007). ERP systems work mostly at integrating inventory data with financial, sales, and human resources data, allowing organisations to price their products, produce financial statements, and manage their resources of people, materials, and money effectively (Markus *et al*., 2000).

In this regard, the fundamental idea of ERP is using information technology to achieve a capability to plan and integrate enterprise-wide resources, i.e. by integrating the applications and processes of the several different functions such as design, production, purchasing, marketing, and finance (Kumar *et al.*, 2003).

Table 2-1. Historical evolution of ERP systems (Summer, 2005)

Types of Systems	Time	Purpose	Systems
Reorder point systems	The 1960s	Used historical data to predict future inventory demand; when an item falls below a predetermined level, additional inventory is ordered	Designed to manage high-volume production of a few products, with constant demand; focus on cost
Materials Requirement Planning (MRP) system	The 1970s	Offered a demand-based approach for planning the manufacture of products and ordering inventory	Focus on marketing; emphasis on greater production integration and planning
Manufacturing Resource Planning (MRP II) systems	The 1980s	Added capacity planning; could schedule and monitor the execution of production plans	Focus on quality; manufacturing strategy focused on process control, reduced overhead costs, and detailed cost reporting
MRP II with Manufacturing Execution (MES) systems	The 1990s	Provide the ability to adapt production schedules to meet customer needs; provide additional feedback concerning shop floor activities	Focus on the ability to create and adopt new products and services on a timely basis to meet customers' specific needs
Enterprise Resource Planning (ERP) systems	Late 1990s and onward	Integrate manufacturing with supply chain processes across the firm; designed to integrate the firm's business processes to create a seamless information flow from suppliers, through manufacturing, to distribution to the customer	Integrates supplier, manufacturing, and customer data throughout the supply chain

O'Leary (2000) defines ERP systems as computer-based systems developed to process an organisation's transactions and provide integrated easy and real-time planning, production, and customer response. This definition refers to both aspects of ERP systems: software and business strategies. In this context, ERP systems integrate information and business processes and enable data to be entered once and shared through an organisation. They improve organisational efficiency through both enhanced information capture and organisational redesign based on defined best practices (Gulledge et al., 2005). It is also argued that ERP systems lead to improved decision making because of their ability to provide 'real time' information in a variety of report formats, each designed to assist particular management functions and procedures (Koch, 2001, Dery, 2006).

An ERP system affects various aspects of an organisation and so, leads to considerable changes. Davenport (1998) described the implementation of ERP systems as "perhaps the world's largest experiment in business change" and for most organisations "the largest change project in cost and time that they have undertaken in their history". Consequently, the issues surrounding the implementation process have been one of the significant concerns in the industry (Moon, 2007).

Although ERP systems have been variously described as delivering reduced procurement costs, smaller inventories, more effective sales strategies, lower administration costs, reduced direct and indirect labour costs, and improved operational efficiency, (e.g. Monk and Wagner, 2013; Davenport, 1998l; Yen and Sheu, 2004; Bergström and Stehn, 2005), there is a belief that the comprehensive pre-structuring of data items and the detailed specification of procedures embedded in ERP systems (i.e. pre-programming of execution patterns) inevitably reduce the space of open, people to people encounters (Kallinikos, 2004; Fleck, 1994). They also impose significant constraints on less structured ways by which humans may relate to their work and work objects (Fleck, 1994).

Furthermore, by recording and interlinking organisational transactions, ERP packages provide the information infrastructure that enables the sharpening awareness of the effects which one's actions may have on others and indirectly on oneself. Any operation and transaction from the smallest (e.g. goods movement in the warehouse) to the most encircling (e.g. production rescheduling) are recorded, and their organisational impact on others are captured through interface connections to other modules or sub-modules (Fleck, 1994). In this regard, while Enterprise Resource Planning packages bring the dream of a comprehensive organisational transparency/visibility (Kallinikos, 2004), this increased control and traceability may result in anxiety and nervousness in people and increases levels of stress in the organisation (Lowe and Locke, 2008). These concerns will be discussed later.

Another essential issue about ERP systems is that, although software is an integral part of such systems, the benefits are related to the technology just partially; and most of the benefits originate from organisational changes such as new business processes, organisational structure, work procedures, the integration of administrative and operative activities, and the global standardisation of work practices leading to organisational improvements, which the technology supports (Hedman and Henningson, 2008). As Moon (2007) has stated, implementing an ERP system inevitably involves a large portion of the organisation and often accompanies with

significant business process reengineering efforts. Therefore, change management becomes a critical topic in ERP implementation.

In this regard, while implementing the standard processes, included in an ERP system, is considered as an extreme condition of success of the implementation (Grabot, 2008), aligning the business processes of a company with best practices is usually considered as a significant source of performance improvement (Al-Mashari, 2001). Thus, successful re-engineering, the success of the ERP implementation, and organisational benefits are closely linked (Law *et al.*, 2007). Herein, the context of an ERP implementation provides both the opportunity and the tool to make change operational (Al-Mashari, 2001). Accordingly, the way it is carried out may even have a stronger impact than the characteristics of ERP system themselves (Mayere and Bazet, 2008). This result highlights the importance of this research to consider the human-related aspects of the implementation process.

Moreover, enterprise systems also have a direct, and often paradoxical, impact on organisational structure and culture (Davenport, 1998). On the one hand, by providing real-time access to the data across the whole organisation, there is a strong likelihood that the organisation will become flatter, more flexible, and more democratic, the decision-making will be less centralised, and the level of horizontal integration will increase (Davenport, 1998, Doherty et al., 2010). On the other hand, they involve the centralisation of control over information and the standardisation of processes, which could result in more centralised and uniformed organisations as well (Davenport, 1998). This paradoxical impact should be considered while conducting the research. Indeed, it seems the management decision regarding this issue (i.e. how to utilise the system, centralised or decentralised), could play an essential role in forming political conflicts in the organisation during the implementation process which obviously should be taken into account in this research.

So far, this section has introduced ERP systems and described their impacts on organisations. It discussed that although these systems may have some

benefits for the organisations, they could be destructive at the same time especially if their impacts on the human side of the organisations are not appropriately considered. The resistance not only could fail the implementation effort but also could be destructive for the organisation itself as every change starts with abandoning the old ways of doing the jobs.

Now, the research moves towards the process of ERP implementation and the role of human agency in this massive change. This discussion will let us get closer to the issue and improve our understanding of it.

2.1.2. The mutual impact of ERP Implementation and the human side of the organisation

Although the potential of information technologies to support organisational transformation is acknowledged, evidence increasingly points to the importance of human agency in converting potential into practice (Boudreau and Robey, 2005). Dery *et al.* (2006b) showed that different users choose to interact with the same technological system in different ways. This phenomenon possibly limits the ability of the technology to deliver the organisational benefits that were expected from the system. They suggest that there is a need for organisations to consider the interaction between ERPs and organisational context in which they operate which could be a key area for this research (e.g. the change in intra-organisational power distribution with the new system). Besides, ERP implementations are often accompanied by increasing levels of stress in organisations that place pressures on organisational relationships, structures and staff. So, it is clear that the implementation of an ERP is highly reliant on the goodwill or "trustfulness" of employees (Lowe and Locke, 2008).

Additionally, as ERP projects are accompanied by many enterprise-wide changes, the organisational culture plays a vital role in the implementation stage. It can be a facilitator or a significant barrier to change (Grabot, 2008). Since an ERP system brings a different way of working and

communicating, the success and acceptance of the system are heavily dependent on the organisational culture (Ke and Wei, 2008). The successful implementation of ERP systems requires a corporate culture that emphasises the value of sharing common goals over individual pursuits and the value of trust between partners, employees, managers and corporations (Razmi *et al*., 2009). Ke and Wei (2008) argued that ERP implementation success is positively related with the dimensions of organisational culture including learning and development, participating in decision making, power-sharing, comprehensive and cross-functional communication, and tolerance for risk and conflicts. To clarify the impact of people and organisational culture on ERP implementation success, the researcher studies the implementation process and its consequences from this viewpoint.

According to Fleck (1994), implementation is not a practice of unproblematic installation but rather a complicated socio-technical process of re-negotiation and re-development. The implementation of ERP packages requires the "re-engineering" of the organisation. This by necessity suggests new methods for designing tasks, jobs and work modules and leads to new work structures and procedures (Kallinikos, 2004). Boudreau and Robey (2005) note that the integrative nature of the ERP and the increased interdependencies of work processes it enforces, require users to change their behaviour and follow to the pre-established process requirements and behave in a more controlled manner than they might otherwise.

By definition, each change sets into question an existing, possibly stable and perhaps satisfying situation, both at the individual and organisational level. Therefore, it may arouse resistance which may have different origins (Grabot, 2008). A potentially high degree of change can raise severe levels of negative human affections and their side-effects through resistance and/or lack of acceptance (Razavi and Ahamad, 2011). In this context, implementing standard processes often leads to adoption problems, regarding strategic, social and cultural difficulties (Grabot, 2008). Such resistance potentially affects ERP implementation projects and decreases

their success rate dramatically (Lapointe and Rivard, 2005; Motwani et al., 2008). Even more, numerous studies have shown that it is the most influential failure factor for such projects (Peszynski, 2006; Razavi and Ahamad, 2011).

The level of involvement in the implementation of the ERP, organisational restructuring, tension between high level and middle level managers, and increased control traceability are the examples of origins which may result in resistance and difficulties (Harley *et al.*, 2006, Bradley, 2008, Razmi *et al.*, 2009, Wang *et al*., 2006).

Low level of involvement in the process of ERP implementation is considered as an important factor driving resistance against the new system. For example, Harley *et al.* (2006), argue that variations in managerial responses to ERP implementations relate, not only to the structural position of individual managers, but also to their level of involvement in the implementation of the ERP and identification with the system as a help or hindrance to their work performance. The successful implementation of the system requires commitment and cooperation of personnel from all segments of the business. Therefore, it is often said that ERP implementation is about people, not process or technology; and the role of personnel in the ERP implementation success or failure is inevitable (Bradley, 2008). The personnel must be convinced that the organisation is committed to implementing the ERP system. They must recognise the need for change and be adequately prepared for changes to prevent resistance and chaos at the implementation stage (Razmi *et al.*, 2009). The personnel involvement in the project is also essential; because they will actually be the users of the system. Wang *et al*. (2006) suggested the importance of the group, rather than the individual for the successful organisational adoption of enterprise systems. According to their model, willingness to participate and commitment to learning are proposed to influence group cohesion. The levels of group cohesion, in turn, contribute to ERP implementation success. According to Basoglu (2007), avoiding user resistance requires organisational groups to break down barriers to knowledge sharing.

Moreover, the redistribution of roles and responsibilities among members can destroy an organisation if it is not appropriately managed (Kallinikos, 2004). Increased tensions may occur between high-level managers coming from other areas, hired to promote new and demanding methods, and middle-level management/operational workers not really convinced of the necessity to change in the context of success (Grabot, 2008). The augmented control and traceability brought by ERP systems make it more problematic to fix human mistakes without referring to an authority (Kallinikos, 2004). As well, the process acceleration induced by automation through ERP packages has also the potential of an anxiety-producing process up to the point that managers may question the wisdom of such conversion (Grabot, 2008).

These crucial issues, which are examples of the human reaction to the enormous change of implementing ERP systems, are required to be considered and taken appropriate measures to confront in different levels: individual, group and organisational.

On the other hand, ERP projects may be considered as organisational learning processes whereby the actors discover the reality and complexity of the organisation process and may re-design it (Grabot, 2008). A broader knowledge of the organisation is required for end users of enterprise systems compared to the traditional legacy systems that were adapted to each island of automation. As the view changes from task-focused to the process focused by implementing enterprise systems, employees need to know how their task fits into the overall process and how that process contributes to the achievement of organisational objectives (Vandaie, 2008). In this sense, the ERP implementation does not only provide a tool for proper operation of the new system but also brings, through re-engineering, a method for better understanding the system which has to evolve. From this perspective, the ERP implementation process is a process of learning and knowledge sharing. Accordingly, the learning attitude and positive approach towards new skills help to make implementation effective (Krumbholz *et al.*, 2000). This issue highlights the importance of utilising a method which could confront these aspects of organisational life.

This section has to reveal the nature of the problem that the ERP implementation process would encounter in the human side of the organisation. It discussed the importance of human agency in the process of implementing ERP systems, highlighted the role of employees and their reaction in this process. It showed by some examples of how this substantial organisational change could arouse different types of resistance or concerns in the human side of the organisation.

In the next section, the existing ERP implementation process models are introduced and their main shortcomings in the context of this research are discussed.

2.1.3. ERP implementation process model

As stated in the previous section, the implementation process of an ERP system is best conceptualised as a business project rather than the unproblematic installation process of new software technology (Fleck, 1994). In such a process, the business processes of the organisation should be aligned with the standard processes included in the ERP system (Grabot, 2008, Al-Mashari, 2001). The process demands the reengineering that by necessity implies new work modules and job descriptions and results in new work structures and procedures (Kallinikos, 2004). Inevitably, such a process takes place through a massive change project (Davenport, 1998) which needs specific guidelines.

There are several models for implementing ERP systems (e.g. Bancroft et al., 1998; Ross, 1998; Parr and Shanks, 2001; Ehie and Madsen, 2005) which generally include multiple stages, with each stage consisting of several diverse activities. The most general categorisation for these stages consists of the following three phases:

1) Pre-implementation (or setting-up),
2) Implementation,
3) Post-implementation (or evaluation).

Setting-up or planning phase generally includes organising the directing board, structuring and selecting the project team, development of the project's guiding principles and formation of a project plan (Bancroft et al., 1998; Ross, 1998; Parr and Shanks, 2001). Ehie and Madsen's (2005) pre-implementation phase covers a bigger area and starts from a critical look at the company's strategic enterprise architecture that analyses the driving motive for implementing an ERP system.

The main activities of the implementation phase are the analysis of existing business processes, mapping of the business processes on to the ERP sub-systems, and high-level design and then detailed design subject to user acceptance. It also usually needs interactive prototyping – which allows users to have interaction with the new system and navigate from page to page before launching the system, accompanied by regular communication with users to let them become familiar with the new processes and way of doing their job. These steps all together are called "as is" and "to be" processes according to Bancroft *et al.* (1998) and Ross (1998), or "reengineering" according to Parr and Shanks (2001). The implementation phase also involves configuration, testing and installation which cover building and testing interfaces and reports, system and user testing, building networks and installation, and managing user training and support (Parr and Shanks, 2001; Bancroft et al., 1998; Ross, 1998). In a nutshell, the implementation phase extends from the beginning of the project to the cut-over to the life system.

In contrast to Bancroft *et al.* (1998), the proceeding models pay attention to post-implementation related steps. For Ross (1998), the stabilisation stage takes place after completing the implementation stage and is a period in which the system problems are fixed, and the organisational performance improves, followed by a continuous period of steady improvement in which functionality is added. According to Parr and Shanks (2001), the enhancement phase may extend over several years and includes the stages of system repair, extension and transformation. The strength of Parr and Shanks's (2001) model is that it identifies the discrete

sub-phases of the project while also recognising the importance of the planning and post-implementation phases.

In addition to emphasising on the fact that implementing an ERP system is a strategic decision in the organisation, Ehie and Madsen's (2005) model through surrounding the phases by change management component is also a significant step forward in highlighting the role of change management to integrate the human resource dimension in the project.

The main shortfall of the extant ERP implementation models from the perspective of this research is that they do not address (at least explicitly) the problems which arise in the human side of the organisation during the process of ERP implementation. For example, though Parr and Shanks (2001) consider the concept of "Commitment to change" in various levels of the organisation as one of the essential critical success factors for ERP implementation, they do not mention any measure to establish and maintain this commitment in their presented model. Similarly, although Ehie and Madsen (2005) assume several human-related factors for a successful ERP implementation, they just refer to change management as one of the components that are needed to be considered during the implementation process and do not mention the change management actions required for a successful implementation.

There are also studies, like Finney and Corbett (2007), that highlight the necessity of building user acceptance (and positive employee attitude) for a successful ERP implementation. Such studies suggest that user acceptance might be accomplished through education about the benefits and need for an ERP system or via securing the support of opinion leaders throughout the organization. There is also a need for the team leader to effectively negotiate between various political turfs. While these studies partially talk about change management, assuming user acceptance as a key step, they do not consider it in tandem with ERP implementation processes.

The models above are summarised in Figure 2-3. The resulted model includes three major stages: Pre-implementation: strategic decisions in the

enterprise level for implementing ERP and selecting the provider and other related resources, Implementation, and Post-implementation: enhancement. The stages are accompanied by a continuous change management block which its components are identified in this research. This model could direct the research effort in identifying and developing mechanisms and interventions required for encountering human-related issues and problems in each step of the implementation process. Such problems (i.e. resistance) are considered in the next section.

The next section takes a look into the extant theories of resistance to IS implementation.

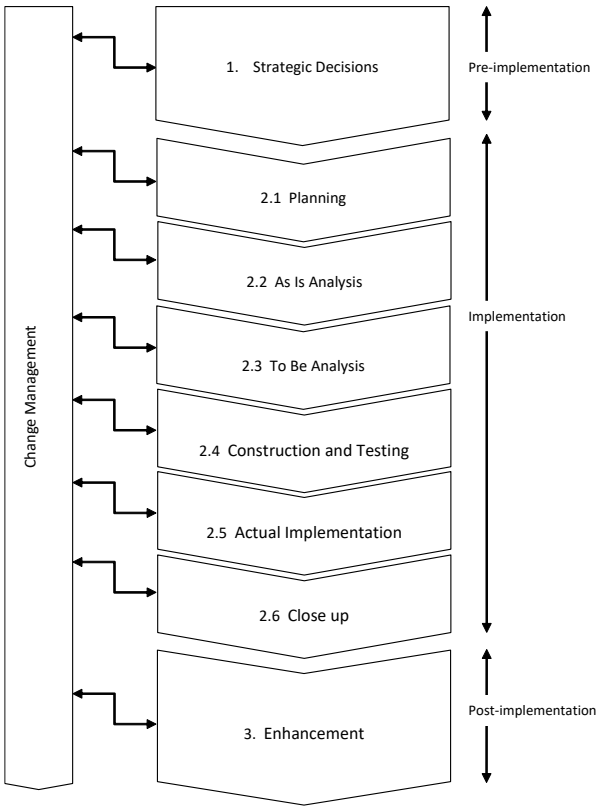

Figure 2-3. ERP Implementation Process Model

2.1.4. Theories of Resistance to information systems implementation

The issue of implementing information systems has been widely considered and studied in the IS literature from various perspectives. There is a group of theories in the literature (e.g., Markus, 1983; Joshi, 1991; Lapointe and Rivard, 2005; Beaudry and Pinsonneault, 2005; 2010; Klaus *et al.*, 2007; Martinko *et al*., 1996, Kim and Kankanhalli, 2009; Klaus and Blanton, 2010) which focus on the issue of user resistance to information systems implementations. However, each of them concentrates only on a specific aspect of the phenomenon.

For example, some like Joshi (1991), Marakas and Hornik (1996), Klaus *et al.* (2007), Kim and Kankanhalli (2009), and Beaudry and Pinsonneault (2005; 2010), focus on the individual level of the phenomenon and the process by which a user decides to behave about a new system (i.e. acceptance or resistance). In contrast, others like Markus (1983), and Lapointe and Rivard (2005), concentrate more on the group level aspects of reaction to new systems and give some clues to confront them.

The role of power and politics in implementing information systems was firstly discussed and highlighted by Markus (1983). She explains resistance in terms of the interaction between the system being implemented and the context of use. The interaction is mainly seen in the change in intra-organisational power distribution with the new system. She suggests that a group of actors will be tending to use a system if they believe it will support their position of power. If they think it might cause them to lose power, they will resist. Although Markus's model mentions the main point provoking resistance, it does not explain how users come to believe whether the system supports their power or not.

Joshi (1991) proposed a model wherein users evaluate the new system on three levels in terms of its impact on their equity status. To assess the change in equity status, users are viewed as evaluating their net gain based upon changes in their inputs and outcomes and comparing their relative outcomes with that of other users/user groups and the employer.

They first assess the variation in their equity status brought about by the system. They then compare it to that of their organisation. Finally, they compare it to that of other members of their reference group. They will resist if they perceive inequity.

According to his model, a necessary first step may be to identify possible equity concerns of users with respect to the implementation. Then, attempts can be made to improve equity by altering the actual outcomes and inputs of users, or by attempting to alter users' perceptions of their own and others' inputs and outcomes. As complementary for the model, he suggests some possible actions for improving equity impacts of implementation which will be discussed later.

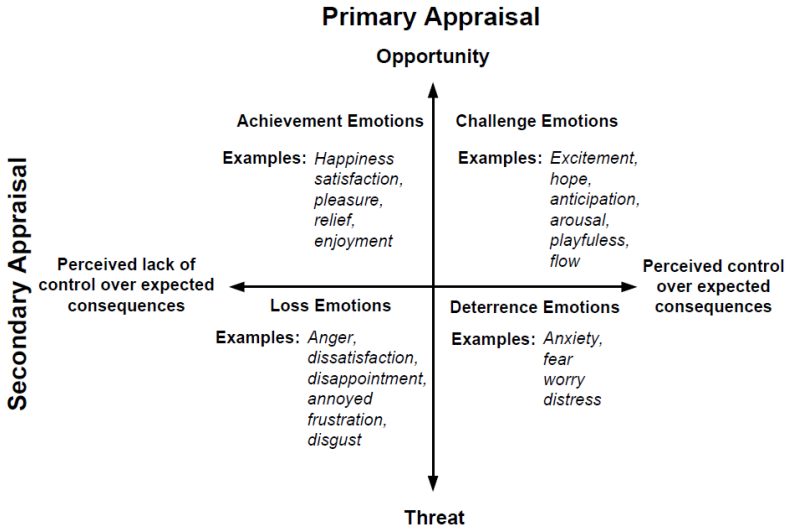

Figure 2-4. Beaudry and Pinsonneault's framework for classifying emotions (2010)

From another point of view, Marakas and Hornik (1996) focus on a form of covert resistance to the IT implementation process that results from both fear and stress stemming from the new routines and modes of work brought about by the new system into the previously stable world of the user. According to them, such behaviour takes the form of overt cooperation and acceptance of the proposed system combined with covert resistance and likely sabotage of the implementation effort.

Kim and Kankanhalli (2009) support this view and highlight the significance of switching costs as a crucial determinant of user resistance. They also

identify colleague opinion and self-efficacy for change as antecedents that reduce switching costs. Their study indicates the role of the perceived value of system-related change and organisational support factors in reducing user resistance.

In the scope of emotion's role in shaping individual reaction to new IT changes, Beaudry and Pinsonneault (2005; 2010) suggested that such reactions are based on the assessment of their personal and professional relevance. According to their model (Figure 2-4), two appraisals determine the reactions. In the primary appraisal, an individual determines whether the new IT constitutes an opportunity or a threat. In secondary appraisal, individuals assess the degree to which they feel they have control over the realisation of the expected consequences of a given event. Excitement and hope about the given IT change occur when the individual determines it as an opportunity and perceives control over expected consequences. Also, it is vital that the effects of emotions occurring prior to the deployment of a new IT (i.e., in the anticipation period) on attitudes, beliefs, behaviours, and IT use exert long-lasting effects on judgment, decision making, and behaviours. It is important to note that it is not the IT event or the IT artefact per se that triggers emotions but the unique psychological and evaluative assessment of the event by an individual. Therefore, different people can have different sets of emotional responses to a given IT event. Also, the process of shaping the users' perception does matter.

Lapointe and Rivard (2005), through examining data from three case studies of clinical information systems implementations in hospital settings, draw attention to this point that the properties of resistance (i.e. the object and behaviour of resistance) could vary during implementation. Their model suggests that early in the implementation, the object of resistance is the new system itself and its features and resistance behaviours initially included indifference, lack of interest, and complaints, which are instances of apathy. Tyre and Orlikowski (1994) called this initial period following the introduction of a system a "window of opportunity" and posit that this time period is ideal to adapt or improve the system.

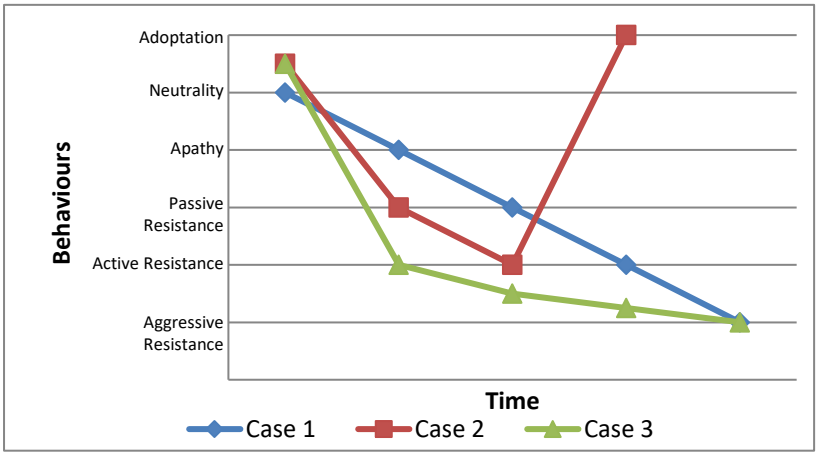

Figure 2-5. Resistance behaviour in implementing three Information Systems (Adapted from Lapointe and Rivard, 2005)

After this step, system users start to make projections about the consequences of its use. If expected consequences are threatening, resistance behaviours will result. This part of the model is very similar to Markus's (1983) model of the role of power and politics in implementing information systems and similarly believes the resistance in this stage tends to show up in group level rather than individual. According to Lapointe and Rivard (2005), during implementation, if some trigger occurs to either modify or activate an initial condition involving the balance of power between the group and other user groups, it will also modify the object of resistance, from system to system significance or the system advocates. Consequently, according to their observation, active resistance behaviour -the formation of coalitions- appears. Later, especially in failure cases in their observation, key users threatened to resign, created trouble, and rebelled, which all correspond to aggressive resistance behaviours. These stages for their three cases are illustrated in Figure 2-5. Their study reveals that inappropriate responses to resistance behaviours ultimately provoke resistance escalation.

The primary underlying assumption in the models is that they consider resistance per se to be neither good nor bad, contrary to commonly held assumptions about the resistance that regard it as a critical obstacle preventing organisations from securing the potential benefits of an IS implementation. For example, Markus suggests that it can have negative or positive effects. Resistance is dysfunctional and can even be destructive

when it generates conflict and consumes time and attention. On the other hand, it could be functional for organisations if it prevents the implementation of systems that, by increasing stress or by reducing performance levels, would have negative impacts (Markus, 1983). According to Joshi's model, extreme inequities should be avoided, because highly inequitable treatment of some users is likely to influence the equity perception of others, hence causing disruptions. Therefore, when resistance prevents the use of a system that has inequitable consequences, it plays a useful role. Marakas and Hornik (1996) point more explicitly to the positive aspect of resistance and refer to it as a means by which users communicate their discomfort with a system that might be flawed.

In terms of proper measures and interventions that could be taken, these models suggest various actions which should be put together in a more comprehensive framework in order to be ensured of covering the most parts of the phenomenon.

Markus's (1983) model, focusing on the role of power and politics in the process of implementation, stresses the importance of forming coalitions and addressing peoples' concerns.

Joshi's (1991) equity model has more specific recommendations. His model draws attention to the importance of managing equity perceptions for successful implementation. As mentioned before, according to this model, the first step is to identify possible equity concerns of users with respect to the implementation. Actions to improve equity perceptions can be taken either by altering the actual outcomes and inputs of users or by attempting to alter users' perceptions of their own and others' inputs and outcomes.

To increase the actual outcomes of users, Joshi (1991) suggests users can be given additional outcomes in the form of an appropriate wage or job status increase or even changes in working conditions (e.g., flexible schedule or reduction in the number of hours worked per week). Also, they can be given appreciation letters, special skill certificates, recognition, and small awards for cooperating in the implementation and for learning and using the new system. According to Joshi's (1991) model users' fear of

adverse outcomes can be lessened if employees are not discharged or laid off upon successful implementation; and if assurances can be given to users as soon as possible on this issue, it may reduce their negative outcomes.

The second strategy Joshi's (1991) model proposes for improving equity is through altering users' perceptions about their own and others' inputs and outcomes. For doing so, he suggests users can be influenced to view learning as an outcome that will improve mobility and job prospects rather than as an input. The benefits of the new system can be emphasised in improving working conditions and quality of work. Training programs can also present the use of the latest technology and systems as outcomes for users. The question of distribution of benefits among employer and employees is also important according to the equity model. Assuming that a reasonable attempt has been made for sharing the benefits, users can be convinced to view the company's survival and financial viability against the competition as a desirable outcome that would bring stability and security to their jobs.

Marakas and Hornik (1996), and Kim and Kankanhalli (2009) put emphasis on reducing the fear and stress stemming from the new system. Kim and Kankanhalli (2009) specifically highlight the significance of switching costs as a key determinant of user resistance. They suggest management can attempt to reduce switching costs by enhancing colleagues' favourable opinions toward new system-related change and increasing users' self-efficacy for change. To enhance colleague opinion, they, as do Massey *et al.* (2001), believe management can attempt to publicise the necessity of the new system and persuade key users (especially opinion leaders) to accept the change first. These leaders can then serve as champions of the change to their colleagues. Apart from developing favourable opinions, management should also provide training to employees to enhance their skills and confidence (i.e., self-efficacy for the change). They also suggest switching benefits needs to be communicated clearly to users before the new system release.

Beaudry and Pinsonneault (2010) provided an integrated picture of emotions and their relationships with IT use and various intermediate behaviours. As discussed, they showed that emotions experienced by the anticipation of a new IT implementation could have important subsequent implications for users. Their model suggests that managers can stimulate challenge emotions (such as excitement) by ensuring that a new IT is perceived as an opportunity and by providing users with sufficient autonomy and appropriate incentives for them to adapt their tasks to the new IT. Like Kim and Kankanhalli (2009), they firmly believe managers can promote system usage by showing users how to gain additional benefits by adapting work routines. Sharing best practices among users and rewarding innovative adaptation of work practices that take advantage of the new IT could do this.

For dealing with negative emotions, they suggest that managers can help reduce the occurrence of loss and deterrence emotions, such as anger and anxiety, by communicating effectively how the new IT constitutes an opportunity for users. For example, providing social support can help reduce the negative impacts of anger and anxiety and can act as a turnaround mechanism. Managers could provide opportunities for users to share positive experiences and provide support through user groups; online sharing such as blogs or wikis, and regular informal meetings where users share best practices about how to use the new IT. When faced with anxious individuals, managers should also try to prevent them from distancing themselves because anxiety coupled with psychological distancing has the most negative effect on IT use. Creating user groups and having users participate and be involved in the development of the new IT system might help prevent distancing.

Lapointe and Rivard (2005), through their multi-step model, claim that inappropriate responses to resistance behaviours ultimately provoke resistance escalation. As discussed before, according to their model, in the early steps of the implementation the object of resistance is the system and its features and the resistance behaviour is mostly seen in the form of apathy and passive resistance. The model suggests that in later stages, if

the first signs and causes of resistance are not recognized and responded appropriately, the resistance will become politicised and the object of resistance converts to the significance of the system or the system advocates.

As is shown in the graph (Figure 2-5), the most critical point in these implementation cases is when the coalition formed against the change intention and the process began to get politicized. As a result, managing resistance becomes a more difficult undertaking (Lapointe and Rivard, 2005).

The main critique that is exposed about the existing theories of resistance to IS implementation is they generally adopt a very narrow and pure IS point of view and do not consider other related fields (e.g. change management) which could contribute in understanding and dealing with user resistance in the field of information systems. For example, although Lapointe and Rivard (2005) in their promising work (which is the only model that explicitly takes into account the role of time in the unfolding of resistance in the process of implementation) show the cycle of resistance behaviour to new IS implementation (Figure 2-5), they do not consider its surprising similarity with Carnall's (2003) Change Coping Cycle (Figure 2-6) which outlines the recurring pattern of how people cope with a change process and identifies different stages of their reaction in such processes. Such similarities, which have not been taken into consideration by those researchers, suggest the adoption of change management tools for effectively managing user resistance in the implementation effort.

Accordingly, this research claims that the extant theories of resistance to IS implementation largely adopt a narrow approach to dealing with user resistance and, hence, the solutions provided by them are fragmented and cannot present a holistic approach to our problem (i.e. understanding and dealing with human resistance in the process of implementing ERP systems).

On the other hand, reviewing aforementioned models of resistance to IS implementation led, in this thesis, to the categorisation of such resistance

instances into two general groups (Bagheri *et al*., 2014): psychologically driven (e.g.: Beaudry and Pinsonneault, 2005; 2010; Marakas and Hornik, 1996; Klaus *et al.*, 2007; Kim and Kankanhalli, 2009; Klaus and Blanton, 2010) and politically driven (e.g.: Markus, 1983; Lapointe and Rivard, 2005; Joshi, 1991). The former focuses on issues like perceiving a threat and lack of control over expected consequences, or fear and stress stemming from the new routines and modes of work, while the latter perspective talks about the change in intra-organisational power distribution with the new system. This categorisation could help in identifying different practical actions in certain situations or contexts depending on the nature of the resistance being provoked by the change initiative (i.e. ERP implementation). It also directs efforts and helps us in developing the framework to guide managers understanding and tackling human resistance during the process of ERP implementation.

In this regard, although each of theories concentrates only on a specific aspect of the phenomenon (i.e. resistance to IS implementation) and mostly adopt a narrow approach to dealing with user resistance, they could contribute to establishing a more comprehensive approach.

In Table 2-2, the researcher summarises the theories of resistance to information systems implementation, including the sources of resistance they studied, their focus (Po: Political or Ps: Psychological) and their recommended management strategies, against the stages of the ERP implementation process.

To sum up, this research proposes to use change management body of knowledge as an overarching perspective to deal with resistance in the process of ERP implementation which could provide a more holistic and coherent approach to understand and address such problem. Though, the sources of resistance that the theories have spotted and the correspondent actions they recommended would contribute to the overarching framework and establishing a comprehensive framework.

Table 2-2. Summary of the extant theories of resistance to IS implementation

	Sources of Resistance (Related to each Phase)	Po/ Ps	Recommended Actions	
Pre-implementation	Perceiving threat and lack of control over expected consequences (Beaudry and Pinsonneault, 2005; 2010) Uncertainty (Klaus et al., 2007)	Ps	Developing habits of openness in organisational communications to create enough psychological safety for people (Darwin et al., 2001; Hirschorn, 1997) Communicating effectively how the new system constitutes an opportunity for users (Beaudry and Pinsonneault, 2010) Clear Plan, Communication (Klaus et al., 2007) Forming coalitions, communicating the change vision and addressing peoples' concerns (Markus, 1983)	Pre-implementation
Implementation	Change in intra-organisational power distribution with the new system (Markus, 1983; Lapointe and Rivard, 2005)	Po	Forming coalitions, communicating the change vision and addressing peoples' concerns (Markus, 1983) identifying the influence of using the system on individuals, groups and balance of power in the organisation in order to anticipate the reaction to the new system (Lapointe and Rivard, 2005) Improving equity perceptions either by altering the actual outcomes and inputs of users or by attempting to alter users' perceptions of their own and others' inputs and outcomes (Joshi, 1991) Reducing switching costs by enhancing colleagues' favourable opinions toward new system-related change and increasing users' self-efficacy for change (Marakas and Hornik, 1996) Clear Plan, Communication, Feedback, Training, Incentives (Klaus et al., 2007) showing users how adapting work routines can lead to additional benefits by sharing best practices and positive experiences (Kim and Kankanhalli, 2009; Beaudry and Pinsonneault, 2010) Preventing users from psychological distancing by involving them in the development of the new system (Beaudry and Pinsonneault, 2010)	Implementation
	Perceiving inequity (Joshi, 1991)	Po		
	Fear and stress stemming from the new routines and modes of work (Marakas and Hornik, 1996)	Ps		
	Workload, Changed Job, Complexity, Lack of Fit, Uncertainty (Klaus et al., 2007) Switching costs for users (Kim and Kankanhalli, 2009)	Ps		
Post-implementation			The new relationships resulted from the change are going to require work on them to be successfully embedded (Schein, 1987).	Post-implementation

2.2. Looking for "how to manage resistance" in Change Management body of knowledge

2.2.1. Change and the nature of the human response

Change management has been defined as "the process of continually renewing an organisation's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers" (Moran and Brightman, 2001). It is also suggested that the primary task for management today is the leadership of organisational change (Graetz 2000).

The change management paradigm is part of an evolutionary process. The Western Electric Hawthorne experiments, in 1939, identified the critical role of people in organisations (Axelrod, 2001). These experiments generated the idea that paying attention to people was essential and the simple act of paying attention affected productivity (McAuley *et al.*, 2007). Kurt Lewin's research during World War II and the landmark Hardwood studies conducted from 1940 to 1947 showed that involving people in change increases the likelihood that they will accept needed change while at the same time increasing productivity (Axelrod, 2001).

Before starting to discuss different approaches to managing change, it is necessary to gain a good understanding of the nature of the human response to change and transition. For doing so, it seems Carnall's (2003) Coping cycle model which shows how people react and adjust when faced with change would help.

Drawing on Lewin's three-step model of change (which will be discussed in this section) and also Erold and Tippet's (2002) reviewing of 15 models of change, Carnall (2003) shows that the heart of the human change process is transition from normality through some form of disruption and then to a re-defined normality. According to Erold and Tippet (2002), in the initial state of normality, a reasonable level of performance can be maintained. However, as an individual or an organisation passes through the region of disruption, performance can be expected to be diminished. In the final

state, re-defined normality, the understandings and expectations of the changed entity (individual or organisation) are more closely aligned with reality and performance increases. Carnall (2003) developed their work and identified five distinct stages in every change effort (Figure 2-6): denial, defence, discarding, adaptation, and internalisation.

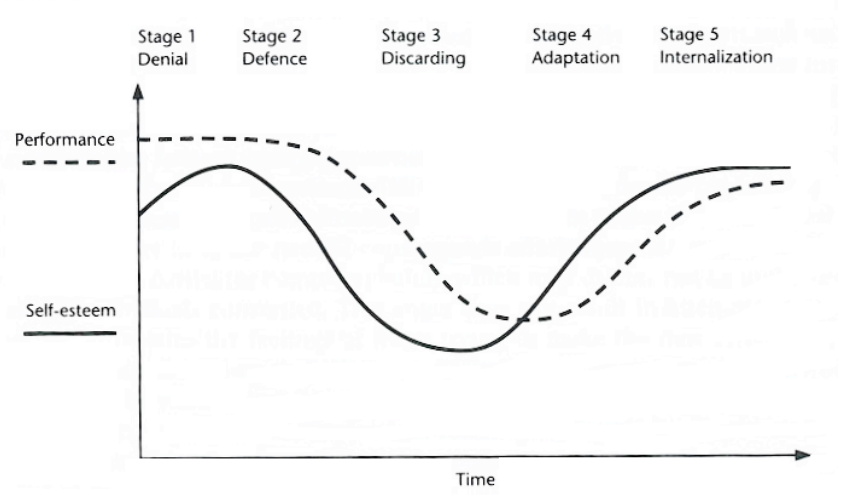

Figure 2-6. Carnall's Change Coping Cycle (2003)

Carnell (2003) believes the first reaction to significant changes may be to deny the need for change. Faced with the possibility of changes, people will often find value in their present circumstances which they would bitterly complain about at other times. According to Adams et al. (1976), this is because of a sense of being overwhelmed, of being unable to reason, to plan, or even to understand what is going on. In this respect, the tendency to deny the validity of new ideas, at least initially, does seem to be a general reaction. One way of handling the stage is to minimise the immediate impact of the change. This allows people time to face up to a new reality. Another important point at this stage is the likelihood of increasing self-esteem. The advantages of the present circumstances, the workgroup and valued skills are recognised, and the sense of being a member of a group subject to external threat can lead to increased group cohesiveness.

After a while and when change becomes more evident, people become aware that they must come to terms with the new way in which they work. This can lead to a feeling of depression and frustration because it can be

challenging to decide how to deal with these changes. So, in this stage, people may attempt to defend their own identity and territory.

The previous stages have focused on the past. At the discarding stage, people begin to let go of the past and look forward to the future. Although it is not clear that how this happens, according to Carnall (2003), it is obvious that supporting and providing people with the opportunity to experiment with new systems without the pressure of formal training programs can be helpful. Discarding is initially a process of perception and happens when people come to see that the change is inevitable and necessary. They begin to solve problems, take the initiative and even demonstrate some leadership. So, there is a sense that they try to re-establish their own identity and self-esteem.

Stages 1 to 3 of Carnall's coping cycle aligns with the first step of Lewin's model – Unfreezing – and the insights and tools necessary to address the issues of Denial, Defense and Discarding could be provided from that (Burnes, 2009). In managing resistance to change, the proper management of the unfreezing stage is essential to prevent adverse and blocking resistance from manifesting itself (Darwin *et al.*, 2001). According to Darwin *et al.* (2001), this stage helps members to identify the reasons for the inability to solve the problem, but without blaming individuals. They also suggest, at this stage, members are also developing habits of openness in their meetings. The development of openness is essential for the release of creativity (Hirschhorn, 1997). He suggests it can help people act autonomously, make decisions in the face of significant uncertainty, and to participate in the strategic decisions. It creates enough psychological safety so that people will risk being more psychologically present and will use thoughts and feelings to create new ideas and discover new solutions.

For a change to be successful, not only those affected by it must adapt to the new ways, but the new ways must also be adapted to fit in with the existing people and circumstances. Carnall (2003) believes a significant amount of energy is involved in the fourth stage –adaptation- and the

process of trial and error, which is necessary for this stage, can be a source of real frustration. In these circumstances, people might show anger. The important point here is that this is not resistance to change; instead, it is the natural consequence of partial or complete failures happened. This anger does not result in attempts to oppose but articulates the feelings of those trying to make the new system work.

According to Burnes (2009), the second step of Lewin's model – Movement – aligns with this stage and provides the means of dealing with the issues and obstacles that arise from adaptation. Movement implies the process whereby people move from their former state into the change state (Darwin *et al.*, 2001), which has two features: acceptance and letting go (Hayes and Hopson, 1976). In this stage, people begin to realise that the change is inevitable and once this is done, members can begin to let go of the past. Schein (1987) suggests that at this period people may be helped to accept the change at an intellectual level although they will not necessarily want to do so at an emotional one.

In the Carnall's (2003) fifth stage –Internalisation- a new relationship between people and processes have been tried, modified and accepted; and people reach the point where, psychologically, they see the changes not as new but as normal. This stage aligns with the third step of Lewin's model. Refreezing provides an approach to the mechanisms for achieving internalisation (Burnes, 2009). According to Darwin et *al.* (2001), refreezing is a metaphor intended to symbolise the ending of a particular phase of the change process. It implies the moment when the persons feel that they have gone through that particular change process and where it has become part of the group's or the person's identity. Schein (1987) believes that in this stage, individuals should have a good understanding of the new situation and feel as comfortable as possible about it. Also, he suggests, at this stage, the new relationships resulted from the change are going to require work on them to be successfully embedded.

The essential point about this cycle is that people seem to experience significant changes in these ways. As a matter of fact, in every change

effort, the situation gets worse and worse before it starts to get better, and this leads to a number of practical ways in which the problems of coping can be handled.

As pointed out in the previous section, this pattern has been observed in Lapointe and Rivard (2005) case research for studying people reaction to new IS implementation. In three cases that they have studied, just one case could have passed the severe situations of implementing the change and come up to the Discarding stage (according to Carnall's model). The other two implementing cases have been failed as they could not be successful in convincing people to cope with the change. This point highlights the importance of political measures in managing such changes for helping people to let go of the past and look forward to the future and avoiding aggressive resistance from key players which would result in failure of the change effort. Also, it shows comparing the pattern of people's reaction to IS implementation and Carnall's cycle, could help in mapping change management models and the ERP implementation process model.

Moreover, it seems it is essential to precisely identify the influence of using the system on individuals, groups and balance of power in the organisation in order to anticipate the reaction to the new system. Especially, it is vital for management to take proper measures about who will lose authority and power as the result of successful implementation (e.g. enriching job description or even laying off). In fact, as Markus (1983) stated, such concerns should be addressed carefully.

The next section discusses the two main categories of approaching the change in the literature, which enables us to specify our point of view about our particular change in the organisation – ERP implementation.

2.2.2. How to manage change efforts

According to Burnes (2009), change is an ever-present feature of organisational life, both at the operational and strategic level. So, it is vital

for any organisation to identify where it needs to be in the future, and how to manage the changes required getting there (Todnem By, 2005).

Change can be categorised by how it comes about: planned and emergent (Senior, 2002). The planned approach to change has become increasingly common in organisations over the last forty years (Darwin *et al.*, 2001). Weiss suggests that planned change is "intentional and thus occurs as a result of thoughtful efforts and interventions, often with the help of change agents." (1996).

This approach was initiated in 1946 by Lewin (Bamford and Forrester, 2003). Lewin (1946 in Burnes, 2009) proposed that before the change and new behaviour can be adopted successfully, the previous behaviour should be discarded. Therefore, as discussed in the previous section, a successful change project must involve the three steps of unfreezing the present status, moving to the new situation, and refreezing this new level. This model of change highlights the need to abandon old behaviour, processes, structures, and culture before successfully adopting new methods (Bamford and Forrester, 2003) and was adopted as a general framework for understanding the process of organisational change (Todnem By, 2005).

On the other hand, a relatively new concept that lacks the formal history of the Planned approach is the “Emergent approach” to organisational change (Bamford and Forrester, 2003).

According to Weick (2000), the Emergent change approach does not consider change as a linear process or a singular, isolated event but sees change as a continuous, open-ended, cumulative and unpredictable process. An emergent change process consists of a continuous sequence of autonomous, local initiatives that pop up within the organisation, changes appearing to be unplanned, unforeseen and unexpected (Weick, 2000). The Emergent approach emphasises the unpredictable nature of change and views it as a process that develops through the relationship of a multitude of variables within an organisation (Todnem By, 2005). From this point of view, organisations are power systems in which, change is a

political process whereby different groups in an organisation struggle to protect or enhance their own interest (Orlikowski and Yates, 2006).

The supporters of the emergent approach to change, believe that the increased uncertainty in the external and internal environment makes this approach more relevant than the planned approach (Bamford and Forrester, 2003). To deal with the complexity and uncertainty of the environment, it is suggested that organisations need to become open learning systems where strategy development and change emerges from the way a company as a whole acquires, interprets and processes information about the environment (Dunphy and Stace, 1993). The approach stresses promotion of ”extensive and in-depth understanding of strategy, structure, systems, people, style and culture, and how these can function either as sources of inertia that can block change, or alternatively, as levers to encourage an effective change process” (Burnes, 2009).

As a criticism of the emergent approach, Bamford and Forrester (2003) believe that it still lacks coherence and a diversity of techniques. However, Burnes (2009) argues, successful change is more dependent on reaching an understanding of the complexity of the issues and identifying the range of available options than detailed plans and projections. Therefore, it can be suggested that what more essential from the emergent approach point of view are change readiness and facilitating for change than to provide specific pre-planned steps for each change project and initiative (Todnem By, 2005).

To adopt the appropriate approach and model of change for our case, a more precise understanding of the nature of ERP implementation related change is needed.

2.2.3. Choosing an appropriate change model for ERP implementation

As described in previous sections, although the potential of information technologies to support organisational transformation is acknowledged, evidence increasingly points to the importance of human agency in

converting potential into practice (Boudreau and Robey, 2005) and it is clear that the implementation of an ERP is highly reliant on the goodwill or "trustfulness" of employees (Lowe and Locke, 2008).

This means that addressing the problems which arise in the human side of the organisation, during the process of ERP implementation, is necessary for avoiding the project from failure. However, as discussed in previous sections, this critical issue is not dealt with (at least explicitly) by existing ERP implementation process models. There are many accounts that help to understand more about the nature of the implementation process and encountered problems.

For example, Kemppainen (2004) and also McAdam and Galloway (2005) showed that the fundamental challenge of ERP implementations is not technology but organisational and human changes, which, if not adequately understood and addressed, can lead to unidentified consequences causing implementation failures. They emphasised that taking into account the factors such as the role of power and politics and inter-organisational communication and collaboration is critical for a healthy implementation. The magnificent of the role of power and politics in a successful IS implementation were thoroughly discussed in reviewing the theories of resistance to IS implementation (section 2.1.4). As mentioned, according to Markus (1983), Lapointe and Rivard (2005), and Joshi (1991), the change in intra-organisational power distribution should be well managed to have a healthy implementation.

Moreover, assuming implementing ERP system as a political act, because it alters the intra-organisational power balance, Kemppainen (2004) showed that for a successful implementation, all the top management layer is needed to actively support and sponsor the project, not just the CEO. This finding highlights the importance of building a coalition among top layer management, before starting the implementation project; which is clearly a political act in turn.

In this regard, there is a need for a more comprehensive implementation model which covers the human aspects of the process as well. What is

needed to be added to existing models are some components to help the organisation to cope with the significant changes during and after the implementation projects. The goal of the following is to identify an effective change process model which could help develop synergy with the ERP implementation process model. That is performed by combining the identified model with the ERP implementation process model and then enriching the joint model through effective change management interventions according to each phase of ERP implementation process.

According to change management literature, whatever the scale of the change, the potential for resistance will always be present and change management is the field of science supposed to cope with this phenomenon (Burens, 2009). To cope effectively with resistance, managers will need to acquire and develop a range of interpersonal skills that enable them to deal with individuals and groups who seek to block and manipulate change from their own benefit (Boddy and Buchanan, 1992; Kotter, 1996). Promoting openness and trust building, encouraging participation in decision making, comprehensive and cross-functional communication, reducing uncertainty, and encouraging experimentation can be powerful mechanisms for avoiding or overcoming resistance and promoting change (Mabey and Mayon, 1993; Ke and Wei, 2008; Clark and Payne, 2006). In this respect, many authors (e.g. McCalman and Paton, 1992; Burnes, 2009, French and Bell, 1999) advocated the use of Organisation Development tools and techniques.

On the other hand, there are many critiques about the *Planned* approach to change especially in the sense that it neglects organisational conflict and politics (Burnes, 2009). As discussed in the change management section (2.2.2), from this view, which generally called *Emergent* change approach, organisational transformation is seen as an ongoing improvisation enacted by organisational actors trying to make sense of and act coherently in the world (Orlikowski and Yates, 2006; Bamford and Forrester, 2003). Proponents of the emergent approach to change highlight that organisations are power systems and, consequently, change is a political

process whereby different groups in an organisation struggle to protect or enhance their own interest (Orlikowski and Yates, 2006).

It seems these critiques do not mean that Planned Change tools and techniques are not valuable and are useless. Instead, they emphasise on the unpredictable and political nature of change that should not be neglected. Notably, it seems there are no apparent borders in the literature between these two approaches (i.e. Emergent and Planned approach to change) and they are not necessarily mutually exclusive (Burnes, 2004). For example, Cummings and Worley (2009) – as the well-known authors belong to Planned approach, in their influential work of Organisation Development and Change, mention the role of developing political support in leading and managing change.

As discussed in studying the extant theories of resistance to IS implementation (Section 2.1.4), politically driven resistance is one of the major categories of resistance instances to the implementation process. So, although the Planned change approach gives a good understanding and helpful prescriptions about different stages of the trajectory of change, for adopting the proper change model for ERP implementation, we cannot simply just rely on this approach due to its ignorance of organisational conflict and politics based on the assumption that joint agreement can be reached, and that all the parties involved in a specific change project have an enthusiasm and interest in doing so (Dawson, 2003; Hatch, 1997).

On the other hand, from the viewpoint of Emergent approach to change (as discussed earlier in Section 2.2.2), the outcomes of change programs were more likely to be determined by power struggles than by any process of rational decision-making (Pfeffer, 1992). As a matter of fact, the primary point of departure between advocates of the Emergent approach and proponents of Planned change is that the former claims that power and politics play an essential role in the process of organisational change (Burnes, 2009). However, they recognise the importance of planning for change, though it would be constrained and influenced by 'the complex untidy and messy nature of change' (Dawson, 2003).

According to Pugh (1993), one of the leading advocates of Emergent change, every reaction to a change proposal must be interpreted not only in terms of rational arguments of what is best for the firm but also must be understood in relation to the occupational system and political system, and how it will affect the power, status and prestige of the individuals and groups. This view is very similar to what was seen in ERP implementation case reviews.

In this respect, power and politics have to be managed if the change is to be effective (Burnes, 2009). For so doing, according to Dawson (2003) and Cummings and Worley (2009), it is essential to try and gain the support of senior management, local management, supervisors and employees. Also, Kanter *et al.* (1992) argued that the first step to implementing change is building coalition and involving those whose involvement really matters, especially power sources and stakeholders.

There are two major perspectives in Emergent approach to change. Some proponents of Emergent change, especially Pettigrew (1997) and Dawson (2003), clearly approach it from the processual perspective on organisations (Burnes, 2017). Processualists are attempting to understand and analyse the change from a critical perspective. On the other hand, while Carnall (2003), Clarke (1994), Kanter *et al*. (1992) and Kotter (2014, 1996) do not doubt the importance of power and politics in the change process, they subscribe to a more pragmatic perspective. For them, managers and change agents have the legitimate right to introduce changes, but to do so, they must use political skills in a practical way to build support and overcome or avoid resistance (Burnes, 2017). They are, like Planned approach proponents, more concerned with prescribing recipes and checklists for successful change.

Accordingly, taking into account that power and politics play an essential role in the problems related to ERP implementation projects (Kemppainen, 2004; Lapointe and Rivard, 2005; McAdam and Galloway, 2005), it seems that adopting an emergent change framework (with its emphasis on the role of power and politics in organisations), from the prescriptive

perspective in this approach, would be the appropriate solution area for our specific target.

In this viewpoint, there are two most influential change models: Kanter's 'Ten commandments for executing change' (Kanter *et al.*, 1992) and Kotter's (2014; 1996) eight-stage process model for successful organisational transformation (Burnes, 2009).

Kanter *et al.* (1992) suggest managers should understand an organization's operations, how it functions in its environment, what its strengths and weaknesses are, and how it will be affected by proposed changes in order to craft an effective implementation plan. One of the first steps in engineering change is to unite an organization behind a central vision. This vision should reflect the philosophy and values of the organization, and should help it to articulate what it hopes to become. A successful vision serves to guide behaviour, and aid an organization in achieving its goals. Accordingly, they introduce ten specific commandments, presented in figure 2-7, to facilitate implementing the change in an organisation; amongst them, creating a sense of urgency for the change and forming political support for the change are essential.

Ten commandments for executing change	1. Analyse the organisation and its need for change.
	2. Create a shared vision and a common direction.
	3. Separate from the past.
	4. Create a sense of urgency.
	5. Support a strong leader role.
	6. Line up political sponsorship.
	7. Craft an implementation plan.
	8. Develop enabling structures.
	9. Communicate, involve people and be honest.
	10. Reinforce and institutionalise change.

Figure 2-7. Kanter's Ten Commandments for Executing Change (Kanter et al, 1992)

Kotter (2007) points out "Leaders who successfully transform businesses do eight things right (and they do them in the right order)". Kotter's original article by the same title - "Leading Change", published in 1995 soon became a must read for organisational leaders planning and implementing change (Brisson-Banks, 2010). Kotter (2014; 1996) states while change efforts have helped improve some organisations in the competitive markets, many situations have been disappointing and the results have been disastrous for the employees and those in charge. Kotter points out "the biggest mistake people make when trying to change organisations is to plunge ahead without establishing a high enough sense of urgency in fellow managers and employees". The thought that this could not happen to our organisation is one of the main causes of failure while instituting organizational change (Brisson-Banks, 2010). Some changes take years and even after a number of years, they may fail for a variety of reasons.

Kotter's model introduces eight fundamental errors causing transformation efforts to fail. Kotter (2014; 1996) via studying more than 100 companies engaged in change programmes, listed the following main mistakes:

1) Not establishing a great enough sense of urgency;
2) Not creating a powerful enough guiding coalition;
3) Lacking a vision;
4) Under communicating the vision;
5) Not removing obstacles to the new vision;
6) Not systematically planning for and creating short-term wins;
7) Declaring victory too soon; and
8) Not anchoring changes in the corporation's culture.

According to Kotter (2014; 1996), change processes unfold in a series of phases (in the order listed above) in which each phase establishes a foundation for the next phase. Failing to resolve the main challenges of each phase is a mistake that can damage, delay, or destroy the change effort. A summary of Kotter's eight-stage change model is shown in Figure 2-8.

These two models are very similar to each other; for example, both of them have major steps to form coalitions and achieve political support for the change. However, it seems there are differences in popularity and ease of use and adaptation between the two models.

The Kotter's model gained much support from later authors in the field who believe that Kotter's model is the most appropriate approach in implementing organisational change (e.g., French and Bell, 1999; Gallos, 2006; Burnes, 2009). In regard of this popularity and also respect of its introducing eight fundamental errors causing transformation efforts to fail which could help us in mapping the ERP implementation problems with appropriate change initiatives, Kotter's model of change management seems to be a proper point to start developing our model.

Adopting Kotter's change model for implementing ERP systems is also promising from the viewpoint that according to his model, the overall direction of change is decided by senior manager (like what happens actually in an ERP implementation project), but its implementation is the responsibility of empowered managers and employees at all levels (Burnes, 2009) rather than a coercive approach for managing such organisational transformations.

Finally, as discussed earlier, because the role of power and politics is identified as a critical factor in a successful implementation as ERP implementation likely alters power balance in the organisation (Kemppainen, 2004; McAdam and Galloway, 2005), Kotter's emphasis on the role of power and politics in successful change implementation, makes it a proper change model in the context of this study, in addition to its aforementioned characteristics.

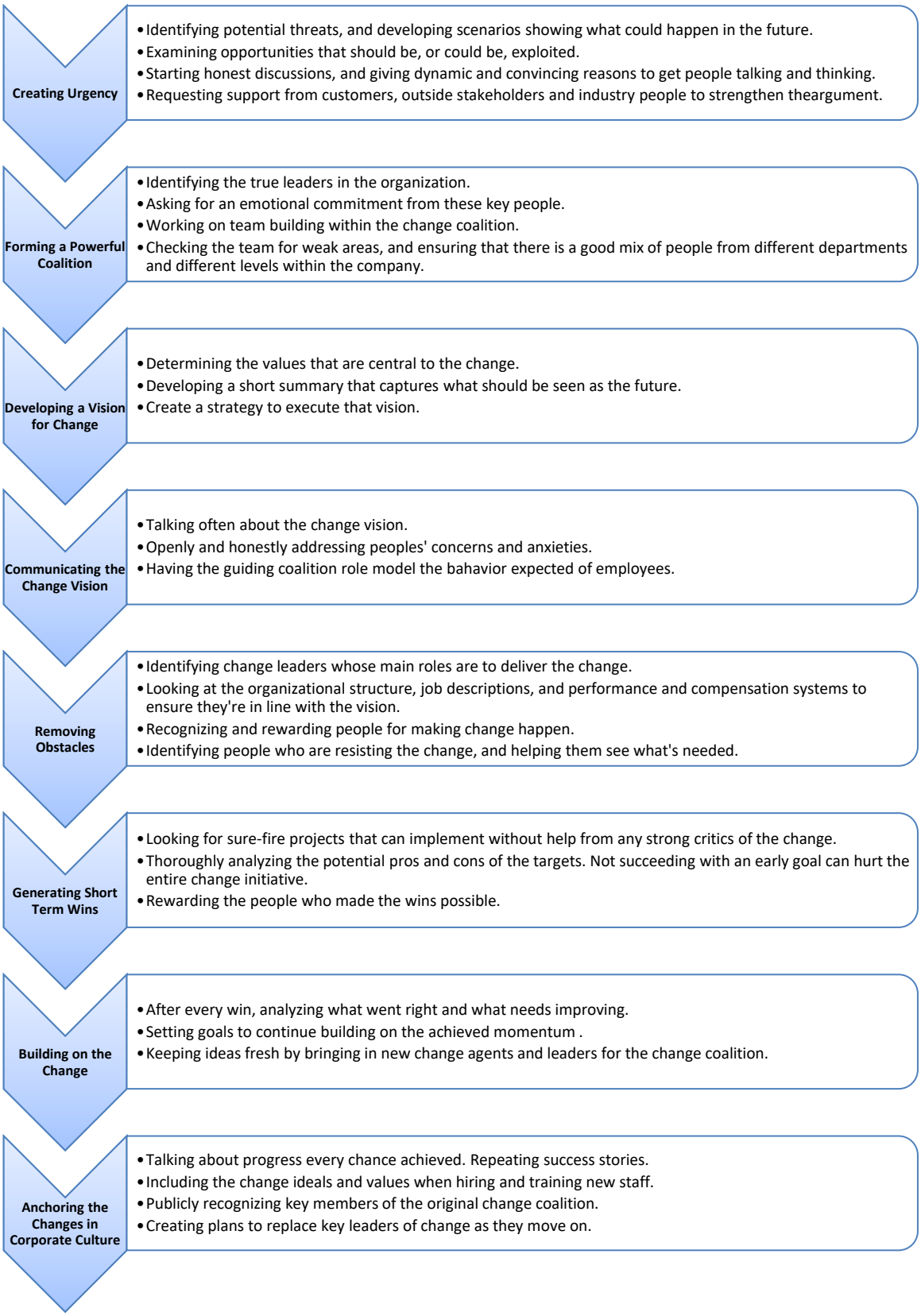

Figure 2-8. Kotter's Eight-Step Process for Organisational Change (2014; 1996)

2.3. Towards a conceptual framework for managing resistance in the process of implementing ERP systems

2.3.1. Forming the Basic framework

The first step to form an implementation model which could address the resistance arising in the human side of the organisation during the process of ERP implementation is to join the selected change model –Kotter's (2014; 1996) change process model– with the extant ERP implementation models.

Through comparing Kotter's (2014; 1996) change process model (Figure 2-8) and ERP implementation process model (Figure 2-3), the researcher mapped the steps of two models with each other as shown in Table 2-3, supposing the whole ERP implementation as one change program. In fact, creating urgency and forming coalition inevitably should be happened before starting the main implementation phase. As Lewin (1947) also pointed out, making proposed change seems attractive has less effect on increasing the pressure for change than making the current situation less attractive. So making people dissatisfied with the current situation or "establishing a sense of urgency" for change, as Kotter says, is the first step in any change effort. Such a sense of urgency in the organisation should lead to a critical mass of individuals whose ongoing commitment is necessary to provide the energy for change to occur (Beckhard and Harris, 1987).

After these two steps, developing the organisational vision for implementing ERP system -as the positive aspect of proposed change- is the third step that should be carried out in the "pre-implementation" phase. However, some of the detailed aspects of the vision probably will be identified in the planning phase of the implementation. As Kotter (1996) highlights, in failed transformations generally there are plenty of plans, directives, and programs but no vision. Without a sensible vision, a transformation effort can easily dissolve into a list of confusing and incompatible projects that can take the organisation in the wrong direction

or nowhere at all. As modelling the existing situation and processes of the organisation generally do not trigger any concern and reaction, "as is analysis" phase is a good duration for communicating the ERP implementation vision. According to Kotter's model, employees will not make sacrifices, even if they are unhappy with the status quo unless they believe that useful change is possible. Without a large amount of credible and trustworthy communication, this goal would not be achieved.

Table 2-3. The Basic Framework:
The mapping between the ERP implementation process model and Kotter's change model

Phases of ERP implementation process model		**Steps of Kotter's change model**
Pre-implementation	Strategic decisions	Creating Urgency
		Forming Powerful Coalition
		Developing a vision for Change
Implementation	Planning	
	As Is Analysis	Communicating the Change Vision
	To Be Analysis	
	Construction and Testing	Removing Obstacles
	Actual Implementation	
		Generating Short Term Wins
		Building on the Change
	Close Up	Anchoring the Changes in Corporate Culture
Post-implementation	Enhancement	

TIME

Designing and getting the approval of "to be" processes (the forth step of ERP implementation, Figure 2-3), is the point which could arise some source of tension and problem especially for who perceive that they lose some authorities. This step can be fit well with "removing obstacles" phase of Kotter's model. However, considering the reasonable concerns brought in the organisation layers is really important.

As discussed in studying Carnall's coping cycle (2003) and also Joshi's (1991) and Lapointe and Rivard's (2005) model (sections 2.2.1 and 2.1.4), it is crucial to precisely identify the influence of using the ERP system on individuals, groups and balance of power in the organisation in order to anticipate the reaction to the new system. This process could be done in 'As is' and 'To be' analysis phases in the ERP implementation process and could give valuable information to the organisation about how to manage these anticipated reactions. Specifically, it is vital for management to consider who will lose authority and power as the result of successful implementation and take proper measures consequently (e.g. enriching job description or even laying off). This point is thoroughly considered in the next section (i.e. Improving the framework).

Last but not least, in mapping the two models, "generating short term wins" and "building on the change" are well mapped with the actual implementation phase; and "anchoring the change in corporate culture" could be taken place as one of the enhancement phase activities.

This framework can direct the later efforts in identifying necessary interventions for delivering a successful implementation. However, it is evident that as Kotter (1996) points out, most major change efforts comprise a host of small and medium-sized change projects which, at any one point in time, can be at different points in the process. In this sense, Kotter's cycle should be repeated in every sub-project in order to ensure the health of the whole implementation.

2.3.2. Improving the framework

As discussed in the previous section, the main resistance sources which are identified by the extant theories of resistance to information systems implementation are: change in intra-organisational power distribution with the new system (Markus, 1983; Lapointe and Rivard, 2005), Perceiving inequity (Joshi, 1991), Fear and stress stemming from the new routines and modes of work (Marakas and Hornik, 1996), and Switching costs for users (Kim and Kankanhalli, 2009).

These factors can guide the implementation project managers to take appropriate measures in order to avoid such predicted resistances or to overcome them during the lifetime of the projects. In this way, the strategies suggested by each theory could help to improve the implementation model and achieving a more comprehensive framework.

Table 2-4 has categorised sources of resistance and recommended strategies against the basic framework stages. Carnall's (2003) coping cycle is also mapped in this table to the ERP implementation phases according to the aforesaid explanation of Lapointe and Rivard's (2005) study.

Table 2-4 acts as a suggested conceptual framework. It summarizes the strategies that should be taken by project managers during the process of implementing ERP systems, in order to address the demanded actions with respect to human aspects of such processes. The framework highlights the complexity of the issues which need to be understood in order to improve the change readiness. As Burnes (1996) argues, successful change is less dependent on detailed plans and projections than on reaching an understanding of the complexity of the issues concerned and identifying the range of available options.

Table 2-4. The Conceptual Framework

The mapping between the models of ERP implementation, Change and Resistance to IS implementation

TIME	ERP implementation Process model phases		Kotter's change process model phases	Carnall's Coping Cycle Stages	Sources of Resistance (Related to each Phase)	Ps/Po	Recommended strategies (In addition to Kotter's model phases)	
↓	Pre-implementation	Strategic decisions	Creating Urgency	Denial Defence Discarding (Unfreezing)	Perceiving threat and lack of control over expected consequences (Beaudry and Pinsonneault, 2005; 2010) Uncertainty (Klaus et al., 2007)	Ps	Developing habits of openness in organisational communications to create enough psychological safety for people (Darwin et al., 2001; Hirschorn, 1997) Communicating effectively how the new system constitutes an opportunity for users (Beaudry and Pinsonneault, 2010) Clear Plan, Communication (Klaus et al., 2007) Forming coalitions, communicating the change vision and addressing peoples' concerns (Markus, 1983)	Pre-implementation
			Forming Powerful Coalition					
			Developing a vision for Change					
	Implementation	Planning	Communicating the Change Vision		Change in intra-organisational power distribution with the new system (Markus, 1983; Lapointe and Rivard, 2005) Perceiving inequity (Joshi, 1991)	Po	Forming coalitions, communicating the change vision and addressing peoples' concerns (Markus, 1983) identifying the influence of using the system on individuals, groups and balance of power in the organisation in order to anticipate the reaction to the new system (Lapointe and Rivard, 2005) Improving equity perceptions either by altering the actual outcomes and inputs of users or by attempting to alter users' perceptions of their own and others' inputs and outcomes (Joshi, 1991) Reducing switching costs by enhancing colleagues' favourable opinions toward new system-related change and increasing users' self-efficacy for change (Marakas and Hornik, 1996) Clear Plan, Communication, Feedback, Training, Incentives (Klaus et al., 2007) showing users how adapting work routines can lead to additional benefits by sharing best practices and positive experiences (Kim and Kankanhalli, 2009; Beaudry and Pinsonneault, 2010) Preventing users from psychological distancing by involving users in the development of the new system (Beaudry and Pinsonneault, 2010)	Implementation
		As Is Analysis						
		To Be Analysis						
		Construction and Testing	Removing Obstacles		Fear and stress stemming from the new routines and modes of work (Marakas and Hornik, 1996) Workload, Changed Job, Complexity, Lack of Fit, Uncertainty (Klaus et al., 2007) Switching costs for users (Kim and Kankanhalli, 2009)	Ps		
		Actual Implementation	Generating Short Term Wins					
			Building on the Change	Adaptation (Movement)				
		Close Up	Anchoring the Changes in Corporate Culture					
	Post-implementation	Enhancement		Internalisation (Refreezing)			The new relationships resulted from the change are going to require work on them to be successfully embedded (Schein, 1987).	Post-implementation

According to the conceptual framework, what is essential in the pre-implementation stage, is to create a sense of urgency, and form the coalition for leading the change. These activities involve identifying key people and groups whose commitment is needed and gaining their support. Also, the primary sources of resistance to the implementation process in this phase, according to the framework, is "perceiving the threat and lack of control over expected consequences" (Beaudry and Pinsonneault, 2005; 2010). For many people, organisational change involves moving from the known to the unknown, with the possibility of loss as well as gain. In such situations, it is often the case that those who fear they will lose out will loudly oppose any change, while those who believe they will gain from the change will keep quiet for fear of annoying the losers (Burnes, 2009). As Machiavelli pointed out:

> *"… the innovator has for enemies all those who have done well under the old conditions and lukewarm defenders in those who may do well under the new." (Machiavelli, 1515)*

So, it is vital to notice that stressing the positive aspects of any proposed change may have much less impact than it might be imagined; and the organisation needs to make people dissatisfied with their current situation (decreasing the forces resisting change), and thus prepared to consider alternatives, than to try to paint a rosy picture of the future (increasing the driving forces for change). In this regard, as the framework stressed, openness helps people to understand the need for change, which is an essential step on the road to achieving change (Burnes, 2009). It also helps in understanding people's fears and concerns and addressing them.

In the framework, what is highlighted in the second stage (i.e. Implementation) after developing the vision for change, is effective communication to reduce people's level of uncertainty. The purpose of communication is not just to inform people about the change, but by drawing them into the discussions and debates about it, to persuade them to convince themselves of the need for change. Drawing people into discussions about the change is one of the most effective ways of gaining support for it (Lewin, 1999).

Moreover, according to the framework, in the second stage there is a need for identifying the influence of using the system on individuals, groups and the balance of power in the organisation in order to anticipate the reaction to the new system (Lapointe and Rivard, 2005). That is, one of the primary sources of resistance during the progress in implementation process is the change in intra-organisational power distribution with the new system (Markus, 1983; Lapointe and Rivard, 2005). In this regard, improving perceptions of equity either by altering the actual outcomes and inputs of users, or by attempting to alter users' perceptions of their own and others' inputs and outcomes (Joshi, 1991), is the other recommendation proposed by the framework in this stage in order to reducing the resistance to the implementation process.

In terms of psychological driven resistance, "fear and stress stemming from the new routines and modes of work" (Marakas and Hornik, 1996) and "switching costs for users" (Kim and Kankanhalli, 2009) are the main two sources of resistance in this stage according to the framework. In this regard, reducing switching costs by enhancing colleagues' favourable opinions toward new system-related change, increasing users' self-efficacy for change (Marakas and Hornik, 1996) and showing users how adapting work routines can lead to additional benefits - by sharing best practices and positive experiences (Kim and Kankanhalli, 2009; Beaudry and Pinsonneault, 2010), are the most essential strategies (recommended by the framework) to face this type of resistance. Also, in this stage, preventing users from psychologically distancing themselves, by involving them in the construction of the new system (Beaudry and Pinsonneault, 2010) should be considered.

At the last stage (Post-implementation), the framework suggests it is crucial to be careful to and work on the new relationships resulted from the change to be successfully embedded in the organisation (Schein, 1987).

2.4. Conclusion

This research, so far, highlighted the human-related issues and concerns during the process of implementing ERP systems and showed such issues potentially affect ERP implementation projects and decrease their success rate dramatically. It reviewed the specifications and also fundamental challenges of ERP implementation processes and also the extant theories of resistance to IS implementation.

Existing ERP implementation process models usually cover the technical aspects and steps of the implementation and do not face the human-related aspects of the process such as resistance to the new system and processes, and organisational conflicts and politics which arise during this huge organisational change. Also, the extant theories of resistance to IS implementation largely adopt a narrow approach to dealing with user resistance and, hence, the solutions provided by them are fragmented and cannot present a holistic approach to our problem (i.e. understanding and dealing with human resistance in the process of implementing ERP systems).

This research proposes to use change management body of knowledge as an overarching perspective to deal with resistance in the process of ERP implementation which could provide a more holistic and coherent approach to understand and address such problem, and could enrich the implementation process models in terms of encountering human-related issues (i.e. user resistance).

According to the change management body of knowledge (e.g. Lewin, 1999; Kotter, 1996; Burnes, 1996; Darwin et al., 2001), management of resistance is not just the matter of reaction to resistance instances, but involves taking measures from the first day of the change initiative to promote and draw approval about it, and consequently reduce the reasons and so the probability of forming resistance against it. It encourages the organisations to proactively deal with the situation and hence, help people

cope with the new routines and environment in a more convenient and smooth way.

In this respect, the Kotter's change model was identified as an appropriate model for such projects, particularly due to the role of power and politics in the system implementation process. It mapped Kotter's change model with ERP implementation process models to shape a basic framework for utilising change management tools and techniques in ERP implementation projects.

To improve this framework, the theories of resistance to information systems implementation were reviewed, and sources of resistance and also the strategies suggested by each theory were categorised according to the process stages.

in the following steps of the research, the suggested conceptual framework will be evaluated and improved through exploring successful ERP implementations.

3

Methodology and the Process of Data Analysis

As discussed, the main objective of this research is "to investigate the factors that enable senior managers and IT project managers to minimise user resistance during ERP implementation projects".

In so doing, this research takes a look into the process of ERP implementation from the lens of change and resistance. In other words, it studies the process of implementing ERP system as a huge-scaled organisational change effort and investigates how change management body of knowledge could contribute and help in managing human-related problems (i.e. resistance) in such specific changes. The application of change management body of knowledge in the context of ERP implementation is not well considered and studied to the best of my knowledge as discussed thoroughly in the literature review section.

The outcome of the literature review was the creation of a dedicated theoretical framework to support senior managers when implementing ERP systems (Presented in Table 2-4 in section 2.3.2). This framework aims to

offer practical guidance and help reduce the level of variability experienced by organisations adopting ERP software. It would assist the organisations and such process managers in helping people cope with the new system and its consequences in a more convenient way, which could improve the success rate of adopting such systems.

To achieve the stated aim, the theoretical framework needs to be evaluated and developed accordingly. Here, it is needed to be understood how and why people react to the implementation of the new systems in order to find a more proper way of doing the job (i.e. implementing the new system). In so doing, it is necessary to understand the process from the perspective of the actors and get access to their interpretation of what has happened. Consequently, it is important to collect the experiences of implementing ERP software by senior managers, IT project managers, and the team managers (who have faced the reactions directly), from different client organisations.

In terms of research design, a neo-empiricist approach (Johnson and Clark, 2006) is taken using case studies as the chosen methodology, which mainly involves interviews with the managers to collect their experiences (following an inductive approach) plus artefacts such as project documentation and organisational charts. The research will employ a pattern-matching data analysis strategy approach (Johnson and Clark, 2006). In the first instance, a within-case strategy will be applied to identify patterns that support or contradict the framework. This will be followed by a between-case strategy to identify patterns across cases in order to map and compare findings to the initial framework. The intended result is a refined framework that can be offered as a practical tool for managers to have a resistance-aware ERP implementation process.

This chapter, after reviewing the objectives of the research and forming the research questions, discusses the theoretical perspective, which underpins the proposed research strategy. Then, considerations of qualitative and quantitative approaches are discussed. This is followed by a review of the research strategies used in studies in the field of information systems and IS implementations. Finally, having outlined the

justification of the choice of case study for this research, the case study design and the role of the theory in this research are provided.

3.1. Research Questions

As Crotty (1998), Miles and Huberman (1994) and Benbasat (1984) suggest, knowing what we want to find out leads inevitably to the question of how we will get that information. In other words, it is essential to formulate research questions as these will guide the subsequent decisions about the research design (Bryman and Bell, 2011). So, before considering the research methodology, the research questions and purpose of the study are defined.

As discussed, the main objective of this research is "to investigate the factors that enable IT project managers to minimise user resistance during ERP implementation projects". It intends to develop a user-resistance-aware framework that the company and IT project managers can use as a practical guide throughout an ERP implementation project.

In putting together the research questions for this work, an attempt has been made to contextualise the overall area of interest (human issues in ERP implementation process) with the relevant literature and theories, such that an original and useful contribution can be made to practice and knowledge in this area. Although the issue of user resistance to implementing information systems has been thoroughly considered and studied in the IS literature (e.g.: Markus, 1983; Joshi, 1991; Martinko et al., 1996; Lapointe and Rivard, 2005; 2010), the high failure rate of such projects because of this factor shows a gap at least between knowledge and practice in the field.

On the other hand, considering some other related areas would suggest more practical approaches to address this problem. In this context, change management body of knowledge in both change process theories and implementation models seems to be a promising source to be used in shaping the solution area. This is because the user resistance mainly

happens due to the changes that information systems (in this case ERP systems) have been bringing to the organisation (Markus, 1983; Lapointe and Rivard, 2005).

In this respect, it is suggested to take an effective change management process model and adapt and integrate it to the ERP implementation process model considering strategies recommended by theories of resistance to information systems implementation for encountering such resistances. The overall research proposal can thus be encapsulated as shown below in Figure 3-1.

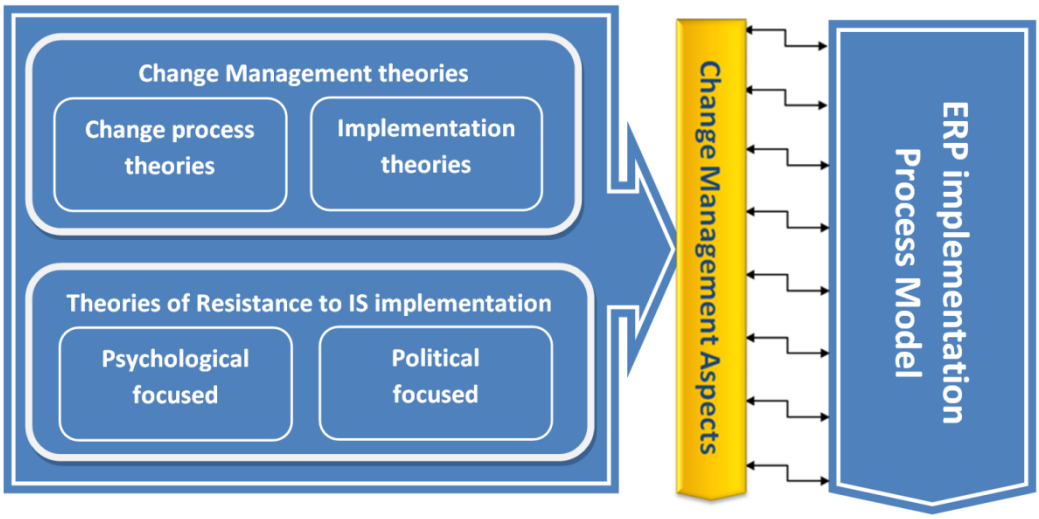

Figure 3-1. Overview of the suggested solution area (Bagheri et al., 2014)

Consequently, by reviewing the literature on resistance to IS implementation and also change management theories in dealing with user resistance, the initial framework has emerged, as shown in Table 2-4 (section 2.3.2).

Accordingly, the theoretical framework is focused on the idea that implementing an ERP system is an organisational transformation (from the old ways of doing the jobs in the organisation to the new system) which for minimising human resistance, some necessary steps should be taken before and during the implementation process according to change management literature.

Now, the research is looking to evaluate and refine the theoretical framework extracted from the literature (Table 2-4). Here, the principal aim is to explore the stock of knowledge held by the project management board in the process of implementing ERP systems with regards to what has been reviewed in the literature.

In this regard, for evaluating the theoretical framework, it is needed to look for the answers of four main questions in the research fieldwork.

(i). Is there any evidence to show that the Kotter's change steps (adopted change management process model in the framework) have been taken during successful ERP implementation instances? (explicitly or implicitly by tracing its recommended steps across the implementation period)

(ii). If so, could any pattern for matching the steps of the two processes (change implementation process and technical process of implementing ERP systems) be found in successful ERP implementation processes?

(iii). How the captured people's reactions (resistance instances) could be mapped chronologically against aforementioned steps? (in terms of resistance category and behaviour)

(iv). Could such resistance instances be mapped to the change coping cycle as the framework suggests?

3.2. Philosophical Perspective

Before discussing the research methodology that would be used, the researcher needs to clarify the philosophical stance lying behind his view of the world – at least in this research. As Crotty (1998: 66) says: "Different ways of viewing the world shape different ways of researching the world".

The idea that we are able to conduct objective, scientific research to establish a 'truth-like theory' which remains current until a 'better' theory is established, and progress knowledge in this way seems to make some

sense and perhaps explains why positivist approaches remain the dominant force in management research (Johnson and Duberley, 2000; McAuley et al., 2007). However, there is a long-running dispute with this objectivist philosophical stance concerning how to conduct meaningful research regarding organisations. While positivists argue that science must limit itself to the direct observable stimuli that are seen to cause human behaviour, which therefore becomes construed as necessary responses, by preferably using quantitative measures of such phenomena (Bryman and Bell, 2011), neo-positivists believe how and why we behave the way we do is presumed to be an outcome of how we subjectively make sense of or interpret our surroundings (Johnson and Duberley, 2000; McAuley et al., 2007). So, being able to access an actor's subjective cultural world in an objective fashion is the key to any theoretical explanation of that actor's organisational behaviour. In other words, Neo-positivists (interpretive researchers) attempt to understand phenomena by accessing the meanings participants assign to them (Orlikowski and Baroudi, 1991). This dispute is illustrated in Figure 3-2.

The central principle of interpretivism, in contrast with positivism which requires the social sciences to incorporate natural science model if they are to become as 'scientific' as the natural sciences (Lee and Hubona, 2009), is that there is a fundamental difference between the subject matters of the natural and the social sciences which makes the interpretive method different, as nature has to be studied from the 'outside', whereas social phenomena have to be studied from the 'inside' (Blaikie, 2007). This is in line with Gill et al. (2010) indicating that natural scientists impose an external causal logic for explaining a behaviour which is inappropriate in explaining human behaviour.

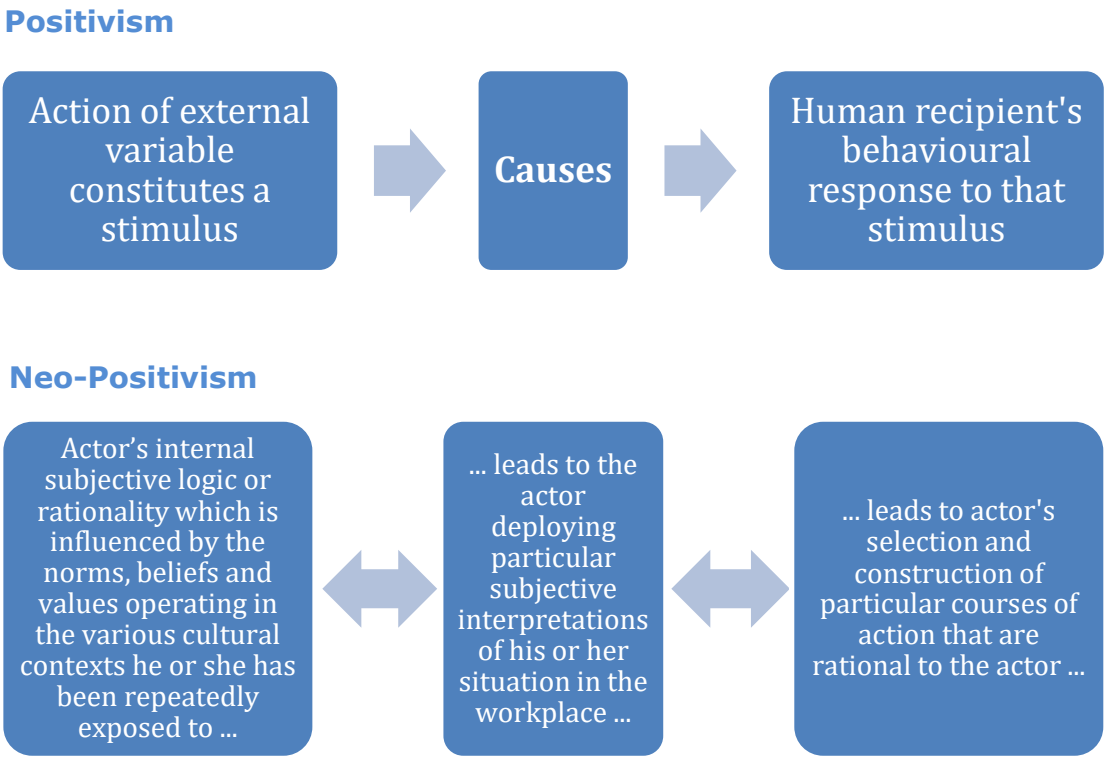

Figure 3-2. The role of the subjective in human behaviour (Adapted from McAuley et al, 2007).

According to interpretivism, human action has an internal logic of its own which must be understood in order for researchers to be able to make that action intelligible and explainable. It is the legitimate aim of social science to access and describe this internal logic through a methodological approach which is generally called *verstehen* - a German word meaning 'to understand'. This has significant methodological implications for how researchers can and should investigate human activities (Gill et al., 2010). They argue the subject matter of the natural sciences does not have this subjective comprehension of its own behaviour - it does not have an internal logic which the scientist must tap in order to understand its behaviour. Therefore, the natural scientist can legitimately, and indeed has to, impose an external causal logic upon the behaviour of his or her subject matter in order to explain it. However, such methodology is inappropriate and does not explain the action of human beings, due to their subjectivity (Gill et al., 2010).

In this regard, according to Gill et al., (2010) interpretive approaches aim to understand (verstehen) how people make sense of their worlds. Interpretivists suggest that the study of social phenomena requires an understanding of the social world that people have constructed and which they reproduce through their continuing activities (Blaikie, 2007). People are regularly involved in interpreting and reinterpreting their world - social situations, other people's actions, their own actions, and natural and humanly created objects (Blaikie, 2007).

This research will be positioned in the context that there is a world out there which exists independently of our understanding of it, but not as 'black and white' as the positivist may proclaim. This approach lends itself to the view of the neo-empiricist and the focus on 'verstehen,' i.e. understanding (Johnson and Duberley, 2003). We can 'know what we are knowing' by accessing the knowledge of others that actively engaged in their daily operations within organisations. As researchers, we can observe, and we can understand the 'subjective interpretations of reality' of the actors we observe (Johnson and Duberley, 2000).

The aim of this research is not to state the causal relationships, as a positivist theoretical approach would claim it could achieve. The key aim is to explore the stock of knowledge held by managers and key personnel engaged in the process of implementing ERP systems. In this regard, to develop an understanding of the interpretations deployed by the actors who were being studied, a neo-positivist approach is adopted for this research; because understanding of human behaviour is concerned with the perceived understanding of human action rather than with the forces that are supposed to act on it (Bryman and Bell, 2011).

3.3. Qualitative or Quantitative

In terms of approach of the research, neo-empiricists argue in order to understand human behaviour in studying organisations through 'verstehen', a qualitative approach is required (Symon and Cassell, 2012), whereas positivists in subscribing to the 'natural science model', put forth

elements often associated with the natural sciences including independent and dependent variables, mathematical propositions, and quantitative data (Lee and Hubona, 2009).

According to Bryman and Bell (2011), qualitative research is a research strategy that usually emphasises words instead of quantification in the collection and analysis of data. It highlights an inductive approach to the relationship between theory and research, in which the emphasis is placed on the generation of theories. It rejects the practices and norms of the natural scientific model and of positivism in particular in preference for an emphasis on how individuals interpret their social world. Descriptive and emergent processes characterise qualitative methods. Other features which are characteristic of qualitative methods are the interpretative nature of the process and the Holistic account (Creswell, 2009).

In contrast, quantitative research emphasises quantification in the collection and analysis of data. It entails a deductive approach to the relationship between theory and research, in which the stress is placed on the testing of theories; and has incorporated the norms and practices of the natural scientific model and positivism in particular (Bryman and Bell, 2011). If researchers are interested in finding the cause and effect relationship in a phenomenon, the quantitative approach may be appropriate (Bryman and Bell, 2011).

As the aim of this research is not to establish a cause-effect relationship, neither quantifying the actors' attitude and values concerning developing their relationships, a quantitative approach is not considered appropriate for the purpose of this research.

According to Gill *et al*. (2010), qualitative methods through 'verstehen' aim at understanding of other's experience by inductively accessing the actual meanings and interpretations they subjectively and inter-subjectively deploy in making sense of their worlds and which influence their on-going social construction and accomplishment of meaningful action. The qualitative approach allows researchers to capture data on "the perception of respondents in the context of their setting, through a process of

attentiveness and empathetic understanding" (Miles and Huberman, 1994: 6).

To achieve the main objective of this research, there is a need to understand how and why people react to the implementation of a new system in order to find a more proper way of doing the job (i.e. implementing the new system). In so doing, it is necessary to understand the process from the perspective of the *actors* and get access to their interpretation of what has happened to evaluate and improve the conceptual framework developed in literature review.

In this context, qualitative research allows the researcher to get a deep such understanding of how people (managers and project teams) make sense of ERP implementation from change perspective and helps the researcher to get a rich picture of the stories behind the phenomenon.

3.4. Review of qualitative research methodologies in the field of Information Systems

A research methodology deals with the methods, principles and procedures used in a discipline so as to achieve warranted knowledge (Gill et al., 2010). It explains how the research is done, the methods of data collection, materials used, subjects interviewed, or places visited. The methodology details the account of how and when the research is conducted. It also gives explanations on why a particular method is used, rather than other methods (Bryman and Bell, 2011).

Orlikowski and Baroudi (1991) classified information system research as positivist if there was evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from the sample to a stated population. On the other hand, it is interpretive research if the study involved researcher's attempting to understand the complexities of the social work, which involved qualitative techniques, with the aim to develop a rich and

sophisticated understanding of each individual's interpretation of the world (Orlikowski and Baroudi, 1991).

Following a general shift in information system research away from technological to managerial and organisational issues, there is a growing interest in the application of qualitative research methods (Matsuo *et al.*, 2008; Mangan, 2004; Jabar, 2009) and consequently qualitative research has achieved an essential strand in this field of study (Walsham, 1993; Dube and Pare, 2003). Interpretive research can help IS researchers to understand human thought and action in social and organisational contexts; it has the potential to produce deep insights into information systems phenomena including the implementation of information systems (Kelin and Myers, 1999).

There are four more common qualitative methodologies being used by IS researchers (Northcutt and McCoy, 2004; Myers and Newman, 2006; Jabar, 2009; Alavi and Carlson, 1992): case study research, ethnography, action research, and grounded theory.

The following sections briefly introduce these common qualitative methodologies in order to select the most proper methodology for conducting this research.

3.4.1. Ethnography

Current thinking on ethnography is generally considered to have been born out of the work of Garfinkel in 1967 and is essentially the study of social anthropology or human behaviour arising from cultural conditioning. For Garfinkel, ethnography is "the investigation of the rational properties of indexical expressions and other practical actions as ongoing contingent accomplishments of organised artful practices of everyday life" (1967/2004: 11)

According to Bryman and Bell (2011), ethnography is a process of joining a group, watching what goes on and writing it up. It is associated with anthropology with its stress on culture. It is undertaken by observation,

interviews and examination of documents. In the research, the researchers observe their collaborators without prejudice or prior assumptions.

Ethnography is widely used in the study of information systems in organisations (Davies and Nielsen, 1992) and is suited to providing information system researchers with rich insights into the human, social and organisational aspects of information systems application (Avison and Myers, 1995). The aim of ethnographic research is to advance the understanding of human thought and action through the interpretation of human actions in context.

Accordingly, as in ethnography-based studies, the researchers do not have prior assumptions in conducting their study, ethnography would not be a proper choice for our research. Since, herein, our objective is to evaluate a conceptual framework extracted from the literature (i.e., there is a prior assumption).

3.4.2. Action Research

French and Bell (1999: 30) defined action research as "the process of systematically collecting research data about an ongoing system relative to some objective, goal or need of that system; feeding these data back into the system; taking action by altering selected variable within the system based both on data and on hypotheses; and evaluating the results of actions by collecting more data". According to Gill et al. (2010), action research is a highly structured applied research methodology that is often used in qualitative organisational change studies to explore current change events; these studies take place usually in one organisation in a controlled, ring-fenced, naturally occurring environment which attempts to bring about change so that the change process can be monitored.

Action research has been promoted and practised as one way to carry out empirical research within Information System area. Information system action research (Davidson, 1998) is applied research to develop a solution that is of actual value to the people with whom the researchers are

working, and at the same time to develop theoretical knowledge of value to a research community. According to Baskerville (1999), information system research has led to a number of different research approaches and methods, adapted from other disciplines such as sociology, natural sciences, and business studies and is often identified by its dual goal of both improving the organisation participating in the research project, and the AR practitioner is expected to apply intervention on this environment. Action Research methodology was generally chosen as a research methodology as it provides the research with an inside and working view of the research matter. AR study done is characterised by the researcher applying the positive intervention to the organisation, while collecting field data about the organisation and the effects of the intervention (Jabar, 2009).

It is vital that the prospective action researcher takes time to situate AR practice within the field of study and consider carefully nature and assumptions underlying his or her work (Symon and Cassell, 2012). So, lack of control makes it challenging to apply action research as an instrument in an orchestrated research program.

Moreover, the action researcher is not an independent observer but becomes a participant, and the process of change becomes the subject of research. Thus, the researcher has two objectives: to take action to solve a problem and to contribute to a set of system development concepts (Symon and Cassell, 2012). The strength of these studies is the in-depth and first hand understanding the researcher obtains. Conversely, a weakness is the potential lack of objectivity stemming from the researcher's stake in effecting a successful outcome for the client organisation. Moreover, generalisations to other situations where the intervention technique is applied by people less knowledgeable than the researcher may be difficult (Benbasat et al., 1987).

Action research seems promising for achieving our research goals that are evaluating and improving the suggested conceptual framework, it is however impractical in the context of this study. Practically, it is hard to find ERP implementation projects that are about to start and are open to

alter selected variables (or change the process); the managers hardly risk to be involved in such experiment. More prominently, ERP projects typically take couple of years or even more, and action research requires to study the whole period of an implementation which makes the use of this approach risky and maybe impossible in the time limit of a thesis.

3.4.3. Grounded Theory

According to Corbin and Strauss (1990), grounded theory is theory finding methodology that allows the researcher to develop a theoretical account based on concepts, categories and propositions. Grounded theory is a research method that seeks to develop a theory that is grounded in data systematically gathered and analysed.

Glaser and Strauss are accredited with introducing grounded theory in 1967 with their book "The Discovery of Grounded Theory" with the main emphasis being on the discovery of theory rather than the verification of theory (Symon and Cassell, 2012). The underlying logic of grounded theory which differentiates it from other research methods is that it is explicitly emergent and does not start with a detailed review of the literature.

In IS research, Orlikowski (1993) uses grounded theory research in the findings of an empirical study in two organisations' experiences with the adoption and use of specific tools over time. The study characterises the organisations' experiences in terms of processes of incremental or radical organisational change. These findings are used to develop a theoretical framework for conceptualising the organisational issues around the adoption and use of these tools. Singh *et al.* (2005) also discussed the challenge of the methodological implication of moving from grounded theory to user requirement in IS design.

Considering the characteristics of this methodology, since the theoretical framework for our research has already been formed and emerged

basically from reviewing the literature, grounded theory could not be a suitable choice for carrying out this research.

3.4.4. Case Study (Our Choice)

There is a rising tradition to use qualitative research approaches to study information systems, especially case study research which figures among those qualitative methods that have been gained acceptance over the past decades in the IS field (Benbasat et al. 1987; Dube and Pare, 2003; Klein and Myers 1999; Orlikowski and Baroudi 1991).

The case study is a research strategy that examines, through the use of a variety of data sources, a phenomenon in its naturalistic context, with the purpose of 'confronting' theory with the empirical world (Ragin, 1992). According to Yin (2009: 18), the scope of a case study is defined as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident".

According to Yin (2009) a case study design should be considered when: (a) the focus of the study is to answer "how" and "why" questions; (b) you cannot manipulate the behaviour of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study, or (d) the boundaries are not clear between the phenomenon and context.

In this regards, Benbasat *et al.* (1987) suggests case study research is a viable information system research strategy as the researcher can study information systems in a natural setting, learn about state of the art, and generate theories from practice; and also, the case method allows the researcher to answer "how" and "why" questions, that is, to understand the nature and complexity of the processes taking place. Moreover, according to Dube and Pare (2003), holistic investigation, which represents an essential characteristic of case research, suits well IS researcher's need to understand the complex and ever-present interactions among

organisations, people, and technologies. In this regard, the access to and use of a wide range of data collection methods, both qualitative and quantitative, bring flexibility and richness to the overall research process, making case research particularly well designed for the study of a complex phenomenon such as implementing information systems**.** Also, in-depth case investigations open the way to new ideas and new lines of reasoning and identify the opportunities, challenges, and issues facing IS specialists and managers (Dube and Pare, 2003).

Such reasons have made case study research the most common qualitative method used in information systems (Alavi and Carlson, 1992). There are numerous case study researches, in the organisational context for the implementation of information systems, to illustrate and investigate theories related to organisations and IS (e.g. Markus, 1983; Lapointe and Rivard, 2005; Kemppainen, 2004; McAdam and Galloway, 2005).

Although in some text the case study is presented as a method (e.g., Crotty, 1998), the case study is viewed as a research strategy rather than just a method of investigation (Yin, 2009; Hartley, 1994; Buchanan, 2012) as it provides more than just a method of collecting data and provides the researcher with the opportunity to fully consider the context of the phenomenon under study (Robson, 2002).

Considering Yin's (2009) definition and also Benbasat et al. (1987) and Dube and Pare's (2003) reasoning, the case study is an appropriate methodology for this research. This is because the focus of this research is to answer "how" user resistance in ERP implementation processes could be managed successfully; and also, implementing ERP systems is a contemporary and complex phenomenon, as explored in the literature review. The boundaries between this phenomenon and the context are complicated as the implementation project manager focuses on the implementation process itself while the process and its outcome's mutual implications on the human side of the organisation are not clear and worth considering from the project manager point of view.

As a result, it seems the case research strategy is well suited to the aim of this research in order to capture the knowledge of practitioners. As Christenson (1974) points out that the trial and error process in which practitioners are engaged is necessary for knowledge to accumulate.

3.5. Case study research design

3.5.1. Exploratory research

Yin (2009) classified case studies into three groups of explanatory, exploratory, or descriptive. The studies with the aim of defining questions, proposing new constructs, building new theories or understanding and gaining insight of a particular situation or phenomenon are classified as Exploratory (Eisenhardt, 1989; Yin, 2009). On the other hand, Explanatory cases are suitable for doing causal studies, mainly to test theories (Yin, 2009; Dube and Pare, 2003).

Stake (1995) also distinguished between three different types of case study. According to him, intrinsic cases are undertaken primarily to gain insight into the particularities of a situation, instead of to gain insight into other cases or general issues. Instrumental case studies are those that focus on using the case as a means of understanding a broader issue or allowing generalisations to be challenged. Finally, there is the category of multiple or collective cases that are undertaken jointly to explore a general phenomenon. Stake (2005) notes, however, that the boundaries between these three types of case study are often blurred.

In this respect, this research is well categorised in the exploratory group in Yin's classification or as instrumental in Stake's terms. This is because it intends to gain an understanding of the process of implementing ERP systems from the change management perspective and identify effective mechanisms and actions.

3.5.2. Multiple-case design

An important issue in case research design is the decision to include one or more cases in the project. A recurrent criticism of case study research is that its dependence on a single case renders it incompetent in providing a generalisable conclusion (Dube and Pare, 2003). Case study research is not sampling research (Benbasat et al. 1987; Lee, 1989; Yin, 2009) and selecting cases must be done so as to maximise what can be learned in the period available for the study. In addition, a single case can be sufficient to disconfirm an existing theory if its predictions do not hold (Markus, 1989). On the other hand, Eisenhardt (1989) and Yin (2009) both expressed a preference for multiple case studies because of its strength in providing "analytical generalisation". The inclusion of multiple cases allows the case researcher to increase the robustness of a finding by replicating it across cases (Eisenhardt, 1989).

From this view, in a multiple case study, one examines several cases to understand the resemblances and differences between the cases. Yin (2009) describes how multiple case studies can be used to either predict similar results (a literal replication) or predicts different results but for predictable reasons (a theoretical replication). Multiple-case designs are desirable when the intent of the research is description, theory building, or theory testing. Multiple-case designs in addition to more generalisation, allow for cross-case analysis and the extension of theory (Benbasat et al., 1987).

In this research, for increasing the likelihood of being covering of empirical grounding, three companies that have implemented ERP systems in their environment are studied to reach a greater awareness and more profound understanding about the process and gaining more general research results.

3.5.3. Methods to be used

In terms of selecting methods of doing the research, proponents of case study research suggest that a significant strength of this strategy is its

ability to incorporate a variety of data collection procedures to provide a more vibrant picture of the events and issues than would any single method (Creswell, 2003; Yin, 2009). A multi-method approach to research includes various data collection techniques, such as interviews and documentation organised to provide multiple but dissimilar data sets concerning the same phenomena (Dube and Pare, 2003; Mingers, 2001).

Yin (2009) argued that the most important advantage of combining different data sources (e.g., interviews and archives) is the development of converging lines of inquiry. According to him, multiple data sources allow for triangulation and enhance the construct validity of the study. Any finding or conclusion in a case study is probably much more convincing and precise if it is based on several different sources of information (Dube and Pare, 2003). Although Yin's focus was on the combination of qualitative data sources, Eisenhardt (1989) and Croswell (2009) also stressed the advantages of mixing qualitative and quantitative evidence (like questionnaires and surveys). Eisenhardt (1989: 538) states that "quantitative data can keep researchers from being carried away by vivid, but false, impressions in qualitative data, and it can bolster findings when it corroborates those findings from qualitative evidence".

Accordingly, in this work, research methods will mainly include interviews with the managers and key personnel directly involved in the implementation process. However, other data sources, for example, system and project documentation, minutes from committee meetings, memorandums and letters will also be analysed. Data gathered from these sources will be used to corroborate, validate, and complement the interview data.

3.5.4. Unit of Analysis

The next vital element of case design is about the fundamental problem of defining what the case is (Yin, 2009). As Markus (1989) stated, the practical significance of the findings for the theory rests on the study of the appropriate unit of analysis.

Prior to searching for sites, the researcher should determine the unit of analysis most appropriate for the project (Benbasat et al. 1987). The researcher should determine whether the study will focus on individuals, groups, or an entire organisation. Alternatively, the unit of analysis could be a specific project, event, decision, implementation process or organisational change (Yin, 2009). In making this determination, the researcher should carefully examine the research questions to be pursued (Benbasat et al. 1987). According to Yin (2009), as a general guide, the definition of the unit of analysis is related to the way the initial research questions have been defined. He also stresses specific time boundaries are needed to define the beginning and the end of the case.

For this research, according to Yin's advice in defining the case and unit of analysis pertaining to the role of the available research literature, it seems Lapointe's (2005) case definition of software implementation process with the time frame starting from the decision to implement an ERP system has been made until the system is "in operation" is well suited with our goal as well.

In line with Guba and Lincoln (1989), the sites were selected to allow comparison. In this regard, the study was held in three large-sized Iranian companies (with more than 250 personnel), from three different industries (presented in Table 3-1). The outcome of the implementation processes (the implementation has been successfully finished, and ERP system is 'in Operation' for all cases) and geographical locations of the companies (Iran for all cases) are the same. This similarity helps us to concentrate on evaluating and refining the framework. The three cases were identified out of a few examples of successful implementations, accessible through the researcher's 'network' in Iran.

Once the case has been determined and the boundaries placed on the case it is crucial to consider the additional components required for designing and implementing a rigorous case study. These include propositions (which may or may not be present) and the application of a conceptual framework (Yin, 2009, Dube and Pare, 2003) which will be discussed in the next section.

Table 3-1. Selected Cases

	Industry	Size of the enterprise	Software Package	Result of Implementation Process
Case 1	Banking	Large	Alpha	The system has been implemented successfully and is "in Operation."
Case 2	Printing	Large	Beta	The system has been implemented successfully and is "in Operation."
Case 3	Food and Beverage	Large	Gamma	The system has been implemented successfully and is "in Operation."

3.6. The role of the literature in this research

For conducting this research as an exploratory comparative case study design (according to Yin's (2009) categories) to investigate effective change management related actions in ERP implementation projects, as Eisenhardt (1989) argues there is a necessary need for using existing theoretical constructs to guide theory-building research. She suggests a priori specification of constructs can help to shape the initial design and without a research focus, it is easy to become overwhelmed by the volume of data. It permits researchers to measure constructs more accurately. If these constructs prove essential as the study progresses, then researchers have a firmer empirical grounding for the emergent theory (Eisenhardt, 1989).

Although early identification of possible constructs can be helpful, it is equally important to recognise that it is tentative in theory- building case research (Dube and Pare, 2003). As Eisenhardt stressed, "no construct is guaranteed a place in the resultant theory, no matter how well it is measured" (1989: 536). Importantly Eisenhardt suggests that theory-building research must commence as close as possible to the ideal of no theory under consideration and no hypotheses to test because predetermined theoretical perspectives may bias and limit the findings.

Empirical research is grounded in the existing literature within a field; it involves the identification of gaps and proposes research questions which address these gaps (Eisenhardt and Graebner, 2007). The case study is an

inductive study which is 'research building'; the gaps identified in the literature review and the main question - investigating effective change management related actions in ERP implementation projects, provides the necessary impetus to utilize the case study, as a way to address this gap and advance theory and practice in this field.

Reviewing the literature so far has given us some clues about what should be looked for in our exploratory research (according to Yin's categories) for investigating the research topic. As Eisenhardt (1989) stressed, investigators after formulating the research problem should specify some potentially essential variables, with some reference to extant literature.

In this regard, by summarising the related theories reviewed in the literature, a conceptual framework was developed (Table 2-4, section 2.3.2). The framework specifies the existing theoretical constructs of the final framework which is supposed to show the suggested measures should be taken by project managers during the process of implementing ERP systems for fulfilling the demanded actions in human aspects of such projects.

This framework can direct the later efforts in identifying necessary interventions for delivering a successful implementation. The framework should continue to develop and be completed as the study progresses and the relationships between the proposed constructs would emerge as data are analysed. A final conceptual framework will include all the themes that emerged from data analysis (Dube and Pare, 2003). As Yin (2009) suggests, returning to the propositions that initially formed the conceptual framework ensures that the analysis is reasonable in scope and that it also provides structure for the final report.

3.7. Interview Protocol

In conducting the interviews, respondents will be asked to provide a narrative of the implementation, from the decision to implement the ERP system to the project termination. Interviews typically will begin with a

general question that allows the respondents to express how they experienced the implementation process. More specific questions will be asked as required to ensure that the data collected from each case is consistent and includes similar material and would allow cross-case comparisons.

The question themes are extracted from recommended strategies and actions in the process of implementing changes from change management literature (The theoretical framework: Table 2-4). This perspective allows us to take a look into the technical process of implementing ERP systems through a change management lens.

Accordingly, the main question themes for interview sessions would be as follows. Basically, they are organised regarding the three main phases in an ERP implementation process and focus on essential aspects acknowledged in a change process.

Pre-implementation:

1. Why did the company decide to implement the ERP system in its environment? Was there any urgent need for such a system?
2. How many people of the top tier management of the organisation did support the idea?
3. Was there any clear vision? Was it communicated well?
4. What about the people? How was their reaction? Was there any symptom of perceiving a threat? How did you deal with these perceptions?

Implementation:

5. How was the implementation planned? How many phases were there? Did you celebrate any short term win during the process?
6. What human-related obstacles did the organisation identify during the implementation? How did the organisation deal with them? Any comment?

7. How was the effect of the new system on power distribution in the organisation? How did the organisation cope with this issue?
8. Which groups or senior managers perceived inequity or losing power? In which phase? How was their reaction? Was this reaction anticipatable? How did the organisation deal with them? What was your position accordingly? Any comment?
9. Was there any fear and stress stemming from the new routines and modes of work? How did the organisation deal with it? Could that be better? How did you influence this reaction?

Post-implementation:

10. Have people got used to the new routines? Have the new relationships resulted from the change been successfully embedded? What was your role in this process? Any comment?

3.8. Coding Process and Data Analysis

The analysis of qualitative data is not as straightforward as for quantitative data because it does not tend to be structured or numeric (Silverman, 2010). For analysing data in this research, as Eisenhardt (1989) has suggested, there are two stages. The within-case analysis will be performed first to allow the unique patterns of each case to emerge and to provide researchers with a rich understanding of each case, hence accelerating cross-case comparisons. Second, a cross-case analysis using analytic induction will be conducted in search of common patterns and unique features.

In analytic induction (Johnson, 1998), researchers develop hypotheses prior to entry into the field. Hypotheses (the theoretical framework here) are revised to fit emerging interpretations of the data throughout the period of data collection and analysis (Gilgun, 1995; Bryman and Bell, 2011). In this way, emerging ideas are coded, developed and refined against existing theories (Strauss and Corbin, 1990).

Accordingly, of the five strategies suggested by Yin (2009) for case study data analysis, iterative explanation building would fit the analytic induction approach described above. This would involve the continual revision of theoretical propositions as the case study evidence is examined until a consistency between theory and observation is achieved. The final explanation may not have been fully stipulated at the beginning of the study (as described before).

In conducting the study, before coding the transcribed interviews, it is needed to define the coding categories. Considering the framework, the researcher first needs to follow up Kotter's change process steps in the ERP implementation processes. Also, it is needed to identify the resistance instances during each implementation process, and the actions were taken against them to examine how people cope with change during the processes. Accordingly, the following tables have been defined.

Table 3-3 presents the template for coding interview responses for following the Kotter's change steps in each implementation process. Therefore, the steps of the technical implementation model are considered as the categories for the answers to the question themes (QT) defined for following Kotter's change steps in the implementation process (QT 1, 2, 3, 5, 6, 7, 10). For the Kotter's steps which are not observed in the interviews, an additional category "not-observed" is defined.

In coding each interview, segments of the transcripts that report any specific responses taken to be aligned with Kotter's change steps in the process of implementation are identified. The segments are then examined to identify in which specific technical phase of implementation happens. They are then organised in the aforementioned table (Table 3-3) so as to build a logical chain of evidence for each case. The resulting chains of evidence permitted an explanation-building analytic strategy (Yin, 2009).

On the other hand, as was discussed in section 2.3 (forming the theoretical framework), considering managerial actions and steps in leading and managing change does not necessarily guarantee a successful transformation. Understanding how people cope with change and react to

its pressure can enable senior managers to provide practical support to people undergoing change and may better enable them to have a pro-active plan for this support. It is inevitable that if people cannot cope with the change, the effort will fail. The framework suggests the resistance behaviours become more severe along the period of implementation till the middle of the process (in successful efforts) where people realise the change is inevitable and let it go (according to the Carnall's (2003) coping cycle that is mapped into the framework). Accordingly, in the case studies, the researcher looks for resistance instances to map them into the framework and categorise them regarding their types (psychological and political driven), in search of emerging patterns relating different types and categories of resistance to the different steps of implementation.

In this regard, Table 3-4 shows segments of the transcripts that report any specific reaction and resistance instance observed during the implementation and also, the organisation's actions taken against them. Question themes 4 and 7-10 are related to this. Based on our framework, the resistance instances are categorised into two major types: Political (Po) and Psychological (Ps). Accordingly, every quote from the transcript showing any observed resistance will be put in the related cell according to its type and correspondent implementation phase (Pre-implementation and Implementation). Then for each instance, the quotes which show the actions taken by the organisation against it are identified and assigned to the instance. Additionally, as a lesson learned if an interviewee has any suggestion or recommendation that s/he thinks it would have had better results in such a situation, it is captured in the next cell.

To examine and follow up how people cope with the change during the process of ERP implementation, the resistance behaviour classification proposed by Coetsee (1999) has been used to code and present people's reaction during the process captured in interviews and other sources of data used for studying each case (presented in Table 3-2). Coetsee's taxonomy allows the classification of the resistance behaviours according to four levels of resistance: apathy, passive resistance, active resistance, and aggressive resistance. Apathy includes behaviours such as inaction,

distance, and lack of interest. Manifestations of passive resistance are rather mild; they include delay tactics, excuses, the persistence of former behaviour, and withdrawal. Active manifestations are typified by loud but not destructive behaviours, such as voicing opposite points of view, asking others to intervene or forming coalitions. Finally, aggressive resistance behaviours such as infighting, making threats, strikes, boycotts, or sabotage seek to be disruptive and may even be destructive.

Table 3-2. Coetsee's classification of resistance behaviors (1999)

classification	**the resistance behaviours**
Apathy	inaction, distance, lack of interest
passive resistance	Delay tactics, excuses, the persistence of former behaviour, withdrawal.
Active resistance	Strong but not destructive behaviours: voicing opposite points of view, asking others to intervene or forming coalitions.
aggressive resistance	Infighting, making threats, strikes, boycotts, or sabotage seek to be disruptive and may even be destructive.

Last but not least, Table 3-5 captures the factors facilitating the change process from the interviewee point of view, which have been not fallen into any categories of Tables 3-3 and 3-4.

Table 3-3. Template for coding the observation of Kotter's change model steps in the implementation process

		Observed								**Not- observed**
Related Question Theme	Kotter's steps	Pre-Imp	imp						Post-imp	
		Strategic decisions	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency									
2	Forming Powerful Coalition									
3	Developing a vision for Change									
3	Communicating the Change Vision									
6	Removing Obstacles									
5	Generating Short Term Wins									
5,7	Building on the Change									
10	Anchoring the Changes in Corporate Culture									

Table 3-4. Template for coding the observed resistance instances during the implementation process

	Related Question Theme	Type of resistance Ps / Po	The instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
Pre-implementation	4	Ps					
		Po					
implementation	9	Ps					
	7,8	Po					

Table 3-5. Template for registering other factors facilitating the change process (from interviewee point of view)

The factor	Description

3.9. Summary

This chapter aimed to provide a research strategy for achieving the goal of my DBA journey: *"Managing User Resistance in Implementing ERP Systems".*

In this regard, the theoretical perspective underpinning this research – neo-empiricism, and also the role of the subjective in human behaviour from this viewpoint has been discussed. It has been mentioned that, although from the viewpoint of the researcher, there is a world out there which exists independently of our understanding of it, it is not as 'black and white' as the positivist may proclaim. So, the key aim of this research is to explore the stock of knowledge held by managers and key personnel engaged in the process of implementing ERP systems, not to state the causal relationships, as a positivist theoretical approach would claim they could achieve. For doing so, a neo-positivist (interpretive) perspective along with the qualitative approach is adopted for this research.

In terms of methodology, the four more common qualitative methodologies being used in information systems research have been reviewed and "case study" has been selected as the research methodology mainly because of its access to and use of a wide range of data collection methods which makes it well fitted for the study of a complex phenomenon such as implementing information systems**.**

Case studies mainly involve interviews with the managers to collect their experiences (following an inductive approach) plus artefacts such as project documentation and organisational charts, in order to investigate the four main research questions (section 3.1). In this regard, considering the research questions and the theoretical framework, the researcher needs to follow up Kotter's change process steps in each implementation process. Also, it is needed to identify the resistance instances during each implementation process and the actions taken against them to examine how people cope with change during the processes. Accordingly, a set of

interview question themes were defined and organised with regard to the three main phases in an ERP implementation process.

The study is held in three large-sized Iranian companies (more than 250 personnel), each one from different industry. The outcome of the implementation processes (the implementation has been successfully finished, and ERP system is 'in Operation' for all cases) and geographical location of the companies (Iran for all cases) are the same. This similarity helps the researcher to concentrate on evaluating and refining the framework.

The research will employ a pattern-matching data analysis strategy. In the first instance, a within-case strategy will be applied to identify patterns that support or contradict the framework. This will be followed by a between-case strategy to identify patterns across cases in order to map and compare findings to the initial framework. The intended result is a refined framework that can be offered as a practical tool for managers to have a resistance-aware ERP implementation process.

Having discussed the research design, in the next chapter, the three cases and the data analysis for each case are presented.

4

Case Studies

In the journey of developing a resistance-aware framework for implementing ERP systems, as discussed in section 3.5, the field study was held in three large-sized companies (more than 250 personnel), which recently has successfully implemented ERP systems in their environment. The new systems were in operation in the period of conducting this research.

The researcher in conducting the study in each case has two main objectives according to the research design (section 3.5):

- Tracing change steps in the system implementation process and matching the steps of the two processes of change and ERP system implementation
- Investigating resistance instances during the period of system implementation

The three cases which are studied are as follow:

Case 1: Bank Z
Case 2: Printing Co. X
Case 3: Y Beverage Company

The Coded data of each case are presented in Appendixes A, B and C. Each coded quotes used in the case reports is specified by a bracket including a Cxy-z format code. The code Cxy-z refers to the case number x, interviewee number y in that case; and the z is the number given to that specific quote.

4.1. Case 1: Bank Z

4.1.1. Background

Bank Z has been established from the merger of two financial institutions and Bank Y. With this merger, the bank's workforce increased from about 800 to more than 3,500 and the number of branches expanded from 90 to more than 600.

Due to the shortcoming of the existing systems' capabilities to meet the requirements of the new situation in back office processes, the bank decided to implement an integrated system for back office operations, including human resources management, asset management, logistics management, and workflow management.

Interviewees:

C11: Head of back-office systems in the IT department and the project manager (client side)

C12: Head of payroll office in the HR department (an important team manager in client side)

C13: Project manager (vendor side)

The coded interviews are presented in Appendix A.

4.1.2. Case Analysis: Tracing the change steps

the objective of this section, according to the research design, is to tracing the change steps in the system implementation process of this case and matching the steps of the two processes of change and ERP system implementation.

Table 4-1 summarises the observation of Kotter's change model steps in the implementation process of case 1. This table shows that at least six first steps of Kotter's change model have been taken sequentially during implementing the new back-office systems in Bank Z. Accordingly, the mapping between the steps of the two processes (change process and system implementing process) in this implementing instance, is not exactly the same as what hypothesised in the conceptual framework (as shown in Table 4-2).

In this particular case, the first three steps of Kotter's change model, namely: creating urgency, forming a powerful coalition, and developing a vision for change, have been wholly taken during the pre-implementation segment of system implementation in the *phase* of "Strategic decisions and vendor selection".

In this successful implementation case, as Kotter anticipated in his model of organisational transformations, there was a high enough sense of urgency in fellow managers.

> *"… we generally did the calculations by workarounds as MS Excel due to its (i.e. the old system's) shortage in necessary features. Therefore, we always encountered with many human errors." (Head of the payroll office)*

Such sufficient urgency helped the organisation to drive people more quickly out of their comfort zones and form a powerful coalition among managers and avoid people to become defensive about the status quo.

Our framework's change model also highlights the importance of having a committed coalition of managers in place rather than just have the support of the head of the organisation for a successful implementation.

> *"… almost all the managers we had interactions with, eagerly supported the project and tracked it down seriously…" (Project manager – vendor side)*

The study of this case suggests having a vision on the board is a recommended prerequisite for permitting the entrance of the vendor and implementer into the organisation. In this implementation case, the knowledge of the organisation and its managers about what they need really helped the progress of the project, not only in selecting the proper vendor but also in trusting to its solution.

In terms of the fourth recommended step of change model- communicating the change vision, according to the study of this case, some measures have been taken in pre-implementation phase and also the early phases of implementation which could address it partially.

> *"Throughout finalising the vision, in the organisation, we had intensive discussions and communications between top layer management of the involved departments (IT, HR and Finance)." (Project manager – client side)*

However, it is evident from the quotes of both project managers (client-side and vendor side) that the measures were not sufficient, especially in the layer of middle managers in the departments and the experts who supposed to be the primary users of the system.

> *"Assuming that persuading the employees is the client responsibility in such projects, in my assessment, the employees were not aware sufficiently of what supposed to happen." (Project manager- vendor side)*

Likewise, according to one of the team managers:

> *"In the initial period of the project- the analysis of the "As Is" and "To Be" situations, there were some limited, not convincing explanations for the employees of the related departments about the targets and advantages the new system provides." (Head of the payroll office)*

Such insufficient communication on the goals of implementing the new system apparently resulted in some instances of distract and lack of interest. For example, the client-side project manager:

> *"In the early days, the experts had no interest in participating in training sessions… We tried to address the problem by explaining the importance of the situation and the necessity of the project to them. We also requested support from departments directors."*

According to our conceptual framework (Table 2-4. The Conceptual Framework), before starting the actual system implementation phase (in the technical process), the first four steps of the transformation process - which help defrost the hardened status quo in the organisation, should be taken. In managing resistance, the proper management of the unfreezing steps is essential to prevent negative and blocking resistance from manifesting itself (Darwin *et al.,* 2001). In this regard, the framework anticipates some sorts of resistance in coming phases due to insufficient efforts in conducting these four unfreezing steps in this implementation case which will be discussed in the next section.

With the start of implementation segment of the technical process, especially the phases of construction, testing the new system and actual implementation, as the change becomes more evident, the efforts for resisting the new system (at least implicitly) become more serious, and removing obstacles become more important as well.

> *"When the project entered the phase of "test and construction", the progress got very slow due to the small amount of the schedule assigned to the project by units' managers; about 20% of their staff working time. In fact, the project was not the priority for the organisational units… The issue was resolved by holding regular meetings with unit managers and providing regular progress reports*

for them in which the IT department had the key role in persuading them for making the project the main priority in their units." (Head of the payroll office)

The client-side project manager has a similar point:

"In the middle of the implementation, we found out that we needed to involve (even artificially) all the employees and managers in the related departments in the process, not just the directly related people. Consequently, we gave more authorities to some staffs by directly involving them in the process and also, provided frequent reports to all level managers."

As a final point, as the framework projected, the sixth step of the change process -Generating Short Term Wins, took place in the actual implementation phase.

"In the middle of the project, we observed that there was a noticeable decrease in the enthusiasm and involvement of some important players like in some sections in HR departments… We found out that it was because we had not presented any tangible progress to the organisation. Then, we scheduled a number of short-term goals and tangible results." (Project manager – client side)

Table 4-1. Observation of Kotter's change model steps in the implementation process in case 1

		Observed								**Not- observed**
Related Question Theme	Kotter's steps	Pre-Imp	imp						Post-imp	
		Strategic decisions	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C1101] [C1201] [C1301]								
2	Forming Powerful Coalition	[C1102] [C1202] [C1302]								
3	Developing a vision for Change	[C1103] [C1203] [C1303]								
3	Communicating the Change Vision	[C1104]	[C1204]							[C1304]
6	Removing Obstacles					[C1205]	[C1105] [C1206]			
5	Generating Short Term Wins						[C1106]			
5,7	Building on the Change									
10	Anchoring the Changes in Corporate Culture									

Table 4-2. Chronologically mapping between the two processes in Case 1

ERP implementation phases		Kotter's change steps (mapping according to the framework)	Kotter's change steps (mapping according to the Case 1)
Pre-implementation	Strategic decisions	Creating Urgency	Creating Urgency
		Forming Powerful Coalition	
		Developing a vision for Change	Forming Powerful Coalition
Implementation	Planning		Developing a vision for Change
	As Is Analysis	Communicating the Change Vision	
	To Be Analysis		
	Construction and Testing	Removing Obstacles	Communicating the Change Vision
	Actual Implementation		Removing Obstacles
		Generating Short Term Wins	Generating Short Term Wins
		Building on the Change	
	Close Up	Anchoring the Changes in Corporate Culture	
Post-implementation	Enhancement		

TIME

4.1.3. Case Analysis: Investigating resistance instances

The observed instances of resistance during the implementation process in case No.1 are summarised in Table 4-3. According to our proposed framework, the resistance instances are categorised into two major types: Political and Psychological. Also, to facilitate the examination and to follow up how people cope with the change during the process of ERP implementation, each instance of resistance was classified based on the Coetsee's resistance behaviour classification into the four levels of apathy, passive resistance, active resistance, and aggressive resistance.

Using Table 4-3, the researcher investigated the relations between the different types and categories of resistance and the different steps of implementation in order to find out the possible emergent pattern of these relationships. The result is illustrated in Figure 4-1 which shows the resistance behaviour during the period of system implementation in the context of case 1, over the time, represented as phases of technical implementation.

The distribution of the instances and their types over the time suggests that the severity of resistance behaviour increases as the implementation process goes forward, and ultimately reaches to its maximum in the actual implementation phase. Moreover, it demonstrates that the resistances are more psychological-driven in the early phases of the implementation and they become more political-driven when the process goes. Although the resulting pattern seems promising, more data is needed to gain hunches about the issue.

Table 4-3. The observed resistance instances during the implementation process in case 1

	Q.T.	Type of resistance	The instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action
Pre-imp	4	Ps. driven	N/A				
		Po. driven	[C1107] (inaction, distance)	Apathy	Strategic decisions	[C1108]	
implementation	9	Psychological driven	[C1109] (lack of interest)	Apathy	As-Is & To-Be analysis	[C1110]	
			[C1305] (lack of interest)	Apathy	As-Is & To-Be analysis, and Construction and Testing	[C1306]	[C1307]
			[C1207] (lack of interest)	Apathy	Construction and Testing		[C1208]
			[C1111] (withdrawal)	Passive resistance	Construction and Testing		
	7,8	Political driven	[C1112] (delay tactics, excuses)	Passive resistance	Construction and Testing	[C1113]	[C1114]
			[C1209] (withdrawal)	Passive resistance	Construction and Testing	[C1210]	[C1211]
			[C1212] (delay tactics)	Passive resistance	Construction and Testing		
			[C1308] (voicing opposite points of view, asking others to intervene or forming coalitions)	Active resistance	Actual implementation		
			[C1115] (voicing opposite points of view, asking others to intervene or forming coalitions)	Active resistance	Actual implementation	[C1116]	[C1117]

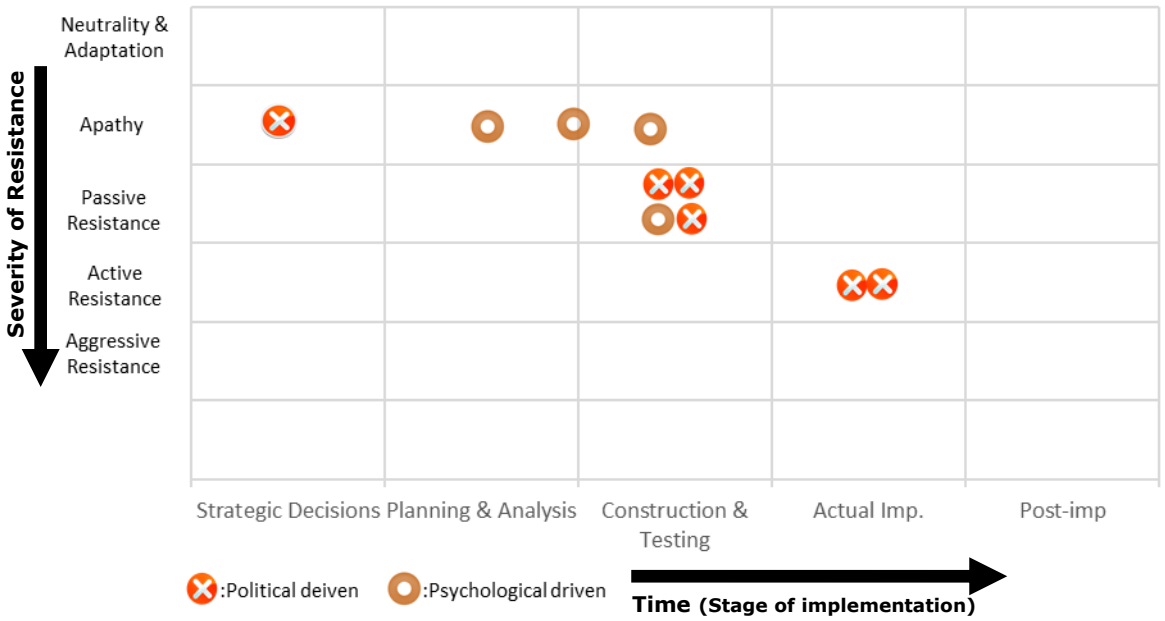

Figure 4-1. Resistance behaviour over time (implementation phases) in case 1

4.2. Case 2: Printing Co. X

4.2.1. Background

X Printing Co. decided to implement an integrated ERP system in 2008 along with its ambitious development plan which made it a medium size enterprise with more than 300 employees, from a small size company with about 70 personnel, within the period of 2008-2012. The ERP implementation project took about three years and ended in 2011 which enables us to investigate its post-implementation situations as well as the pre-implementation and the implementation process.

In terms of the implementation outcomes, according to a press interview with the CEO held in 2013 (two years after the close-up of the project), the company is delighted with the ERP implementation project result which is believed to have considerable contributions in the improvement of many critical factors. For example, by the improved production planning, being possible by the new system, the company saw 30% decrees in the total idle time of printing machines. Also, the total delays in delivering the orders decreased to 35% in comparison with the figures before implementing the new system. Moreover, the new system led to an average cost reduction of about 4%.

Interviewees:

C21: Business development director, member of the board, and the project manager (client side)

C22: Project manager (vendor side)

C23: Team manager (vendor side)

The coded interviews are presented in Appendix B.

4.2.2. Case Analysis: Tracing the change steps

As presented in Table 4-4, here, in this case, there is some evidence that all steps of Kotter's change model have been taken sequentially during implementing the new integrated system in the company X. The result mapping between the ERP implementation phases and Kotter's change model has been presented in Table 4-5.

As shown in Table 4-5, the mapping between the steps of the two processes (change process and system implementing process) in this implementing instance, is not exactly the same as what hypothesised in the framework.

The study shows, likewise the first case, in this case, the first three steps of Kotter's change model, namely: creating urgency, forming a powerful coalition, and developing a vision for change, have been taken during the pre-implementation segment of system implementation in the *phase* of "Strategic decisions and vendor selection".

Similar to the first case, a high enough sense of urgency in the organisation has been observed as Kotter anticipated in his model of organisational transformations for successful change efforts.

> *"… the silo and insular legacy systems had made it impossible to manage the company effectively. Moreover, for some departments such as the warehouse, there was no computerised system at all." (Project manager – client side)*

The point here is although "*all the board and also the senior managers were agreed on the need for change in the information systems*" (Project manager – client side) and they "*were agreed on the necessity of a more reliable information system for the whole company*" (Project manager – vendor side), it is clear that they were not on the same page about the solution; or at least coalition did not cover the exact vendor selected for bringing the required change.

Table 4-4. Observation of Kotter's change model steps in the implementation process in case 2

		Observed								**Not- observed**
Related Question Theme	Kotter's steps	Pre-Imp	imp						Post-imp	
		Strategic decisions	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C21-01] [C22-01] [C23-01]								
2	Forming Powerful Coalition	[C21-02] [C22-02]								
3	Developing a vision for Change	[C21-03] [C22-03] [C23-02]								[C22-04]
3	Communicating the Change Vision	[C21-04]	[C21-05] [C22-05] [C23-03]							
6	Removing Obstacles					[C21-06] [C22-06]	[C21-07] [C22-06]			
5	Generating Short Term Wins					[C21-08]	[C21-08] [C23-04]			
5,7	Building on the Change						[C21-09] [C23-04]			
10	Anchoring the Changes in Corporate Culture						[C21-10]		[C23-05]	

Table 4-5. Chronologically mapping between the two processes in Case 2

<table>
<tr><th>Kotter's change steps (mapping according to the framework)</th><th colspan="2">ERP implementation phases</th><th colspan="2">Kotter's change steps (mapping according to the case 2)</th></tr>
<tr><td>Creating Urgency</td><td rowspan="4">Pre-implementation</td><td rowspan="4">Strategic decisions</td><td colspan="2">Creating Urgency</td></tr>
<tr><td>Forming Powerful Coalition</td><td colspan="2">Forming Powerful Coalition</td></tr>
<tr><td rowspan="2">Developing a vision for Change</td><td colspan="2">Developing a vision for Change</td></tr>
<tr><td rowspan="4">Communicating the Change Vision</td></tr>
<tr><td rowspan="6">Communicating the Change Vision</td><td rowspan="4">Implementation</td><td>Planning</td></tr>
<tr><td>As Is Analysis</td></tr>
<tr><td>To Be Analysis</td></tr>
<tr><td rowspan="2">Removing Obstacles</td><td>Construction and Testing</td><td rowspan="2">Removing Obstacles</td><td rowspan="2">Generating Short Term Wins</td></tr>
<tr><td rowspan="3">Actual Implementation</td></tr>
<tr><td>Generating Short Term Wins</td><td rowspan="2">Post-implementation</td><td colspan="2">Building on the Change</td></tr>
<tr><td>Building on the Change</td><td rowspan="3">Anchoring the Changes in Corporate Culture</td></tr>
<tr><td rowspan="2">Anchoring the Changes in Corporate Culture</td><td>Close Up</td></tr>
<tr><td>Enhancement</td></tr>
</table>

TIME

> *"A number of members of the Board did not agree with signing the contract with the selected vendor, as although the vendor was the only ERP provider in the industry in the country, it was not well-known at the time; so, they could not trust its ability in carrying out the project…" (Project manager – client side)*

The point was so bold that the vendor–side project manager caught it as well:

> *"…it seemed the other managers were not as determined as their project manager about the need of an ERP solution but not a simpler solution such as just a data repository MIS system.".*

Such disagreement, as the client-side project manager stated explicitly, "resulted in some sort of getting distance from the project in early steps and maybe hesitation in fully support the project team in later steps as well."

Taking into account the team manager view that questioned the existence of a sense of urgency in the lower level of the organisation added to such confess, might be better describes the problematic nature of coming steps:

> *"I believe although the necessity of taking actions about the company's outdated information systems had been recognised among the top managers, the middle managers and the staff had not felt the urgency of a change as mainly they had no idea of the functionalities their system should provide."*

Here, in bold contrast with the case 1, the insufficient knowledge of the organisation and its managers about what they really need, made some problems from the very beginning of the project such as agreeing on the proper vendor, and also trusting to its solution.

In addition to immature coalition forming, there are also some problems that can be spotted in communicating the developed vision in different layers of the organisation.

> *"at the point we entered the organisation, there was no awareness of what the company precisely want to do about the information systems in the layers other than top managers; however, a part of our analysis sessions with every department was dedicated to talking about the project and its objectives." (Project manager – vendor side)*

Nevertheless, in this case (similar to case 1), the first four necessary steps for change, namely: creating Urgency, forming powerful coalition, developing a vision for change, and communicating the change vision, have been taken during the phases of strategic decisions, planning and preparation and analysis of ERP implementation. However, there were problems and inadequate required actions which resulted in a shaky start in the change process, and hence, a weak unfreezing status which showed its consequences in later steps. People in various departments were interested in returning to the ways that they used to do the job. For example, the client-side project manager pointed to the issues on many occasions:

> *"…the supporters of the legacy systems and old routines kept trying to persuade the organisation and their managers that the new system did not work correctly."*

Alternatively:

> *"Some personnel, especially in the Sales department, continued to use their old ways of doing their job such as using Excel sheets and other workarounds for a while after switching to the new system in their departments."*

Alternatively:

> *"The director of Sales department delayed the switching plan for three times; so, the staff had to do their jobs in the new system in parallel with their old ways of doing the jobs …."*

Alternatively:

> *"[the night shift manager of production department] believed that the production planning is a managerial job and could not be left to*

computers. So, he tried to ignore the system in that field completely. The problem resolved completely, only when he retired."

The issue has been pointed by other interviewees as well. For example:

"The interest in returning to use the old systems or modes of work was usually high especially in the first weeks of launching each sub-system. The employees kept showing the old system pages as soon as they faced a problem in working with the new system." (team manager – vendor side)

Considering the change management body of knowledge, such aforementioned problems could have been principally prevented by enforcing the unfreezing of the status quo, and demonstrating the urgent need for an organisational-wide change before starting the implementing of the change itself. Addressing this issue, our conceptual framework (Table 2-4) postulates the first four steps of the transformation process should be taken before starting the actual system implementation phase (in the technical process). These steps help defrost the hardened status quo in the organisation, which were apparently not considered adequately in this case. While the proper management of the unfreezing steps is essential to prevent harmful and blocking resistance from manifesting itself (Darwin *et al.,* 2001).

Throughout the implementation segment of the technical process, especially the phases of construction and testing the new system, and the actual implementation, the efforts for empowering actions and removing obstacles become more important, since the change becomes more obvious. In this case, the project management team has made tremendous affirmative efforts, in addition to protecting jobs required to save the implementation process and also solving prominent problems:

"I think one of the most important tasks we did during the implementation phase was to teach not only the functionality and pages of the system but also the business processes and the underlying concepts. It really helped our younger and more enthusiastic employees to establish a stronger relationship with the system and

also the company, and after all, resulted in a more convenient implementation." (Project manager – client side)

Also, the importance of the role of the top management in removing obstacles and supporting the implementation effort is evident in this phase:

"The role of the CEO himself was really strong in supporting the project and following up its progress and solving the problems." (Project manager – vendor side)

Generating short term wins, as the sixth step of the change model that is also required in our conceptual framework, has been promptly taken during this implementation case. The client-side project manager and the vendor-side team manager, both reported it as a crucial point for implementation success. It enabled taking the seventh change step; short term wins resulted in increased credibility which ultimately allows to consolidate gains and build on them:

"When … everyone who needed inventory data, could access it online and accurately in his/her office, we achieved our very first important short win which really made a momentum for the implementation project … With the help of the momentum generated in first steps, we move towards other sub-systems which were actually seemed to be harder in the first place" (Project manager – client side)

"The way of planning the project, which was step-by-step not a big bang, really helped in the project success, as the employees in various departments who were not interested in the first place, because of the extra workload or fears of facing new systems, became very accompanied and helpful after realizing the benefits and the accurate data the system provided. For example, I remember the positive effect of the 'waste' report in facilitating the implementation of the other Production Planning sub-systems." (Team manager – vendor side)

A successful change effort is projected to anchor in the organisation culture, as the eighth and final step of our change model and theoretical framework, which apparently has been taken successfully in this case:

> *"After a while from the end of the project and the close-up, it seems the company's culture has been considerably changed due to the influence of the new system and has moved towards becoming more transparent. For example, now, the Sales Department has requested to provide a service, to the customers, to informs them about the status of their orders and the production stage to which they are reaching at any time, via the Internet. While, in the past, such information was totally considered as confidential." (Project manager – client side)*

In terms of other factors facilitating the change process- which are not explicitly mentioned in our theoretical framework, the interviewees pointed to some thought-provoking issues. The vendor-side project manager raised the importance of "the Organisation's ability of technology adoption". He claimed: *"…if we assessed this ability during the analysis phase, we could warn the company before facing the problem harshly and the process of implementation would be far more convenient."*

The client-side project manager insisted on the role of "Trust to the provider's brand" –which was first brought up to our attention by one the first case interviewees. In this case, the client-side project manager admitted the role of this factor and was totally regret about not preparing the conditions of trust making between the leading players and the solution provider:

> *"It is obvious that the relative anonymity of the provider among top managers and lack of trust to it made huge problems in the project trajectory. As I mentioned earlier, it could be a more rational way to let the other players to be involved and have the opportunity to interact with the alternatives; and consequently, some sort of trust would have been formed about the ability of the selected provider and its quality of service. … although the vendor was the only ERP provider in the industry in the country, it was not well-known at the time; so, they could not trust its ability in carrying out the project… Such disagreement resulted in some sort of getting distance from the project in the early steps and maybe hesitation to fully support the project team in the later steps as well."*

This is an issue that admitted by the vendor-side project manager as well:

> *"maybe one reason for the problems we faced in the implementation process was that our company as a local young ERP provider, was not known sufficiently for some of the managers; so, they could hardly trust us and our recommendations."*

Last but not least, the vendor-side team manager mentioned the importance of giving time to the people to come to new terms and cope with changes.

> *"People needed time to get used to the new system and routines. Their reaction usually became completely different after a while without any further specific intervention from the project team."*

Such points could be investigated more during studying the next case.

4.2.3. Case Analysis: Investigating resistance instances

Table 4-6, summarises The observed resistance instances during the implementation process of case No.2. As discussed earlier in Section 2, according to our framework, the resistance instances are categorised into two major types: Political and Psychological. Also, to facilitate the examination and to follow up how people cope with the change during the process of ERP implementation, each instance of resistance was classified based on the Coetsee's resistance behaviour classification into the four levels of apathy, passive resistance, active resistance, and aggressive resistance (Section 3.8, Table 3-2).

In search of emerging patterns relating different types and categories of resistance to the different steps of implementation, the results charted in figure 4-2 which shows resistance behaviour during the period of system implementation in the environment of case 2, over the time (phases of technical implementation).

The diagram suggests along with progressing in the implementation process, the severity of resistance behaviour goes up till reaches to its

maximum in the actual implementation phase. Moreover, it seems the resistance type is more psychological driven in the early phases of implementation and becomes more political driven when we progress in the process. However, we need to wait for other cases data to gain hunches about the issue.

Table 4-6. The observed resistance instances during the implementation process in case 2

	Q.T.	Type of resistance	The instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action
Pre-imp	4	Psychological driven	[C21-11] (distance)	Apathy	Strategic decisions and vendor selection	[C21-12]	[C21-13]
		Political driven	N/A				
implementation	9	Psychological driven	[C21-15] (lack of interest)	Apathy	As-Is & To-Be analysis	[C21-16]	[C21-17]
			[C21-18] (making threats)	Aggressive resistance	Actual implementation	[C21-19]	[C21-20]
			[C21-21] (persistence of former behavior)	Passive resistance	Actual implementation	[C21-22]	
			[C21-23] (delay, excuses)	Passive resistance	Construction and Testing		
			[C22-07] (persistence of former behaviour)	Passive resistance	Construction and Testing, and Actual implementation	[C22-08]	
			[C23-06] (persistence of former behaviour)	Passive resistance	Construction and Testing, and Actual implementation		
	7,8	Political driven	[C21-14] (delay tactics)	Passive resistance	As-Is & To-Be analysis		
			[C21-24] (asking others to intervene, forming coalitions)	Active resistance	Actual implementation		
			[C21-25] (asking others to intervene, making threats-almost)	Active-Aggressive resistance	Construction and Testing		[C21-26]
			[C21-27] (withdrawal, the persistence of former behaviour)	Passive resistance	Construction and Testing, Actual implementation, Close up		
			[C23-07] (voicing opposite points of view)	Active resistance	Construction and Testing, and A. implementation		

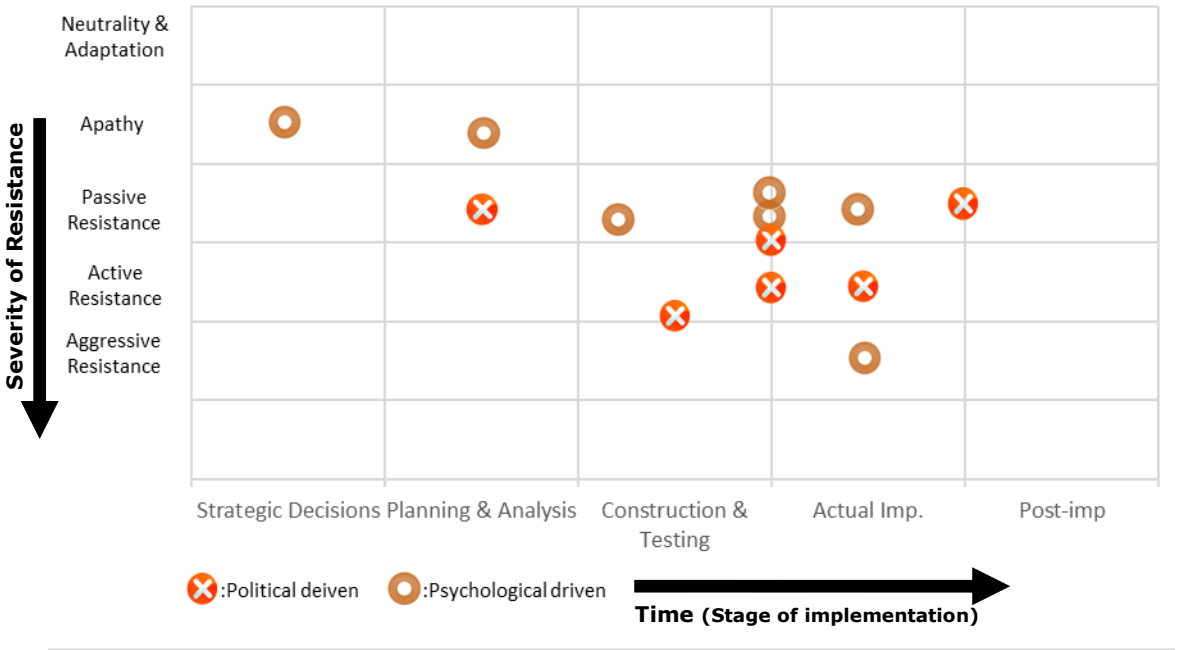

Figure 4-2. Resistance behaviour over time (implementation phases) in case 2

4.3. Case 3: Y Beverage Company

4.3.1. Background

Y Beverage Company is one of the largest producers of soft drinks in Iran. It has a diverse portfolio of products, with eight brands and 80 products, produced in its five plants across the country. With more than 5,000 employees, 11 branches and 65 warehouses and distribution centres, Y is considered as the owner of one of the largest distribution systems in the country, serving more than 200,000 outlets with about 1,500 sales and distribution employees.

One of the reasons that drove the company towards adopting a new total solution was managing this massive distribution operation. The legacy system was offline and distributed. So there was no real-time data to manage and control the behaviour of the visitors (sales teams), distributors, and the ordering and distribution system over-all. For example, the company needed to know if visitors are following the given routes and if they are spending the required amount of time in each outlet, as face to face relationships with the customers are very important for the company.

In this regard, prior to the launch of the ERP project, a small project was carried out aiming to define the requirements of the organisation and defining the final objectives of the ERP project. The output of this project was a statement of work (SoW) for the main project, which defined the project's vision and was approved and agreed upon by the top managers of the different departments of the organisation.

The summary of the ERP implementation project objectives, according to the SoW document, was:

- Applying operational and systematic online control on the process of sales and distribution in order to minimise the possibility of human error;
- Real-time and online access to accurate and reliable information from all departments, including sales figures in different areas,

inventory of product and distribution depots, and the feasibility of comparative assessments for use in sales and production planning.

After conducting a 3-year project, eventually, the system has been successfully implemented and real-time reports become accessible in all departments throughout the company. Also, a systematic control has been utilised especially in the sales and distribution departments.

The three interviewees studied in this case were:

C31: The CEO consultant in management and information technology, and the project executive (client side)

C32: The manager of the IT department, and Project manager (client side)

C33: The project manager (vendor side)

The coded interviews are presented in Appendix C.

4.3.2. Case Analysis: Tracing the change steps

As presented in table 4-7, here in this case, there is some evidence that all steps of Kotter's change model have been taken sequentially during implementing the new integrated system in the company Y.

Based on such evidences, the mapping between the steps of the two processes (change process and system implementing process) in this implementing instance, is not exactly the same as what hypothesised in the framework (as shown in Table 4-8).

Table 4-7. Observation of Kotter's change model steps in the implementation process in case 3

		Observed								**Not- observed**
Related Question Theme	Kotter's steps	Pre-Imp	imp						Post-imp	
		Strategic decisions	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C31-01] [C32-01] [C33-01]								
2	Forming Powerful Coalition	[C31-02] [C32-02] [C33-02]								
3	Developing a vision for Change	[C31-03] [C32-03] [C33-03]								
3	Communicating the Change Vision	[C31-04]	[C32-04]							[C33-04]
6	Removing Obstacles	[C31-05]				[C32-05] [C33-05]	[C32-05] [C33-05]			
5	Generating Short Term Wins					[C31-06] [C32-06] [C33-06]	[C31-06] [C32-06] [C33-05]			
5,7	Building on the Change						[C31-07] [C32-07]			
10	Anchoring the Changes in Corporate Culture								[C31-08]	

Table 4-8. Chronologically mapping between the two processes in Case 3

Kotter's change steps (mapping according to the framework)	ERP implementation phases		Kotter's change steps (mapping according to the Case 3)
Creating Urgency	Pre-implementation	Strategic decisions	Creating Urgency
Forming Powerful Coalition			Forming Powerful Coalition
Developing a vision for Change			Developing a vision for Change
	Implementation	Planning	Communicating the Change Vision
Communicating the Change Vision		As Is Analysis	
		To Be Analysis	
Removing Obstacles		Construction and Testing	Removing Obstacles
		Actual Implementation	Generating Short Term Wins
Generating Short Term Wins			Building on the Change
Building on the Change			Anchoring the Changes in Corporate Culture
Anchoring the Changes in Corporate Culture		Close Up	
	Post-implementation	Enhancement	

TIME

The study also shows in this case, the first three *steps* of Kotter's change model, namely: creating urgency, forming a powerful coalition, and developing a vision for change, have been taken during the pre-implementation segment of system implementation in the *phase* of "Strategic decisions and vendor selection".

In this successful implementation case, likewise as with the first two cases and as Kotter anticipated in his model of organisational transformations, not only there was a high enough sense of urgency in the top layer of the organisation:

> *"In the CEO's view, there was no longer any trust on the departments' reports that were sent manually or by Excel. There was even a feeling of financial and commodity leakage in the company.*
> *The senior managers of the organisation had severe problems in control systems and could not enforce the necessary controls on the organisations…*
> *In fact, the organisation's information systems did not develop with the growth of the organisation itself and still 30 years old legacy systems were used…*
> *Many managers also believed that the information they received was manipulated." (Project manager – client side)*

and fellow managers:

> *"… The unreliability of the legacy system outputs has been widely recognised during the initial meetings with senior managers." (Project executive – client side)*

but there was a thoroughly thought-out vision on the board:

> *"Prior to the launch of the ERP project, a small project carried out that was aimed at defining the requirements of the organisation and defining the final objectives of the ERP project. The output of this project was a statement of work (SoW) for the main project, which defined the project's vision and was approved and agreed upon by the top managers of the various departments of the organisation." (project executive – client side)*

Also, according to the vendor side project manager, "the extent of the requirements identified in various management areas indicated that there was a complete agreement on the need to improve the management systems of the group among the key managers". The project executive explains that the coalition between the key managers about the need for change in organisation's information management and implementing an ERP system as a solution was formed in "initial consultation meetings on the status of information flow in the company".

However, two concerns have been spotted here which would have effects on the next steps. First, the negative view from the financial department to the selected provider:

> *"The result of the system selection process, which was approved by the CEO and the sales and logistics managers, was using the system provided by the famous local Vendor X; whereas the financial department was opposed due to its director's previous negative experience with this vendor." (project executive – client side)*

Second, the conflict between the financial and the newly independent IT department:

> *"In the old structure, the IT department was a subsidiary of the financial department which promoted to a key department in the new structure. This change made financial executives unhappy because of a sense of the loss of part of their authority. Prior to the launch, the tension was not too tense, especially by establishing the recognition of the financial control role over the entire organisation and the emphasis on the service role of the new IT department. However, the issue was the case in the implementation phase." (project manager – client side)*

Regarding the fourth step of Kotter's model, the client-side project manager and executive believe the key people in the organisation were well-communicated and agreed with its vision.

> *"… the vision was communicated at three levels: the layer of senior managers, the layer of regional managers and sales force in each*

region. … various meetings held with the executive body of the organisation in the sales area prior to the launch, and they were completely informed about the objectives and the road map of the project." (project manager – client side)

However, some regional managers and officers, for example, who were close to retirement, "did not welcome it because of their feelings of the extra work it created in these last years; or not accepting the centralised decision-making paradigm which the company headed to." (project manager – client side).

The vendor side project manager, admits this observation:

"This happened at the level of senior executives, but in the next layers there was a lack of interest in the project and uncertainty about its outputs."

He believes this issue in the first steps, resulted in some sort of problems in progressing the implementation. For example, in admitting the delivery of the systems:

"… as the subsequent layers were responsible for accepting deliverables, we encountered some problems during the project."

Eventually, according to all interviewees, it can be concluded that the first four necessary steps for change have been taken during the phases of strategic decisions, planning and preparation and analysis of ERP implementation, although with some issues, like the other two cases.

In step five of Kotter's model, removing obstacles, we have many instances in this case which could contribute in clarifying what actually an ERP implementation effort needs, in terms of managing the change, to be successful.

There are many resistance instances which could be rooted in the concerns reported in the first steps. For example, anxiety in the financial department due to a sense of losing some of their power and authorities because of separating IT unit from their department to form the IT department was

captured in early steps. As it seems in reports of resistance instances, it was not addressed enough and resulted in severe issues.

> *"The tension between the financial department and the newly independent IT department was created on several runs. For example, they did not accept mistakes in the organisation's old processes or accept them hardly. Or in the coding structure that the financial department mistakenly insistences made it impossible for the project to progress. …*
>
> *… The tension caused by the loss of control over the IT unit also delayed the process of completing the parallel work of the two systems and abandoning the old system in a few cases. In the last case, at the last moment, by changing the issuance of the factor number, they were looking for a delay in the replacement." (project manager – client side)*

This issue and similar cases could highlight the importance of the need to proactively plan and conduct the fifth phase of Kotter's model in implementing ERP systems, rather than just passively handling the occurred resistance instances. It means we need to identify the roots of resistance in any implementation effort and carefully handle them to avoid resistance instances as much as possible. Classifying this resistance in our framework into two categories of political driven resistance – which generally is resulted from a sense of losing power in the new status, and psychological driven resistance, hopefully, could contribute in finding the possible roots in implementation environment.

Moreover, according to the change management body of knowledge (e.g. Lewin, 1999; Kotter, 1996; Burnes, 1996; Darwin et al., 2001), such problems should have been avoided by concentrating on unfreezing the status quo and provoking the sense of urgency of change in the whole organisation before starting the implementing of the change itself. According to our conceptual framework (ref. Chapter 2, p. 43), before starting the actual system implementation phase (in the technical process), the first four steps of the transformation process -which help defrost the hardened status quo in the organisation, should be taken. In managing resistance, the proper management of the unfreezing steps is essential to

prevent negative and blocking resistance from manifesting itself (Darwin *et al.,* 2001).

With the start of implementation segment of the technical process (especially the phases of construction and testing the new system and the actual implementation) as the change becomes clearer, the efforts for empowering actions and removing obstacles become more important.

> *"At the beginning of the implementation, there were some resistance instances due to some system weaknesses or time-consuming of data entry (due to lack of familiarity with the new system) that was managed by the regional managers. In some cases, bonuses were also defined for hard-working users." (project manager – client side)*

The vendor side project manager admits this help, too:

> *"The support of the senior managers' layer, especially after evaluating the early short wins, helped to speed up the project."*

Generating short term wins, as the sixth step of the change model proposed in the conceptual framework, has been taken promptly during this implementation case. All of the interviewees reported it as a crucial point for implementation success. It enabled taking The seventh step, using increased credibility resulted from short term wins to consolidate gains and build on them:

> *"The design of the project plan was such that at relatively short intervals, tangible outputs were obtained for the company. For example, within three months of the start of the project, we got the same coding for accounting and goods in the entire group, which was valuable from the customer point of view. Or, after about six months from the start of the project, the software has been exploited in the pilot plant." (Project manager – vendor side)*

> *"The implementation of the phase zero of the project, which included the unification of the coding systems of accounting and products in all branches, with the help of the financial department, greatly contributed to improving the relations between the financial*

department and the project. And their assurance of the uniformity of procedures in all sectors with the finalisation of ERP led to great support despite the initial opposition…. Also, the successful implementation of the pilot phase (which was the implementation of the system at one of the regional offices), caused the company to observe a real change within just less than four months from the finalising the contract which removed many of the oppositions in other parts of the company." (Project executive – client side)

Such short wins, created great momentum for the project so that the complete transformation could have built on it:

"The success of the Phase Zero and also the pilot phase was a major contributor to the project. Succeeding in launching the new system in the pilot branch with almost no significant problem, helped to change the work practices of middle-managers who run the other branches, with less trouble. Eventually, it was an important transformation in the organisation to make everything happen in the system, and the oral processes replaced with the system workflows." (Project executive – client side)

A successful change effort is projected to anchor it in the organisation culture (Lewin), as the eighth and final step of our change model and theoretical framework, which apparently has been taken successfully in this case:

"With access to the real-time reports and also the BI system, decision-making has changed dramatically across all levels of the organisation. Instead of relying on speculation, the use of sales trends has become widespread. Production managers trust and rely more on sales department requests, and the distribution of goods across the country more clearly shows the pattern of consumer demand in different locations. The organisation has clearly entered a new era. And realised that its main need was not just to control more; rather, it was access to right and real-time information for making the right decisions at the right time." (Project executive – client side

4.3.3. Case Analysis: Investigating resistance instances

Table 4-9, summarises the managers' observed resistance instances during the implementation process of case No.3. As discussed, according to the framework, the resistance instances are categorised into two major types: Political and Psychological. Also, to facilitate the examination and following up how people cope with the change during the process of ERP implementation, each instance of resistance was classified based on the Coetsee's resistance behaviour classification into the four levels of: apathy, passive resistance, active resistance, and aggressive resistance.

Table 4-9. The observed resistance instances during the implementation process in case 3

	Q.T.	Type of resistance	An instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action
Pre-imp	4	Psychological driven	[C32-08] (distance, lack of interest)	Apathy	Planning & Analysis	[C32-09]	
			[C32-10] (distance, lack of interest)	Apathy	Strategic Decisions	[C32-11]	
			[C32-12] (distance, lack of interest)	Apathy	Planning & Analysis	[C32-13]	
			[C32-14] (distance, lack of interest)	Apathy	Construction and Testing		
			[C32-15] (delay, excuses)	Passive resistance	Construction and Testing	[C32-16]	
		Political driven	[C32-17] (voicing opposite points of view, asking others to intervene)	Active resistance	Construction and Testing	[C32-18]	[C32-19]
			[C32-20] (voicing opposite points of view)	Active resistance	Construction and Testing		
imple ment	9	Psychological driven	[C31-09] (voicing opposite points of view,	Active resistance	Actual implementation	[C31-10]	

			asking others to intervene)				
			[C31-11] (persistence of former behavior)	Passive resistance	Actual implementation	[C31-12]	
			[C31-13] (delay, excuses)	Passive resistance	Construction and Testing	[C31-14]	
			[C33-07] (persistence of former behaviour, withdrawal)	Passive resistance	Construction and Testing, and Actual implementation	[C33-08]	
	7,8	Political driven	[C31-15] (persistence of former behavior, withdrawal)	Passive resistance	Actual implementation	[C31-16]	
			[C32-21] (voicing opposite points of view)	Active resistance	Actual implementation	[C32-22]	
			[C32-23] (voicing opposite points of view)	Active resistance	Actual implementation	[C32-24]	
			[C32-25] (strikes, boycotts)	Aggressive resistance	Actual implementation	[C32-26]	
			[C32-27] (Infighting, strikes, boycotts)	Aggressive resistance	Actual implementation	[C32-28]	
			[C32-29] (Delay tactics, excuses, the persistence of former behaviour)	Passive resistance	Planning and Analysis	[C32-30]	
			[C32-31] (Delay tactics, excuses, persistence of former behavior)	Passive resistance	Actual implementation	[C32-32]	
			[C33-09] (voicing opposite points of view)	Active resistance	Construction and Testing, and Actual implementation	[C33-10]	
			[C33-11] (Delay tactics)	Passive resistance	Construction and Testing, and Actual implementation		

In the search for emerging patterns relating different types and categories of resistance to the different steps of implementation, the results charted in figure 4-3 shows resistance behaviour during the period of system implementation in the environment of case 3, over the time (phases of technical implementation).

The circles show the psychologically driven resistance instances, and the crosses show the politically driven ones. The blue line connects the worse instance in each period which ends in "Neutrality and Adaptation" at the end of the implementation process.

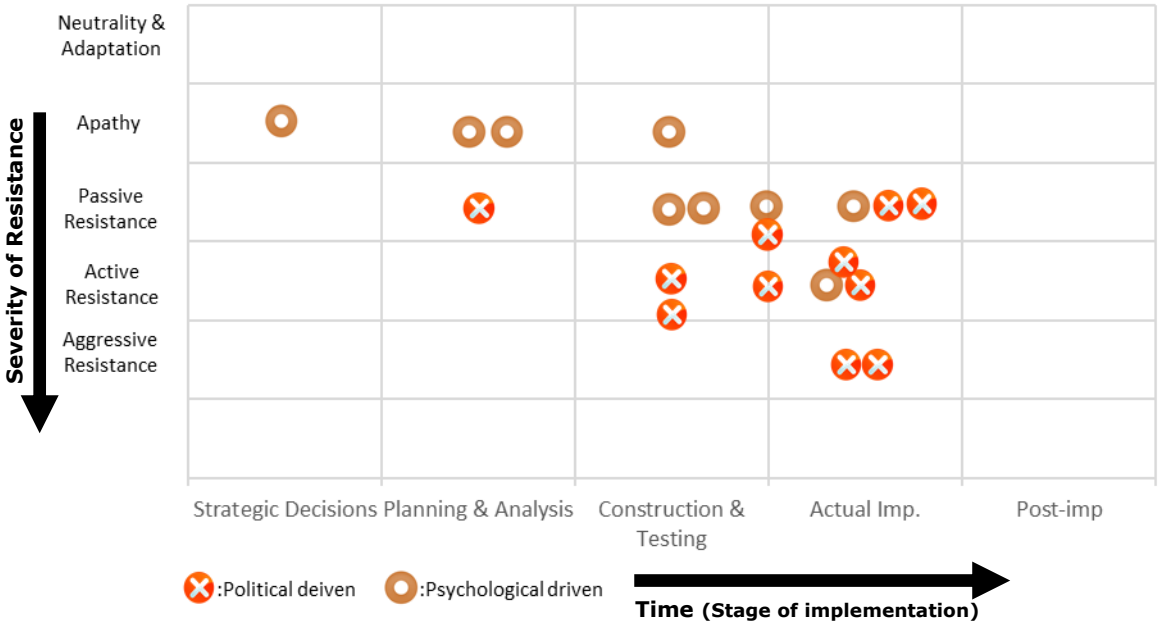

Figure 4-3. Resistance behaviour over time (implementation phases) in case 3

The diagram suggests along with progressing in the implementation process, the severity of resistance behaviour goes up till reaches to its maximum in the actual implementation phase. Moreover, it seems the resistance type is more psychological driven in early phases of implementation and becomes more political driven when we have progressed in the process. This issue will be discussed in the next chapter.

5
Discussion

5.1. Introduction

This research presents a resistance-aware framework for implementing ERP systems. This chapter pulls together the evidence and discusses how the initial framework is validated, changed and developed during the fieldwork towards the final version.

As discussed before, the main objective of this research is "to investigate the factors that enable IT project managers to minimise user resistance during ERP implementation projects". The research set out to develop a user-resistance framework that company and IT project managers can use as a practical guide throughout an ERP implementation project. By reviewing the literature on resistance to IS implementation and change management theories that deal with user resistance, the initial framework emerged (Table 2-4).

This was achieved by (i) reviewing the change management literature to produce a synthesised change process model suitable for large-scale IT projects; (ii) mapping the practical elements of a technical ERP implementation process model against the different steps of the change process model; and (iii) charting the different types of user resistance to

IS implementation against the different steps of the implementation process model. The outcome of the literature review was the creation of a dedicated theoretical framework to support senior managers when implementing ERP systems (Table 2-4).

The aim of this framework is to offer practical guidance and help with reducing the level of variability experienced by organisations adopting ERP software. It would assist the organisations and such process managers in helping people cope with the new system and its consequences in a more convenient way, which could improve the success rate of adopting such systems. It helps in understanding the complexity of the issues and improving the change readiness.

The framework is based mainly on the idea that implementing an ERP system is an organisational transformation (from the old ways of doing the jobs in the organisation to the new system) which for avoiding or minimising human resistance, some necessary steps should be taken before and during the implementation process regarding to change management literature. According to the change management body of knowledge (e.g. Lewin, 1999; Kotter, 1996; Burnes, 1996; Darwin et al., 2001), management of resistance is not just the matter of reaction to resistance instances, but taking measures from the first day of the change initiative to promote and draw approval about it, and consequently reduce the reasons and so the probability of forming resistance against it. It encourages the organisations to proactively deal with the situation and hence, help people cope with the new routines and environment in a more convenient and smooth way.

In this regard, the framework has mapped different steps of the selected change process model (Kotter's (1996) model; ref. Chapter 2) against the stages of the ERP implementation process model. It also has charted the different types of user resistance to IS implementation and the recommended strategies to deal with them (extracted from the literature on resistance to IS implementation), against the different stages of the ERP implementation process model.

Accordingly, the developed framework offers an enriched ERP implementation process model which suggests the actions should be taken by the organisation in each phase to better manage the human side of the implementation process and avoid or overcome the probable resistance instances. It also presents what type of resistance should be expected in each stage of the process and helps the implementation managers to become aware and ready for them.

After forming the conceptual framework (Table 2-4), the research looked for evaluating and refining the conceptual framework extracted from the literature. Here, the key aim was to explore the stock of knowledge held by the project management board in the process of implementing ERP systems with regards to what had been reviewed in the literature.

In this regard, in evaluating the conceptual framework, in the research fieldwork, the researcher looked for the answers to four main questions:

(i) Is there any evidence to show that the Kotter change steps (the adopted change management process model in the framework) have been taken during the successful ERP case implementation instances? (explicitly or implicitly by tracing its recommended steps across the implementation period)

(ii) If so, could any pattern for matching the steps of the two processes (change implementation process and technical process of implementing ERP systems) be found in successful ERP implementation processes?

(iii) How might the captured people's reactions (resistance instances) be mapped chronologically against the aforementioned steps? (in terms of resistance category and behaviour)

(iv) Could such resistance instances be mapped to the change coping cycle as the framework suggests?

The study was held in three large-sized Iranian companies (more than 250 personnel), each one from different industry (Table 3-1). The outcome of the implementation processes (the implementation has been successfully

finished, and ERP system is 'in Operation' for all cases) and geographical location of the companies (Iran for all cases) are the same. This similarity helps us to concentrate on evaluating and refining the framework.

It is worth mentioning that the success definition in this study focuses on the deliverable itself: whether the final product or service has been accepted by the user; and if the user is actually using the product or service (Marnewick, 2018). Herein, an ERP implementation is successful (in terms of the change effort) when the new ERP system totally replaces all the legacy systems in the organization, regardless of project factors such as time and budget which are usually considered in assessing the success of projects (in terms of project management).

In conducting the study, considering the framework, the researcher first needed to follow up Kotter's change process steps in each implementation process. Also, it is needed to identify the resistance instances during each implementation process and the actions taken against them to examine how people cope with change during the processes.

Accordingly, the main interview question themes were organised with regard to the three main phases in an ERP implementation process. The questions focused on essential aspects that are acknowledged in a change process, as follows:

Pre-implementation:

1. Why did your company decide to implement the ERP system in its environment? Was there any urgent need for such a system?
2. How many people in the top tier of management in the organisation supported the idea?
3. Was there any clear vision? Was it communicated well?
4. What about the people, what was their reaction? Were there any symptoms of perceiving a threat? How did you deal with these perceptions?

Implementation:

5. How was the implementation planned? How many phases were there? Did you celebrate any short term win during the process?
6. What human-related obstacles did the organisation identify during the implementation? How did the organisation deal with them? Any comment?
7. What was the effect of the new system on power distribution in the organisation? How did the organisation cope with this issue?
8. Which groups or senior managers perceived inequity or the loss of power? And in which phases? What was their reaction? Was this reaction anticipatable? How did the organisation deal with these reactions? Accordingly, what was your position? Do you have any comments?
9. Was there any fear and stress stemming from the new routines and modes of work? How did the organisation deal with it? Could that be better? How did you influence this reaction?

Post-implementation:

10. Have people got used to the new routines? Have the new relationships resulted from the change been successfully embedded? What was your role in this process? Any comment?

The interview responses have been coded regarding the main research questions.

Following the Kotter (1996) change steps in each implementation process, the steps of the technical implementation model were considered as the categories for the answers to the corresponding interview themes (QT 1, 2, 3, 5, 6, 7, 10). For the Kotter steps which were not observed in the interviews, an additional category "not-observed" was defined. In coding each interview, segments of the transcripts that reported any specific be taken Kotter's change step in the process of implementation were identified. The segments were then examined to identify in which specific technical phase of implementation happened. They were then organised so

as to build a logical chain of evidence for each case. The summarised result of each case was shown in tables 4-1, 4-4 and 4-7 (sections 4.1, 4.2 and 4.3).

Also, in the case studies, in the search for emerging patterns relating to different types and categories of resistance, the author looked for resistance instances to map into the framework and to categorise them with regard to their types (psychological and political driven), and to the different steps of implementation.

The framework suggests the resistance behaviours become more severe through the period of implementation until the middle of the process (in successful efforts) when people realize the change is inevitable and let it go, according to the Carnall's coping cycle (2003) mapped into the framework, as discussed in the literature review (Chapter 2).

To examine the severity of resistance instances, the researcher used the resistance behaviour classification proposed by Coetsee (1999) to code and present people's reaction, as captured in the interviews (Table 3-2). Accordingly, each instance of resistance was coded to one of the four levels of resistance in Coetsee's taxonomy (apathy, passive resistance, active resistance, and aggressive resistance) and, additionally, to its correspondent implementation phase and resistance type (psychological driven or political driven). The summarised result of observed resistance instances for each case were shown in tables 4-3, 4-6 and 4-9; and also charted in figures 4-1, 4-2 and 4-3 (sections 4.1, 4.2 and 4.3).

After undertaking the within-case analyses, which allowed the unique patterns of each case to emerge and to provide the researcher with a rich understanding of each case, the focus moves towards a cross-case analysis in search of common patterns in the three cases.

5.2. Tracing change steps in the system implementation process and matching the steps of the two processes

As discussed in the literature review (Chapter 2), the main critique exposed with the existing theories of resistance to IS implementation was that they generally adopt a very narrow and pure IS point of view and do not consider other related fields, especially Change Management, which could contribute in understanding and dealing with user resistance in the field of information systems.

Accordingly, this research proposed to use the change management body of knowledge as an overarching perspective to deal with resistance in the process of ERP implementation, which could provide a more holistic and coherent approach to understand and address such problems.

In this regard, the initial framework has mapped different steps of the selected change process model (Kotter's (1996) model; ref. Chapter 2) against the stages of the ERP implementation process model.

For validating the conceptual framework, this section addresses the first two main research questions. The research looked for the evidence, by tracing the recommended steps across the implementation periods to indicate if Kotter's change steps have been undertaken during these successful ERP implementation instances (explicitly or implicitly). And if so, could any pattern for matching the steps of the two processes (change implementation process and technical process of implementing ERP systems) be found in successful ERP implementation processes?

The result shows in all three implementation cases – which were successful in terms of replacing the new systems with the old ones, Kotter's recommended steps for a successful change have been observed sequentially during the implementation process. This suggests that the idea of using change management perspective and tools for successful implementation of ERP systems and managing user resistance in such projects is valid, and could enrich the implementation process models in terms of encountering human-related issues (i.e. user resistance).

In addition, the result of the case study analysis shows some difference in the mapping between the change and technical implementation process in implementation cases with the initial mapping in the framework. This contributed in changing and developing the final framework suggested by this research. Table 5-1, aggregates Table 4-1, 4-4, and 4-7 and presents the observation of the steps of Kotter's model during the implementations of the ERP system in the cases (with respect to the implementation stages). The codes refer to the answers given by the interviewees (for detailed coding see each case). Each bracket represents a quote coded according to its corresponding Kotter's change step and also its corresponding step in the technical implementation model. The code Cxy-z refers to the case number x, interviewee number y in that case; and the z is the number given to that specific quote (For example quote [C31-02] refers to the coded quote No.2 from the first interviewee in the third case).

Table 5-1. Aggregating of the observations of Kotter's change model steps in the implementation process of the three cases

		Observed						**Not-observed**
Related Question Theme	Kotter's steps	Pre-Imp	imp				Post-imp	
		Strategic decisions	Planning, and As Is & To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C11-01] [C21-01] [C31-01] [C12-01] [C22-01] [C32-01] [C13-01] [C23-01] [C33-01]						
2	Forming Powerful Coalition	[C11-02] [C21-02] [C31-02] [C12-02] [C22-02] [C32-02] [C13-02] [C33-02]						
3	Developing a vision for Change	[C11-03] [C21-03] [C31-03] [C12-03] [C22-03] [C32-03] [C13-03] [C23-02] [C33-03]						[C22-04]
3	Communicating the Change Vision	[C11-04] [C31-04] [C21-04]	[C12-04] [C21-05] [C22-05] [C23-03] [C32-04]					[C13-04] [C33-04]
6	Removing Obstacles	[C31-05]		[C12-05] [C21-06]	[C11-05] [C21-07] [C12-06]			
				[C22-06] [C32-05] [C33-05]				
5	Generating Short Term Wins			[C21-08] [C33-06]	[C11-06] [C23-04] [C21-08] [C33-05]			
				[C31-06] [C32-06]				
5,7	Building on the Change				[C21-09] [C31-07] [C23-04] [C32-07]			
10	Anchoring the Changes in Corporate Culture				[C21-10]		[C23-05] [C31-08]	

5.2.1 Discussion of the table and findings

The formation of the cells filled in Table 5-1 shows the sequence chain of observing Kotter's model in this study and addresses the first two main questions of this research.

Firstly, the case studies demonstrated that the steps of Kotter's change model could be perceived throughout these three ERP implementation projects. As presented in Table 5-1 (and also presented case by case in Chapter 4), by analysing the script of the interviews, the author found evidence that the Kotter's change model steps had been taken (implicitly) during the ERP implementation efforts. Furthermore, the cases showed that these steps had happened consecutively as the implementation process moves forward. This result indicates that the idea of dealing with resistance in IS implementation processes from a change management perspective is valid and is worthy of consideration in practice.

Secondly, the case studies suggest almost the same mapping between the Kotter's change process model and the system implementation process, as the one hypothesised in our proposed framework. However, there are a few differences between what has been observed in our cases and what has been proposed based on the literature and previous studies.

According to the change management body of knowledge (e.g. Lewin, 1999; Kotter, 1996; Burnes, 1996; Darwin *et al*., 2001), the most influential factor in a successful change effort is to create a sense of urgency in the organisation and to destabilise the status quo before starting the change itself. Also, Markus (1983) and Kotter (1996) stress the importance of forming coalitions, mainly for addressing the political concerns arising in the organisation with introducing the change initiative (i.e. the new system in our study). Accordingly, what is essential in the pre-implementation stage of our conceptual framework, in order to have a successful ERP implementation process (through the lens of change management), is to create a sense of urgency, and form the coalition for leading the change (i.e. ERP implementation effort). From the perspective of this research, considering and applying this established part of the

change literature in the field of information systems implementation will contribute in increasing the success rate of such projects and in reducing the problems they face in human-side of the organisations.

In our cases, carrying out the first three steps of Kotter's change model, namely "creating urgency", "forming powerful coalition", and "developing a vision for change", have all been observed during the pre-implementation period of system implementation, in the phase of "Strategic decisions and vendor selection".

For example, one of the client-side team managers (Head of the payroll office) in case No. one (Bank Z) describes their situations:

> *"… we generally did the calculations by workarounds as MS Excel due to its (i.e. the old system's) shortage in necessary features. Therefore, we always encountered with many human errors." (Head of the payroll office)*

Likewise, the client-side project manager in case No. 3 (The beverage company) says:

> *"In the CEO's view, there was no longer any trust on the departments' reports that were sent manually or by Excel. There was even a feeling of financial and commodity leakage in the company.*
> *The senior managers of the organisation had severe problems in control systems and could not enforce the necessary controls on the organisations…*
> *In fact, the organisation's information systems did not develop with the growth of the organisation itself and still 30 years old legacy systems were used…*
> *Many managers also believed that the information they received was manipulated." (Project manager – client side)*

Such sufficient urgency helped the organisations (at least through the top layer) to drive people more quickly out of their comfort zones and form a powerful coalition among managers and avoid people to become defensive about the status quo.

The other point is whereas, in the framework, it was anticipated that the 'developing the vision for change' would be accomplished during the early steps of the implementation phase (i.e., planning), in all three cases of this study, it has been undertaken in the pre-implementation period. In other words, these cases suggest having a vision on the board is a recommended prerequisite for permitting the entrance of the ERP vendor and implementer into the organisation. It seems that, in successful ERP implementations, the understanding of the organisation and its managers of what they need, have really facilitated the progress of the projects, particularly in selecting the proper vendors (i.e. ERP providers), and also trusting to their solutions.

Furthermore, this research suggests that in a successful ERP implementation, not only the vision for change is developed before the beginning of the implementation period, but also organisations have started to discuss the vision among the different layers of the organisations before the implementation starts. This slightly differs from what is proposed in the framework in that the vision is started to be communicated in the early steps of the implementation period (i.e. not before it).

The fourth step in the framework stresses the importance of communication for successful change efforts; as Lewin (1999) stated drawing people into the discussions about the change is one of the most effective ways of gaining support for it (1999). However, in some of our cases, the communication was not sufficient as the few "not observed" scripts noted in this row of Table 5-1 indicate.

For example, in case No. 1, it is evident from the quotes of the both project managers (client-side and vendor side) that the measures taken for communicating the vision were not sufficient, especially in the layer of middle managers in the departments and the experts who supposed to be the main users of the system.

> *"Assuming that persuading the employees is the client responsibility in such projects, in my assessment, the employees were not aware sufficiently of what supposed to happen." (Project manager- vendor side)*

Likewise, according to one of the team managers:

> *"In the initial period of the project- the analysis of the "As Is" and "To Be" situations, there were some limited, not convincing explanations for the employees of the related departments about the targets and advantages the new system provides." (Head of the payroll office)*

The interesting point is that such inattention has made troubles for the implementation in terms of facing distract and lack of interest in the next stages. For example, the client-side project manager (the aforementioned case):

> *"In the early days, the experts had no interest in participating in training sessions… We tried to address the problem by explaining the importance of the situation and the necessity of the project to them. We also requested support from departments directors."*

According to the conceptual framework developed, before starting the 'actual implementation' phase (in the technical process), the first four steps of the transformation process -which help defrost the hardened status quo in the organisation (Lewin, 1999), should be taken. In managing resistance, the proper management of the unfreezing steps is essential to prevent negative and blocking resistance from manifesting itself (Darwin *et al*., 2001). In this regard, the framework anticipates some sorts of resistance in the subsequent phases due to insufficient efforts in conducting these four unfreezing steps in such cases. This matches some of the evidence in this study and is discussed in the next section. For example, in case No. 2 due to a somehow shaky start in the change process and weak unfreezing of the status quo, people in various departments were interested in returning to the ways that they used to do the job. The client-side project manager, in this case, pointed to the issue:

> *"…the supporters of the legacy systems and old routines kept trying to persuade the organisation and their managers that the new system did not work correctly". This observation is repeated in other interviewees as well; one of the vendor side team managers brought up the issue: "The interest in returning to use the old systems or modes of work, was usually high especially in the first weeks of launching*

each sub-system. The employees kept showing the old system pages as soon as they faced a problem in working with the new system".

The other point is, based on the interviews, the researcher could not clearly determine in which of the planning, as-is analysis, and to-be analysis phases, the vision of the change is discoursed; in fact, it has been only acknowledged that the vision is definitely discussed before the actual implementation phase starts.

With the start of implementation segment of the technical process, especially the phases of "Construction and testing the new system" and "Actual implementation", as the change becomes clearer, the efforts for empowering the organisation-wide actions and removing obstacles become more important (Kotter, 1996) which has reflected in the framework developed and also approved by the fieldwork. For example, in case No. 3, as the client-side project manager points out:

"At the beginning of the implementation, there were some resistance instances due to some system weaknesses or time-consuming of data entry (due to lack of familiarity with the new system) that was managed by the regional managers. In some cases, bonuses were also defined for hard-working users."

The momentum created by "early short wins" provided a supportive environment for the project:

"The support of the senior managers' layer, especially after evaluating the early short wins, helped to speed up the project (vendor side project manager)"

Here, the next two Kotter's steps are "Removing Obstacles" and "Generating Short Term Wins" which the framework envisages should be taken consequently during the "To-be analysis", "Construction and testing", and "Actual implementation" phases of the implementation process. However, as illustrated in Table 5-1, according to the cases, these two steps mostly take place in parallel during the implementation, starting from "Construction and testing" phase and not the "To-be analysis". However, some evidence of removing obstacles has been observed during

the earlier phases (i.e. "Strategic decisions and vendor selection") in some cases.

The seventh step, "Building on the Change", should be taken in the "actual implementation" phase too, according to the framework. The three cases confirm such projection. Actually, the three steps of "Removing Obstacles", "Generating Short Term Wins" and "Building on the Change", form the main part of any change effort (Kotter, 2014; 1996). Assuming the ERP implementation process as a change effort, its main body is the two phases of "Construction and testing", and "actual implementation".

Taking the last step of Kotter's model, "Anchoring the Changes in Corporate Culture", there is some evidence from two of three cases in this study (Case No. 2 and 3) that it took place in the post-implementation phase as the framework had projected.

> *"After a while from the end of the project and the close-up, it seems the company's culture has been considerably changed due to the influence of the new system and has moved towards becoming more transparent. For example, now, the Sales Department has requested to provide a service, to the customers, to informs them about the status of their orders and the production stage to which they are reaching at any time, via the Internet. While, in the past, such information was totally considered as confidential." (Case No.2 client side Project manager)*

However, there are some scripts corresponding to the earlier phase ("actual implementation") pointing to the impacts of the ERP system to the organisation culture and getting used to online reports and analysis provided by it, and behaving the new system as the new normal conditions which matches with the definition of this step in Kotter's model. The prolonged process of implementation that could take more than two years in many cases may justify this observation.

To sum up, Table 5-2 shows the mapping between the steps of the two processes (change process and technical system implementing process) according to the observations in these three implementing instances

(columns two and three), which is slightly different from what hypothesised in the framework (columns one and two) as discussed here.

Table 5-2. Chronologically mapping between the two processes
The first column shows the initial mapping

Steps of Kotter's change model (mapped according to the framework)	**Phases of ERP implementation process**		**Steps of Kotter's change model** (mapped according to the three cases)
Creating Urgency	Pre-implementation	Strategic decisions	Creating Urgency
Forming Powerful Coalition			Forming Powerful Coalition
Developing a vision for Change			Developing a vision for Change
	Implementation	Planning	Communicating the Change Vision
Communicating the Change Vision		As Is Analysis	
		To Be Analysis	
Removing Obstacles		Construction and Testing	Removing Obstacles / Generating Short Term Wins
		Actual Implementation	
Generating Short Term Wins			Building on the Change
Building on the Change			Anchoring the Changes in Corporate Culture
Anchoring the Changes in Corporate Culture		Close Up	
	Post-implementation	Enhancement	

TIME

5.3. Investigating resistance instances

The other gap identified in the extant theories of resistance to IS implementation was that they largely adopt a narrow approach to understanding and dealing with user resistance. They are mostly very weak in taking into account the role of time in the unfolding of resistance in the process of implementation and showing the cycle of resistance behaviour to new IS implementation.

This section discusses our finding related to the last two research questions which focus on user resistance throughout the implementation process:

- How might the captured people's reactions (resistance instances) be mapped chronologically against the aforementioned steps? (in terms of resistance category and behaviour)
- Could such resistance instances be mapped to the change coping cycle as the framework suggests?

In this regard, it aggregates the findings of the three cases about how the people's reactions that were captured (resistance instances) could be mapped chronologically against implementation stages (in terms of resistance category and behaviour); and if such resistance instances could be mapped to the change coping cycle as the framework suggests.

The results suggest the resistance instances mostly are psychological driven in the earlier phases of the implementation, and they become more politically driven and also more severe as the projects move on and the impact of the new routines on the organisational power balance becomes clearer. Having such knowledge helps the project managers to predict and be prepared for the people's reactions throughout the implementation process.

5.3.1 discussion of the findings

In search of emerging patterns relating the different types and categories of resistance to the different steps of implementation, figure 5-1 aggregates the observed resistance instances of the three cases over the

time (phases of technical implementation). The circles show the psychologically driven resistance instances, and the crosses show the politically driven ones.

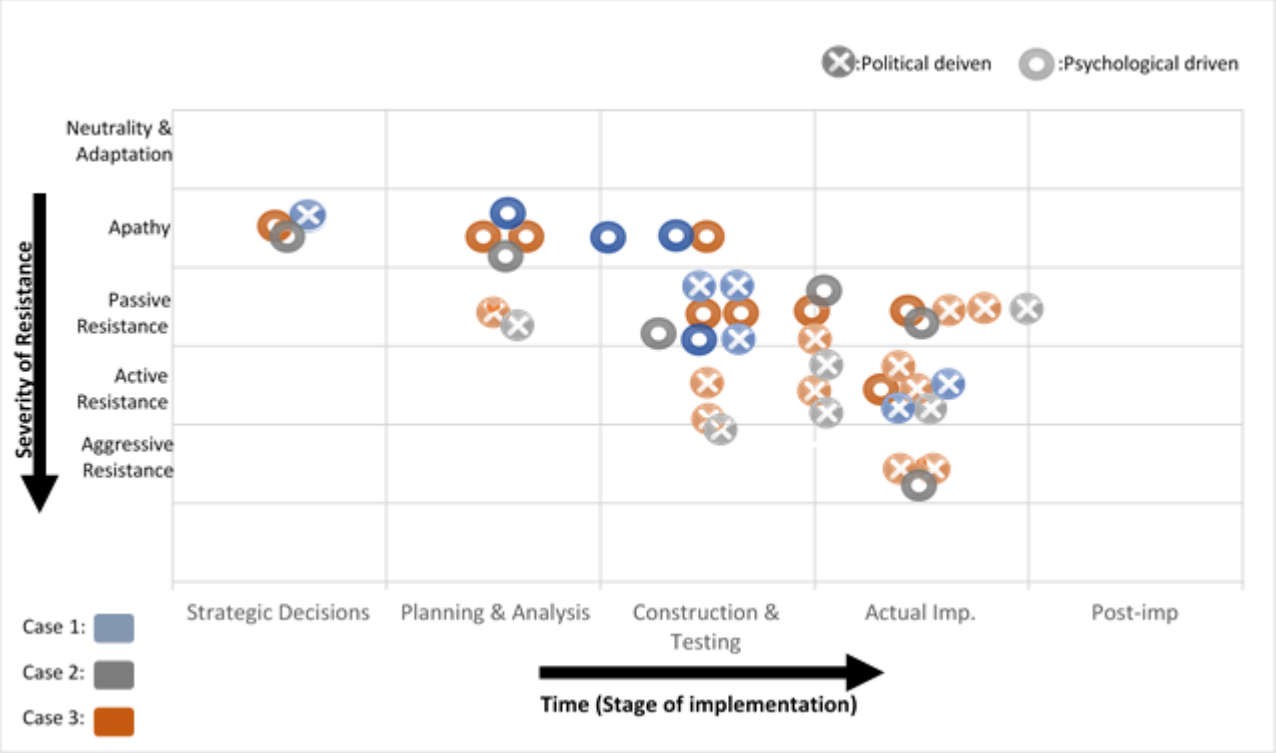

Figure 5-1. Resistance behaviour over time in the three cases

The diagram suggests the resistance instances are mostly psychologically driven in earlier phases of the implementation, and they become more politically driven as the projects move on and the impact of the new routines on the organisational power balance becomes clearer. This observation and results will be added to the framework in order to help project managers understand people's reaction better throughout the implementation process (section 5.4, Table 5-3: The final framework).

Back to the conceptual framework, it aggregates the theories of resistance to IS implementation according to their impact period (regarding the implementation phases). Accordingly, it seems the emerging pattern could be approved by this holistic view. As presented in the framework, according to the literature of resistance to IS implementation, the major sources of resistance spotted in the pre-implementation stage are "Perceiving threat and lack of control over expected consequences" (Beaudry and

Pinsonneault, 2005; 2010) and "Uncertainty" (Klaus *et al.,* 2007) that both could be categorized as psychological driven resistances.

As the implementation process moves on through time, the other sources of resistance play their roles. In the implementation stage of all the three cases, the interviewees reported facing both types (psychological driven and political driven resistance) in their projects. However, it seems they faced many political driven resistances mostly after the end of the "planning and analysis stage" and in the stages of "construction & testing" and especially the "actual implementation". For example, the client-side project manager in case No.3 described a related instance:

> "*The increased possibility of controlling and tracking by headquarter, made some branch managers - who were the only decision makers till the time, order not using the system.".*

As another example:

> *"During the actual implementation phase, one of the departments' managers (head of the welfare department), surprisingly and strongly, took the opposite position to the project. Fortunately, he could not manage to attract companionship from other managers… we later found that he was concerned about losing the advantage of accessing the core banking system after launching the new back-office system." (Case No.1, Client-side project manager)*

This observation could be explained by the framework as the political driven resistances are the result of "Change in intra-organisational power distribution with the new system" (Markus, 1983; Lapointe and Rivard, 2005) and "Perceiving inequity" (Joshi, 1991) which could be perceived by people mostly after that the change and the impact of the new routines on the organisational power balance becomes clearer. Here, system users start to make projections about the consequences of its use. If expected consequences are threatening, resistance behaviours result (Markus, 1983; Lapointe and Rivard, 2005).

We have psychological driven resistance in this stage as well. "Fear and stress stemming from the new routines and modes of work" (Marakas and Hornik, 1996), "Workload, Changed Job, Complexity, Lack of Fit, Uncertainty" (Klaus et al., 2007), and "Switching costs for users" (Kim and Kankanhalli, 2009) are the main sources of this type of resistance in this stage according to the conceptual framework.

> *"At the time of launching the Sales sub-system, we faced this issue that some of the invoice records were cleared after the data entry, which posed a huge challenge to the project. At that time, the untrusted new system and its bugs were the inevitable culprits in the eyes of the personnel and in particular the sales director. After reviewing the system logs which took some time, it was recognised that the problem was happened by one of the staff who had intentionally deleted some random records.*
> *…the most possible reason was that the launch time of the system was planned to take place in the new year holidays, despite the severe opposition of the personnel. At the time, we consider this resistance as an emotional reaction against the system; However, the increased workload resulted from parallel working with the old system should not be neglected." (Case No.2, Client-side project manager)*

Another interesting emerging pattern that could be perceived from resistance instances reported in the cases (Figure 5-1) is, along with progressing in the implementation process, in all cases the severity of resistance behaviour goes up until it reaches its maximum in the "actual implementation" phase. As a matter of fact, in all these three cases, the situation gets worse and worse before it starts to get better.

Actually, the graphs resemblance to Carnall's (2003) change coping cycle is very promising, as this similarity suggests his model is a good way to explain the people's reactions during the process of implementing ERP systems. Having used Carnall's model to explain the emergent pattern observed in our study, the implementation efforts were successful in our three cases as the implementation managers were successful in convincing people to cope with the change introduced by the new system. Otherwise, the oppositions to the new system could have formed coalitions against it

and have defeated the implementation effort. There were interesting quotes regarding this point in our study. For example:

> *"… some key players perceived some sort of exclusion from the process, and consequently they concerned about their positions and started to expose some kind of resistance. For example, one of the middle layer managers in the HR department prevented her staff from spending enough time in the process by overwhelming them with daily jobs.*
> *We reacted to the problem by planning weekly meetings in such cases to have those managers involved in the process." (Case No.1, Client-side project manager)*

They have passed the severe situations of implementing the change and come up to the Discarding stage (according to Carnall's model). As it is shown in the last section, by implicitly following Kotter's model steps, they took proper measures in managing such changes and helped people let go of the past and look forward to the future and avoid aggressive resistance from key players which would have resulted in failure of the change effort (i.e. system implementation).

As discussed in Chapter 2, any change process is a transition from normality through some form of disruption and then to re-defined normality. In the initial state of normality, a reasonable level of performance can be maintained. However, as an individual or an

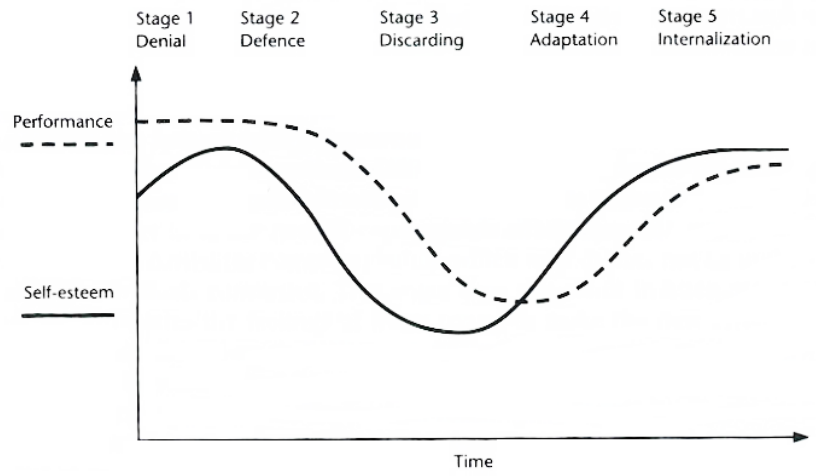

Figure 5-2. Carnall's Change Coping Cycle (2003)

organisation passes through the region of disruption, performance can be expected to be diminished. In the final state, re-defined normality, the understandings and expectations of the changed entity (individual or organisation) are more closely aligned with reality and performance increases. Carnall (2003) identified five distinct stages in every change effort: denial, defence, discarding, adaptation, and internalisation (Figure 5-2).

According to Carnall (2003), at the discarding stage, people begin to let go of the past and look forward to the future. Although it is not clear how this happens, it is initially a process of perception and happens when people come to see that the change is inevitable and necessary. They begin to solve problems, take the initiative and even demonstrate some leadership. So, there is a sense that they try to re-establish their own identity and self-esteem.

In this regard, the emergent pattern observed in our study suggests "the Discarding" stage of people's coping cycle to the new ERP system happens in the stage of "Actual implementation" of the technical implementation process. This point could make the project managers aware of what they should expect in different stages of implementing new systems and will contribute to improving the final framework as will be discussed in the next section.

5.4. the Final Framework

As discussed, the study indicated that the idea of dealing with resistance in the ERP implementation process from a change management perspective could enrich the implementation process models in terms of encountering human-related issues (i.e. user resistance).

The result shows in all three implementation cases – which were successful in terms of replacing the new systems with the old ones, Kotter's recommended steps for a successful change have been observed sequentially during the implementation process. This result could confirm that using change management body of knowledge as an overarching

perspective to deal with resistance in the process of ERP implementation is valid, worth considering and could provide a more holistic and coherent approach to understand and address such problem.

The results also propose a mapping between the Kotter's change process model and the system implementation process which was presented and discussed in section 5.2. This mapping can guide the implementation project managers to take appropriate measures in order to avoid such predicted resistances or to overcome them during the lifetime of the projects.

The research also investigated how people's reactions (resistance instances) to the new system could be mapped chronologically against implementation stages (in terms of resistance category and behaviour).

The study suggests that the resistance becomes more political and more severe along with the progress of the implementation projects. The severity, probably, comes to its maximum in the "actual implementation" phase after which the situation starts to become better in the successful efforts. This can be explained by the "discarding" point of Carnall's (2003) coping cycle.

In this regard, the final framework suggested by this research is illustrated in Table 5-3. The aim of this framework is to offer practical guidance and help with reducing the level of variability experienced by organisations adopting ERP software. It would assist the organisations and such process managers in helping people cope with the new system and its consequences in a more convenient way, which could improve the success rate of adopting such systems. It helps in understanding the complexity of the issues and improving the change readiness.

Table 5-3. The final framework: The resistance-aware framework for implementing ERP systems

ERP implementation Process model stages		Kotter's change process model steps	Carnall's Coping Cycle Stages	Type of expected resistance	Severity of expected resistance	Sources of Resistance (Related to each Phase)	Recommended strategies (In addition to Kotter's model phases)	
Pre-implementation	Strategic decisions	Establishing a Sense of Urgency Forming Powerful Coalition Developing a vision for Change		Mostly Psychological driven	Apathy	Ps. driven: Perceiving threat and lack of control over expected consequences (Beaudry and Pinsonneault, 2005; 2010) Uncertainty (Klaus et al., 2007)	Developing habits of openness in organisational communications to create enough psychological safety for people (Darwin et al., 2001; Hirschorn, 1997) Communicating effectively how the new system constitutes an opportunity for users (Beaudry and Pinsonneault, 2010) Clear Plan, Communication (Klaus et al., 2007) Forming coalitions, communicating the change vision and addressing peoples' concerns (Markus, 1983)	Pre-implementation
Implementation	Planning As Is Analysis To Be Analysis	Communicating the Change Vision	Denial Defence	Both Psychological and Political driven; Probably more Political driven instances in later stages towards "Actual imp."	Passive	Po. driven: Change in intra-organisational power distribution with the new system (Markus, 1983; Lapointe and Rivard, 2005) Perceiving inequity (Joshi, 1991)	Forming coalitions, communicating the change vision and addressing peoples' concerns (Markus, 1983) identifying the influence of using the system on individuals, groups and balance of power in the organisation in order to anticipate the reaction to the new system (Lapointe and Rivard, 2005) Improving equity perceptions either by altering the actual outcomes and inputs of users or by attempting to alter users' perceptions of their own and others' inputs and outcomes (Joshi, 1991) Reducing switching costs by enhancing colleagues' favourable opinions toward new system-related change and increasing users' self-efficacy for change (Marakas and Hornik, 1996) Clear Plan, Communication, Feedback, Training, Incentives (Klaus et al., 2007) showing users how adapting work routines can lead to additional benefits by sharing best practices and positive experiences (Kim and Kankanhalli, 2009; Beaudry and Pinsonneault, 2010) Preventing users from psychological distancing by involving them in the development of the new system (Beaudry and Pinsonneault, 2010)	Implementation
	Construction and Testing	Removing Obstacles / Generating Short Term Wins	Discarding		Active	Ps. driven: Fear and stress stemming from the new routines and modes of work (Marakas and Hornik, 1996) Workload, Changed Job, Complexity, Lack of Fit, Uncertainty (Klaus et al., 2007) Switching costs for users (Kim and Kankanhalli, 2009)		
	Actual Implementation	Building on the Change			Aggressive			
	Close Up	Anchoring the Changes in Corporate Culture	Adaptation (Movement)		Adaptation			
Post- Imp.	Enhancement		Internalisation (Refreezing)				The new relationships resulted from the change are going to require work on them to be successfully embedded (Schein, 1987).	Post-Imp.

TIME

As discussed, what the ERP implementation realm can acquire from the change management body of knowledge, in order to improve the success rate of implementation efforts, is the idea that management of resistance is not just a matter of reaction to resistance instances. It is about taking measures from the first day of the change initiative (i.e. implementing the ERP system) to promote and draw approval about it, and consequently to reduce the reasons and the probability of forming resistance against it.

Accordingly, regarding each technical implementation stage, the framework provides the change management steps, and measures should be taken, expected resistance type and severity, the expected sources of resistance, and the measures should be taken respectively.

As illustrated in the framework, in the pre-implementation segment of ERP implementations technical process which includes the stage of taking "Strategic decisions" about the situation of the organisation's information systems and the measures should be taken about it, the steps should be carried out in order to have a successful outcome in the effort of implementing the new system are: (i) "Establishing a Sense of Urgency" in the atmosphere of the organisation about the need to change the information systems and routines, (ii) "Forming Powerful Coalition" among top layer managers, and (iii) "Developing a vision for Change" for the new system. In this stage, the resistance instances are mostly psychological driven and probably emerges as the form of "Apathy" against the new system. "Perceiving threat and lack of control over expected consequences" (Beaudry and Pinsonneault, 2005; 2010) and "Uncertainty" (Klaus et al., 2007) are the main sources of resistance here. It is highly recommended to "Develop habits of openness in organisational communications to create enough psychological safety for people" (Darwin et al., 2001; Hirschorn, 1997) and "Communicating effectively how the new system constitutes an opportunity for users" (Beaudry and Pinsonneault, 2010) in order to have a smoother and successful implementation.

In the period of the next segment – implementation, there are technical stages of planning and analysis (including as-is and to-be analysis),

Construction and Testing, Actual Implementation, and Close Up. Four steps of the change model would be carried out in this period. As illustrated, the step of "Communicating the Change Vision" should probably be taken along planning and analysis stages. The steps of "Removing Obstacles" and "Generating Short Term Wins" are complementing each other and take place along the stages of Construction and Testing and Actual Implementation. "Building on the Change" is the next step carrying out here in the period of Actual Implementation.

In this segment, the severity of resistance instances against the new system would increase from passive resistance to even aggressive resistance in the middle of implementation. In the stage of "Actual Implementation" and probably after presenting some short wins, should the previous change model steps were taken carefully, it is expected that people come to the "discarding point", realising the new routines and systems is inevitable and let go of the past and look forward to the future.

It is most likely that both Psychological and Political driven resistance instances will be present in the aforementioned period. However, the resistance instances probably become more politically driven as the progress of the project, and the impact of the new routines on the organisational power balance becomes clearer. "Change in intra-organisational power distribution with the new system" (Markus, 1983; Lapointe and Rivard, 2005), and "Perceiving inequity" (Joshi, 1991) are the main sources of Political driven resistance instances; whereas "Fear and stress stemming from the new routines and modes of work" (Marakas and Hornik, 1996), "Workload, Changed Job, Complexity, Lack of Fit, Uncertainty" (Klaus et al., 2007) and "Switching costs for users" (Kim and Kankanhalli, 2009) are the main sources of Psychological driven resistance instances in this period.

According to the framework, the recommended strategies to encounter user resistance in the implementation period – the second segment, include:

- Forming coalitions, communicating the change vision and addressing peoples' concerns" (Markus, 1983),

- Identifying the influence of using the system on individuals, groups and balance of power in the organisation in order to anticipate the reaction to the new system (Lapointe and Rivard, 2005),
- Improving equity perceptions either by altering the actual outcomes and inputs of users, or by attempting to alter users' perceptions of their own and others' inputs and outcomes (Joshi, 1991),
- Reducing switching costs by enhancing colleagues' favourable opinions toward new system-related change and increasing users' self-efficacy for change" (Marakas and Hornik, 1996),
- Clear Plan, Communication, Feedback, Training, Incentives" (Klaus et al., 2007),
- Showing users how adapting work routines can lead to additional benefits by sharing best practices and positive experiences" (Kim and Kankanhalli, 2009; Beaudry and Pinsonneault, 2010), and
- Preventing users from psychological distancing by involving user in the development of the new system" (Beaudry and Pinsonneault, 2010).

"Anchoring the Changes in Corporate Culture" is the last step of the change model, aiming to internalise the new routines and systems to the organisation's atmosphere and carrying out mostly in the post-implementation period along the technical stage of necessary "Enhancements" in the new system. According to the framework, in this period, the new relationships resulted from the change are going to require work on them to be successfully embedded (Schein, 1987).

In conclusion, this framework (Table 5-3) helps to understand the complexity of the issues and improve the readiness for this change (i.e. ERP implementation); as Burnes (1996) argues, successful change is less dependent on detailed plans and projections than on reaching an understanding of the complexity of the issues concerned and identifying the range of available options. It is a dedicated framework for guiding implementation project managers through the process life cycle. It encourages the organisations to proactively deal with the situation and hence, help people cope with the new routines and environment more conveniently and smoothly.

6
Conclusion

This research addressed the challenges that ERP implementation projects encounter, in the human-side of organisations, due particularly to the changes associated with such projects. Studies (e.g., Lapointe and Rivard, 2005; Motwani et al., 2008; Peszynski, 2006) show that the high degree of change, happening due to ERP implementation, raise severe levels of negative human affections and user resistance, that are recognised as the most influential failure factor for ERP implementation projects (e.g., Panorama Consulting Group, 2016; 2011; Peszynski, 2006; Razavi and Ahamad, 2011). This research presented a *resistance-aware* framework for ERP implementation projects. Considering the implementation of an ERP system as a huge-scaled organisational change effort, this study recommended that the change management theory and practice could help enrich the ERP implementation process models with effective measures. Measures that assist the organisations and project managers to manage and deal with the changes (and hence, user resistances) in a more convenient way.

The initial conceptual framework was introduced based on previous studies and theories, by 1) mapping and integrating the steps of the change process model (Kotter's model) against the technical ERP implementation process model, and 2) charting the different types and sources of user resistance to IS implementation (extracted from theories of resistance to

IS implementation) against the different steps of the implementation process model. This framework provides a holistic and coherent approach to understanding and dealing with the issues (mainly user resistances) arising because of the change (i.e., implementation effort). It defines the specific steps that should be taken before and during the actual implementation, to help minimise user resistance against the new system. Also, different sources and types (physiological and political) of anticipated resistances, associated with the recommended actions to deal with each one, are outlined throughout the implementation process. This enables the organisations to launch the ERP implementation projects with precognition of what would be expected during the project.

6.1. Thesis Contributions

The main contributions of this thesis are summarised below.

- Motivating the application of change management body of knowledge as an overarching perspective to deal with resistance in ERP implementation projects.
- Identifying the important characteristics of an effective change process model for ERP projects, which led to the use of Kotter's change model for improving the technical ERP implementation process.
- Mapping and integrating the steps of the Kotter's change process model against the technical ERP implementation process model.
- Categorising the different sources of user resistance to IS implementation into two general types of physiological and political, and charting the different types and sources of user resistance against the steps of the implementation process model.
- Using the (real) data of three successful ERP implementation projects, throughout the study, for continuous improvement and validation of the outcome of this research.
- Identifying a pattern for resistance severity in ERP implementation projects.
- Development of a user-resistance-aware framework for implementing ERP systems that company and IT project managers can use as a practical guide throughout such projects.

6.2. Change Management Body of Knowledge in ERP Projects

The initial contribution of this thesis is looking into the process of ERP implementation from the lens of change and resistance. Considering the process of implementing ERP systems as a huge-scaled *organisational change,* change management body of knowledge seems to provide promising measures and tools for managing human-related problems (i.e., resistance) in such specific changes. Chapter 2 discussed the findings of the review conducted, and analysed the existing ERP implementation process models regarding the context of the research.

The main critique to the existing theories of resistance to IS implementation was that they generally adopt a very narrow approach and only consider the aspects related to ISs, leading to a fragmented solution in understanding and dealing with user resistance in the field of information systems. This research demonstrated that the application of change management knowledge in the context of ERP implementation was not well considered and studied.

Accordingly, this research proposed to use the change management body of knowledge as an overarching perspective to deal with resistance in the process of ERP implementation, that resulted in a holistic and coherent approach to understand and address such problems. Nevertheless, the sources of resistance identified by the theories and the correspondent actions they recommended contributed to the overarching framework.

6.3. Resistance-aware Framework

This research introduced a *resistance-aware* framework for ERP implementation projects. Firstly, the main characteristics of an effective change management process model for ERP projects are identified and accordingly, a suitable change model was adapted and integrated into the

general technical process model of ERP implementation, leading to the so-called "conceptual framework". Then, the strategies recommended by theories of resistance to the implementation of information systems, for encountering user resistances, were applied to improve the framework.

The conceptual framework was hugely established based on the idea that implementing an ERP system is an organisational transformation (from the old ways of doing the jobs in the organisation to the new system) in that, for minimising human resistance, some necessary steps should be taken before and during the implementation process according to change management literature. In the following the most important parts (phase or tasks) of this research, resulting in the final ERP implementation framework, are briefly introduced in turn.

6.3.1. Change steps against the technical implementation process

Kotter's change model (2014; 1996) was identified as an appropriate model for ERP projects, particularly due to the role of power and politics in the system implementation process. The steps of Kotter's change model were integrated with ERP implementation process models (section 2.3), and the user-resistance-aware framework was introduced. The framework is then improved using the theories of resistance to information systems implementation; the sources of resistance and also the strategies suggested by each theory were charted against the stages of the implementation process. The recognised resistances in each model were also categorised according to the main two identified general resistance groups (i.e., physiological and political) to help understanding the resistance atmosphere in each implementation stage, in a better way.

6.3.2. Types of Resistance: physiological and political

This huge organisational change could arouse different types of resistance or concerns in the human side of the organisation. Reviewing the literature of ERP implementation and also the models of resistance to IS

implementation demonstrated two general groups for instances of user resistance, namely political and physiological (Bagheri *et al*., 2014).

Politically-driven resistances principally happen due to redistribution of roles and responsibilities among ERP users, which can destroy an organization if it is not properly managed (e.g., Markus, 1983; Lapointe and Rivard, 2005; Joshi, 1991; Kallinikos, 2004; Kemppainen, 2004). ERP systems typically alter the internal power structures in an organization, and hence, they are resisted by those losing power and accepted by those gaining power (Markus, 1983). Therefore, the implementation process becomes a political act, and the battles for power would complicate and delay the process. Such issues are categorised as politically-driven resistances.

Psychologically-driven resistances focus on issues like perceiving a threat and lack of control over expected consequences, or fear and stress stemming from the new routines and modes of work (e.g. Beaudry and Pinsonneault, 2005; 2010; Marakas and Hornik, 1996; Klaus *et al.*, 2007; Kim and Kankanhalli, 2009; Klaus and Blanton, 2010). As Boudreau and Robey (2005) note, the integrative nature of the ERP and the increased interdependencies of work processes it imposes, require users to change their behaviour and conform to the pre-established process requirements and behave in a more disciplined manner than they might otherwise. The issue of process acceleration induced by automation through ERP packages (Grabot, 2008), combined with the increased control and traceability brought by ERP systems has the potentially unintended side-effect of creating an anxiety-producing process.

6.3.3. Pattern of Resistance During a project

The main shortcoming of the extant theories of resistance to IS implementation was that they had largely adopted a narrow approach to understanding and dealing with user resistance. They were mostly very weak in taking into account the role of time in unfolding the resistance in the process of implementation and demonstrating the cycle of resistance behaviour to the new IS.

In this regard, the research studied three case studies (ultimately successful ERP implementation projects). It collected the people's reactions (resistance instances) throughout each case and then aggregated the findings of the cases. The instances of resistance were mapped chronologically against the implementation stages, in terms of resistance category and behaviour. It was also examined if the resistance instances could be mapped to the change coping cycle as the framework suggests.

The results demonstrated that the resistance instances are mostly psychological driven in earlier phases of the implementation, and they become more politically driven and also more severe as the projects move on and the impact of the new routines on the organisational power balance becomes clearer.

Another interesting finding of the research was the emerging pattern that could be perceived from resistance instances. The research suggested along with progressing in the implementation process, the severity of resistance behaviour goes up until it reaches its maximum in the "actual implementation" phase. As a matter of fact, in all these three cases, the situation became worse and worse before it started to get better. Actually, the graphs resemblance to Carnall's (2003) change coping cycle was very promising; the ERP projects have passed the severe situations of implementing the change and come up to the Discarding stage, according to Carnall's model. It could be interpreted that by implicitly following Kotter's model steps, the organisations and project managers took proper measures in managing such changes and helped people let go of the past and look forward to the future and avoid aggressive resistance from key players which would have resulted in failure of the change effort (i.e. system implementation).

6.4. The contribution to professional practice

The framework developed in this research (Table 5-3) offers practical guidance to managers undertaking ERP projects. It offers an enriched ERP implementation process model and outlines the actions that should be taken by the organisation to better manage the human side of the

implementation process and avoid or overcome the probable resistance instances.

It is argued that following the application of the steps outlined will help reduce the level of variability experienced by organisations adopting ERP software. As a guide, it helps in understanding the complexity of the issues and improving the change readiness; it encourages the organisations to proactively deal with the situation and ultimately, help people cope with the new routines and environment more conveniently and smoothly. Thus it has the potential for improving the success rate of adopting such systems.

6.5. Research Limitations

There are of course limitations in our approach and, hence, in the contribution of the thesis, that are however, inevitable in any approach constructed based on case studies. While the framework was initially formed according to the existing literature, the final framework was perfected based on the case studies; the type and choice of cases may affect the generality or validity of the result.

The main issue was that the researcher had to have access or permission to collect the required data and interview the employees. Accordingly, the cases were limited to ERP implementations, accessible through the researcher's 'Network'. This limitation might restrict the generality of the proposed framework as all the cases were in Iran, and thus, all the collected data may be affected by the geographical and cultural characteristics of the subject companies.

Moreover, the size and the domain (i.e., industry) of the target companies are definitely of the essential factors, in addition to their geographical locations, in generalisability of the findings. To mitigate this shortcoming as much as possible, the study was designed based on the guidelines provided by Guba and Lincoln (1989) and the cases were selected accordingly -albeit in the range of the researcher's network: three successful ERP implementation experiences, in large-sized Iranian

companies, from three different industries. Nevertheless, the author is confident that the results are valuable and applicable for other domains and context as well.

6.6. My reflection

For me as a practitioner, the whole research process, from the beginning to end, and its outcomes, helped to recognise the critical role of human agent throughout an EPR implementation project, more clearly and precisely; it provided well-founded understanding and practical techniques of how this huge change in an organisation could be effectively managed, in order to have a successful implementation.

Moreover, as a consultant, this research has changed and improved my understanding of people's behaviour, their relationships and reactions, and how they might contribute in real world situations. This has helped me remarkably in providing effective human-oriented advice to managers.

6.7. Future work

Throughout our research, the researcher noticed several directions for future work which would enhance the proposed approach. In the following, these areas are described and, in case, initial work is outlined.

Application of the proposed implementation framework throughout running projects would certainly identify potential improvements and shortcomings of the framework; it would increase the maturity of the framework so that practitioners use the framework with more confidence. Moreover, considering different industries and their specific needs could improve our framework.

In this context, a suggestion is to use action research method. Action research is a structured applied research methodology in which the field data about the organisation and the effects of the interventions, presented by the framework, are systematically collected throughout the project. In this setting, the proposed framework (and its interventions) is considered

and used in an implementation project from the beginning. The collected data is essential in examining and improving the framework.

Additionally, this thesis mainly focused on the role of human and user resistance in ERP implementation projects and investigated these issues in accordance with the technical implementation process. Nevertheless, the issue (i.e., user resistance) can be studied with respect to other aspects such as project management methodologies and project management organisations, which could enrich the framework promisingly for practitioners.

A

Appendix A: Case 1 Coded Interviews

Table C1T11. Observation of Kotter's change model steps in the implementation process (case #1, interviewee #1)

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C1101] *"The legacy systems couldn't process and calculate the back office operations of the new large scale bank such as managing payslips."*								
2	Forming Powerful Coalition	[C1102] *"All related managers and senior managers including bank CFO and CIO supported the change."*								
3	Developing a vision for Change	[C1103] *"The vision was: An integrated centralised system for managing all back-office operations in all branches and head office which is capable of handling large scale operations."*								
3	Communicating the Change Vision	[C1104] *"Throughout finalising the vision, in the organisation we had intensive discussions and communications between top layer management of the involved departments (IT, HR and Finance)."*								(But, there were no noticeable communications observed in lower layers)

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
6	Removing Obstacles						[C1105] *"In the middle of the implementation we found out that we needed to involve (even artificially) all the employees and managers in the related departments in the process, not just the directly related people. Consequently, we gave more authorities to some staffs by directly involving them in the process and also, provided frequent reports to all level managers."*			
5	Generating Short Term Wins						[C1106] *"In the middle of the project, we observed that there was a noticeable decrease in the enthusiasm and involvement of some important players like in some sections in HR departments… We found out that was because we had not presented any tangible progress to the organisation. Then, we scheduled a number of short term goals and tangible results."*			
5,7	Building on the Change									
10	Anchoring the Changes in Corporate Culture									

Table C1T21. The observed resistance instances during the implementation process (case #1, interviewee #1)

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
Pre-implementation	4	Ps	N/A				
		Po	[C1107] *"In the first place, each department had their own vision for implementing the back office system. During the discussions for finalising the vision, each of them concerned about demoting their position if other departments' visions were selected as the final vision… Such concerns resulted in some sort of distance for the departments which felt their voices less has taken into account."*	Apathy (inaction, distance)	Strategic decisions and vendor selection	[C1108] *"Developing an inclusive vision covering all concerns pointed by various departments."*	
implementation	9	Ps	[C1109] *"In the early days, the experts had no interest in participating in training sessions."*	Apathy (lack of interest)	As-Is & To-Be analysis	[C1110] *"We tried to address the problem by explaining the importance of the situation and the necessity of the project to them. We also requested support from departments directors."*	
			[C1111] *"The repetitive work (which was inevitable in testing phase) lasted a bit long which resulted to tiredness and withdrawal*	Passive resistance (withdrawal)	Construction and Testing		

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
			in some cases… Such reactions had some costs for the project and made some new repetitive works on its own."				
	7,8	Po	[C1112] *"The project did not intend to change the power distribution in the organisation, but during the implementation, some key players perceived some sort of exclusion from the process and consequently they concerned about their positions and started to expose some kind of resistance. For example, one of the middle layer managers in the HR department, prevented her staff of spending enough time in the process by overwhelming them with daily jobs."*	Passive resistance (delay tactics, excuses)	Construction and Testing	[C1113] *"We reacted to the problem by planning weekly meetings in such cases to have those managers involved in the process."*	[C1114] *"It was better to involve all the related players - implicitly or explicitly- from the earliest phases of the process."*
		Po	[C1115] "*During the actual implementation phase, one of the departments managers (head of welfare department), surprisingly and strongly, took the opposite position to the project. Fortunately, he couldn't manage to attract companionship from other managers… we later found that he was concerned about losing the advantage of accessing the core banking system after launching the new back-office system."*	Active resistance (voicing opposite points of view, asking others to intervene or forming coalitions)	Actual implementation	[C1116] *"There was nothing to do for us at the moment but requesting the HR director to interfere and settle the challenge."*	[C1117] *"It was better to investigate the impacts of launching the new system on the power and the advantages of the key persons before confronting their reactions."*

Table C1T31. Other factors facilitating the change process (from interviewee point of view) / (case #1, interviewee #1)

The factor	Description
Trust to the provider's brand	[C1118] *"a very important factor which really helps the relative ease of the implementation in this project was that the managers and employees' Trust to the provider's brand and its quality of service"*

Table C1T12. Observation of Kotter's change model steps in the implementation process (case #1, interviewee #2)

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Imp	imp						Post -imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C1201] *"Our need for change was urgent because the software we had was so inappropriate- as we needed to enter the same data in different parts of the system. Also it mainly acted as just an archive system for us; we generally did the calculations by workarounds as MS Excel due to its shortage in necessary features. Therefore, we always encountered with many human errors."*								
2	Forming Powerful Coalition	[C1202] *"All the managers in different layers of related departments were agree with the need for changing the software system, especially after the merger."*								
3	Developing a vision for Change	[C1203] *"The managers with the advice they had taken from the experts in their units and the IT department, agreed on the main issue: the need for an integrated system. They also agreed on the essential sub-components of the desired system. Finally, based on the determined target and the agreed requirements and feature list, the vendor selection process was conducted."*								

Table C1T12. Observation of Kotter's change model steps in the implementation process (case #1, interviewee #2) (continued.)

Related Question Theme	Kotter's steps	Observed								N
			imp							
		Strategic decisions	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
3	Communicating the Change Vision		[C1204] *"In the initial period of the project- the analysis of the "As Is" and "To Be" situations, there were some limited, not convincing explanations for the employees of the related departments about the targets and advantages the new system provides."*							
6	Removing Obstacles					[C1205] *"When the project entered the phase of "test and construction", the progress got very slow due to the small amount of the schedule assigned to the project by units' managers; about 20% of their staff working time. In fact, the project was not the priority for the organisational units… The issue was resolved by holding regular meetings with unit managers and providing regular progress reports for them in which the IT department had the key role to persuade them for making the project a main priority in their units."*	[C1206] *" In the units, the competition between the employees who were directly involved and who were not, made some difficulties… Communicating and getting more people participated in the process, reduced the issue and its impacts."*			
5	Gen. Short Term Wins									
5, 7	Building on the Change									
10	Anchoring the Changes in Corporate Culture									

Table C1T22. The observed resistance instances during the implementation process (case #1, interviewee #2)

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
Pre-imp	4	Ps	N/A				
		Po	N/A				
implementation	9	Ps	[C1207] *"The staff particularly because of the added work of need to collect data needed by the system, at this stage did not interact much with the aim of the project. For example, one of them commented: 'who is in the mood of going that much!' "*	Apathy (lack of interest)	Construction and Testing		[C1208] *"Communicating more with the employees about the goals of implementing the new systems and also the facilities and advantages it creates."*
	7,8	Po	[C1209] *" In the units, the competition between the employees who were directly involved and who were not, made some difficulties such as not cooperating or not offering help in usual business."*	Passive resistance (withdrawal)	Construction and Testing	[C1210] *"Communicating and getting more people participated in the process, reduced the issue and its impacts."*	[C1211] *"Recognising and respecting the very unique role of every people in the organisation (and certainly showing such respect) could play an important role in the process."*
		Po	[C1212] "*My direct manager was uncomfortable as she felt she in not adequately in the current of the events. Therefore, there were some instances that she hesitated to let me put time on implementation related jobs. Actually, I believe she was somewhat worried that I get hang of the system and take her position.*"	Passive resistance (delay)	Construction and Testing		

Table C1T13. Observation of Kotter's change model steps in the implementation process (case #1, interviewee #3)

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C1301] *"There absolutely was an urgent need for an integrated back office system in the bank due to severe problems they encountered in ex. accuracy and swiftness of calculations, coverage of main processes, and the amount of workarounds and paper-works they had."*								
2	Forming Powerful Coalition	[C1302] *"almost all the managers we had interactions with, eagerly supported the project and tracked it down seriously. The only exception was the welfare department director who did not recognise the urgency of the new system for his department."*								
3	Developing a vision for Change	[C1303] *"It seemed that the main directors and managers had a good knowledge about what the bank needed from the project and agreed on that before we entered into the process."*								

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
3	Communicating the Change Vision									[C1304] *"Assuming that persuading the employees is the client responsibility in such projects, in my assessment, the employees were not aware sufficiently of what supposed to be happened."*
6	Removing Obstacles									
5	Generating Short Term Wins									
5,7	Building on the Change									
10	Anchoring the Changes in Corporate Culture									

Table C1T23. The observed resistance instances during the implementation process (case #1, interviewee #3)

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
Pre-imp	4	Ps	N/A				
		Po	N/A				
implementation	9	Ps	[C1305] *" In the analysis and also the early steps of construction, there was some clear signs of disinterestedness in the behaviour of the staff towards the new system implementation; such as absence in training classes, and delaying in providing needed information."*	Apathy (lack of interest)	As-Is & To-Be analysis, and Construction and Testing	[C1306] *"The problem gradually resolved by interfering related directors and managers."*	[C1307] *"Certainly, the clients should communicate more the objectives and the necessity of the new system with the employees by any means... It is a really difficult project, it's not business as usual."*
	7,8	Po	[C1308] *"The only major resistance we encountered during the project, pertained to the department of welfare which strongly opposed the new system due to some blur reasons."*	Active resistance (voicing opposite points of view, asking others to intervene or forming coalitions)	Actual implementation	[C1309] *"The challenge resolved interfering the director of HR."*	

B

Appendix B: Case 2 Coded Interviews

Table C2T11. Observation of Kotter's change model steps in the implementation process (case #2, interviewee #1)

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Imp	imp						Post -imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C21-01] *"The new owners, just after taking over the company, realized that they needed to take actions regarding the information systems; as the silo and insular legacy systems had made it impossible to manage the company effectively. Moreover, for some departments such as the warehouse, there was no computerised system at all."*								
2	Forming Powerful Coalition	[C21-02] *"All the board members and also the senior managers agreed on the need for a change in the information systems."*								
3	Developing a vision for Change	[C21-03] *"After doing some studies and research by myself, I came to the decision that we need an ERP system to integrate all of our processes and data in one place."*								
3	Communicating the Change Vision	[C21-04] *"That the solution to our problem was a total integrated system (or ERP), was discussed separately with the board members and the senior managers; and we all agreed on that. But, what I criticise myself about now is perhaps it was better to slow down the decisions making process and hence, attract more participation from them; especially, in selecting the vendor. Particularly, this is because our selected vendor was not well-known in the field at the time. I don't mean our selection was wrong; just it was far better for the project somehow to let the other players to be involved and have the opportunity to interact with the alternatives."*	[C21-05] *"Practically, the goals of the project were informed to the rest of the layers of the organisation in the analysis phases."*							

Table C2T11. Observation of Kotter's change model steps in the implementation process (case #2, interviewee #1) (continued.)

Related Questio	Kotter's steps	Observed: Strategic decisions	imp: Planning	imp: As Is Analysis	imp: To Be Analysis	imp: Construction and Testing	imp: Actual Implementation	imp: Close Up	imp: Enhancement	Not-observed
6	Removing Obstacles					[C21-06] *"Defending and supporting the project and the people carrying out the related tasks is really important especially in the period of construction and testing of each new sub-system, as the supporters of the legacy systems and the old routines kept trying to persuade the organisation and their managers that the new system didn't work correctly. … For example, during the testing period of the warehouse system, we noticed that the accuracy of the entered data was so low and there was a huge difference between the actual inventory data and the system data. In fact, they tried to convince us that the system was not trustworthy and their paperwork data was much more accurate and reliable. At the moment, we believed that they were trying to preserve their position and reference authority, which however were right just for some of them. But, the horrible fact we understood later on was that there were actually huge instances of rubbery in place unfortunately."*	[C21-07] *"I think one of the most important tasks we did during the implementation phase was to teach not only the functionality and pages of the system, but also the business processes and the underlying concepts. It really helped our younger and more enthusiastic employees to establish a stronger relationship with the system and also the company; and after all resulted in a more convenient implementation."*			
5	Gen. Short Term Wins					[C21-08] *"The launch of the system was planned to be done stage by stage and thus the sub-systems were launched respectively. However, for delivering the first short win which was the deployment of the inventory system, we finally were forced to change the person in charge of the warehouse to eliminate the deviations. When the problem of inaccurate data was resolved and everyone who needed inventory data, could access it online and accurately in his/her office, we achieved our very first important short win which really made a momentum for the implementation project."*				
5,7	Building on the Change						[C21-09] *"With the help of the momentum generated in first steps, we move towards other sub-systems which were actually seemed to be harder in the first place, such as the production planning and the control system for which we needed to attract much more participation from the employees."*			

Table C2T11. Observation of Kotter's change model steps in the implementation process (case #2, interviewee #1) (continued.)

Re–	Kotter's steps	Observed: Strategic decisions	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	Not- observed
10	Anchoring the Changes in Corporate Culture								[C21-10] *"After a while from the end of the project and the close up, it seems the company's culture has been considerably changed due to the influence of the new system and has moved towards becoming more transparent.* *For example, now, the Sales Department has requested to provide a service, to the customers, to informs them about the status of their orders and the production stage to which they are reaching at any time, via the Internet. While, in the past, such information was totally considered as confidential."*	

Table C2T21. The observed resistance instances during the implementation process (case #2, interviewee #1)

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
Pre-imp	4	Ps	[C21-11] *"A number of members of the Board did not agree with signing the contract with the selected vendor, as although the vendor was the only ERP provider in the industry in the country, it was not well-known at the time; so, they couldn't trust its ability in carrying out the project… Such disagreement resulted in some sort of getting distance from the project in the early steps and maybe hesitation to fully support the project team in the later steps as well."*	Apathy (distance)	Strategic decisions and vendor selection	[C21-12] *"Unfortunately nothing"*	[C21-13] *"…perhaps it was better to slow down the decisions making process and hence, attract more participation from them; especially, in selecting the vendor. Particularly, this is because our selected vendor was not well-known in the field at the time. I don't mean our selection was wrong; just it was far better for the project somehow to let the other players to be involved and have the opportunity to interact with the alternatives."*
		Po	N/A				
implementation	9	Ps	[C21-15] *"Lack of interest in participating in the training sessions was observable among system users in all the departments in forms of absence and delays. Especially it happened with elderly employees who had less knowledge and interest in working with computer."*	Apathy (lack of interest)	As-Is & To-Be analysis	[C21-16] *"Attending in the classes was announced as compulsory."*	[C21-17] *"Maybe it was better to communicate more with the people, especially the key persons in various departments and make them positive about the system."*

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
	9	Ps	[C21-18] *"At the time of launching the Sales sub-system, we faced this issue that some of the invoice records were cleared after the data entry, which posed a huge challenge to the project. At that time, the untrusted new system and its bugs were the inevitable culprit in the eyes of the personnel and in particular the sales director. After reviewing the system logs which took some time, it was recognised that the problem was happened by one of the staff who had intentionally deleted some random records.* *…the most possible reason was that the launch time of the system was planned to take place in the new year holidays, despite the severe opposition of the personnel. At the time, we consider this resistance as an emotional reaction against the system; However, the increased workload resulted from parallel working with the old system should not be neglected."*	Aggressive resistance (making treats)	Actual Implementation	[C21-19] *"The person who had deleted the records, admitted her fault."*	[C21-20] *"maybe providing more incentives for the hard periods and also avoiding too high pressure on the staff would help."*

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee' s classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
		Ps	[C21-21] "*Some personnel, especially in the Sales department, continued to use their old ways of doing their job such as using Excel sheets and other workarounds for a while after switching to the new system in their departments.*"	Passive resistance (persistence of former behaviour)	Actual Implementation	[C21-22] *"The project team tried to develop the exact report that they used to generate in Excel, in the new system; but the habit didn't vanish until about a year later. It needed time I think."*	
		Ps	[C21-23] *"The director of Sales department delayed the switching plan for three times; so, the staff had to do their jobs in the new system in parallel with their old ways of doing the jobs. It seemed that he couldn't persuade himself that he could trust in and be certain about the reliability of the new system."*	Passive resistance (delay, excuses)	Construction and Testing		

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee' s classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
	7,8	Po	[C21-14] *"…in the phase of analysis, the director of production (a member of the board) had an obvious lack of interest in the project; he cancelled the planned sessions or attended them with delay while others were waiting for him… might be this was a signal to me to acknowledge his superiority in his area"*	Passive resistance (delay tactics, excuses)	As-Is & To-Be analysis		
		Po	[C21-24] *"…In this situation* (cf. quote [C21-18])*, there were some people who supported the claim of the system inability, because of the threats they felt the new system would impose to their identity in their department and the organisation. They tried to make the department director intervene and block the launching process."*	Active resistance (asking others to intervene, forming coalitions)	Actual implementation		

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee' s classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
		Po	[C21-25] *"…Likewise* (cf. quote [C21-24]) *many of the personnel who thought the new system impose threats to their identity in their department and the organisation tried to prevent launching the new system, especially those had reference roles for the information in the company in some forms. … For example, during the testing period of the warehouse system, we noticed that the accuracy of the entered data was so low and there was a huge difference between the actual inventory data and the system data. In fact, they tried to convince us that the system was not trustworthy and their paperwork data was much more accurate and reliable. At the moment, we believed that they were trying to preserve their position and reference authority, which however were right just for some of them. But, the horrible fact we understood later on was that there were actually huge instances of rubbery in place unfortunately."*	Active-Aggressive resistance (asking others to intervene, making threats-almost)	Construction and Testing		[C21-26] *"Defending and supporting the project and the people carrying out the related tasks is really important especially in the period of construction and testing of each new sub-system, as the supporters of the legacy systems and the old routines kept trying to persuade the organisation and their managers that the new system didn't work correctly."*

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee' s classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
		Po	[C21-27] *"…As another* example (cf. quote [C21-25]) *which was quite more moderate, was the night shift manager of the production department. He believed that the production planning is a managerial job and could not be left to computers. So, he tried to completely ignore the system in that field. The problem resolved completely, only when he retired."*	Passive resistance (withdrawal, persistence of former behaviour)	Construction and Testing, Actual implementation, Close up		

Table C2T31. Other factors facilitating the change process (from the interviewee point of view) / (case #2, interviewee #1)

The factor	Description
Trust to the provider's brand (from quote [C1118] in Case No.1)	[C21-28] *"It is obvious that the relative anonymity of the provider among top managers and lack of trust to it, made huge problems in the project trajectory. As I mentioned earlier, it could be a more rational way to let the other players to be involved and have the opportunity to interact with the alternatives; and consequently some sort of trust would have been formed about the ability of the selected provider and its quality of service.* *… although the vendor was the only ERP provider in the industry in the country, it was not well-known at the time; so, they couldn't trust its ability in carrying out the project… Such disagreement resulted in some sort of getting distance from the project in the early steps and maybe hesitation to fully support the project team in the later steps as well."*

Table C2T12. Observation of Kotter's change model steps in the implementation process (case #2, interviewee #2)

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C22-01] *"The information systems company had at the time were totally outdated and could not provide reliable data at all. Also due to the developments plan the company had, I believe the top layer managers completely felt the emergency of the change in their information systems."*								
2	Forming Powerful Coalition	[C22-02] *"I think all people of the top tier management, including the CEO, the board and the other COs, agreed on the necessity of a more reliable information system for the whole company."*								
3	Developing a vision for Change	[C22-03] *It was obvious that their project manager had a clear vision about what they need and based on that, contacted us to provide an ERP system for them..."*								[C22-04] *"… but I'm not sure about the others. I mean it seemed the other managers were not as determined as their project manager about the need of an ERP solution but not a simpler solution such as just*

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
										a data repository MIS system."
3	Communicating the Change Vision			[C22-05] *"at the point we entered the organisation, there were no awareness of what the company precisely want to do about the information systems in the layers other than top managers; therefore, a part of our analysis sessions with every department was dedicated to talk about the project and its objectives."*						
6	Removing Obstacles					[C22-06] *"The role of the CEO himself was really strong in supporting the project and following up its progress and solving the problems."*				
5	Generating Short Term Wins									

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
5,7	Building on the Change									
10	Anchoring the Changes in Corporate Culture									

Table C2T22. The observed resistance instances during the implementation process (case #2, interviewee #2)

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
Pre-imp	4	Ps	N/A				
		Po	N/A				
implementation	9	Ps	[C22-07] *"… using the technology of computer aided production planning was totally impossible for the personnel in charge, as they were old and completely uninterested or hesitated to learn new technologies."*		Construction and Testing, and Actual implementation	[C22-08] *"After a while, we recommended the company to hire a new employee for doing the task."*	
	7,8	Po	N/A				

Table C2T32. Other factors facilitating the change process (from the interviewee point of view) / (case #2, interviewee #2)

The factor	Description
Trust to the provider's brand (from quote [C1118] in Case No.1)	[C22-09] *"maybe one reason for the problems we faced in the implementation process was that our company as a local young ERP provider, was not known sufficiently for some of the managers; so, they could hardly trust us and our recommendations."*
Organisation's ability of technology adoption	[C22-10] *"One factor I think made problem for us during the implementation, was the fact that we didn't pay a sufficient attention to the organisation's ability to adopt new technologies which should have been considered in advance.* *It was important to improve the ability of learning in the organisation in some departments even by hiring some capable people for especial jobs. … I think if we assessed this ability during the analysis phase, we could warn the company before facing the problem harshly and the process of implementation would be far more convenient."* (related example in quote [C22-07])

Table C2T13. Observation of Kotter's change model steps in the implementation process (case #2, interviewee #3)

Related Question Theme	Kotter's steps	Observed								Not-observed
		Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C23-01] *"I believe although the necessity of taking actions about the company's outdated information systems had been recognized among the top managers, the middle managers and the staff had not felt the urgency of a change as mainly they had no idea of the functionalities their system should provide."*								
2	Forming Powerful Coalition									
3	Developing a vision for Change	[C23-02] *"It was obvious that the management intended to migrate from the legacy information silos to an integrated information system"*								

		Observed								Not-observed
Related Question Theme	Kotter's steps	Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
3	Communicating the Change Vision			[C23-03] *"…but the purpose of such a change and also its consequences were not communicated till our entrance to the organisation and the beginning of the analysis sessions"*						
6	Removing Obstacles									
5	Generating Short Term Wins						[C23-04] *"The way of planning the project, which was step-by-step not a big bang, really helped in the project success, as the employees in various departments who were not interested in the first place, because of the extra workload or fears of facing new systems, became very accompanied and helpful after realizing*			
5,7	Building on the Change									

		Observed								Not-observed
		Pre-Imp	imp						Post-imp	
Related Question Theme	Kotter's steps	Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
							the benefits and the accurate data the system provided. For example, I remember the positive effect of the 'waste' report in facilitating the implementation of the other Production Planning sub-systems."			
10	Anchoring the Changes in Corporate Culture								[C23-05] *"With the improvement of the organisational knowledge, now we have come across numerous requests for designing new reports from various departments."*	

Table C2T23. The observed resistance instances during the implementation process (case #2, interviewee #3)

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
Pre-imp	4	Ps	N/A				
		Po	N/A				
implementation	9	Ps	[C23-06] *"The interest in returning to use the old systems or modes of work, was usually high specially in the first weeks of launching each sub-system. The employees kept showing the old system pages as soon as they faced a problem in working with the new system."*	Passive resistance (persistence of former behaviour)	Construction and Testing, and Actual implementation		
	7,8	Po	[C23-07] *"It seemed to me that there was a competition between the client project manager, who was in the board as well, and the CO of each department in the time of deploying the respective system which resulted for example in some sort of conflicts in task assignments to the personnel."*	Active resistance (voicing opposite points of view)	Construction and Testing, and Actual implementation		

Table C2T33. Other factors facilitating the change process (from the interviewee point of view) / (case #2, interviewee #3)

The factor	Description
The importance of giving time to the people	[C23-08] *"People needed time to get used to the new system and routines. Their reaction usually became completely different after a while without any further specific intervention from the project team."*

C

Appendix C: Case 3 Coded Interviews

Table C3T11. Observation of Kotter's change model steps in the implementation process (case #3, interviewee #1)

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Implementation	implementation						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C31-01] *"Because of the sharp increase in sales costs and reduction in company revenue, there was a complete need for system monitoring of sales and distribution. As a result of this need, several meetings were held to examine the functioning of the units. The lack of reliable information in the units and departments of the organisation was quite apparent at these meetings. The existence of a large amount of workarounds enabled the creation of bogus reports that came to the fore. The legacy system was an in-house developed system that had adapted itself to the organisation's defects. In addition, to producing specific reports, there was a large amount of workload of time-consuming workarounds, such as Excel, that unsurprisingly did not have much reliant output. The unreliability of the legacy system outputs has been widely recognized during the primary meetings with senior managers. As a result, the necessity of using organisation wide integrated ERP system was felt at the top layer management."*								
2	Forming Powerful Coalition	[C31-02] *"By organising the initial consultation meetings on the status of information flow in the company, this agreement was created at all parts of the company that the organisation's information management needs to be well-organised. And the solution is to implement an ERP system. ...challenges and disagreement, but later, appeared in selecting the vendor. The selection team was formed of representatives of different departments and their duty was to assess the shortlisted vendors according to the system features described in SoW document. The result of the system selection process, which was approved by the CEO and the sales and logistics managers, was using the system provided by the famous local Vendor X; whereas the financial department was opposed due to its director's previous negative experience with this vendor."*								

Related Question Theme	Kotter's steps	Observed								Not- observed
		Pre-Implementation	implementation						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
3	Developing a vision for Change	*[C31-03] "Prior to the launch of the ERP project, a small project carried out that was aimed at defining the requirements of the organisation and defining the final objectives of the ERP project. The output of this project was a statement of work (SoW) for the main project, which defined the project's vision and was approved and agreed upon by the top managers of the various departments of the organisation.* *The summary of ERP implementation project objectives according to the SoW document was:* *• Applying operational and systematic online control on the process of sales and distribution in order to minimize the possibility of human error* *• Real-time and online access to accurate and reliable information from all departments, including sales figures in different areas, inventory of product and distribution depots, and the feasibility of comparative assessments for use in sales and production planning."*								
3	Communicating the Change Vision	[C31-04] "*At SoW development meetings in different parts of the organisation, the project vision was finalized with the agreement of key managers and experts. Therefore, almost all the key people in the organisation were fully intent on the project and agreed with its objectives."*								

Table C3T11. Observation of Kotter's change model steps in the implementation process (case #3, interviewee #1) (continued.)

Related	Kotter's steps	Observed								Not
			imp							
		Strategic decisions	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
6	Removing Obstacles	[C31-05] *"… challenges and disagreement, but later, appeared in selecting the vendor. The selection team was formed of representatives of different departments and their duty was to assess the shortlisted vendors according to the system features described in SoW document. The result of the system selection process, which was approved by the CEO and the sales and logistics managers, was using the system provided by the famous local Vendor X; whereas the financial department was opposed due to its director's previous negative experience with this vendor. Eventually, with the intervention of the CEO, and holding several meetings with financial directors, as well as frequent meetings with the Vendor team introducing the solution, their agreement was reached for the ultimate selection of solution X."*								

Related	Kotter's steps	Observed								Not
			imp							
5	Gen. Short Term Wins					[C31-06] *"The implementation of the zero phase of the project, which included the unification of the coding systems of accounting and products in all branches, with the help of the financial department, greatly contributed to improving the relations between the financial department and the project. And their assurance of the uniformity of procedures in all sectors with the finalization of ERP led to a great support in spite of the initial opposition…* *Also, the successful implementation of the pilot phase (which was the implementation of the system at one of the regional offices), caused the company to observe a real change within just less than 4 months from the finalizing the contract which removed many of the oppositions in other parts of the company.* *Of course, during the time the system was launched in the pilot branch, due to increased workload, especially at the end of the working time and closing daily accounts which couldn't be postponed to the next day in contrast with the legacy system, a lot of resistance came from the office and sales staff. This resistance dropped with the immediate support of sales managers that became able to observe daily sales results. The workload and hence the relates resistance finally disappeared after lunching the sales mobile service.* *Awareness of the rest of the organisation of the success of the pilot phase has encouraged and expressed the interest of most of the managers of the branches to launch the system. But at the same time it increased the worries of sales staff who became under more serious control ..."*			
5,7	Building on the Change						[C31-07] *"The success of the Phase Zero and also the pilot phase, was a major contributor to the project.* *Succeeding in launching the new system in the pilot branch with almost no significant problem, helped to change the work practices of middle-managers who run the other branches, with less trouble.* *Eventually, it was an important transformation in the organisation to make everything happen in the system, and the oral processes replaced with the system work flows."*			

Table C3T11. Observation of Kotter's change model steps in the implementation process (case #3, interviewee #1) (continued.)

Related Question Theme	Kotter's steps	Observed								N c
			imp							
		Strategic decisions	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
10	Anchoring the Changes in Corporate Culture								[C31-08] *"With access to the real-time reports and also the BI system, decision-making has changed dramatically across all levels of the organisation. Instead of relying on speculation, the use of sales trends has become widespread. production managers trust and rely more on sales department requests, and the distribution of goods across the country more clearly shows the pattern of consumer demand in different locations. The organisation has clearly entered a new era. And realized that its main need was not just to control more; rather, it was access to right and real-time information for making right decisions in the right time.* *The psychological stress of workarounds and fake information has gone away and a higher level of trust has been formed between the different units of the organisation."*	

Table C3T21. The observed resistance instances during the implementation process (case #3, interviewee #1)

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
Pre-imp	4	Ps	N/A				
		Po	N/A				
implementation	9	Ps	[C31-09] *"... During the time the system was implemented in the pilot branch, due to the increase in the workload, especially at the end of the work time and closing the daily accounts (due to the importance of entering the process information that would force the operators to a particular order and they could not postpone a part of the job into tomorrow), a great deal of resistance was put on by the office and sales staff in terms of nagging and complaining."*	Active resistance (voicing opposite points of view, asking others to intervene)	Actual Implementation	[C31-10] "*This resistance was shrunk with the immediate support of sales executives benefited of setting up a system that allowed daily sales results to be observed. And finally, it has gone away with the launch of the Mobile Sales Service, which significantly reduced the volume of office work."*	
		Ps	[C31-11] "*Some personnel, especially in the Financial department in some regional offices, continued to use their old ways of doing their job such as using the legacy system, Excel sheets and other workarounds for a while after switching to the new system in their branches.*"	Passive resistance (persistence of former behaviour)	Actual Implementation	[C31-12] *"The only way to solve the problem was changing the senior user of financial department. The new assigned manager had more commitment to the change and supported the project more effectively."*	

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
		Ps	[C31-13] *"The senior user of Financial department delayed the switching plan for three times; so, the staff had to do their jobs in the new system in parallel with their old ways of doing the jobs. It seemed that he couldn't persuade himself that he could trust in and be certain about the reliability of the new system."*	Passive resistance (delay, excuses)	Construction and Testing	[C31-14] *"The problem continued till changing The senior user of Financial department"*	
	7,8	Po	[C31-15] *"Informing the rest of the organisation of the success of the pilot phase has caused that most of the managers of the branches and subsystems encouraged and expressed the interest to launch the system. But at the same time it increased the concern of sales staff who became under more serious control. So, in some cases they started to pretend that the system was not working and they had to gather the orders in paper, not in the system"*	Passive resistance (persistence of former behaviour, withdrawal)	Actual implementation	[C31-16] *"In order to obtain positive view to the new system from salespersons, the company decided to purchase brand new android device for salespersons instead of using the old ordering handhelds for collecting outlets orders data. So, despite the increased systemic controls on sales staff (spatial and online controls), there were no serious resistance in this part of the organisation."*	

Table C3T31. Other factors facilitating the change process (from the interviewee point of view) / (case #3, interviewee #1)

The factor	Description
Trust to the provider's brand (from quote [C1118] in Case No.1)	[C31-17] *"The provider was well-known in the country and the majority of directors and also middle-managers were happy about the selection but the CFO due to previous negative experience with an old version of this solution. His lack of trust in this brand made some delays in the project trajectory; however, the CEO support and acknowledging the problem from the provider side, eventually resolved the issue and the trust was gradually rebuilt.*
Organisation's ability of technology adoption (from quote [C2210] in Case No.2)	[C31-18] *"I believe it is an important factor but was not the case in this implementation effort, as the main technology used in user side was an android based app for gathering the orders that the visitors were familiar with as daily users of android phones."*
The importance of giving time to the people (from quote [C2308] in Case No.2)	[C33-19]

Table C3T12. Observation of Kotter's change model steps in the implementation process (case #3, interviewee #2)

		Observed								Not- observed
		Pre-Imp	imp						Post-imp	
Related Question Theme	Kotter's steps	Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C32-01] *"In the CEO's view, there was no longer any trust on the departments reports that were sent manually or by Excel. There was even a feeling of financial and commodity leakage in the company. The senior managers of the organisation had severe problems in control systems and could not enforce the necessary controls on the organisations… In fact, the organisation's information systems did not develop with the growth of the organisation itself and still 30 years old legacy systems were used… Many managers also believed that the information they received was manipulated."*								
2	Forming Powerful Coalition	[C32-02] *"The chief executive of sales, finance, and logistics at the meetings showed that in their view the change should be happened, and the corporate's*								

		Observed								Not- observed
		Pre-Imp	imp						Post-imp	
Related Question Theme	Kotter's steps	Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
		procedures should become systematic. *But, In the next layer, among regional managers, the same thing couldn't be said firmly. Some were very supportive, some did not react, and some were resisting.* *Especially because of changes in the procedures that they were accustomed to. As unifying and integrating business processes in all areas was one of the main goals of the project."*								
3	Developing a vision for Change	[C32-03] *"There was a vision document about the project's purpose and the point that the organisation was supposed to be at the end of the project.* *In fact, before the start of the project, a small project was implemented to define the project goals and the requirements of the organisation in the project area, which formed the SoW of the main project."*								

		Observed								Not- observed
		Pre-Imp	imp						Post-imp	
Related Question Theme	Kotter's steps	Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
3	Communicating the Change Vision		[C32-04] *"The defined vision was shared with regional management layers at various meetings.* *Some regional managers and officers, especially who were close to retirement, did not welcome it because of their feelings of the extra work it created in these last years; or not accepting the centralized decision-making paradigm which the company headed to. Also, various meetings held with the executive body of the organisation in the sales area prior to the launch, and they were completely informed about the objectives and the road map of the project.* *In fact, the vision was communicated at three levels: layer of senior managers, layer of regional managers and sales force in each region."*						

		Observed								Not- observed
		Pre-Imp	imp						Post-imp	
Related Question Theme	Kotter's steps	Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
6	Removing Obstacles						[C32-05] *"At the beginning of the implementation, there were some resistance instances due to some system weaknesses or time-consuming of data entry (due to lack of familiarity with the new system) that was managed by the regional managers. In some cases, bonuses were also defined for hard-working users."*			
5	Generating Short Term Wins						[C32-06] *"The plan was in a way that the system implementation in the regions were in a row. So, the successful implementation in the first regions played the role of the short wins for the project. Also, the integrating and unifying accounting and product coding across the whole group, as the first short win, created a great momentum for the project among senior executives of the organisation. The short wins had two different types of impact on the organisation. The one that was*			

		Observed								Not- observed
		Pre-Imp	imp						Post-imp	
Related Question Theme	Kotter's steps	Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
							positive made the course of action and progress clearer. *But there was also another aspect and it was clarification of the consequences of systems on different people. For example, centralised decisions and limiting the powers of regional managers. As an example, regional managers would lose their authorities in setting promotions. So, the directors of the next regions took a more closed guard in comparison with the start of the project.*			
5,7	Building on the Change						[C32-07] *"With the introduction of the system in the organisation, top managers who had been happy with the project used the change to improve the performance of their own departments. They also helped to the implementation progress. Specifically, head office managers who were*			

		Observed								Not- observed
Related Question Theme	Kotter's steps	Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
							responsible for monitoring the performance of the regions."			
10	Anchoring the Changes in Corporate Culture									

Table C3T22. The observed resistance instances during the implementation process (case #3, interviewee #2)

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
Pre-imp	4	Ps	[C32-08] "*Before the start of the implementation, many mid-level experts were not very promising due to previous negative experiences in some branches. For example, in one of the branches, they had an experience of a completely failed project in system integration."*	Apathy (distance, lack of interest)	Planning & Analysis	[C32-09] "*The matter discussed with these experts, especially the reasons behind their project's blockade, most notably the lack of project support by senior management which would not be the case in this new effort. Also, the experience level of the implementation team would be very different from that case.* *Moreover, in the run-up process, we tried to get more partnership from this group to be more prominent in the project. Experts would not feel that they were decided from outside."*	

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
			[C32-10] "*Some of managers in financial department did not believe and trust in the selected vendor ability to conduct the project. They believed that the company has some specific requirements which the vendor could not fulfil due to lack of experience in exactly similar companies."*	Apathy (distance, lack of interest)	Strategic Planning	[C32-11] *"Some of the concerns were resolved by visiting some other sites in which the system had been deployed. They were convinced that, despite worries, the work would begin. It was assured that no part of the work would be left without their approval."*	
			[C32-12] "*Sales managers are similarly concerned about the fact that, for example, the rules for allocating incentives, promotions and discounts, cannot be implemented by the selected system. In their view, the company has a complex business that the selected system cannot support these complexities."*	Apathy (distance, lack of interest)	Planning & Analysis	[C32-13] "*Examples were shown in the system to address the concerns. Also, the implementation of the pilot branch was, in fact, the answer to these concerns."*	

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
			[C32-14] "*There was a concern about the inability of subordinate personnel, visitors and other sales force to use technical tools, which were not very realistic, since they already worked with a comparable device, and the only difference was that the new framework and devices was online and gps embedded.*"	Apathy (distance, lack of interest)	Construction and testing		
			[C32-15] "*Ordering by visitor in the new system was done by a mobile app. So, all the visitors needed to have a smart phone which they necessarily did not have yet. This was a concern and a reason for opposition from sales executives.*"	passive resistance (Delay tactics, excuses)	Construction and testing	[C32-16] "*Smart phone has been purchased for all sales personnel.*"	
		Po	[C32-17] "*One part of the concern of financial managers was that their power would be reduced against the sales sector. Also, they worried about losing their control points over the whole process. So, they tried draw the attentions of senior executives to intervene and do something.*"	Active resistance (Strong but not destructive behaviours: voicing opposite points of view, asking others to intervene or forming coalitions.)	Construction and testing	[C32-18] "*By simulating control points in Construction phase, they were persuaded that their controls just would transform into automatic controls by defining their rules in the system.*"	[C32-19] "*I think it would be better if we listened to them more carefully at the time the issue rose up, so that we could address it and make them comfortable sooner.*"

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
			[C32-20] "*In the old structure, IT department was a subsidiary of the financial department which promoted to a key department in the new structure. This change made financial executives unhappy because of a sense of the loss of part of their authority. Prior to the launch, the tension was not too tense, especially by establishing the recognition of the financial control role over the entire organisation and the emphasis on the service role of the new IT department. But the issue was the case in the implementation phase."*	Active resistance (Strong but not destructive behaviours: voicing opposite points of view)	Construction and testing		
implementation	9	Ps	N/A				
	7,8	Po	[C32-21] "*The new system did not affect the distribution of power between financial and sales units. But the senior managers of the headquarter became more powerful than the managers of the branches because of the centralization of the definition of rules."*	Active resistance (Strong but not destructive behaviours: voicing opposite points of view)	Actual Implementation	[C32-22] "*In order to prevent the occurrence of resistance in the first phase, rules were allowed to be decentralized and entered by the manager of each branch."*	

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
			[C32-23] "*The power of the visitors and supervisors was reduced to the branch managers advantage especially in the allocation of promos and discounts, because in the previous system the calculations of promos and discounts were carried out manually and there was no control over them. While in the new system they were automatically calculated and only defined by the branch manager."*	Active resistance (Strong but not destructive behaviours: voicing opposite points of view)	Actual Implementation	[C32-24] "*By acting on the authority of the branch manager, they allowed the work to be done without forcing the new routines.* *In fact, in the first phase, the legacy system was just replaced with the new system with the same routines, which does not differ much in terms of the power of the individuals."*	
			[C32-25] "*The increased possibility of controlling and tracking by headquarter, made some branch managers - who were the only decision makers till the time, order not using the system."*	Aggressive resistance (strikes, boycotts)	Actual Implementation	[C32-26] "*It was attempted to avoid any change in decision-making procedures and authorities in the course of replacing the new system with the previous system, in order to reduce the sensitivity of this group of managers at*	

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
						the time of implementation."	
			[C32-27] "*Transparency of the system for shopkeepers and their awareness of promos and discounts would have jeopardized part of the illicit benefits of visitors to personal use of promos and discounts.* *And thus try to show the system is ineffective."*	aggressive resistance (Infighting, strikes, boycotts)	Actual Implementation	[C32-28] "*Therefore, it was very important that there should be close cooperation between the implementation team and the branch managers during the launch phase of the "Receive orders and distribution" section in each branch, in order to solve the user problems.*	
			[C32-29] "*The tension between the financial department and the newly independent IT department was created on several runs.* *For example, they did not accept mistakes in the organisation's old processes or accept them hardly.* *Or in the coding structure that the financial department mistakenly insistences made it impossible for the project to progress."*	Passive resistance (Delay tactics, excuses, persistence of former behaviour)	Planning and analysis	[C32-30] "*Which eventually solved with the intervention of the chief financial officer who was committed to deploying the system and so determined a new person to finalize the coding problem.*	

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
			[C32-31] "*The tension caused by the loss of control over the IT unit also delayed the process of completing the parallel work of the two systems and abandoning the old system in a few cases. In the last case, at the last moment, by changing the issuance of the factor number, they were looking for a delay in the replacement.*	Passive resistance (Delay tactics, excuses, persistence of former behaviour)	Actual Implementation	[C32-32] "*The issue was resolved again with the intervention of the chief financial officer."*	

Table C3T32. Other factors facilitating the change process (from the interviewee point of view) / (case #3, interviewee #2)

The factor	Description
Trust to the provider's brand (from quote [C1118] in Case No.1)	[C32-33] *"The familiarity of the system and the existence of previous user experience in the other companies created two completely different reactions. Users who had a positive image of the brand and trusted the provider, were more interested in the change, and vice versa.* *Part of the delay in the signing of the delivery of the system at the pilot branch was due to their negative image of the provider's support quality."*
Organisation's ability of technology adoption (from quote [C2210] in Case No.2)	[C32-34] *"The use of the tablet by sales supervisors was difficult at the beginning of the work due to the lack of previous experience (supervisors just did paper works in pervious system), but due to the widespread use of smartphones, they came up fairly fast with the system."*
The importance of giving time to the people (from quote [C2308] in Case No.2)	-

Table C3T13. Observation of Kotter's change model steps in the implementation process (case #3, interviewee #3)

Re		Observed								Not- observed
		Pre-Imp	imp						Post-imp	
	Kotter's steps	Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
1	Creating Urgency	[C33-01] *"There were some serious challenges in the organisation when we entered such as the need of controlling the extensive and distributed operations of country-wide sales and distribution in order to reduce sales costs, or the need for improvement in the mechanism of aggregating comprehensive management information from sub-companies, also need to access analytical reports in different areas such as sales and finance; there was also the risk of loss of information due to the dispersion of branch databases at the country level as well as the silos of software that prevented centralized control. and the point is the issues were raised by the executive team itself at the time. So, I believe there were obvious sense of urgency*								

Re		Observed								Not- observed
		Pre-Imp	imp						Post-imp	
	Kotter's steps	Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
		among the top layer of the organisation for change."								
2	Forming Powerful Coalition	[C33-02] *"The extent of the requirements identified in various management areas indicated that there was a complete agreement on the need to improve the management systems of the group among the key managers."*								
3	Developing a vision for Change	[C33-03] *"Before we arrived at the company, a project aimed at defining the problem and the main system requirements in the company had been conducted; the output of this project was the definition of the objectives of the ERP deployment project. Therefore, there was a specific and documented purpose."*								

Re	Kotter's steps	Observed								Not- observed
		Pre-Imp	imp						Post-imp	
		Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
3	Communicating the Change Vision									[C33-04] *"This happened at the level of senior executives, but in the next layers there was a lack of interest in the project and uncertainty about its outputs, and as the subsequent layers were responsible for accepting deliverables, we encountered some problems during the project."*
6	Removing Obstacles					[C33-05] *"The support of the senior managers layer, especially after evaluating the early short wins, helped to speed up the project."*				

Re		Observed								Not- observed
		Pre-Imp	imp						Post-imp	
	Kotter's steps	Strategic decisions and vendor selection	Planning	As Is Analysis	To Be Analysis	Construction and Testing	Actual Implementation	Close Up	Enhancement	
5	Generating Short Term Wins					[C33-06] *"The design of the project plan was such that at relatively short intervals, tangible outputs were obtained for the company. For example, within three months of the start of the project, we got the same coding for accounting and goods in the entire group, which was valuable from the customer point of view. Or, after about six months from the start of the project, the software has been exploited in the pilot plant."*			
5,7	Building on the Change									
10	Anchoring the Changes in Corporate Culture									

Table C3T23. The observed resistance instances during the implementation process (case #3, interviewee #3)

	Related Question Theme	Type of resistance Psychological driven: Ps / Political driven: Po	Instance of resistance behaviour	Coetsee's classification	Implementation phase	Actions taken by the organisation	Recommend action (interviewee view – at the end of the implementation)
Pre-imp	4	Ps	N/A				
		Po	N/A				
implementation	9	Ps	[C33-07] *"Some users, especially the sales and financial operators, were afraid to work with the system first in terms of the difference in procedures in the new system than in the previous system."*	Passive resistance (persistence of former behaviour)	Construction and Testing, and Actual implementation	[C33-08] *"Repeating the training sessions and accompanying in using the system in the first days, helped to resolve the problem."*	
	7,8	Po	[C33-09] *"The top layers were happy with the system start-up, but the lower layers showed less interest in running the system. And in some branches, they were opposed even by preventing the system from being launched at the specified times. Middle managers, such as branch managers, realized that with the launch of an integrated and centralized system, many of their authorities would be lost."*	Active resistance (voicing opposite points of view)	Construction and Testing, and Actual implementation	[C33-10] *"After observing the resistance in the first branches, it was coordinated with the client to prevent implementing centralised decision making procedures, till a complete replacement of the new system with the previous system."*	
			[C33-11] *"The conflict between the financial unit and the IT department that was responsible for implementing the project at the company sometimes led to the financial unit's obstruction with decisions taken or attempts to retard the system's launch."*	Passive resistance	Construction and Testing, and Actual implementation		

Table C3T33. Other factors facilitating the change process (from the interviewee point of view) / (case #3, interviewee #3)

The factor	Description
Trust to the provider's brand (from quote [C1118] in Case No.1)	-
Organisation's ability of technology adoption (from quote [C2210] in Case No.2)	-
The importance of giving time to the people (from quote [C2308] in Case No.2)	-

References

Adams, J., Hayes, J., Hopson, B. (1976), "Transitions – Understanding and managing personal change", Oxford: Martin Robertson.

Alavi, M., Carlson, P. (1992), "A Review of MIS Research and Disciplinary Development", Journal of Management Information Systems, Vol. 8, No. 4, pp. 45-62.

Al-Mashari, M. (2001), "Process orientation through Enterprise Resource Planning (ERP): A review of critical issues", Knowledge and Process Management, Vol. 8, Iss. 3, pp. 175-185.

Avison, D., Myers, M. (1995), "Information systems and anthropology: an anthropological perspective on IT and organisational culture", Information Technology & People, Vol. 8, No. 3, pp. 43-56.

Axelrod, Richard H. (2001), "Why Change Management needs changing", Reflections, Vol. 2, No. 3, pp. 46-57.

Bagheri, M., Cole, M., Clark, M. (2014), "Developing Change Management Aspects of ERP Implementation Process Models", UKAIS, Oxford, UK.

Bamford, D. R., Forrester, P. L. (2003), "Managing planned and emergent change within an operations management environment", International Journal of Operations & Production Management, Vol. 23, Iss. 5, pp. 546-564.

Bancroft, N., Seip, H., Sprengel, A. (1998), "Implementing SAP R/3", 2nd edn, Manning Publications, Greenwich.

Bartunek, J.M. (1993), "Rummaging behind the scenes of organisational change – and finding role transitions, illness and physical space", Research in Organisational Change and Development, Vol. 7, pp. 41-76.

Baskerville, R. (1999), "Investigating Information systems with Action Research", Communications of AIS, Vol. 2, Article 19.

Basoglu, N., Daim, T., Kerimoglu, O. (2007), "Organisational adoption of enterprise resource planning systems: A conceptual framework", The Journal of High Technology Management Research, Vol. 18, Iss. 1, pp. 73-97.

Beaudry, A., Pinsonneault, A. (2005), "Understanding user responses to information technology: A coping model of user adaptation", MIS Quarterly, Vol. 29, No. 3, pp. 493-524.

Beaudry, A., Pinsonneault, A. (2010), "The other side of acceptance: studying the direct and indirect effects of emotions on information technology use", MIS Quarterly, Vol. 34, No. 4, pp. 689-710.

Beckhard, R. (2006), "What Is Organisation Development?", in Gallos, Joan V. (ed.), Organisation Development, Jossey-Bass.

Beckhard, R., Harris, R. (1987), "Organisational Transitions: Managing Complex Change", 2nd edn., Addison-Wesley, Reading, MA.

Bedeian, A., Armenakis, A., Curran, S.M. (1980), "Personality correlates of role stress", Psychological Reports, Vol. 46, pp. 627-632.

Benbasat, I. (1984), "An Analysis of Research Methodologies", in The Information Systems Research Challenge, F. Warren McFarlan (ed.), Harvard Business School Press, Boston, Massachusetts, pp. 47-85.

Bergström, M., Stehn, L. (2005), "Matching Industrialized Timber Frame Housing Needs and Enterprise Resource Planning: A Change Process", International Journal of Production Economics, Vol. 97, Iss. 2, pp. 172-184.

Blaikie, N. (2007), "Approaches to social enquiry: Advancing knowledge", Cambridge: Polity Press.

Boddy, D., Buchanan, D. (1992), "Take the lead: Interpersonal skills for change agents", Prentice Hall: London.

Boudreau, M., Robey, D. (2005), "Enacting integrated information technology: A human agency perspective", Organisation Science, Vol. 16, pp. 3–18.

Bradley, J. (2008), "Management based critical success factors in the implementation of Enterprise Resource Planning systems", International Journal of Accounting Information Systems, Vol. 9, pp. 175-200.

Brisson-Banks, Claire V. (2010), "Managing change and transitions: a comparison of different models and their commonalities", Library Management, Vol. 31, No. 4/5, pp. 241-252.

Bryman, A., Bell, E. (2011), "Business Research Methods", 3rd Ed., Oxford University Press, Oxford.

Buchanan, D.A., (2012) "Case studies in organizational research", in Symon, G. & Cassell, C. (eds) Qualitative Organizational Research: Core Methods and Current Challenges, pp.351-370, London: Sage.

Burnes, B. (2009), "Managing Change: A Strategic Approach to Organisational Dynamics", 5th edn., Harlow: Prentice Hall.

Burnes, B. (2004), "Emergent change and planned change – competitors or allies? The case of XYZ Construction", International Journal of Operations and Production Management, 24(9), 886–902.

Burnes, B. (1996), "No such thing as . . . a "one best way" to manage organisational change", Management Decision, Vol. 34, Iss. 10, pp. 11-18.

Carnall, C. (2003), "Managing change in organisations", 3rd edn., Prentice Hall: Harlow.

Christenson, C. (1976), "Proposals for a Program of Empirical Research into the Properties of Triangles", Decision Sciences, Vol. 7, No. 3, pp. 631-648.

Clark, MC, Payne, RL (2006), "Character-Based Determinants of Trust in Leaders", Risk Analysis, Vol. 26, No. 5, pp. 1161-1173.

Coetsee, L. D. (1999), "From Resistance to Commitment," Public Administration Quarterly (23:2), pp. 204-222.

Creswell, J. (2009), "Research design. Qualitative, quantitative and mixed method approaches", Sage, 2009.

Crotty, M. (1998), "The foundations of social research: Meaning and perspective in the research process", St Leonards: Allen and Unwin.

Cummings, Thomas G., Worley, Christopher G. (2009), "Organisational Development and Change", 9th edn., South-Western Cengage Learning: Mason.

Darwin, J., Johnson, P., McAuley, J. (2001), "Developing Strategies for Change", London: Financial Times/Prentice Hall.

Davenport, Thomas H. (1998), "Putting the Enterprise into the Enterprise System", Harvard Business Review, July-August 1998, pp. 121-131.

Davies, L., Nielsen, S. (1992), "An Ethnographic Study of Configuration Management and Documentation Practices in an Information Technology Centre", in Kendall, K.E., Lyytinen, K. and De Gross, J. (eds.), The Impact of Computer Supported Technology on Information Systems Development, Amsterdam: Elsevier.

Davidson, J. (1994), "The sources and limits of resistance in a privatised utility", in Jermier, J.M., Knights, D., Nord, W.R. (eds), Resistance and Power in Organisations, pp. 69-101 (London: Routledge).

Dawson, P. (2003), "Organisational Change: a Processual Approach", Routledge: London.

Dent, E.B., Goldberg, S.G. (1999), "Challenging resistance to change", The Journal of Applied Behavioral Science, Vol. 35, pp. 25-41.

Dery, K., Grant, D., Harley, B. and Wright, C. (2006a), "Work, organisation and Enterprise Resource Planning systems: an alternative research agenda", New Technology, Work and Employment, Vol. 21, pp. 199-214.

Dery, K., Hall, R., Wailes, N. (2006b), "ERPs as 'technologies in-practice': social construction, materiality and the role of organisational factors", New Technology, Work and Employment, Vol. 21, pp. 229-241.

Dezdar, Shahin, Ainin, Sulaiman (2011), "The influence of organisational factors on successful ERP implementation in Iran", Management Decision, Vol. 49 No. 6, pp. 911-926.

Doherty, N., Champion, D., Wang, L. (2010), "An holistic approach to understanding the changing nature of organisational structure", Information Technology & People, Vol. 23, Iss. 2, pp. 116-135.

Dubé, L., Paré, G. (2003), "Rigor in Information Systems Positivist Case Research: Current Practices, Trends, and Recommendations", MIS Quarterly, Vol. 27, No. 4, pp. 597-636.

Dunphy, D., Stace, D. (1993), "The strategic management of corporate change", Human Relations, Vol. 46, Iss. 8, pp. 905-918.

Ehie, I., Madsen, M. (2005), "Identifying critical issues in enterprise resource planning (ERP) implementation", Computers in Industry, Vol. 56, pp. 545–557.

Eisenhardt, K. (1989), "Building theories from case study research", Academy of Management Review, Vol. 14, No. 4, pp. 532 – 51.

Eisenhardt, K., Graebner, M. (2007), "Theory building from cases: Opportunities and challenges", Academy of Management Journal, Vol. 50, No. 1, pp. 25-32.

Elrod, P., Tippett, D. (2002), "The Death Valley of change", Journal of Organisational Change Management, Vol. 15, No. 3, pp.273-91.

Finney, S., Corbett, M. (2007), "ERP implementation: a compilation and analysis of critical success factors", Business Process Management Journal, Vol. 13, No. 3, pp. 329–347.

Fleck, J. (1994), "Learning by Trying: The Implementation of Configurational Technology", Research Policy, Vol. 23, pp. 637-652.

Ford, J.D., Ford, L.W., D'Amelio, A. (2008), "Resistance to Change: The rest of the story", Academy of Management Review, Vol. 33, No. 2, pp. 362-377.

French, W.L., Bell, C.H. (1999), "Organisation Development: behavioural science interventions in organisation improvement", Sixth Edition, Prentice Hall.

Friedlander, Frank, Dave Brown, L. (1974), "Organisation Development", Annual Review of Psychology, Vol. 25, pp. 313-341.

Garfinkel, H. (1967), "Studies in Ethnomethodology", Prentice-Hall, Englewood Cliffs, NJ.

Gibson, C. F. (2003), "IT-Enabled Business Change: An Approach to Understanding and Managing Risk", MIS Quarterly Executive, Vol. 2, No.2, pp. 104-115.

Gill, J., Johnson, P., Clark, M. (2010), "Research Methods for Managers", London: Sage.

Graetz, F. (2000), "Strategic change leadership", Management Decision, Vol. 38, Iss. 8, pp. 550-562.

Grabot, Bernard (2008), "Process Alignment or ERP Customisation: Is There a Unique Answer?", in Grabot, Bernard, Mayere, Anne, Bazet, Isabelle (eds), ERP Systems and Organisational Change: a Socio-technical Insight, Springer.

Gulledge, T.R., Sommer, R.A., Vincent, J.P. (2005), "An introduction to basic enterprise resource planning concepts", International Journal of Management and Enterprise Development, Vol. 2, No. 2, pp.204-218.

Harley, B., Wright, C., Hall, R., Dery, K. (2006), "Management Reactions to Technological Change: The Example of Enterprise Resource Planning", The Journal of Applied Behavioral Science, Vol. 42, Iss. 1, pp. 58-75.

Hartle, J., (1994), "Case studies in organizational research", in Cassell, C. & Symon, G. (eds) Qualitative Methods in Organizational Research: A Practical Guide, pp.208-229, London: Sage.

Hatch, MJ (1997), "Organisation Theory: Modern, Symbolic and Postmodern Perspectives", Oxford University Press: Oxford.

Hayes, J., Hopson, B. (1976), "Transitions: Understanding and Managing Personal Change", London: Martin Robertson.

Hedman, J., Henningson, S. (2008), "ERP Systems in the Extended Value Chain of the Food Industry", in Grabot, Bernard, Mayere, Anne, Bazet, Isabelle (eds), ERP Systems and Organisational Change: a Socio-technical Insight, Springer.

Hirschhorn, L. (1997), "Reworking Authority: Leading and following in the post-modern organisation", Cambridge, Mass: The MIT Press.

Hofstede, G. (2001), Culture's Consequences: Comparing Values, Behaviors, Institutions and Organisations across Nations, 2nd Ed., Sage Publications.

Huang, Zhenyu, Palvia, Prashant (2001), "ERP implementation issues in advanced and developing countries", Business Process Management Journal, Vol. 7 No. 3, pp. 276-284.

Jabar, M. (2009), "An Investigation into Methods and Concepts of Qualitative Research in Information System Research", Computer and Information Science, Vol. 2, No. 4, pp. 47-54.

Johnson, P. (1998), "Analytical Induction", in Symon, G. & Cassell, C. (eds). Qualitative Methods and Analysis in Organizational Research, pp. 28-50, London: Sage.

Johnson, P., Clark, M. (2006), "Business and Management Research Methodologies", Six volume set, Sage.

Johnson, P., Duberley, J. (2000), "Understanding Management Research", Sage.

Johnson, P., Duberley, J. (2003), "Reflexivity in Management Research", Journal of Management Studies, Vol. 40, No. 5, pp. 1279 - 1303.

Joshi, K. (1991), "A Model of Users' Perspective on Change: The Case of Information Systems Technology Implementation," MIS Quarterly, Vol. 15, No. 2. pp. 229-240.

Kallinikos, Jannis (2004), "Deconstructing Information Packages: Organisational and Behavioural Implications of ERP Systems", Information Technology & People, Vol. 17, Iss. 1, pp. 8-30.

Kanter, R., Stein, B., Jick, T. (1992), "The Challenge of Organisational Change", Free Press: New York.

Ke, Weiling, Wei, Kwok K. (2008), "Organisational culture and leadership in ERP implementation", Decision Support Systems, Vol. 45, Iss. 2, pp. 208-218.

Kemppainen, I. (2004), "Change Management Perspectives in an ERP Implementation", Proceedings of the 12th European Conference on Information Systems, Turku, Finland.

Kim HW, Kankanhalli, A. (2009), "Investigating user resistance to information systems implementation: A status quo bias perspective", MIS Quarterly, Vol. 33, No. 3, pp. 567-582.

Klein, J.A. (1984), "Why supervisors resist employee involvement", Harvard Business Review, Vol. 62, pp. 87-95.

Koch, C. (2001), "Enterprise Resource Planning: Information Technology as a Steamroller for Management Politics?", Journal of Organisational Change Management, Vol. 14, Iss.1, pp. 64-78.

Kotter, John P., (1996), "Leading Change", Harvard Business School Press, Boston.

Kotter, John P. (2014), "Accelerate: Building Strategic Agility for a Faster-Moving World", Harvard Business Review Press, Boston.

Kotter, J.P. (2007), "Leading change: why transformation efforts fail", Harvard Business Review, Vol. 85, pp. 96-103

Kotter, John P., Schlesinger, L.A. (2008), "Choosing strategies for change", Harvard Business Review, Best of HBR.

Kotter, John P., Schlesinger, L.A. (1979), "Choosing strategies for change", Harvard Business Review, Vol. 57, pp. 106–114.

Krumbholz, J., Coulianos, G.N., Maiden, N.A.M. (2000), "Implementing enterprise resource planning packages in different corporate and national cultures", Journal of Information Technology, Vol. 15, No. 4, pp. 267-79.

Kumar, V., Maheshwari, B., Kumar, U. (2003), "An investigation of critical management issues in ERP implementation: Empirical evidence from Canadian organisations", Technovation, Vol. 23, pp. 793-807.

Lapointe, L., Rivard, S. (2005), "A Multilevel Model of Resistance to Information Technology Implementation", MIS Quarterly, Vol. 29, No. 3, pp. 461-491.

Law, Chuck C.H., Ngai, Eric W.T. (2007), "ERP systems adoption: an exploratory study of the organisational factors and impacts of ERP success", Information and management, Vol. 44, Iss. 4, pp. 418-435.

Lee, A. (1989), "A Scientific Methodology for MIS Case Studies", MIS Quarterly, Vol. 13, No. 1, pp. 33-52.

Lee, A., Hubona, G. (2009), "A scientific basic for rigour in information system research", MIS Quarterly, Vol. 33, No. 2, pp. 237-262.

Lewin, K. (1947), "Frontiers in group dynamics", in Cartwright, D. (ed) (1952), Field Theory in Social Science, Social Science Paperbacks, London.

Lewin, K. (1999), "Group decisions and social change", in Gold, M. (ed): The Complete Social Scientist: A Kurt Lewin reader, American Psychological Association, Washington DC.

Lowe, A., Locke, J. (2008), "Enterprise resource planning and the post-bureaucratic organisation: 'Formalization' as trust in the system versus 'solidarity' as trust in individuals", Information Technology & People, Vol. 21, Iss. 4, pp. 375-400.

Mabey, C., Mayon, B. (1993), "Managing Change", 2nd edn., The Open University/Paul Chapman Publishing: London.

Machiavelli, N. (1515), "The Prince", Available at www.constitution.org/mac/prince06.htm.

Madapusi, A., D'Souza, D. (2005), "Aligning ERP Systems with International Strategies", Information Systems Management, Vol. 22, Iss. 1, pp. 7-17.

Mangan, J. (2004), "Combining quantitative and qualitative methodologies in logistic research", International Journal of Physical Distribution & Logistics Management, Vol. 34, No. 7, pp. 565-578.

Marakas, G. M., Hornik, S. (1996), "Passive Resistance Misuse: Overt Support and Covert Recalcitrance in IS Implementation", European Journal of Information Systems, Vol.5, No.3, pp. 208-220.

Markus, M. (1983), "Power, politics, and MIS implementation", Communications of ACM, Vol. 26, Issue 6, pp. 430-444.

Markus, M., Tanis, C., Fenema, P. (2000)., "Multisite ERP implementation", Communications of the ACM, Vol. 43, pp. 42-46.

Marnewick, Carl (2018), "Realizing Strategy through Projects: The Executive Guide", CRC Press, Taylor & Francis Group, London.

Marshak, R.J., Grant, D. (2008), "Organisational Discourse and New Organisation Development Practices", British Journal of Management, Vol. 19, S7-S19.

Martinko, M. J., Henry, J. W., Zmud, R. W. (1996), "An Attributional Explanation of Individual Resistance to the Introduction of Information Technologies in the Workplace", Behaviour & Information Technology, Vol.15, No.5, pp. 313-330.

Matsuo, M., Wong, C., Lai, K (2008), "Experience-based learning of Japanese IT professionals: A qualitative research", Journal of Strategic Information Systems, Vol. 17, pp. 202 -213.

Mayere, A., Bazet, I. (2008), "ERP Implementation: the Question of Global Control Versus Local Efficiency", in Grabot, Bernard, Mayere, Anne, Bazet, Isabelle (eds), ERP Systems and Organisational Change: a Socio-technical Insight, Springer.

McAdam, R., Galloway, A. (2005), "Enterprise resource planning and organisational innovation: a management perspective", Industrial Management & Data Systems, Vol. 105 No. 3, pp. 280-290.

McCalman, J., Paton, RA. (1992), "Change Management: a Guide to Effective Implementation", Paul Chapman Publishing: London.

McAuley, J., Duberley, J., Johnson, P. (2007), "Organisation Theory: Challenges and Perspective", Prentice Hall.

Miles, M., Huberman, A. (1994), "Qualitatve Data Analysis", London: Sage.

Monk, E., Wagner, B., (2013), "Concepts in Enterprise Resource Planning", 4th edn, Course Technology, Cengage Learning.

Moon, Y. (2007), "Enterprise Resource Planning (ERP): a review of the literature", Int. J. Management and Enterprise Development, Vol. 4, No. 3, pp. 235-264.

Moran, J. W., Brightman, B. K. (2001), "Leading organisational change", Career Development International, Vol. 6, Iss. 2, pp. 111-118.

Motwani, J., Akbulut, A., Argyropoulou, M. (2008), "A Cross-cultural Analysis of ERP Implementation by US and Greek Companies", in Grabot, Bernard, Mayere, Anne, Bazet, Isabelle (eds), ERP Systems and Organisational Change: a Socio-technical Insight, Springer.

Myers, M., Newman, M. (2006), "The qualitative interview in IS research: Examining the craft", Information and Organisation, pp. 2-26.

Nevis, E.C. (1987), "Organisational Consulting; A Gestalt Approach", Gardner Press, New York, NY.

Northcutt, N., McCoy, D. (2004), "Interactive qualitative analysis", Thousand Oaks: Sage.

O'Leary, Daniel E. (2000), Enterprise Resource Planning Systems: Systems, Life Cycle, Electronic Commerce, and Risk, Cambridge University Press.

Orlikowski, W. (1993), "CASE tools are organisational change: Investigating Incremental and Radical Changes in Systems Development", MIS Quarterly, Vol. 17, No.3, pp. 309-340.

Orlikowski, W., Baroudi, J. (1991), "Studying information technology in organisations: research approaches and assumptions", Information Systems Research, vol. 2, pp. 1–28.

Orlikowski, W, Yates, JA. (2006), "ICT and Organisational Change: a commentary", Journal of Applied Behavioural Science, Vol. 42, No. 1, pp. 127-134.

Panorama Consulting Group (2016), The 2016 ERP Report, available at: http://Panorama-Consulting.com/resource-center/2016-erp-report/.

Panorama Consulting Group (2011), The 2011 ERP Report, available at: http://Panorama-Consulting.com/resource-center/2011-erp-report/.

Parr, A., Shanks, G. (2000), "A model of ERP project implementation", Journal of Information Technology, Vol. 15, No. 4, pp. 289-304.

Peszynski, K., Corbitt, B. (2006), "Politics, Complexity, and Systems Implementation", Social Science Computer Review, Vol. 24, No. 3, pp. 326-341.

Pfeffer, J. (1992), "Managing with Power: Politics and Influence in Organisations", Harvard Business School Press: Boston.

Piderit, S. K. (2000), "Rethinking resistance and recognizing ambivalence: A multidimensional view of attitudes toward an organisational change", Academy of Management Review, Vol. 25, pp. 783-794.

Pugh, DS (1993), "Understanding and managing organisational change", In Mabey, C., Mayon, B. (eds), "Managing Change", 2nd edn., The Open University/Paul Chapman Publishing: London.

Ragin, C. (1992), "Introduction: Cases of 'what is a case?', In Ragin, C., Becker, H., (eds.), What is a case? Exploring the foundations of social inquiry, pp. 1-17, Cambridge, UK: Cambridge University Press.

Razavi, A.M., Ahamad, R. (2011), "Dealing with Human Issues throughout Systems Implementation: Guidelines from a Psychodynamic Perspective", Proceeding of 3rd International Conference on Information and Financial Engineering, Singapore, pp. 99-107.

Razmi, J., Sangari, M.S., Ghodsi, R. (2009), "Developing a practical framework for ERP readiness assessment using fuzzy analytic network process", Advances in Engineering Software, Vol. 40, pp. 1168-1178.

Rogers, A., Castree, N., Kitchin, R. (2013), "human agency", In A Dictionary of Human Geography, Oxford University Press.

Robbins, Stephen P. (2003), Essentials of Organisational Behaviour, 7th edition, Prentice Hall.

Robson, C. (2002), "Real world research: a resource for social scientists and practitioner-researchers", 2nd ed., Blackwell.

Ross, J.W. (1998), "The ERP Revolution: Surviving Versus Thriving", Centre for Information Systems Research, Sloan School of Management.

Schein, E. (1987), "Process Consultation", Reading, Mass: Addison-Wesley.

Schein, E. (1965), "Organisational psychology", Englewood Cliffs, NJ: Prentice-Hall.

Senior, B. (2002), "Organisational Change", 2nd edn (London: Prentice Hall).

Singh, S., Bartolo, K., Satchell, C. (2005), "Grounded theory and user requirements: A challenge for qualitative research", Australian Journal of Information System, Vol. 12, No.2.

Stake, R. (1995), "The Art of Case Study Research", London: Sage.

Stake, R. (2005), "Multiple case study analysis", New York: Guilford Press.

Strauss, A., Corbin, R. (1990), "Basics of Qualitative Research: Grounded Theory Procedures and Techniques", Sage Publications, Los Angeles.

Summer, M. (2005), "Enterprise resource planning", Upper Saddle River, New Jersey: Prentice-Hall.

Symon, G., Cassell, C. (2012), "Qualitative Organisataional Research", London: Sage.

Tyre, M. J., Orlikowski, W. J. (1994), "Windows of Opportunity: Temporal Patterns of Technological Adaptation in Organisations", Organisation Science, Vol. 5, No. 1, pp. 98-118.

Todnem By, R. (2005), "Organisational change management: A critical review", Journal of Change Management, Vol. 5, Iss. 4, pp. 369-380.

Ullrich, J., Wieseke, J., Van Dick, R. (2005), "Continuity and change in mergers and acquisitions: the illustrative example of a German industrial merger", Journal of Management Studies, Vol. 42, pp. 1549-1569.

Van Dijk, R., Van Dick, R. (2009), "Navigating Organisational Change: Change Leaders, Employee Resistance and Work-based Identities", Journal of Change Management, Vol. 9, Iss. 2, pp. 143-163.

Vandaie, R. (2008), "The role of organisational knowledge management in successful ERP implementation projects", Knowledge-Based Systems, Vol. 21, pp. 920-926.

Wallace, T., Kremzar, M. (2001), "ERP: making it happen", New York, John Wiley & Sons.

Walsham, G. (1993), "Interpreting Information Systems in Organisations", Wiley.

Wang, E. T. G., Ying, T. C., Jiang, J. J., Klein, G. (2006), "Group cohesion in organisational innovation: An empirical examination of ERP implementation", Information and Software Technology, Vol. 48, Iss. 4, pp. 235-244.

Watkins, Karen E., Golembiewski, Robert T. (1995), "Rethinking Organisation Development for the Learning Organisation", The International Journal of Organisational Analysis, Vol. 3, No. 1 (January), pp. 86-101.

Weick, KE (2000), "Emergent change as a universal in organisations", in Beer, M, Nohrin, N (eds), Breaking the Code of Change, Harvard Business School Press.

Weiss, J.W. (1996), "Organisational Behaviour and Change: Managing Diversity", Cross-Cultural Dynamics and Ethics St Paul, Minn: West Publishing.

Yen, H. Sheu, C. (2004), "Aligning ERP Implementation with Competitive Priorities of Manufacturing Firms: An Exploratory Study", International Journal of Production Economics, Vol. 92, Iss. 3, pp. 207-220.

Yin, R. (2009), "Case study research: Design and methods", Sage.