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Abstract

ERP systems implementation projects continue to be troubled by failures for which user resistance has constantly been identified as the main reason. Whilst existing IS research has provided a good understanding of why ERP implementations trigger user resistance, there is less guidance offered to those seeking to successfully negotiate user resistance during the ERP implementation process. This paper provides a conceptual framework designed to provide project managers with a change management approach to ERP implementation. Specifically, the paper provides the basis for applying change management concepts and tools within the specific context of a technically-driven enterprise-wide implementation process. By integrating concepts from two distinct disciplines (IS and organisational behaviour) into a coherent framework, this paper aims to refine existing models of ERP implementation.

Keywords: ERP implementation model, Change Management, Information Systems, Resistance.

1   Introduction

User resistance remains the most influential element in ERP implementation failure (Peszynski, 2006; Lapointe and Rivard, 2005; Motwani et al., 2008; Razavi and Ahamad, 2011; Panorama Consulting Group, 2011); this is because ERP implementations are technically-driven enterprise-wide organisational re-structuring causing severe disruption to the employee side of organizations (Grabot, 2008; Lapointe and Rivard, 2005; Markus, 1983). Consequently, pure technical process models of implementation neglect or fail to fully appreciate the problems of user resistance (e.g.: Bancroft et al., 1998; Ross, 1998; Parr and Shanks, 2000; Ehie and Madsen, 2005).

In order to achieve a more comprehensive framework for implementing ERP systems which helps project managers to deal with user resistance, there is a need to review the concepts and interventions of change management drawn from organizational behaviour perspective and integrate them with the existing models offered by IS discipline.

Initially, literature on user resistance to ERP implementation can be categorized into two general groups: political and psychological. This categorization directs efforts in looking for effective actions and mechanisms. By reviewing the change management body of knowledge in both change process theories and implementation theories, an appropriate change process model is identified. This can then be combined with existing process models of technical ERP implementation. The integration is done by mapping the stages and steps of the two models to form the basic implementation framework. Then, the framework is improved with strategies recommended by theories of resistance to IS implementation (in both political and psychological forms). A conceptual overview of the suggested solution area is encapsulated in Figure 1.
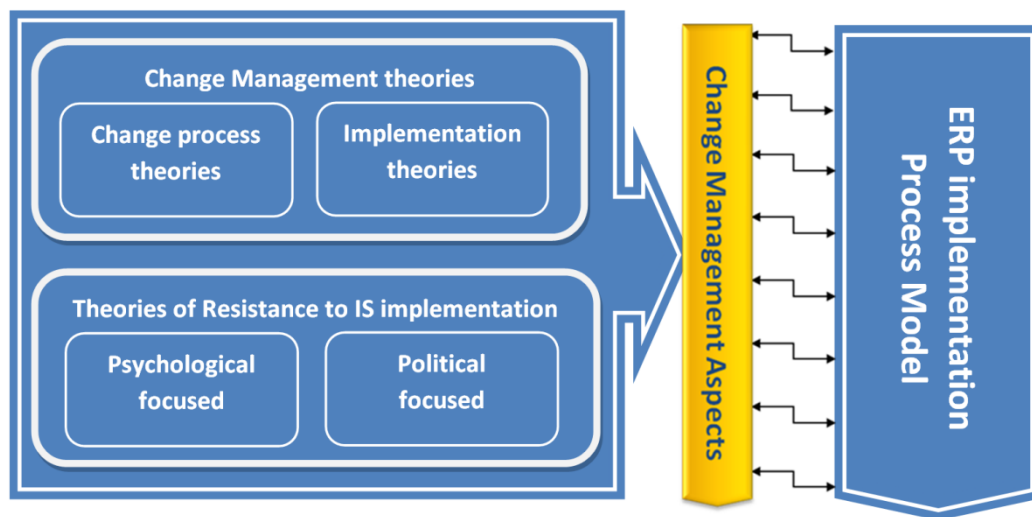
Figure 1. Conceptual overview of the suggested solution area

The rest of the paper structures as follow: Section 2 introduces employee related challenges in implementing ERP systems. Section 3 talks about change management and its main categories of theories and initiates the basic framework by mapping a selected change implementation model with ERP implementation process model. In Section 4, theories of resistance to information systems implementation are introduced and the framework is enriched accordingly. Finally, Section 5 concludes and suggests the future work.

2   Employee related challenges in implementing ERP systems

Although the potential of information technologies to support organizational transformation is acknowledged, evidence increasingly points to the importance of

employee agency in converting potential into practice (Boudreau and Robey, 2005). According to Fleck (1994), Kemppainen (2004), and McAdam and Galloway's (2005), implementation is not a procedure of unproblematic installation but rather a complex socio-technical process of renegotiation and redevelopment. The implementation of ERP packages demands the "reengineering" of the organization. This by necessity implies new methods for designing tasks, jobs and work modules and leads to new work structures and procedures (Kallinikos, 2004). This huge organizational change could arouse two different types of resistance or concerns in employee side of the organization.

First, according to Kallinikos (2004) and also Kemppainen (2004), redistribution of roles and responsibilities among members can destroy an organization if it is not properly managed. As Markus (1983) pointed out: "Systems that alter internal power structures in an organization are resisted by those losing power and accepted by those gaining power. Thus the implementation became a political act, and the battles for power complicated and delayed the process".

Second, 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. This issue of process acceleration induced by automation through ERP packages (Grabot, 2008), combined with the increased control and traceability brought by ERP systems makes it more difficult to fix employee errors without referring to an authority (Kallinikos, 2004). It also has the potentially unintended side-effect of creating an anxiety-producing process.

Conversely, ERP projects can be considered from a positive perspective. That is, they could be viewed as a process for organizational learning whereby the actors discover the reality and complexity of the organization process as they contribute to its re-design (Grabot, 2008). From this perspective, ERP implementation process is a knowledge sharing and learning process. Accordingly, the learning approach and positive attitude towards new skills of organization helped to make implementation effective (Krumbholz et al., 2000).

Distinguishing between the two types of user resistance: political and psychological, thus enables a more sophisticated appreciation of both the form, and also the potential strength, of user resistance. The next section tries to get closer to the solution area and

expand our understanding about the nature of change and resistance and its role in the organization.

3   Change Management

The central premise of change management is that involving people increases the likelihood that change will not only be accepted but that productivity will also increase (Axelrod, 2001; McAuley et al., 2007). In his seminal 1946 work, Kurt Lewin proposed that before change, and thus new behaviour can be successfully adopted, the previous behaviour has to be discarded. Consequently, a successful change project must involve the three steps of unfreezing the present level, moving to the new level, and refreezing this new level. Two general categories of change management theory have been developed in response to Lewin's foundational work: a) change process theory (how the change process works) and b) implementation theory (how to implement change successfully).

Change process theories explain the variables, outcomes and causal relationships related to the process of change itself (Burnes, 2009; Lynham et al., 2004). Reviewing 15 models of change, Carnall (2003) identified 5 distinct stages in every change effort: denial, defence, discarding, adaptation and internalization. Essential to every change process is the importance and negative impact of change. That is, any and every intervention would make the existing situation worse before it began to show improvement.

In contrast, implementation theories –in which Lewin's model itself is categorized, focused on the activities or specific actions associated with the successful implementation of change (Porras and Robertson, 1987). Although Lewin's change model gives us a good understanding about the process of organisational change, there are many critiques about his approach especially in the sense that it neglects organizational conflict and politics based on the assumption that common agreement can be reached, and that all the parties involved in a particular change project have a willingness and interest in doing so (Dawson, 2003; Hatch, 1997; Todnem By, 2005; Burnes, 2009). Critics believe that organizations are power systems and, consequently, change is a political process whereby different groups in an

organization struggle to protect or enhance their own interest (Orlikowski and Yates, 2006). This view is very similar to what is seen in ERP implementation case reviews (e.g. Lapointe and Rivard, 2005; Kemppainen, 2004; McAdam and Galloway, 2005; Markus, 1983). In this respect, power and politics have to be managed if change (i.e.: ERP implementation in our case) is to be effective (Burnes, 2009). The most famous change model which supports this viewpoint is that of Kotter (1996) which gained much support from later authors in the field who believe that his model is the most appropriate approach in implementing organizational change (e.g.: French and Bell, 1999; Gallos, 2006; Burnes, 2009). According to Kotter (1996), change processes unfold in a series of phases including: creating urgency; forming powerful coalition; developing a vision for change; communicating the change vision; removing obstacles; generating short term wins; building on the change; and finally, anchoring the changes in corporate culture.

Through comparing Kotter's (1996) change process model and a typical ERP implementation process model (adapted from Bancroft *et al*, 1998; and Ehie and Madsen, 2005), one can map the steps of two models with each other as shown in Table 1. In this way we can see that creating urgency and forming coalition clearly need to happen before starting the main implementation phase. As Lewin (1947) also pointed out, making proposed change seem attractive, has less effect on increasing the pressure for change, than making the current situation seem less attractive. In other words, there is a need to make people dissatisfied with the current situation or "establishing a sense of urgency", as Kotter says, is the first step in any change effort. Such sense of urgency in the organization should lead to a critical mass of individuals whose active commitment is necessary to provide the energy for change to occur (Beckhard and Harris, 1987). After these two steps, developing the organizational 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 detailed aspects of the vision probably will be identified in 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 organization in the wrong direction or nowhere at all.

Because modelling the existing situation and processes of the organization generally does not trigger any concern and reaction, the "as is analysis" phase is a good point 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. This is the time that could be used also for deepening people's understanding about their organization and involving them in the process of analyzing it – as a form of positive organisational learning as suggested by Grabot (2008). At this stage, change is viewed as an opportunity to develop positive attitude towards new skills amongst employees.

ERP implementation Process model phases		Kotter's change process model phases
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	

Table 1. **The Basic Framework: The Mapping of the two models (ERP implementation Process and Kotter's Change Process)**

Designing and getting approval of the "to be" processes highlight the point in the implementation process where tensions could surface. This would especially be a problem for those who perceived that they lose some authorities (Markus, 1983; Joshi, 1991; Kemppainen, 2004). This step can be fit well with removing obstacles phase of Kotter's model. Generating short term wins and building on the change are well mapped with the actual implementation phase. Finally, anchoring the change in corporate culture could be enacted as one of the enhancement phase activities.

As Kotter (1996) points out, most major change efforts comprise a host of smaller 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 about the health of whole implementation.

4 Theories of resistance to information systems implementation

Taking a look at the theories of resistance to IS implementation, there are clear points of complementarity with each theoretical perspective highlighting different facets of the ERP implementation "problem". For example, some like Joshi (1991), Marakas and Hornik (1996), Kim and Kankanhalli (2009), and Beaudry and Pinsonneault (2005; 2010), focus on the individual level of the phenomenon and the process by which an individual decides to behave about a new system. In contrast, others like Markus (1983), and Lapointe and Rivard (2005), concentrated more on the group level aspects of reaction to new systems and give some clues to confront them. As with the change management literature, so can the IS literature on ERP implementations be categorized into two general groups: psychologically focused (e.g.: Beaudry and Pinsonneault, 2005; 2010; Marakas and Hornik, 1996; Kim and Kankanhalli, 2009) and politically focused (e.g.: Markus, 1983; Lapointe and Rivard, 2005; Joshi, 1991). The former focuses on issues like perceiving threat and lack of control over expected consequences, or fear and stress stemming from the new routines and modes of work, whilst the latter perspective talks about change in intra-organizational power distribution with the new system. This categorization is also helpful in identifying different effective actions in certain situations or contexts depending on the nature of the resistance being provoked by the change initiative (i.e. ERP implementation).

Consequently, we argue that Kotter's model of change management enriches ERP implementation process models because it offers a useful and practical response to politically driven resistance and concerns of the process. Equally, ISstrategies focusing on psychological effects of ERP implementation nicely broaden and complement change management models. Table 2 (below) presents a conceptual framework summarizing these two related but distinct discipline perspectives. The framework presents an overview of the discussed change management models and

maps them against the three stages of ERP implementation (pre-implementation, implementation and post-implementation. At each stage of the implementation process, sources of employee resistance are identified. Taking recommendations drawn from both the IS and change management literature, actionable strategies are then suggested against each of the three stages of ERP implementation. In this way, the framework provides IS project managers with a range of suggested measures they can use within a structured framework of guidance.

5   Conclusion and Future Works

This paper highlighted the importance of employee issues and concerns during the process of implementing ERP systems and suggested addressing them through change management concept and tools. As such it offers a different perspective to that currently offered in the IS literature which emphases management commitment as a critical success factor in ERP implementation.

The paper briefly reviewed the employee related challenges in ERP implementation projects and sought to build a conceptual bridge between models of change management and the process of implementing ERP systems. The result is a structured framework of guidance for IS project managers contemplating ERP implementation initiatives that focuses explicitly on recognising and addressing the variety of concerns that employees could exhibit at various stages of an ERP implementation process. Specifically, the paper explicitly acknowledges the nature and form of change that could be experienced throughout the different levels, functional departments and specific job descriptions as a result of an enterprise-wide technically driven change initiative, such as ERP implementation. As such the paper represents a first step towards a more comprehensive and sophisticated understanding of the dynamics of human agency and IT implementations proposed by Boudreau and Robey in 2005.

ERP implementation Process model phases		Kotter's change process model phases	Carnall's Coping Cycle Stages	Sources of Resistance (Related to each Phase)	Recommended strategies (In addition to Kotter's model phases)	
Pre-implementation	Strategic decisions	Creating Urgency	Denial Defense Discarding (Unfreezing)	Perceiving threat and lack of control over expected consequences (Beaudry and Pinsonneault, 2005; 2010)	Developing habits of openness in organizational 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) 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-organizational 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) Switching costs for users (Kim and Kankanhalli, 2009)	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 organization 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' favorable opinions toward new system-related change and increasing users' self-efficacy for change (Marakas and Hornik, 1996) 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 user in the development of the new system (Beaudry and Pinsonneault, 2010)	Implementation
	As Is Analysis					
	To Be Analysis					
	Construction and Testing	Removing Obstacles				
	Actual Implementation					
		Generating Short Term Wins				
		Building on the Change	Adaptation (Movement)			
	Close Up					
Post-implementation	Enhancement	Anchoring the Changes in Corporate Culture	Internalization (Refreezing)		The new relationships resulted from the change are going to require work on them to be successfully embedded (Schein, 1987).	Post-implementation

Table 2.   **The Improved Framework: The mapping between the models of ERP implementation, Change and Resistance to IS implementation**

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