Critical factors for successful implementation of enterprise systems

Fiona Fui-Hoon Nah and Janet Lee-Shang Lau
University of Nebraska-Lincoln, Lincoln, Nebraska, USA, and Jinghua Kuang
University of Texas-Austin, Austin, Texas, USA

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Abstract Enterprise resource planning (ERP) systems have emerged as the core of successful information management and the enterprise backbone of organizations. The difficulties of ERP implementations have been widely cited in the literature but research on the critical factors for initial and ongoing ERP implementation success is rare and fragmented. Through a comprehensive review of the literature, 11 factors were found to be critical to ERP implementation success – ERP teamwork and composition; change management program and culture; top management support; business plan and vision; business process reengineering with minimum customization; project management; monitoring and evaluation of performance; effective communication; software development, testing and troubleshooting; project champion; appropriate business and IT legacy systems. The classification of these factors into the respective phases (chartering, project, shakedown, onward and upward) in Markus and Tanis’ ERP life cycle model is presented and the importance of each factor is discussed.

Introduction
Businesses today face a stark reality: anticipate, respond, and react to the growing demands of the marketplace, or perish. In a fiercely competitive environment, business strategy not only determines success, it governs business survival. Now, more than ever, effective business strategy centers on aggressive, efficient use of information technology. An enterprise resource planning (ERP) system is a packaged business software system that enables a company to manage the efficient and effective use of resources (materials, human resources, finance, etc.) by providing a total, integrated solution for the organization’s information-processing needs. It supports a process-oriented view of the business as well as business processes standardized across the enterprise. Among the most important attributes of ERP are its abilities to:

- automate and integrate an organization’s business processes;
- share common data and practices across the entire enterprise; and
- produce and access information in a real-time environment.

The difficulties and high failure rate in implementing ERP systems have been widely cited in the literature (Davenport, 1998), but research on critical success...
factors (CSFs) in ERP implementation is rare and fragmented. To date, little has been done to theorize the important predictors for initial and ongoing ERP implementation success (Brown and Vessey, 1999). This research is an effort to achieve that. It identifies the CSFs in ERP implementation, categorizes them into the respective phases in the ERP life cycle model proposed by Markus and Tanis (2000), and discusses the importance of these factors in ERP implementation.

**Literature review**

ERP systems hold the promise of improving processes and decreasing costs. Furthermore, two important new frontiers for ERP are electronic business (e-business) and supply-chain management (Wang and Nah, 2001). By linking supply-chain applications with other business systems, users can slash cycle times and reduce inventory. They can also reach beyond their own corporate walls to better connect with suppliers, distributors, and customers to engage in e-business.

However, there are always two sides to the story. In reality, ERP implementation is costly. Although ERP software is expensive, an even more substantial amount of business cost is typically spent on consulting to overcome difficult software implementation. ERP is a packaged solution with long complicated interrelated code containing a set process. Usually businesses have their own existing proven competitive advantage processes set in place. Businesses will have to change their proven processes to fit the software in order to take advantage of future releases, benefit from the improved processes, and avoid costly irreparable errors.

**Methodology**

The high failure rate of ERP implementation calls for a better understanding of its critical success factors (Somers *et al.*, 2000). Through an extensive literature review, we found ten articles that provide answers to the question: what are the key critical factors for ERP implementation success? These ten articles were identified through a computer search of databases of published works and conference proceedings in the information systems area. The articles were searched by the title based on the following two criteria:

1. it must contain either the keyword “success/succeed” or “critical issues/factors”, and
2. it must contain the term “ERP” or its equivalent, such as MRPII.

In the case where the authors published more than one article in the area, only the latest publication will be used. Among the ten articles identified, Roberts and Barrar (1992) was the earliest published work, whereas the other nine articles were published between 1998-2000 – the main reason being that Roberts and Barrar studied key factors for success in material requirements planning 2 (MRP-II) implementations. Because ERP evolved from MRPII, the
CSFs in MRPII implementations would apply to ERP as well. Table I summarizes the results of the review.

From the review, 11 factors emerged as critical to the successful implementation of ERP systems. These 11 factors were obtained after careful analysis and grouping of related sub-factors. These 11 factors are inclusive of all the sub-factors identified in the review.

Theoretical framework
A process theory approach (Markus and Tanis, 2000) was used to classify the CSFs identified. The process theory focuses on the sequence of events leading up to implementation completion.

Markus and Tanis (2000) identified the following four phases in an ERP life cycle:

1. chartering – decisions defining the business case and solution constraints;
2. project – getting system and end users up and running;
3. shakedown – stabilizing, eliminating “bugs”, getting to normal operations;
4. onward and upward – maintaining systems, supporting users, getting results, upgrading, system extensions.

The chartering phase comprises decisions leading to funding of the ERP system project. Key players in the phase include vendors, consultants, company executives, and IT specialists. Key activities include initiation of idea to adopt ERP, developing business case, decision on whether to proceed with ERP or not, initiation of search for project leader/champion, selection of software and implementation partner, and project planning and scheduling.

The project phase comprises system configuration and rollout. Key players include the project manager, project team members (mainly from business units and functional areas), internal IT specialists, vendors, and consultants. (We will refer to this group of people as the implementation partners.) Key activities include software configuration, system integration, testing, data conversion, training, and rollout. In this phase, the implementation partners must not only be knowledgeable in their area of focus, but they must also work closely and well together to achieve the organizational goal of ERP implementation.

The shakedown phase refers to the period of time from “going live” until “normal operation” or “routine use” has been achieved. Key activities include bug fixing and rework, system performance tuning, retraining, and staffing up to handle temporary inefficiencies. In this phase, the errors of prior causes can be felt, typically in the form of reduced productivity or business disruption (Markus and Tanis, 2000). Hence, it is important to monitor and constantly make adjustments to the system until the “bugs” are eliminated and the system is stabilized.
Table I. Survey of critical success factors in ERP implementations

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The onward and upward phase refers to ongoing maintenance and enhancement of the ERP system and relevant business processes to fit the evolving business needs of the organization. It continues from normal operation until the system is replaced with an upgrade or a different system. Key players include operational managers, end users, and IT support personnel (internal and external). Vendor personnel and consultants may be involved when upgrades are concerned. Key activities include continuous business improvement, additional user skill building, upgrading to new software releases, and post-implementation benefit assessment.

The phases in Markus and Tanis’ (2000) ERP life cycle model are in line with the stages of the traditional systems development life cycle, as presented in Figure 1. As different factors are important in different stages, it is important to classify the 11 CSFs identified into the phases of ERP implementation life cycle where the factors may come into play (see Figure 1). Figure 1 shows the classification of these factors into an integrative framework.

**Critical factors of ERP implementation success**

This section discusses the 11 factors that are critical to ERP implementation success.

**ERP teamwork and composition**

As shown in Figure 1, ERP teamwork and composition is important throughout the ERP life cycle. The ERP team should consist of the best people in the organization (Buckhout et al., 1999; Bingi et al., 1999; Rosario, 2000; Wee, 2000). Building a cross-functional team is also critical. The team should have a mix of consultants and internal staff so the internal staff can develop the necessary technical skills for design and implementation (Sumner, 1999). Both business and technical knowledge are essential for success (Bingi et al., 1999; Sumner, 1999).

The ERP project should be their top and only priority and their workload should be manageable (Wee, 2000). Team members need to be assigned full time to the implementation (Wee, 2000). As far as possible, the team should be co-located together at an assigned location to facilitate working together (Wee, 2000).

The team should be given compensation and incentives for successfully implementing the system on time and within the assigned budget (Wee, 2000). The team should be familiar with the business functions and products so they know what needs to be done to support major business processes (Rosario, 2000).

The sharing of information within the company, particularly between the implementation partners, and between partnering companies is vital and requires partnership trust (Stefanou, 1999). Partnerships should be managed with regularly scheduled meetings. Incentives and risk-sharing agreements will aid in working together to achieve a similar goal (Wee, 2000).
Figure 1. Classification of CSFs of ERP implementation into Markus and Tanis’ (2000) process-oriented ERP life cycle model.
Top management support

Top management support is needed throughout the implementation. The project must receive approval from top management (Bingi, 1999; Buckhout, 1999; Sumner, 1999) and align with strategic business goals (Sumner, 1999). This can be achieved by tying management bonuses to project success (Wee, 2000).

Top management needs to publicly and explicitly identify the project as a top priority (Wee, 2000). Senior management must be committed with its own involvement and willingness to allocate valuable resources to the implementation effort (Holland et al., 1999). This involves providing the needed people for the implementation and giving appropriate amount of time to get the job done (Roberts and Barrar, 1992).

Managers should legitimize new goals and objectives. A shared vision of the organization and the role of the new system and structures should be communicated to employees. New organizational structures, roles and responsibilities should be established and approved. Policies should be set by top management to establish new systems in the company. In times of conflict, managers should mediate between parties (Roberts and Barrar, 1992).

Business plan and vision

Additionally, a clear business plan and vision to steer the direction of the project is needed throughout the ERP life cycle (Buckhout et al., 1999). A business plan that outlines proposed strategic and tangible benefits, resources, costs, risks and timeline is critical (Wee, 2000). This will help keep focus on business benefits.

There should be a clear business model of how the organization should operate behind the implementation effort (Holland et al., 1999). There should be a justification for the investment based on a problem and the change tied directly to the direction of the company (Falkowski et al., 1998). Project mission should be related to business needs and should be clearly stated (Roberts and Barrar, 1992). Goals and benefits should be identified and tracked (Holland et al., 1999). The business plan would make work easier and impact on work (Rosario, 2000).

Effective communication

Effective communication is critical to ERP implementation (Falkowski et al., 1998). Expectations at every level need to be communicated. Management of communication, education and expectations are critical throughout the organization (Wee, 2000). User input should be managed in acquiring their requirements, comments, reactions and approval (Rosario, 2000).

Communication includes the formal promotion of project teams and the advertisement of project progress to the rest of the organization (Holland et al., 1999). Middle managers need to communicate its importance (Wee, 2000). Employees should be told in advance the scope, objectives, activities and updates, and admit change will occur (Sumner, 1999).
**Project management**

Good project management is essential. An individual or group of people should be given responsibility to drive success in project management (Rosario, 2000). First, scope should be established (Rosario, 2000; Holland et al., 1999) and controlled (Rosario, 2000). The scope must be clearly defined and be limited. This includes the amount of the systems implemented, involvement of business units, and amount of business process reengineering needed. Any proposed changes should be evaluated against business benefits and, as far as possible, implemented at a later phase (Sumner, 1999; Wee, 2000). Additionally, scope expansion requests need to be assessed in terms of the additional time and cost of proposed changes (Sumner, 1999).

Then the project must be formally defined in terms of its milestones (Holland et al., 1999). The critical paths of the project should be determined. Timeliness of project and the forcing of timely decisions should be managed (Rosario, 2000). Deadlines should be met to help stay within the schedule and budget and to maintain credibility (Wee, 2000).

Project management should be disciplined with coordinated training and active human resource department involvement (Falkowski et al., 1998). Additionally, there should be planning of well-defined tasks and accurate estimation of required effort. The escalation of issues and conflicts should be managed (Rosario, 2000).

Delivering early measures of success is important (Wee, 2000). Rapid, successive and contained deliverables are critical. A focus on results and constant tracking of schedules and budgets against targets are also important (Wee, 2000).

**Project champion**

Project sponsor commitment is critical to drive consensus and to oversee the entire life cycle of implementation (Rosario, 2000). Someone should be placed in charge and the project leader should “champion” the project throughout the organization (Sumner, 1999).

There should be a high level executive sponsor who has the power to set goals and legitimize change (Falkowski et al., 1998). Sumner (1999) states that a business leader should be in charge so there is a business perspective. Transformational leadership is critical to success as well. The leader must continually strive to resolve conflicts and manage resistance.

**Appropriate business and legacy systems**

Appropriate business and legacy systems are important in the initial chartering phase of the project. According to Roberts and Barrar (1992), a stable and successful business setting is essential. Business and IT systems involving existing business processes, organization structure, culture, and information technology affect success. It determines the IT and organizational change required for success (Holland et al., 1999). Roberts and Barrar also
argue that success in other business areas is necessary for successful MRPII implementations.

Change management program and culture
Change management is important, starting at the project phase and continuing throughout the entire life cycle. Enterprise wide culture and structure change should be managed (Falkowski et al., 1998), which include people, organization and culture change (Rosario, 2000).

A culture with shared values and common aims is conducive to success. Organizations should have a strong corporate identity that is open to change. An emphasis on quality, a strong computing ability, and a strong willingness to accept new technology would aid in implementation efforts. Management should also have a strong commitment to use the system for achieving business aims (Roberts and Barrar, 1992). Users must be trained, and concerns must be addressed through regular communication, working with change agents, leveraging corporate culture and identifying job aids for different users (Rosario, 2000).

As part of the change management efforts, users should be involved in design and implementation of business processes and the ERP system, and formal education and training should be provided to help them do so (Bingi et al., 1999; Holland et al., 1999). Education should be a priority from the beginning of the project, and money and time should be spent on various forms of education and training (Roberts and Barrar, 1992).

Training, reskilling and professional development of the IT workforce is critical. User training should be emphasized, with heavy investment in training and reskilling of developers in software design and methodology (Sumner, 1999). Employees need training to understand how the system will change business processes. There should be extra training and on-site support for staff as well as managers during implementation. A support organization (e.g. help desk, online user manual) is also critical to meet users’ needs after installation (Wee, 2000).

Business process reengineering (BPR) and minimum customization
Another important factor that begins at the project phase is BPR and minimum customization. It is inevitable that business processes are molded to fit the new system (Bingi et al., 1999). Aligning the business process to the software implementation is critical (Holland et al., 1999; Sumner, 1999).

Organizations should be willing to change the business to fit the software with minimal customization (Holland et al., 1999; Roberts and Barrar, 1992). Software should not be modified, as far as possible (Sumner, 1999). Modifications should be avoided to reduce errors and to take advantage of newer versions and releases (Rosario, 2000). Process modeling tools help aid customizing business processes without changing software code (Holland et al., 1999).
Broad reengineering should begin before choosing a system. In conjunction with configuration, a large amount of reengineering should take place iteratively to take advantage of improvements from the new system. Then when the system is in use reengineering should be carried out with new ideas (Wee, 2000).

Quality of business process review and redesign is important (Rosario, 2000). In choosing the package, vendor support and the number of previous implementers should be taken into account (Roberts and Barrar, 1992).

**Software development, testing and troubleshooting**

Software development, testing and troubleshooting is essential, beginning in the project phase. The overall ERP architecture should be established before deployment, taking into account the most important requirements of the implementation. This prevents reconfiguration at every stage of implementation (Wee, 2000).

There is a choice to be made on the level of functionality and approach to link the system to legacy systems. In addition, to best meet business needs, companies may integrate other specialized software products with the ERP suite. Interfaces for commercial software applications or legacy systems may need to be developed in-house if they are not available in the market (Bingi et al., 1999).

Troubleshooting errors is critical (Holland et al., 1999). The organization implementing ERP should work well with vendors and consultants to resolve software problems. Quick response, patience, perseverance, problem solving and firefighting capabilities are important (Rosario, 2000). Vigorous and sophisticated software testing eases implementation (Rosario, 2000).

Scheer and Habermann (2000) indicate that modeling methods, architecture and tools are critical. Requirements definition can be created and system requirements definition can be documented. There should be a plan for migrating and cleaning up data (Rosario, 2000). Proper tools and techniques and skill to use those tools will aid in ERP success (Rosario, 2000).

**Monitoring and evaluation of performance**

Finally, monitoring and evaluation come into play at the shakedown phase. Milestones and targets are important to keep track of progress. Achievements should be measured against project goals. The progress of the project should be monitored actively through set milestones and targets.

Two criteria may be used (Roberts and Barrar, 1992). Project management based criteria should be used to measure against completion dates, costs and quality. Then operational criteria should be used to measure against the production system. Monitoring and feedback include the exchange of information between the project team members and analysis of user feedback (Holland et al., 1999).

There should be an early proof of success to manage skepticism (Rosario, 2000). Reporting should be emphasized with custom report development, report
generator use and user training in reporting applications (Sumner, 1999). Management needs information on the effect of ERP on business performance. Reports or processes for assessing data need to be designed. These reports should be produced based on established metrics. It must include effective measurable project goals that meet business needs and are reasonable. Additionally, performance should be tied to compensation (Falkowski et al., 1998).

**Conclusions**

A total of 11 critical success factors for ERP implementation have been identified, based on a review of the ERP literature. Teamwork and composition in the ERP implementer-vendor-consultant partnership is a key factor influencing ERP implementation success. Good coordination and communication between the implementation partners are essential. Since ERP covers a wide range of functional areas, it is also important to have a cross-functional ERP core team. It is extremely critical that partnership trust is present and the team members are working well together. Another very critical factor is change management program and culture. An organizational culture where the employees share common values and goals and are receptive to change is most likely to succeed in ERP implementation. Furthermore, user training, education and support should be available and highly encouraged. Change agents should also play a major role in the implementation to facilitate change and communication, and to leverage the corporate culture. Other critical factors include top management support, business plan and vision, BPR and minimum customization, effective communication, project management, software development, testing and troubleshooting, monitoring and evaluation of performance, project champion, and appropriate business and IT legacy systems.

In the next stage of this research, we will send out survey questionnaires to companies to evaluate the degree of criticality and importance of the success factors identified in the ERP literature. We are also interested in studying how the perceived importance of these factors may differ across implementation partners such as top executives, users, project team members, internal IT specialists, vendors, and consultants. With a better understanding of the issues involved in ERP implementations, management will be able to make critical decisions and allocate resources that are required to make ERP implementation a success.

**References**


This article has been cited by:


10. Ogan M. Yigitbasioglu. 2015. The role of institutional pressures and top management support in the intention to adopt cloud computing solutions. *Journal of Enterprise Information Management* 28:4, 579-594. [Abstract] [Full Text] [PDF]


13. Malgorzata Plaza. 2015. Balancing the costs of human resources on an ERP project. *Omega*. [CrossRef]


17. David Hwang, Hokey Min. 2015. Identifying the drivers of enterprise resource planning and assessing its impacts on supply chain performances. *Industrial Management & Data Systems* 115:3, 541-569. [Abstract] [Full Text] [PDF]
24. Etienne Erasmus, Sebastiaan Rothmann, Chrizzanne Van Eeden. 2015. A structural model of technology acceptance. SA Journal of Industrial Psychology 41. . [CrossRef]
26. Ziyuan Fan 206. . [CrossRef]
32. Marcelo Biagio Laquimia, Gabriel EwejeCollaborative Governance toward Sustainability: A Global Challenge on Brazil Perspective 371-413. [Abstract] [Full Text] [PDF] [PDF]
33. Josef Hynek, Václav Janeček, Frank Lefley, Kateřina Půzová, Jan Němeček. 2014. An exploratory study investigating the perception that ICT capital projects are different. Management Research Review 37:10, 912-927. [Abstract] [Full Text] [PDF]


36. Abdulaziz I. Almajed, Pam Mayhew. An empirical investigation of IT project success in developing countries 984-990. [CrossRef]

37. Rui Meng, Xin-liang Xu. Influence factors of decision-making ability in marine engineering equipment manufacturing enterprise based on the ANP-DEMATEL 555-564. [CrossRef]


40. Regis Coeurderoy, Nathalie Guilmot, Alain Vas. 2014. Explaining factors affecting technological change adoption. *Management Decision* 52:6, 1082-1100. [Abstract] [Full Text] [PDF]

41. Poonam Garg, Atul Garg. 2014. Factors influencing ERP implementation in retail sector: an empirical study from India. *Journal of Enterprise Information Management* 27:4, 424-448. [Abstract] [Full Text] [PDF]

42. Mehdi Mahdavian, Hamideh Nazarian, Maryam Mahdavian, Naruemon Wattanapongsakorn. An investigation of the success of hospital information systems implementation: A case study 329-333. [CrossRef]


45. Paul Devadoss. Deconstructing Enterprise Systems 24-1-24-15. [CrossRef]


47. Abdoulmohammad Gholamzadeh Chofreh, Feybi Ariani Goni, Awaluddin Mohamed Shaharoun, Syuhaida Ismail, Jiří Jaromír Klemeš. 2014. Sustainable enterprise resource planning: imperatives and research directions. *Journal of Cleaner Production* 71, 139-147. [CrossRef]


50. Ondrej Zach, Bjørn Erik Munkvold, Dag Håkon Olsen. 2014. ERP system implementation in SMEs: exploring the influences of the SME context. *Enterprise Information Systems* 8, 309-335. [CrossRef]


53. Jiwat Ram, David Corkindale. 2014. How “critical” are the critical success factors (CSFs)? Business Process Management Journal 20:1, 151-174. [Abstract] [Full Text] [PDF]


56. Rafael Alexandre dos Reis, Maria do Carmo Duarte Freitas. 2014. Critical Factors on Information Technology Acceptance and Use: An Analysis on Small and Medium Brazilian Clothing Industries. Procedia Computer Science 31, 105-114. [CrossRef]


62. Darshana Sedera, Sharmistha Dey. 2013. User expertise in contemporary information systems: Conceptualization, measurement and application. Information & Management 50, 621-637. [CrossRef]

63. Amala V. Rajan, Jim Odhiambo Otieno, Samraj AndrewsLeveraging three pillars of academia through blended learning 96-101. [CrossRef]

64. Maria Christofi, Miguel Nunes, Guo Chao Peng, Angela Lin. 2013. Towards ERP success in SMEs through business process review prior to implementation. Journal of Systems and Information Technology 15:4, 304-323. [Abstract] [Full Text] [PDF]

65. HAYA AJJAN, RAM L. KUMAR, CHANDRASEKAR SUBRAMANIAM. 2013. UNDERSTANDING DIFFERENCES BETWEEN ADOPTERS AND NONADOPTERS OF INFORMATION TECHNOLOGY PROJECT PORTFOLIO MANAGEMENT. International Journal of Information Technology & Decision Making 12, 1151-1174. [CrossRef]


67. Delvin Grant, Yujong Hwang, Qiang Tu. 2013. An empirical investigation of six levels of enterprise resource planning integration. Computers in Human Behavior 29, 2123-2133. [CrossRef]


74. Mehdi Mahdavian, Maryam Mahdavian, Naruemon Wattanapongsakorn. 2013. Developing a model to measure the skills of ERP implementation team 64-67. [CrossRef]


83. C. Annamalai, T. Ramayah. 2013. Does the organizational culture act as a moderator in Indian enterprise resource planning (ERP) projects?. *Journal of Manufacturing Technology Management* 24:4, 555-587. [Abstract] [Full Text] [PDF]


86. Mark Borman, Marijn Janssen. 2013. Reconciling two approaches to critical success factors: The case of shared services in the public sector. *International Journal of Information Management* 33, 390-400. [CrossRef]

87. Shashank Saini, Siddhartha Nigam, Subhas C. Misra. 2013. Identifying success factors for implementation of ERP at Indian SMEs. *Journal of Modelling in Management* 8:1, 103-122. [Abstract] [Full Text] [PDF]


90. Katja Andresen, Carsten Brockmann, Christina Drager. A Classification of Ecosystems of Enterprise System Providers -- An Empirical Analysis 4034-4044. [CrossRef]

91. Pei-Hung Ju, Hsiao-Lan Wei. The Influence of User Social Network on User Participation in ERP System Implementation 4094-4103. [CrossRef]


96. Fawzy Soliman. Role of cloud systems as a global innovation crucible 1-6. [CrossRef]


106. Qinhua Wang, Changrui Ren, Feng Chen. Achieve Agile Enterprise System through Collaboration with BPMS 494-501. [CrossRef]


111. Amin Amid, Morteza Moalagh, Ahad Zare Ravasan. 2012. Identification and classification of ERP critical failure factors in Iranian industries. *Information Systems* 37, 227-237. [CrossRef]


114. Kevin P. Gallagher, James L. “Jamey” Worrell, Robert M. Mason. 2012. The negotiation and selection of horizontal mechanisms to support post-implementation ERP organizations. *Information Technology & People* 25:1, 4-30. [Abstract] [Full Text] [PDF]


118. Zhen Shao, Yuqiang Feng, Qing Hu. How Leadership Styles Impact Enterprise Systems Success throughout the Lifecycle: A Theoretical Exploration 4692-4701. [CrossRef]
119. Dimitrios Maditinos, Dimitrios Chatzoudes, Charalampos Tsairidis. 2011. Factors affecting ERP system implementation effectiveness. *Journal of Enterprise Information Management* 25:1, 60-78. [Abstract] [Full Text] [PDF]


122. Ammar Rashid, William Y. C. Wang, Felix B. Tan. Opportunities and Leverage in the Information Technology Post Adoption Stage 357-361. [CrossRef]


129. Emad M. Kamhawi. 2011. IT and non-IT factors influencing the adoption of BSC systems: a Delphi study from Bahrain. *International Journal of Productivity and Performance Management* 60:5, 474-492. [Abstract] [Full Text] [PDF]


134. Khadija Elmeziane, Shuai Chuanmin, Mourad Elmeziane. Critical success factors of enterprise resource planning implementation in China: Case study in Shanghai city, China 1-4. [CrossRef]


140. Suliman Abdulla Al Shamsi, Anuar Ahmad, Ghazali DesaDevelopment of critical successful factors model for spatial data infrastructure implementation 212-219. [CrossRef]


144. O Zach, Dag Ha OlsenERP System Implementation in Make-to-Order SMEs: An Exploratory Case Study 1-10. [CrossRef]


146. Pak-Lok Poon, Yuen Tak Yu. 2010. Investigating ERP systems procurement practice: Hong Kong and Australian experiences. Information and Software Technology 52, 1011-1022. [CrossRef]


150. Bjarne Rerup Schlichter, Pernille Kraemmergaard. 2010. A comprehensive literature review of the ERP research field over a decade. Journal of Enterprise Information Management 23:4, 486-520. [Abstract] [Full Text] [PDF]


152. Wen-Hsien Tsai, Sin-Jin Lin, Kuen-Chang Lee, Wan-Rung Lin, Jau-Yang Liu, Jui-Ling Hsu Examining the implementation risks affecting different aspects of Enterprise Resource Planning project success 1-6. [CrossRef]


159. Marcus A. Rothenberger, Mark Srite, Karen Jones-Graham. 2010. The impact of project team attributes on ERP system implementations. *Information Technology & People* **23**:1, 80-109. [Abstract] [Full Text] [PDF]


166. Franc Ravnikar. 2010. The Impact of Managers on Successful ERP Implementation. *Organizacija* **43**. [CrossRef]


170. Ton A. M. Spil, Christiaan P. Katsma, Robert A. Stegwee, Ernst F. Albers, Arne Freriks, Edwin LigtValue, Participation and Quality of Electronic Health Records in the Netherlands 1-10. [CrossRef]

172. Shashank Saini, Siddhartha Nigam, Subhas C Misra. Success factors for implementing ERP in SMEs in India: A conceptual model 165-169. [CrossRef]


183. Suresh Subramoniam, Mohamed Tounsi, K.V. Krishnankutty. 2009. The role of BPR in the implementation of ERP systems. Business Process Management Journal 15:5, 653-668. [Abstract] [Full Text] [PDF]


194. Vichita Vathanophas, Lindsay Stuart. 2009. Enterprise resource planning: technology acceptance in Thai universities. *Enterprise Information Systems* 3, 133-158. [CrossRef]


197. Jau-Rong Chen. 2009. An exploratory study of alignment ERP implementation and organizational development activities in a newly established firm. *Journal of Enterprise Information Management* 22:3, 298-316. [Abstract] [Full Text] [PDF]


201. Yuanqiang Xia, Peter Lok, Song Yang. 2008. The ERP implementation of SME in China 135-140. [CrossRef]


207. Qing Xu, Qingguo Ma. 2008. Determinants of ERP implementation knowledge transfer. *Information & Management* 45, 528-539. [CrossRef]
208. Parijat Upadhyay, Pranab K. Dan. An Explorative Study to Identify the Critical Success Factors for ERP Implementation in Indian Small and Medium Scale Enterprises. 295-299. [CrossRef]


218. Ketshidile Tlhomelang, Marie-Louise Barry. An investigation into the benefits of the implementation of an enterprise project management system in large organisations in developing economies. 1456-1461. [CrossRef]

219. Lihong Zhou, Ana Vasconcelos, Miguel Nunes. 2008. Supporting decision making in risk management through an evidence-based information systems project risk checklist. Information Management & Computer Security 16:2, 166-186. [Abstract] [Full Text] [PDF]

220. Dag Näslund. 2008. Lean, six sigma and lean sigma: fads or real process improvement methods?. Business Process Management Journal 14:3, 269-287. [Abstract] [Full Text] [PDF]


229. Qinhua Wang, Changrui Ren, Shao Bing, Jin Dong, Hongwei Ding, Wei Wang. SCPM: Facilitating Process-Centric Deployment in Enterprise System Implementation 461-466. [CrossRef]


231. Mojca Indihar temberger, Andrej Kovacic. The Role of Business Process Modelling in ERP Implementation Projects 260-265. [CrossRef]


234. Oana Velcu. 2007. Exploring the effects of ERP systems on organizational performance. *Industrial Management & Data Systems* 107:9, 1316-1334. [Abstract] [Full Text] [PDF]

235. J. R. Hough, R. Haines, S. Giacomo. 2007. Contextual factors affecting the integration of enterprise systems in post-merger oil and gas companies. *Enterprise Information Systems* 1, 421-441. [CrossRef]


241. Yuanfang Song, Jidong Han, Dong Cheng, Yanyan Zhang. An Empirical Research on the Impact of CSFs on Adoption of ERP 6248-6251. [CrossRef]


245. Ranzhe Jing, Xun Qiu. A Study on Critical Success Factors in ERP Systems Implementation 1-6. [CrossRef]

246. T. Ramayah, May-Chiun Lo. 2007. Impact of shared beliefs on “perceived usefulness” and “ease of use” in the implementation of an enterprise resource planning system. *Management Research News* 30:6, 420-431. [Abstract] [Full Text] [PDF]


249. Ramaraj Palanisamy. 2007. Capturing Users’ Tacit Knowledge in ERP Implementation: An Exploratory Multi-Site Case Study. *Journal of Information & Knowledge Management* 06, 9-23. [CrossRef]


253. Yan Zhu, Yan Li. The Informatization Development Trend of Chinese Retailing 467-471. [CrossRef]


255. Sherif Kamel. Assessing the Business Value of Using Information Systems: Case of UTi Egypt 1316-1324. [CrossRef]


259. Charalambo Spathis. 2006. Enterprise systems implementation and accounting benefits. *Journal of Enterprise Information Management* 19:1, 67-82. [Abstract] [Full Text] [PDF]

260. Constantinos J. Stefanou, Andreas Revanoglou. 2006. ERP integration in a healthcare environment: a case study. *Journal of Enterprise Information Management* 19:1, 115-130. [Abstract] [Full Text] [PDF]


263. Critical Success Factors of Implementing Enterprise Portals 182a-182a. [CrossRef]

265. Supporting the Module Sequencing Decision in the ERP Implementation Process 181a-181a. [CrossRef]


270. Charles Møller. 2005. ERP II: a conceptual framework for next-generation enterprise systems?. *Journal of Enterprise Information Management* 18:4, 483-497. [Abstract] [Full Text] [PDF]


292. Charalambos Spathis, Sylvia Constantinides. 2003. The usefulness of ERP systems for effective management. *Industrial Management & Data Systems* **103**:9, 677-685. [Abstract] [Full Text] [PDF]


298. Kim Maes, Steven De Haes, Wim Van Grembergen. A Literature Review on IT Value Management: 26-55. [CrossRef]


302. Hussam Eldin I. Agha Risk Management and Business Processes Reengineering, Success Drivers for ERP Projects 146-184. [CrossRef]

303. Payam Hanafizadeh, Ahad Zare RavasanA McKinsey 7S Model-Based Framework for ERP Readiness Assessment 141-183. [CrossRef]

304. C. Annamalai, T. Ramayah Reengineering for Enterprise Resource Planning (ERP) Systems Implementation 791-806. [CrossRef]

305. Lorraine Warren, Ted Fuller Contrasting Approaches to Preparedness 400-411. [CrossRef]

306. Hamid Nach Structuring Knowledge for Enterprise Resource Planning Implementation through an Ontology 25-42. [CrossRef]

307. Nelly Todorova, Julie Falls-Anderson The Selection of a New Student Administration System at University of Southland 24-42. [CrossRef]

308. Tim Klaus Understanding User Dissatisfaction 215-241. [CrossRef]

309. Nabil Ghalib The Design and Implementation of Paperless Medical System (PMS) for Offshore Operating Company 71-83. [CrossRef]

310. Colm Burns, Nola Hewitt-Dundas Implementation of Discrete and Integrated IT 168-183. [CrossRef]


312. Nabil Ghalib The Design and Implementation of Paperless Medical System (PMS) for Offshore Operating Company 1064-1072. [CrossRef]

313. Moti Frank Selecting Strategies and Approaches in Systems Engineering 376-388. [CrossRef]

314. Huub J.M. Ruël, Tanya Bondarouk, Stefan Smink The Waterfall Approach and Requirement Uncertainty 49-65. [CrossRef]

315. Hamed Al-Hinai, Helen M. Edwards Preparing People to Manage, Support and Use Enterprise Systems in an Arabian Gulf Context 866-882. [CrossRef]


319. Hamed Al-Hinai, Helen M. Edwards Preparing People to Manage, Support and Use Enterprise Systems in an Arabian Gulf Context 114-129. [CrossRef]

320. Lorraine Warren, Ted Fuller Contrasting Approaches to Preparedness 18-34. [CrossRef]

321. Cliff Cartman, Angel Salazar The Influence of Organisational Size, Internal IT Capabilities, and Competitive and Vendor Pressures on ERP Adoption in SMEs 19-43. [CrossRef]

322. Stephan Kronbichler, Herwig Ostermann Specific Factors for ERP-Success Measurement in Healthcare 205-231. [CrossRef]

323. Chetan Sankar Factors that Improve ERP Implementation Strategies in an Organization 114-135. [CrossRef]

325. Adekunle Okunoye, Mark Frolick, Elaine Crable, ERP Implementation in Higher Education 128-156. [CrossRef]

326. Nooruddin Ahmed, Enterprise Asset Management System 57-70. [CrossRef]

327. C. Annamalai, T. Ramayah, Reengineering for Enterprise Resource Planning (ERP) Systems Implementation 185-200. [CrossRef]

328. Hsin-Ju Wei, Chia-Liang Wei, Analysis of Success Factors of Introducing SAP System for ERP Implementation in Small and Midsize Enterprises in Taiwan 252-290. [CrossRef]

329. Carmen de Pablos Heredero, Mónica de Pablos Heredero, Elements that Can Explain the Degree of Success of ERP Systems Implementation 468-498. [CrossRef]

330. Klaus Wölfel, Jean-Paul Smets, Tailoring FOS-ERP Packages 1979-1996. [CrossRef]

331. Klaus Wölfel, Jean-Paul Smets, Tailoring FOS-ERP Packages 116-133. [CrossRef]

332. Brian Davis, Joe McDonagh, The Evolving Role of the Chief Information Officer (CIO) 207-232. [CrossRef]

333. Norman Gwangwava, Khumbulani Mpofu, Samson Mhlanga, Big Data and Data Modelling for Manufacturing Information Systems 266-288. [CrossRef]

334. C. Byers, Project management and E-learning: adapting to new dimensions 145-150. [CrossRef]

335. K. Laframboise, F. Reyes, E-negotiations, supply networks and collaborative product development in aerospace manufacturing 855-859. [CrossRef]


337. Ziyuan Fan, An Approach for Assessment of the Success of Cloud Systems Usage in Innovation 1873-1890. [CrossRef]