

Exploring Organization Change Management Techniques for Successful ERP Implementation

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Abstract

Introduction: While ERP has proved its worth in organizations, its implementation remains a difficult exercise. Change management (CM) is one of the most widely accepted critical success factors for ERP Implementation. This paper aims to identify the techniques and tactics that could be specifically used to successfully execute a CM program.

Methods: A qualitative descriptive methodology is employed to explore the specific CM practices that can be used in an ERP implementation and try to identify potential techniques. The aim is to get inputs from a number of knowledgeable respondents through semi-structured interviews as to what different techniques and strategies were used in the ERP implementation exercises (that they were involved in) to ensure successful CM.

Results: The identified techniques were grouped under the following loosely adhering themes: High Level activities in CM, ERP System Deployment Practices, Project Organization Practices and Organizational CM Practices. Emphasis has been given on techniques that contribute to success in CM endeavours. The techniques have been looked up in the existing literature and elaborated.

Conclusion: This study attempts to delve deeper into the idea of CM and what it involves in the context of ERP implementation. This will help practitioners to better grasp the different aspects of CM process and be useful in more efficient control of the same. This is not a complete handbook of all the techniques available, but seeks to achieve some kind of unanimity over how CM should actually be handled during ERP implementation.

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Introduction

Organizations have been increasingly feeling the need to get rid of the silos of information maintained by each department and converge them into a common entity in an effort to remain competitive. In this context, organizations consider ERP to be a vital tool for operational excellence leading to business success based on the ability of ERP software to integrate the different functional systems in the organization leading to error free production (Shaul and Tauber, 2013).

ERP systems are the most prevalent commercial packages whose procurement is aimed at streamlining organization wide business processes, addressing the issues of information fragmentation and improving the bottom lines (Nour and Mouakket, 2011). ERP systems encompass the whole enterprise in their reach, achieving integration in business processes that are industry standards (Esteves and Pastor, 2000; Haines and Goodhue, 2003; Shih, 2006). Huge benefits can be reaped from successful implementation of ERP systems: standardized business processes with customization facilities, and achievement of higher organizational KPIs through the institutionalization of

the business processes that can also be customized (Holland and Light, 1999; Rao, 2000; Chang *et al.*, 2008). The cost associated with ERP implementation is much more than the cost of the software: it includes the associated cost of bring in a change in the business processes (Soh, Kien and Tay-Yap, 2000; Wu and Wang, 2006; Osei-Bryson, Dong and Ngwenyama, 2008). Because of the complexity and association of different factors (including technology), the failure rates of ERP implementations have been variously estimated to be as high as 50-75% (Barker and Frolick, 2003; Yeh, Yang and Lin, 2007).

While successfully implementing an ERP can propel the organization to new heights of prosperity, failures can lead to catastrophic consequences (Kang, Jong-Hun Park and Hee-Dong Yang, 2008). News of the failures of ERP implementations (Soh, Kien and Tay-Yap, 2000; Ribbers and Schoo, 2002; Willis and Willis-Brown, 2002), or the forfeiture of the entire system (Jesitus, 1997) are increasingly common. It has been suggested that deeper research in the critical success factors of ERP Implementation is necessary, keeping in mind the difficulties often faced in the implementation of enterprise systems (Somers, Nelson and Ragowsky, 2000). Consequently, there has been research that is focused on the ERP implementation process and the success factors that influence the process (Bingi, Sharma and Godla, 1999; Esteves and Pastor, 2000; Scheer and Habermann, 2000; Soh, Kien and Tay-Yap, 2000; Hong and Kim, 2002; Ribbers and Schoo, 2002; Xu *et al.*, 2002; Ngai, Law and Wat, 2008; Chen, Law and Yang, 2009; Kronbichler,

Ostermann and Staudinger, 2009; Mathrani and Viehland, 2010). In the context of ERP implementations, the CSFs can be thought of as conditions that have to be satisfied to achieve success in the implementation exercise.

Literature Review

There are several problems that are common while implementing ERP System in an organization. Foremost amongst these is the resistance to change (Al-Mashari, Al-Mudimigh and Zairi, 2003; Kamhawi, 2008). It has been advised (Aloini, Dulmin and Mininno, 2007) that underestimating the change management aspect may cause failure in the project implementation. This concept of Change Management pertains to the necessity of formally preparing a change management program and execution of the same by the ERP implementation team (Nah, Lau and Kuang, 2001) and appreciate its importance in terms of the possible implications on the ERP implementation project (Bingi, Sharma and Godla, 1999) on organizational effectiveness. One vital task is to generate acceptance of the changes expected to be ushered in by the project along with a positive mindset of the employees towards those changes (Holland and Light, 1999; Parr and Shanks, 2000; Kumar, Maheshwari and Kumar, 2002; Abdinnour-Helm, Lengnick-Hall and Lengnick-Hall, 2003). Educating the users about how the ERP system can benefit them and why the system is required in the organization can help achieve this (Siriginidi, 2000; Aladwani, 2001; Somers and Nelson, 2001, 2004; Motwani *et al.*, 2002; Mandal and Gunasekaran, 2003; Bajwa, Garcia and Mooney, 2004). An important aspect of this is also to secure the support of key users who can act as opinion leaders in the organization at all levels (Aladwani, 2001). It is also necessary for the Implementation team management to effectively deal with various aspects of political sensibilities in the organization (Skok and Legge, 2002). It has been further stressed that while making plans for the ERP implementation project one should look at it as a peoples initiative for change management rather than an IT initiative (Wood and Caldas, 2001).

Change management is one of the most widely accepted critical success factors for ERP Implementation. (Luminita and Ana-Maria, 2013) avers that ERP implementation success is highly dependent on the company's openness to change. Even in recent times, poor change management has been identified as an issue that ultimately led to a failed ERP implementation (Ramburn, Seymour and Gopaul, 2013). However there are a variety of definitions for change management, and there exists scant explanation of the tactics that could be specifically used to successfully implement a change management program. While change management as a success factor finds mention in literature by almost every researcher, there seems to be a disconnect as to what exactly it involves.

As is mentioned in the literature below, the array of activities that are loosely categorized under change management is many. Additionally, current literature does not quite attempt to identify or explain the tactics that are specifically required for successfully managing and implementing the change management program.

A number of researchers have alluded to the different change management activities that are required for success. The reflective strategies that instructors can use to support management in change initiatives have been mentioned (Thi Tran and Anvari, 2014). An ethnography study of IT change management to identify the main reasons of failure of change control initiatives have been reported (Pandey and Mishra, 2014). The training of employees and the sharing of information among the staff members has been highlighted while revealing the impact of change management on ERP effectiveness (Othman Al-Mobaideen, 2014). The need to build commitment to the change amongst the users and build acceptance for it have been mentioned frequently (Holland and Light, 1999; Parr and Shanks, 2000; Kumar, Maheshwari and Kumar, 2002; Motwani *et al.*, 2002; Abdinnour-Helm, Lengnick-Hall and Lengnick-Hall, 2003; Bajwa, Garcia and Mooney, 2004) and take care of resistance to change (Ross and Vitale, 2000; Hong and Kim, 2002; Skok and Legge, 2002); necessity of communicating the different aspects of change starting with the vision (Ribbers and Schoo, 2002); the importance of appreciating the benefits and issues (Bingi, Sharma and Godla, 1999; Aladwani, 2001); educating (Siriginidi, 2000); and the need to reflect on organizational culture issues and address them adequately (Scott and Vessey, 2000; Aladwani, 2001; Nah, Lau and Kuang, 2001; Davison, 2002; Skok and Legge, 2002; Al-Mashari, Al-Mudimigh and Zairi, 2003; Tarafdar and Roy, 2003). Also, several researchers (Nah, Lau and Kuang, 2001; Voordijk, Van Leuven and Laan, 2003) have underscored the need for an independent change management program whose aim is to help create a common organizational culture with common values and shared objectives, focus on quality, work towards building management commitment, design effective training program for users, involve users in the making of the system from the outset, and provide a one stop shop for resolution of queries that employees may be having about the changes being incorporated (Nah, Lau and Kuang, 2001). It is of utmost importance that throughout the implementation stage the changes across the organization should be managed and be under control (Tarafdar and Roy, 2003). It has also been acknowledged that some employees are resistant to change because of the new roles and responsibilities; reporting structures, new organizational processes, etc. Similarly, keeping in mind the impact that such a project has on corporate mindset it is suggested that the employees at all levels in the organization should be prepared for the change (Umble, Haft and Umble,

2003). It is further stated: “if proper change management techniques are utilized, the company should be prepared to embrace the opportunities provided by the new ERP system”.

As is clear for the references above, the overall views on change management and exactly what it involves differs a lot. This can be further investigated, so as to make it possible for the “change manager” to exercise control over the process and successfully implement the same. Additionally, although there is unanimity on the view that change management is necessary, there are differences over how it should actually be handled.

A study was done that investigated change in the implementation of an Enterprise system where the impact of motors of change on user resistance, and reported the need for organizations to adopt a more user centric approach (Klaus and Harris, 2013). The impact of employee attitudes on the success of the implementation process was examined (Abdinnour-Helm, Lengnick-Hall and Lengnick-Hall, 2003). While the above mentioned studies have highlighted some elements that have an influence on attitudes, further exploration can be done in terms of identifying tactics that might have an impact on those factors.

Some strategies have been specified to assist in the building of user acceptance (Kumar, Maheshwari and Kumar, 2002), which is an important component of change management. Some of their ideas include: supporting the users during the process and education of users through training, communication to the users to disseminate change related information, user guidelines to be used during change, demonstration of change benefits. Yet, the specific tactics for achieving the same is not clear. It has been suggested that a well-managed change process requires evolutionary and revolutionary change tactics (Motwani *et al.*, 2002), but there is no further information as to what these tactics might be. In the same context, a novel approach has also been recommended, tying ERP projects to the existing theories of marketing new products, and proposing a framework for change management implementation on that basis (Aladwani, 2001). While this does qualify as a strategy and tactic, it has been clarified that this framework is not yet tested.

Research Method

The current study explores the change management practices that can be used in an ERP implementation, and tries to identify potential techniques for its successful implementation. The purpose of this study is not to test any hypothesis, and employs a qualitative descriptive methodology.

Respondents belonged to the different Indian companies in the manufacturing sector. They were chosen on the basis of their involvement in ERP implementation in their companies. Each had been involved in the implementation in a managerial

capacity, with a first-hand experience of the manner in which Change Management initiatives that accompanied the ERP Implementation project were implemented. A total of six respondents’ inputs have been taken. The focus is not on arriving at case studies, but to get inputs from a number of knowledgeable respondents as to what different techniques and strategies were used in the ERP implementation exercises (that they were involved in) to ensure successful change management.

Unrestricted responses from respondents can be expected from semi-structured interviews, providing insight into their mindsets and understanding of Change Management in ERP implementation. This allows the researcher to better comprehend the subject from different perspectives. Since this study has descriptive characteristics, semi-structured interviews would allow the investigation in a more detailed way than if structured interviews would have been used.

The researcher separately interviewed each respondent face to face. The interviews were not recorded. Each initial session began with an overview: background of the research, and what was expected from the respondents in the interview. Voluntariness of participation and anonymity were emphasized. General points associated with change management in ERP Implementations were mentioned and the respondent was requested to elaborate on each of those points as to how he had experienced the coverage of aspect of change management during the ERP implementation that he was involved in. This structured the course of the interview in a rather detailed manner while maintaining an explorative nature. Further questions were asked to understand the scenario better. Notes were taken during the interviews.

The points for discussion were relatively open ended. The semi-structured interviews also led to more elaborate answers since the respondents did not feel restricted to any specific topic but could speak more about the areas within his interest amongst the topics. The points were not split up in different parts depending on the work roles of the respondents. Instead they were allowed to answer all the questions as well as they could. This enabled gathering of richer data by obtaining answers from different sources.

After the first round of interviews, the interview notes were perused to arrive at common themes in change management activities across respondents. Comparison of these themes with the notes led to further probes through follow up questions with the individual respondents, looking for new angles and perspectives in the current topic. If misunderstandings were discovered by the respondents these were corrected with their agreement. The data were checked by the respondents along with the researcher to ensure that the findings are reflective of the subjects and a result of the course of inquiry itself rather than flowing from the researcher’s own thought processes.

Finally, the identified techniques were investigated in the literature to see if they could be elaborated.

Findings

The identified techniques for different aspects of change management have been listed below. They are grouped under loosely adhering themes. Emphasis has been given on techniques that contribute to success in change management endeavors. The techniques have been looked up in the existing literature and elaborated (Davis, 1998; Al-Mashari, 2003; Stapleton and Rezak, 2004; Coker, 2006; Granered, 2006; Huq, Huq and Cutright, 2006).

High Level activities in Change Management

These are to determine the objectives and offer guidance on how the ERP system can be best utilized in the organization.

- Analyzing and identifying the differences between the prevalent company practices and the industry wide best practices (in technology and the lines of business)
- Conveying the long-term objectives and associated viewpoints, the business mission, and identifying the key non-functional requirements in terms of system specifications (availability, performance, etc.) and security. The most used communication tools are:
 - Regularly published newsletters
 - User blogs, social media outlets within the organization, editorial boards
 - Open house, town hall meetings for users, roadshows for advertising change related information
 - Publicize articles from publications that are respected in the industry
 - Animation oriented presentations in Video and Flash formats
 - Speeches and exhibitions at public gatherings and conferences
 - Talking point cards
 - Highlight the different aspects through Fact sheets and brochures
 - Posters, t-Shirts, etc.
- Emphasize the need to follow a single core set of business processes across the company using a common business model.
- Arriving at and publicizing the estimated benefits in the individual business units through qualitative statements.
- Highlighting the aspect of superiority in operations resulting from the usage of ERP, and focusing on reduction of overall system expenditure and per-transaction costs
- Integration of material planning and production control as a preferred approach justifying the change

- Highlight the changes required in thought, style of work, mechanisms of control, and work models that are associated with ERP implementation.
- Focus on approaches covering the supply aspects, demand aspects, and the integration between them

ERP System Deployment Practices

The following points are those that deal with the technological issues of transforming of the legacy system environment into the enterprise wide ERP system environment. This is necessary because any failure on the technology front will adversely affect the credibility of the ERP implementation and has the potential to undermine the users' faith on the system.

- Choosing the technology consulting partner based on successful case studies involving successful implementation experience in similar projects, expertise in program management and technical aspects, support capabilities, and bid value of proposal
- Deciding on the selection of the ERP system based on a holistic assessment involving stakeholders across the organization
- Application portfolio rationalization exercise resulting in the retiring of existing legacy systems and moving onto an integrated ERP application with interfaces for master data: this includes comprehensive data cleansing and accurate data migration
- Designing business processes using the interactive business process modeling tools for configuration so that it is easily understandable by business persons (as opposed to only technical personnel)
- Ensuring readiness of hardware infrastructure for ERP implementation
- Developing and incorporating an application support strategy (during and post implementation) make a significant favorable difference in the availability of the system and thereby ensures satisfaction of the end users: such strategy includes strong site support staff with access to a knowledge management system, processes and procedures around automated help desk tools

Project Organization Practices

This is to primarily specify the working profiles of the different possible responsibilities and roles of all the entity groups involved in the ERP implementation process

- Assess readiness for change in different departments and stakeholder groups, take appropriate actions wherever required
- Espousing the concept of "super users" by forming identifying specially trained managers from various departments and getting them into a team with expectations to meet regularly and discuss amongst themselves the different developments associated

with the ERP implementation exercise. These super users can act as the change coordinators for their respective departments. Getting the support of well-known individuals and opinion leaders in the organization for a change management project is one of the first steps to be taken.

- Top management representatives from all business units should be working in unison with internal and external experts in a partnership mode
- Bifurcating the implementation of ERP systems into a number of scheduled releases so as to better understand user feedback and respond to that so as to maintain better control of the ERP system implementation.
- Setup a strong culture of periodic change review: weekly review meetings and issuing regular project update newsletters
- Planning a set of projects subsequent to the ERP implementation that works on top of the ERP system to keep up the ongoing momentum of progress so as to institutionalize change.

Organizational Change Management Practices

These are the steps that take the soft side of change into consideration that is needed for effective ERP systems implementation

- Following people transition process carefully, aiming to reduce anxiety resulting from possible restructuring of jobs: During times of change, the manager can use the SHINE approach: supportive, honest, informative, no-nonsense and enthusiastic.
- Regularly updating employees through organizing focus group meetings, publishing newsletters, having periodic quiz programs, and making use of messaging systems (like e-mails from a specific email address, organizational social media, etc.) and web technologies (blogs, etc.). It should provide the possibility to accept the readers' opinions, comments and propositions. Effective communication can dispel confusion and employee resistance.
- Ensure sharing of project information by creating "cross-lateral" teams representing the different functional areas within the organization
- Communicating project related information like scope, objectives, and activities to the employees at regular intervals: workforces tend to associate management to the promises made to them earlier. In cases where there is a possibility of changes in project parameters like design and scope, it should be immediately notified to the employees about the possible changes. Leadership must provide a honest and realistic preview of the outcomes that are expected, and be on the lookout for unrealistic expectations from employees; these considerations have the potential to aggravate the user resistance issues.

- Establishing a center of excellence entrusted with the task of creating global configuration and standards for knowledge management and transfer
- Adequate investment into training employees on ERP environment and methodology. This may require re-skilling, and also include hands-on interaction, along with validation sessions to test the users' understanding of concepts, activities that let people experiment with the applications on independent (separate) instances using the correct master data.
- Include representatives from each business unit in conceptualizing the ERP implementation efforts
- Joint decision making on ERP Implementation, by a separate high level group comprising representatives from top management, as well as different departments like HR, production, marketing, and other support groups. This is to ensure group members' commitment.
- Usage of web based training that allows large groups to get uniformly trained with consistent and private performance feedback
- By virtue of its integration capabilities, ERP offers the possibility of early development of a shared-services model where similar activities performed within separate business units are clubbed together to accentuate operational efficiencies
- Putting down the new roles, responsibilities, and reporting structures in the changed scenario
- Surveys, open sessions for communications, conferences and other aggregation tools so as to ensure open communication with all employees without regard to hierarchical considerations
- Development of "job-impact-analysis" documents, reviewed by different sections of the affected employees and managers so as to enable all round involvement and thus minimize resistance
- Devise a customized change strategy (from Empirical-Rational, Normative-Re-educative, Power-Coercive, Environmental-Adaptive approaches) based on people characteristic (rational, compliant, adaptable, social) arising out of cultural dimension (Individualism – individual/group; Power distance - hierarchical/participative style; Certainty - structure/ risk orientation; Masculinity - task/relationship orientation)
 - Individual style: the team needs to emphasize the personal benefits arising out of change (appeal to the self-interest of persons concerned); formulation of questions to be allowed at the individual level.
 - Group style: the team needs to emphasize the group benefits of change (appeal to the group interest); formulation of questions to be allowed at the group level. The group should be allowed to discuss with each other and spend time together

- arriving at their responses, queries, and apprehensions.
- High power distance - hierarchical style: Use senior management personnel to make announcements and to communicate information regarding changes; Exercise authority from legitimate power to instruct subordinates about what exactly to do (rather than expecting them to figure out themselves how to do things in a changed circumstance)
 - Low power distance - participative style: Use persuasion skills; have a joint discussion with them in an informal setting - explain the current situation of the organization; Allow for queries and disputes; arrange forum where they can be regularly involved in discussion and outlining how exactly things will be different (defining of provisional work processes)
 - Certainty - structure orientation: Prepare the specific rules, structures and interim structures and inform the personnel; their need for information will have to be satisfied. Supporting data and theoretical considerations will have to be made available, if appropriate. Emphasize the use of logic in putting forward a view. Successful case studies of similar approaches will have to be provided; cost-benefit comparison will also need to be presented through a quantitative cost analysis; Use different channels for dissemination of information; Attention to compliance aspects with procedures and policies will be useful.
 - Risk orientation: Incentivize creative behavior that supports the position of the group or division; acknowledge “outside the box” ideas; the process of learning will assume more importance as the project moves towards completion; Information sharing through different communication forums will be necessary; the information required for use in decision-making will have to be shared. A positive return-on-investment scenario will help in making a favorable decision. The bottom line is important, rather than the detailed working procedures. Earlier successful cases are not required for convincing. The case for change has to be built around the questions they would be having. Point out the issues associated with the way things are currently done.
 - Task orientation: Emphasize and reward good performance and results; for these employees, need to be aware that work takes precedence over family life; Their philosophy is “Live to work”; Underscore the need for task completion and meeting deadlines; responsiveness in communication with alacrity is important, so is decisiveness; Deliverance on promises is very important
 - Relationship orientation: Emphasize interdependence; continued service to the internal and external clients is to be highlighted; for these employees need to be aware their philosophy is “Work to live”, having a yen for family life — Underscore how the changes would enhance their quality of life. Stress solidarity and service; Emphasize humbleness and restraint in your approach, so is intuitive management and decision making; conflicts to be resolved by conciliation and cooperation;

Novelty of Research

In this study, an attempt has been made to thoroughly examine the change management success factor in the context of ERP implementation. Of the different strategies that have been uncovered in the existent Literature, the tactics associated with implementation of Change Management has been dwelled upon. It is expected that this will help to grasp the different aspects of change management and be useful in more efficient control of the change management process, which is one of the most important of all the success factors for ERP implementation.

Limitations

The study is an initial attempt to document the techniques associated with change management in ERP Implementation. This is not a complete handbook of all the techniques available to practitioners. Also, the categorization of the change management techniques is not comprehensive. The techniques have been mentioned as is, without associating any priorities to them. It is also possible that certain techniques are more applicable in certain situations, that aspect is not covered in the current study.

Implications for Practice

The understanding on change management and exactly what it involves vary greatly in the available Literature. This aspect has been further explored in this study, so as to make it possible for the “change manager” to exercise control over the process and successfully implement this success factor that is so significant in the context of ERP implementation. Although there is unanimity on the view that change management is necessary, there are differences over how it should actually be handled.

Future Research

The current study is of an exploratory nature: this can be enhanced in various ways. Future researchers can work on making the list of techniques more comprehensive, categorize the techniques more elaborately and efficiently; prioritization will help a change management practitioner to allocate scarce resources to implementation of the most important

ones. Association of these techniques with specific situations will enable more fine-tuned choices for implementation.

Concluding thoughts

Research on critical success factors of ERP implementation add a lot of value in enhancing the chances of success in ERP Implementation projects. While change management is unanimously accepted as a vital success factor, there is still a variance in what exactly comprises it and what specific tactics would work in change management programs (Finney and Corbett, 2007).

In view of the limitations that have been unearthed in the extant literature and based on the suggestions of other researchers, this study attempts to delve deeper into the idea of change management and what it involves. Each critical success factors is important in their own right; however, the need to approach ERP implementation from a change management perspective can propel an ERP project towards success. The perceived gap in the literature has been sought to be explored more in this study. An effort has been made here to identify the strategies to be engaged and the explicit tactics to be operated to successfully manage an ERP implementation project.

Disclosure

The authors deny any conflicts of interest related to this study: have no financial affiliation (e.g., employment, direct payment, stock holdings, retainers, consultant ships, patent licensing arrangements, or honoraria), or involvement with any commercial organization with direct financial interest in the subject or materials discussed in this manuscript, nor have any such arrangements existed in the past 3 years.

References

1. Abdinnour-Helm, S., Lengnick-Hall, M. L. and Lengnick-Hall, C. A. (2003) 'Pre-implementation attitudes and organizational readiness for implementing an enterprise resource planning system', *European journal of operational research*, 146(2), pp. 258–273.
2. Aladwani, A. M. (2001) 'Change management strategies for successful ERP implementation', *Business Process management journal*, 7(3), pp. 266–275.
3. Al-Mashari, M. (2003) 'A Process Change-Oriented Model for ERP Application', *International Journal of Human-Computer Interaction*, 16(1), pp. 39–55.
4. Al-Mashari, M., Al-Mudimigh, A. and Zairi, M. (2003) 'Enterprise resource planning: A taxonomy of critical factors', *European journal of operational research*, 146(2), pp. 352–364.
5. Aloini, D., Dulmin, R. and Mininno, V. (2007) 'Risk management in ERP project introduction: Review of the literature', *Information & Management*, 44(6), pp. 547–567.
6. Bajwa, D. S., Garcia, J. E. and Mooney, T. (2004) 'An integrative framework for the assimilation of enterprise resource planning systems: phases, antecedents, and outcomes', *Journal of Computer Information Systems*, 44(3), pp. 81–90.
7. Barker, T. and Frolick, M. N. (2003) 'ERP implementation failure: A case study', *Information Systems Management*, 20(4), pp. 43–49.
8. Bingi, P., Sharma, M. K. and Godla, J. K. (1999) 'Critical issues affecting an ERP implementation', *Information systems management*, 16(3), pp. 7–14.
9. Chang, M.-K., Cheung, W., Cheng, C.-H. and Yeung, J. H. Y. (2008) 'Understanding ERP system adoption from the user's perspective', *International Journal of Production Economics*, 113(2), pp. 928–942. doi: 10.1016/j.ijpe.2007.08.011.
10. Chen, C. C., Law, C. and Yang, S. C. (2009) 'Managing ERP implementation failure: A project management perspective', *Engineering Management, IEEE Transactions on*, 56(1), pp. 157–170.
11. Coker, D. W. (2006) 'Lessons Learned from the Army's Largest ERP Implementation', *Defense AT&L*, 11 December, pp. 8–11.
12. Davis, L. (1998) 'Change Management', *Shortcuts for Smart Managers*, pp. 45–56.
13. Davison, R. (2002) 'Cultural complications of ERP', *Communications of the ACM*, 45(7), pp. 109–111.
14. Esteves, J. and Pastor, J. (2000) 'Towards the unification of critical success factors for ERP implementations', in *10th Annual BIT Conference, Manchester, UK*, p. 44.
15. Finney, S. and Corbett, M. (2007) 'ERP implementation: a compilation and analysis of critical success factors', *Business Process Management Journal*, 13(3), pp. 329–347.
16. Granered, E. (2006) 'Managing change across cultures', *MultiLingual*, December, pp. 69–72.
17. Haines, M. N. and Goodhue, D. L. (2003) 'Implementation partner involvement and knowledge transfer in the context of ERP implementations', *International journal of human-computer interaction*, 16(1), pp. 23–38.
18. Holland, C. and Light, B. (1999) 'A critical success factors model for ERP implementation', *Software, IEEE*, 16(3), pp. 30–36.
19. Hong, K. K. and Kim, Y. G. (2002) 'The critical success factors for ERP implementation: an organizational fit perspective', *Information & Management*, 40(1), pp. 25–40.
20. Huq, Z., Huq, F. and Cutright, K. (2006) 'BPR through ERP: Avoiding change management pitfalls', *Journal of Change Management*, 6(1), pp. 67–85.
21. Jesitus, J. (1997) 'Broken promises?' *Industry Week*, 246(20), pp. 31–34.
22. Kamhawi, E. M. (2008) 'Enterprise resource-planning systems adoption in Bahrain: motives, benefits, and barriers', *Journal of Enterprise Information Management*, 21(3), pp. 310–334.
23. Kang, S., Jong-Hun Park and Hee-Dong Yang (2008) 'ERP Alignment for Positive Business Performance: Evidence from Korea's ERP Market', *Journal of Computer Information Systems*, 48(4), pp. 25–38.
24. Klaus, T. and Harris, M. (2013) 'Dynamics of Change in Implementing Enterprise Systems', *Journal of Information Technology Management*, 24(3), p. 25.
25. Kronbichler, S. A., Ostermann, H. and Staudinger, R. (2009) 'A Review of Critical Success Factors for ERP-Projects', *The Open Information Systems Journal*, 3, pp. 14–25.
26. Kumar, V., Maheshwari, B. and Kumar, U. (2002) 'ERP systems implementation: Best practices in Canadian

- government organizations', *Government Information Quarterly*, 19(2), pp. 147–172.
27. Luminita, H. and Ana-Maria, N. (2013) 'Erp Assimilation: An End-User Approach', *Annals of the University of Oradea, Economic Science Series*, 22(1), pp. 1876–1884.
 28. Mandal, P. and Gunasekaran, A. (2003) 'Issues in implementing ERP: A case study', *European Journal of Operational Research*, 146(2), pp. 274–283.
 29. Mathrani, S. and Viehland, D. (2010) 'Critical Success Factors for the Transformation Process in Enterprise System Implementation', in *Proceedings of the Pacific Asia Conference on Information Systems (PACIS)*, pp. 821–831.
 30. Motwani, J., Mirchandani, D., Madan, M. and Gunasekaran, A. (2002) 'Successful implementation of ERP projects: evidence from two case studies', *International Journal of Production Economics*, 75(1-2), pp. 83–96.
 31. Nah, F. F. H., Lau, J. L. S. and Kuang, J. (2001) 'Critical factors for successful implementation of enterprise systems', *Business process management journal*, 7(3), pp. 285–296.
 32. Ngai, E. W. T., Law, C. C. H. and Wat, F. K. T. (2008) 'Examining the critical success factors in the adoption of enterprise resource planning', *Computers in Industry*, 59(6), pp. 548–564.
 33. Nour, M. A. and Mouakket, S. (2011) 'A Classification Framework of Critical Success Factors for ERP Systems Implementation: A Multi-Stakeholder Perspective', *International Journal of Enterprise Information Systems (IJEIS)*, 7(1), pp. 56–71.
 34. Osei-Bryson, K.-M., Dong, L. and Ngwenyama, O. (2008) 'Exploring managerial factors affecting ERP implementation: an investigation of the Klein-Sorra model using regression splines', *Information Systems Journal*, 18(5), pp. 499–527. doi: 10.1111/j.1365-2575.2008.00309.x.
 35. Othman Al-Mobaideen, H. (2014) 'The Impact of Change Management on the Application Enterprise Resource Planning System (ERP) Effectiveness: Field Study in Jordan Bromine Company', *Journal of Management Research*, 6(4), pp. 79–98. doi: 10.5296/jmr.v6i4.6137.
 36. Pandey, A. and Mishra, S. (2014) 'Understanding IT Change Management Challenges at a Financial Firm', in *Proceedings of the Information Systems Educators Conference ISSN*, p. 1435. Available at: <http://proc.isecon.org/2014/pdf/3060.pdf> (Accessed: 4 December 2014).
 37. Parr, A. and Shanks, G. (2000) 'A model of ERP project implementation', *Journal of information Technology*, 15(4), pp. 289–303.
 38. Ramburn, A., Seymour, L. and Gopaul, A. (2013) 'Learning from a Failed ERP implementation: The Case of a Large South African Organization', *Proceedings of the European Conference on Information Management & Evaluation*, pp. 215–222.
 39. Rao, S. S. (2000) 'Enterprise resource planning: business needs and technologies', *Industrial Management & Data Systems*, 100(2), pp. 81–88.
 40. Ribbers, P. and Schoo, K. C. (2002) 'Program management and complexity of ERP implementations', *Engineering Management Journal*, 14(2), pp. 45–52.
 41. Ross, J. W. and Vitale, M. R. (2000) 'The ERP revolution: surviving vs. thriving', *Information Systems Frontiers*, 2(2), pp. 233–241.
 42. Scheer, A. W. and Habermann, F. (2000) 'Enterprise resource planning: making ERP a success', *Communications of the ACM*, 43(4), pp. 57–61.
 43. Scott, J. E. and Vessey, I. (2000) 'Implementing enterprise resource planning systems: the role of learning from failure', *Information systems frontiers*, 2(2), pp. 213–232.
 44. Shaul, L. and Tauber, D. (2013) 'Critical Success Factors in Enterprise Resource Planning Systems: Review of the Last Decade', *ACM Computing Surveys*, 45(4), pp. 55–55:39. doi: 10.1145/2501654.2501669.
 45. Shih, Y.-Y. (2006) 'The effect of computer self-efficacy on enterprise resource planning usage', *Behaviour & Information Technology*, 25(5), pp. 407–411. doi: 10.1080/01449290500168103.
 46. Siriginidi, S. R. (2000) 'Enterprise resource planning in reengineering business', *Business Process Management Journal*, 6(5), pp. 376–391.
 47. Skok, W. and Legge, M. (2002) 'Evaluating enterprise resource planning (ERP) systems using an interpretive approach', *Knowledge and Process Management*, 9(2), pp. 72–82.
 48. Soh, C., Kien, S. S. and Tay-Yap, J. (2000) 'Enterprise resource planning: cultural fits and misfits: is ERP a universal solution?', *Communications of the ACM*, 43(4), pp. 47–51.
 49. Somers, T. M. and Nelson, K. (2001) 'The impact of critical success factors across the stages of enterprise resource planning implementations', in *System Sciences, 2001. Proceedings of the 34th Annual Hawaii International Conference on*, p. 10–pp.
 50. Somers, T. M. and Nelson, K. G. (2004) 'A taxonomy of players and activities across the ERP project life cycle', *Information & Management*, 41(3), pp. 257–278.
 51. Somers, T. M., Nelson, K. and Ragowsky, A. (2000) 'Enterprise resource planning (ERP) for the next millennium: development of an integrative framework and implications for research', in *AMCIS 2000 Proceedings*.
 52. Stapleton, G. and Rezak, C. J. (2004) 'Change Management Underpins a Successful Erp Implementation at Marathon Oil', *Journal of Organizational Excellence*, 23(4), pp. 15–22. doi: 10.1002/npr.20022.
 53. Tarafdar, M. and Roy, R. K. (2003) 'Analyzing the adoption of enterprise resource planning systems in Indian organizations: a process framework', *Journal of Global Information Technology Management*, 6(1).
 54. Thi Tran, H. M. and Anvari, F. (2014) 'Reflective Frameworks for Change Management', *Proceedings of the European Conference on Information Management & Evaluation*, pp. 253–261.
 55. Umble, E. J., Haft, R. R. and Umble, M. M. (2003) 'Enterprise resource planning: Implementation procedures and critical success factors', *European journal of operational research*, 146(2), pp. 241–257.
 56. Voordijk, H., Van Leuven, A. and Laan, A. (2003) 'Enterprise resource planning in a large construction firm: implementation analysis' *Construction Management and Economics*, 21(5), pp. 511–521.
 57. Willis, T. H. and Willis-Brown, A. H. (2002) 'Extending the value of ERP', *Industrial Management & Data Systems*, 102(1), pp. 35–38.
 58. Wood, T. and Caldas, M. P. (2001) 'Reductionism and complex thinking during ERP implementations', *Business Process Management Journal*, 7(5), pp. 387–393.
 59. Wu, J. H. and Wang, Y. M. (2006) 'Measuring ERP success: the ultimate users' view', *International Journal*

- of Operations & Production Management*, 26(8), pp. 882–903.
60. Xu, H., Nord, J. H., Brown, N. and Nord, G. D. (2002) 'Data quality issues in implementing an ERP', *Industrial Management & Data Systems*, 102(1), pp. 47–58.
 61. Yeh, T.-M., Yang, C.-C. and Lin, W.-T. (2007) 'Service quality and ERP implementation: A conceptual and empirical study of semiconductor-related industries in Taiwan', *Computers in Industry*, 58(8–9), pp. 844–854. doi: 10.1016/j.compind.2007.03.002.