CENTERIS - International Conference on ENTERprise Information Systems / ProjMAN - International Conference on Project MANagement / HCist - International Conference on Health and Social Care Information Systems and Technologies, CENTERIS/ProjMAN/HCist 2018

ERP Systems in Multinational Enterprises: A literature Review of Post-implementation Challenges

Karoline B. Osnes[a], Julie R. Olsen[a], Polyxeni Vassilakopoulou[a], Eli Hustad[a]*

[a]University of Agder, 4604 Kristiansand, Norway

Abstract

This paper reports on a literature review focusing on challenges during post-implementation of enterprise resource planning (ERP) systems in a multinational context. Through an extensive literature search across multiple databases, we identified 20 articles which address issues in this context. Global demands prove to be a key challenge and source of conflict between parent and subsidiary companies: frequently, parent companies seek control through standardized solutions, while local subsidiaries aim to sustain local processes and routines. The primary focus is to shed light on these contradictive objectives unfolding in this context and identify research areas that need more attention in future ERP post-implementation research.

Keywords: ERP post-implementation, multinational enterprises (MNE), multisite ERP implementation, ERP challenges, ERP and conflicts

* Corresponding author. Tel.: +47 38141000; fax: +47 38141001.
  E-mail address: eli.hustad@uia.no

1. Introduction

Implementation of enterprise systems within organizations has received much attention in information system (IS) research, and this interest has, over time, resulted in a large body of research studies. One of the reasons for this attention is that enterprise systems, and in particular, enterprise resource planning (ERP) systems, represent an important backbone of the business which can control all organizational resources and transactions through one system [1]. ERP systems are standardized, off-the-shelf software packages which build on best practices based on different industries. Furthermore, ERP systems respond to the need for integrated solutions by replacing legacy systems to avoid incompatible silo structures and data redundancy, reducing maintenance costs and contributing to the establishment of a common platform for the enterprise [2]. Since the 1990s, organizations have been introducing ERP systems to increase efficiency and obtain seamless integration of information flow across departments and functions [3]. Adopting ERP systems is, however, a complex organizational and technical undertaking. Technically, the systems are challenging to implement in terms of configuration, adaptation, and data conversion from legacy systems. Organizationally, for optimal use, the system introduces changes in business processes, working routines, and roles of the employees [4]. In addition, due to complexity, ERP systems can be difficult to learn and understand, and comprehensive training programs are often necessary [5]. By combining all features into one system, businesses aim to operate in a more streamlined fashion providing employees in different departments access to the same data through a shared database.

ERP systems are well-suited for implementation in multinational enterprises (MNEs) due to their wide range of functionalities and expected benefits, such as standardization, efficiency, and better communication [6]. Nonetheless, MNEs comprise several geographical locations across countries representing a diversity of cultures and business traditions [7]. Moreover, implementing ERP in MNEs involves a larger network of different actors and stakeholders, compared to smaller and co-located enterprises, which significantly increases the complexity of such implementation projects, both while underway and afterward. In a multinational context, it is not only organizational processes that need to be changed; there may be global requirements which control and determine different choices, functions, practices, and processes in the subsidiaries. Carton and Adam (2003) claim some subsidiaries do not have a voice in decisions related to ERP implementation [8]. Thus, local requirements and needs can be overruled and overridden, for example, concerning what functionalities and features should be included in the software, who needs and will use these different features, and for which purposes they will be used.

Despite much research on the implementation of ERP, there are few recent studies that take into account the time after implementation (post-implementation) in MNEs. The extant literature is also generally inadequate about how businesses can quickly achieve normal operation after an ERP implementation. There is also a need to identify critical success factors (CSFs), particularly those related to the post-implementation stage [9, 10]. The literature review conducted by Gavidia (2016) addresses conflicts which arise between parent and subsidiary companies while implementing ERP systems, in addition to the related CSFs [11].

This literature review focuses on the ERP literature which pays attention to the ERP post-implementation phase in MNEs and seeks to identify critical factors related to stabilization after ERP implementation, as discussed in former research. We also want to elucidate specific aspects, such as global system requirements connected to local needs. A review of the ERP literature within these boundaries will provide a comprehensive overview of what exists, and which aspects are inadequate. The overarching question of this study is the following: *"What are the challenges addressed in previous literature regarding the ERP post-implementation stage in multinational enterprises?"*

By synthesizing findings from previous research on ERP implementations, we can get an overview of the challenges and critical factors identified in former studies. This overview can be valuable and have transfer value to companies which are in the start-up phase of an ERP implementation. It can also provide companies with information about how to realize gains from an ERP implementation and how to avoid pitfalls. This can, again, reduce the well-known performance dip, which is said to be a critical turning point for the outcome of an ERP implementation [2].

We think that it is important to focus more on the relationship between the parent company and its subsidiaries and the potential conflicts which may occur in MNEs during ERP implementations. Our research has been guided by the following research questions:

RQ1: What are the critical factors in the ERP post-implementation stage for multinational enterprises?

RQ2: What are the potential sources of conflicts between the parent company and its subsidiaries in this context?

The paper is organized as follows. Section 2 presents the research method applied. Section 3 presents the concept matrix and the key findings. In Section 4 the findings are synthesized and discussed. Finally, Section 5 provides some concluding remarks and implications.

2. Research Method

A systematic literature review is a good approach for getting an overview of the existing literature in one specific research area, making it easy to identify gaps in the current research, and thereby being able to suggest areas for future research [12]. In this study, we have utilized Kitchenham's (2004) guidelines for the execution of a systematic literature review [13]. Based on these guidelines, we have divided the process into three main parts: (1) planning, (2) implementation, and (3) reporting. The ERP research represents an overwhelming and comprehensive body of research, and a single search in Google Scholar on "ERP implementation" provides over 468,000 hits. It is therefore important to narrow the research focus to obtain useful results which can suggest future research in a specific area of ERP research. A well-planned and systematic review is necessary to identify existing areas of knowledge and in which areas research is limited. Our search strategy was to divide the research questions into smaller parts and to find synonyms, abbreviations, and alternative spellings to optimize the searches. Here, we used web-based synonym dictionaries to identify alternative words. We then decided which library databases we wanted to use to do the search, and we chose well-recognized databases, such as Web of Science (20 hits), Scopus (7 hits), Oria (199 hits), and EBSCOhost (64 hits). These databases have advanced search functionalities which made the search more efficient. We used the Boolean search method, where keywords from both the research questions and appropriate synonyms were included. In addition, we used specific inclusion and exclusion criteria (Table 1).

Table 1. Search criteria for the literature review

Search String	Pseudonyms	Databases	Inclusion criteria	Exclusion Criteria
ERP	Enterprise Resource planning	Web of Science, Oria, Scopus, EBSCOhost	Peer-reviewed, English language, well-known IS journals and IS conferences, journals focusing specifically on ERP, publication after year 2000	Specific journals of health, biology, finance
Multinational	Multi-national, Multi-site, Multisite, MNE, MNC			Specific focus on SMEs
				Focus on a specific CSF
Post	Past, Shakedown			
CSF	Critical success factors			

We checked the relevance of the articles by reviewing the titles of the remaining publications after exclusion, we removed duplicates, and checked the quality of the publication outlets, according to the selection criteria. For each article, we noted authors, year, title, publication outlet, number of citations, research method, research context, purpose of study, key findings, and suggestions for further research. After identifying several appropriate studies, we read them carefully to make sure they fulfilled every predefined criterion and had relevance to the research questions. After this filtration process, 20 articles were selected. By documenting the search process continuously on one Excel form, we had constant control of the selection process, and, if necessary, we were able to easily track the searches later. The selected articles mainly focus on the implementation of ERP in MNEs and pay attention to the challenges identified in the ERP post-implementation phase.

3. Concept matrix of key findings

This section presents the selected articles from the systematic review process. In the publication list, eight papers are published in IS journals, and one paper is from an IS conference. The remainder of the articles are published in journals for business, computer science, human-computer interaction, and operational research. Because of the multidisciplinary nature of the IS field, we found it necessary to include papers from related research areas to get a more holistic perspective. We have included studies published from 2000 to 2017, and the publication list includes 12 articles from the last 10 years. Because of the multinational focus, most of the studies are conducted in geographically

dispersed locations. Several studies have a research context where the headquarters are in the US, and the subsidiaries being studied are European, or are in the Asia region. Half of the studies have used a case study as the research method, and a few studies are based on action research or focus groups. We have a few studies presenting literature reviews, which provide good overviews of previous research and central themes. A few of the studies utilize a theoretical perspective, such as the actor-network theory, contingency theory, agency theory, or game theory. Others have utilized ERP life cycle frameworks or CSFs to systematize their findings.

In this study, a concept matrix was developed to organize the findings from the literature review. A matrix as such is effective for communicating the findings and for providing an overview of research gaps in the literature. The matrix is organized according to the foci of the research questions; (1) CSFs that are in particular important in the ERP post implementation stage, and (2) sources of conflicts that may occur between parent and subsidiaries in MNEs during ERP implementations. CSFs are well-documented in the ERP literature [e.g. 14], and we identified critical issues related to the post-implementation stage from some of the publications [15, 16].

Furthermore, several key challenges were identified regarding the sources of conflict, for example, the focus on subsidiaries' autonomy regarding local decision-making processes, and the balance between local and central control. Regarding the concept of demand for standardization, it was found that attention was paid to the standardization of business processes across distinct locations, such as using the same system and functionalities, as it is important to avoid local variations. Other key concepts identified were how various business strategies, infrastructure, and business processes across different departments led to conflicts or inappropriate routines and system usage. Some claimed they had to find workarounds to accommodate demands from the headquarters [8], while others had problems with the local currency and tax rules within the ERP system [17]. Thus, the factors most prominent in the post-stage are included in the concept matrix. See Figure 1 for all publications included in the concept matrix [6, 8, 9, 11, 15-30].

Ref	Focus Area		Critical Success Factors (CSFs)					Sources of Conflict							
	ERP Post-imp	MNE	Change Man	Top Man Support	Project Man	Imp team	User Training	National differences	Communication	Standard Demands	Autonomy	Deployment	Business Strategy	Infrastructure	Business Process
[6]		X						X			X			X	
[8]	X	X								X	X	X			X
[9]	X		X	X		X			X						
[11]		X							X	X	X		X		X
[15]			X	X	X	X	X	X			X	X			
[16]	X		X	X	X	X	X	X					X		X
[17]		X						X		X	X		X	X	X
[18]			X				X				X				X
[19]		X						X	X						
[20]		X						X			X	X	X		
[21]	X	X	X						X						
[22]	X							X							
[23]	X	X					X								
[24]	X	X	X	X	X	X	X		X						
[25]	X				X	X	X								
[26]		X								X	X	X	X		
[27]	X			X		X		X							
[28]		X						X	X		X			X	
[29]		X						X	X	X	X		X		
[30]		X						X		X	X	X	X	X	

Fig. 1. Concept matrix. Overview of publications focusing on ERP post-implementation issues in multinationals

4. Analysis and discussion

The literature review illustrates the need for more research on ERP post-implementation issues. A large part of ERP literature has mainly focused on the pre-implementation and implementation phases, and the identified research gaps indicate a need for more studies on CSFs in the post-phase [21, 24]. This is also supported by a recent literature review that ranks the different ERP focus areas [9]. The focus on ERP implementation, CSFs, and ERP systems are ranked highest, followed by country-specific implementations, ERP models, reasons for failures, benefits, and risks. They emphasize the need for an expanded focus on the post-phase, and they claim that the most serious organizational issues emerge in the post-implementation phase of an ERP project. In the following we discuss the challenges identified, CSFs specifically crucial in the post-implementation stage, and the sources of conflicts which were identified in our literature review.

4.1. Critical success factors and challenges in ERP post-implementation stage

The analysis revealed several challenges which are recognized as important to consider in the post-implementation stage. These were associated with being in different locations globally, and how cultural diversity can lead to challenges and misunderstanding in the ERP post-stage. When national differences are pronounced, it becomes more difficult to obtain a smooth collaboration across borders. In addition, there were challenges associated with the desire for autonomy. Global requirements for standardization initiated from the headquarters create challenges because standardization demands conflict with the local management needs of the subsidiaries located in different countries. User perceptions and expectations of the system are sometimes unrealistic, and challenges are related to supporting the users in adapting the new system and providing appropriate and effective training approaches and exercises. In many cases, workarounds become an unfortunate consequence of the abovementioned problems, and the global benefits of the system were not realized.

Several of the publications address challenges related to the implementation and use of ERP systems; there is a broad consensus that ERP projects represent high-complexity projects, and this complexity increases with the number of players involved. Thus, to cooperate across borders of nations, cultures, processes, and local laws is very challenging, and organizations are struggling to find the optimal balance of power between headquarters and their satellites. Local executives want to perform their work based on their own strategies and goals, but, if these do not match with the practices at other locations, many of the benefits of one shared ERP system are not realized. ERP systems are built on best practices and require standardization; therefore, it is important to build one business model which supports the same goals and rules embedded in the system and which is accepted by all business locations.

Many of the identified CSFs are not considered, and, in several instances, this makes the project fail in the post-implementation stage. The importance of good support and maintenance are specifically addressed as being crucial [21]. System configuration, information architecture, and system deployment are critical topics in the post-phase. In addition, a good implementation strategy across locations is important [26]. Both a "big bang" and "phased" implementation approach is considered appropriate, depending upon the international strategy. The implementation strategy in itself has been identified as an CSF, along with infrastructure, client-supplier customization, user participation, the ability to utilize ERP expertise, communication, and coordination, as well as the development of a maintenance and support strategy [21]. Furthermore, it is important to have an early focus on the post-phase to plan for it, especially when considering the requirements for maintenance and support. One common mistake is to spend too many resources early in the project life cycle and then expect the benefits to come as soon as the system is implemented. Several measures are required to optimize the system and the business processes of the implementing company, and, without an improvement focus, the time until normal operation is attained, and any benefits are realized could take much longer than expected. Measurement and evaluation as CSFs in the post-implementation stage are underlined, which will allow for an overview of the status quo and progress at an early stage [24]. Such measurements are considered very important to system acceptance, and for dealing with user resistance. Therefore, developing key performance indicators (KPIs) to map the organization's direction is essential. This can encourage the users to implement changes for improvement. Product cycle times, profit, and service time are examples of KPIs which organizations should implement to get an improved overview of the ERP project [15].

Support from top management is emphasized in many research studies and is critical throughout the entire ERP project. Management should continuously show support and dedication, as well as understand and communicate the costs and benefits associated with the project [15]. The project should be run by a team with developed leadership skills which is able to communicate the main targets and allocate the required resources. Change management is compulsory to restructure the business processes of the company to make them fit into the new ERP system; the system will then introduce new working routines and roles which affect the social environment inside the organization. This might be a great challenge unless the local management promotes and supports the project.

Good user training is described as the most recognized CSF in the ERP post-stage [16], and the users' understanding, and acceptance of the system are essential for success. Users who lack system skills may have to manipulate the system, and that may cause failures in the system. The training should start early in the project, and it is very important not to underestimate the resources associated with training. In the post-implementation phase, it is essential to assign a role within the project team which is responsible for follow-up and the further education of employees. Users' knowledge and system usage should be monitored and measured continuously, and periodic meetings held to identify problem areas and encourage the sharing of knowledge and experiences related to the usage of the system. Support from top management is very crucial, and it is important that resources for training are allocated in the budget. It is suggested that 15% of the budget should be allocated to user training, as proper use of the system is essential to achieve project success [15].

4.2. Sources of conflicts between headquarters and subsidiaries in ERP post-implementation stage

Our other research questions concerned conflicts between the parent company and subsidiaries in the ERP post-implementation phase. In the review of the literature, 9 out of 20 publications focused on national differences as one source of conflict between the parent and its subsidiaries. These differences encompass diversity of language, culture, politics, regulations and laws, and leadership style and skills [28]. Additional sources of conflict were also highlighted such as requirements for standardization, autonomy, deployment, different business strategies, and infrastructure [30]. Moreover, six categories of national differences which may have an impact on multinational ERP practices were identified: culture and language, management style, business policy, government regulations, internal resources, and geography [28]. These six categories are further divided into three distinct groups: socio-psychological, economical, and demographical differences, and the same national differences and especially language differences as the primary reason for communication problems were highlighted [6]. It is also claimed that management style has an impact on the approach and the duration of an implementation, in addition to the personality of managers involved [6]. Local state regulations and laws present difficulties with standardization and universalization in MNEs because of the use of different forms, tax policies, and procedures [28].

Many MNEs want a standardized ERP system in all its subsidiaries. This means that the system must have the same modules, features, and practices at all locations. A total of 8 of our 20 publications focused on the standardization requirement as a source to conflict. Several ERP projects in MNEs have a global project management approach involving centralized control, which can lead to inappropriate use of strategies and routines and which, as previously noted, can make it difficult to motivate the end users at local organizations. The degree of control over subsidiaries may vary from giving the subsidiaries full freedom to choose their ERP system and to decide the business processes, toward the other end of the spectrum, where the parent company decides everything and forces them to adopt a standard package solution [11]. The demands from the headquarters may require the implementation of global standards and best practices across the entire MNE, and these demands have both benefits and challenges [17].

Different subsidiaries of an MNE, however, may have different processes, and some of the ERP modules and best practices may not be successfully adapted on a global scale. Special adaptations, such as ERP customization, are often avoided, and the subsidiaries may have little influence on the inclusion of special functionalities in the system [8]. Process standardization is discussed as a way to obtain vertical centralization, and reducing decision-making power for managers at lower levels [20]. When local processes are replaced by corporate standards, the subsidiaries lose control over their own processes, and the existing local control and management are undermined, which, in turn, could increase the level of conflicts. Standardization can be disadvantageous if the users lose useful functionalities, and they develop ways to work around the system. Workarounds arise when a subsidiary does not adapt to the new system and its processes, or when users are unaware of system functionalities already in the ERP system [19]. Another reason that

workarounds occur is because of the lack of user training [15], or because they become a way to demonstrate resistance toward the system [19]. Knowledge management and advisory networks are mentioned as appropriate support mechanisms in order to prevent this from happening [18]. We consider workarounds as an unfortunate consequence, and local leaders should take steps to minimize them.

The desire for autonomy among the subsidiaries is often seen as one source of conflict in MNEs, and 11 of the publications address this source of conflict. The balance between local variation and standardization is often misinterpreted as a matter of steering [29]. Local variation is seen to regain control, working toward or around top-down approaches and the compulsory structuring required when implementing ERP solutions. Institutional mechanisms which MNEs utilize for control can be beneficial for top management; however, the managers of the subsidiaries try to defend their local knowledge and business processes by avoiding these controlling tools [11]. Moreover, the strategic goals are often not aligned between the headquarters and the subsidiary, and conflicting goals engender competitive behavior. Local executives try to negotiate the overarching demands and can also resist them by implementing local guidelines which neutralize the global requirements, or the subsidiaries can resist by passive behavior. A global ERP system with a standardized configuration can be the death of local autonomy for a subsidiary [20]. This power balance signifies quite a challenge, and the establishment of strategies for satisfying local needs versus global demands is crucial.

Communication affects several areas related to ERP implementation, and 7 of the studies under review identified communication as a challenge. Communication is also regarded as one of the CSFs [9, 16, 21]. Communication is important in order to get support from top management, to ensure collaboration across departments, and to develop user training programs [16]. Communication problems between organizational levels and across organizational units are crucial, and communication problems occur because of technical challenges or national and cultural differences [24]. Moreover, communication problems arise because different national locations encompass diversity of language, geography, time zones, cultural conflicts, and politics [28]. Particularly, cultural differences can lead to misunderstandings and poor communication [11]. Lack of communication between parent and subsidiary can lead to distrust, delays in projects, and budgetary overruns [28], and standardized protocols for internal communication in global enterprises should, therefore, be established to ensure efficiency and a shared understanding.

5. Conclusion and implications

This study has reviewed ERP post-implementation literature to identify challenges addressed in previous research focusing on multinational companies. CSFs in the post-stage and sources of conflicts between the headquarters and subsidiaries have been highlighted. A concept matrix was developed to identify the research gaps. New research agendas on ERP post-implementation are needed to examine and understand the sources of conflicts between the parent company that seeks control through standardized solutions, and the local subsidiaries that may want to sustain local processes and routines. Thus, it is important for management at different levels to understand how to leverage business and cultural diversity and handle conflicts and power relationships in multisite ERP implementations. The paper has some practical implications and we propose the following for top management and local managers working in MNEs that aim to reap benefits from ERP systems locally and globally in the post-implementation stage:

- Awareness; be attentive to conflicting interests between the headquarters and its subsidiaries.
- Power balance; leverage the power relations by balancing local autonomy at each of the subsidiaries with standardization demands from the headquarters. Put resources into finding this balance, realize that this will take time and efforts. Establish a board that involves the managers at each location.
- Diversity; leverage national, cultural, processual and legal diversity across the locations of the MNE to ensure both autonomy and standardization.
- Assess standardization demands; in some cases, deviations between the system and local practices are unaffordable, and local adaption of the system is necessary. This can reduce ineffective workarounds.
- Establish change management programs or continue existing programs in the post-stage; communicate the benefits of standardization to achieve commitment to a shared system, allow for local adaptations when necessary, establish training programs with high quality to create understanding of how the system works.

References

[1]   T. H. Davenport and J. D. Brooks, "Enterprise systems and the supply chain," *Journal of Enterprise Information Management,* vol. 17, pp. 8-19, 2004.

[2]   J. W. Ross and M. R. Vitale, "The ERP Revolution: Surviving vs. Thriving," *Information Systems Frontiers,* vol. 2, pp. 233-241, 2000.

[3]   H. A. Akkermans and K. Van Helden, "Vicious and virtuous cycles in ERP implementation : a case study of interrelations between critical success factors," *European Journal of Information Systems,* vol. 11, pp. 35-46, 2002.

[4]   O. Volkoff, D. Strong, and M. Elmes, "Technological Embeddedness and Organizational Change," *Organization Science,* vol. 18, pp. 832-848, 2007.

[5]   D. Robey, J. W. Ross, and M.-C. Boudreau, "Learning to Implement Enterprise Systems: An Exploratory Study of the Dialectics of Change," *Journal of Management Information Systems,* vol. 19, pp. 17-46, Summer2002 2002.

[6]   C. Sheu, H. R. Yen, and D. Krumwiede, "The effect of national differences on multinational ERP implementation: An exploratory study," *Total Quality Management & Business Excellence,* vol. 14, pp. 641-657, 2003.

[7]   M. Krumbholz, J. Galliers, N. Coulianos, and N. A. M. Maiden, "Implementing enterprise resource planning packages in different corporate and national cultures," *Journal of Information Technology (Routledge, Ltd.),* vol. 15, pp. 267-279, 2000.

[8]   F. Carton and F. Adam, "Analysing the impact of the enterprise resource planning systems roll-outs in multi-national companies," *Electronic Journal of Information Systems Evaluation,* vol. 6, pp. 21-32, 2003.

[9]   M. Ali and L. Miller, "ERP system implementation in large enterprises – a systematic literature review," *Journal of Enterprise Information Management,* vol. 30, pp. 666-692, 2017.

[10]   J. Esteves and V. W. Bohórquez, "An updated ERP systems annotated bibliography: 2001-2005," *Communications of the Association for Information Systems,* vol. 19, pp. 386-446, 2007.

[11]   J. V. Gavidia, "Impact of parent-subsidiary conflict on ERP implementation," *Journal of Enterprise Information Management,* vol. 29, pp. 97-117, 2016.

[12]   B. Kitchenham, O. P. Brereton, D. Budgen, M. Turner, J. Bailey, and S. Linkman, "Systematic literature reviews in software engineering–a systematic literature review," *Information and software technology,* vol. 51, pp. 7-15, 2009.

[13]   B. Kitchenham, "Procedures for performing systematic reviews," *Keele, UK, Keele University,* vol. 33, pp. 1-26, 2004.

[14]   T. M. Somers and K. G. Nelson, "A taxonomy of players and activities across the ERP project life cycle," *Information & Management,* vol. 41, pp. 257-278, 2004.

[15]   E. J. Umble, R. R. Haft, and M. M. Umble, "Enterprise resource planning: Implementation procedures and critical success factors," *European Journal of Operational Research,* vol. 146, pp. 241-257, 4/16/ 2003.

[16]   Y. M. Ha and H. J. Ahn, "Factors affecting the performance of Enterprise Resource Planning (ERP) systems in the post-implementation stage," *Behaviour & Information Technology,* vol. 33, pp. 1065-1081, 2014.

[17]   M. L. Williams and B. C. Wheeler, "The Four Faces of Deploying Global Common Systems: Understanding Global and Local Objectives," *MIS Quarterly Executive,* vol. 8, 2009.

[18]   M. Haddara and T. Hetlevik, "Investigating the Effectiveness of Traditional Support Structures & Self-organizing Entities within the ERP Shakedown Phase," *Procedia Computer Science,* vol. 100, pp. 507-516, 2016.

[19]   J. Malaurent and D. Avison, "Reconciling global and local needs: a canonical action research project to deal with workarounds," *Information Systems Journal,* vol. 26, pp. 227–257, 2016.

[20]   F. Rahimi, C. Møller, and L. Hvam, "Succeeding in process standardization: Explaining the fit with international management strategy.," *Business Process Management Journal,* vol. 22, pp. 1212-1246, 2016.

[21]   C. C. Law, C. C. Chen, and B. J. Wu, "Managing the full ERP life-cycle: Considerations of maintenance and support requirements and IT governance practice as integral elements of the formula for successful ERP adoption," *Computers in Industry,* vol. 61, pp. 297-308, 2010.

[22]   P. Ifinedo, B. Rapp, A. Ifinedo, and K. Sundberg, "Relationships among ERP post-implementation success constructs: An analysis at the organizational level," *Computers in Human Behavior,* vol. 26, pp. 1136-1148, 2010.

[23]   T. Almeida, L. Teixeira, and C. Ferreira, "Enterprise Resource Planning System in a Multinational Enterprise: Users' Attitude Post Implementation," in *ENTERprise Information Systems: International Conference, CENTERIS 2010, Viana do Castelo, Portugal, October 20-22, 2010, Proceedings, Part II,* J. E. Quintela Varajão, M. M. Cruz-Cunha, G. D. Putnik, and A. Trigo, Eds., ed Berlin, Heidelberg: Springer Berlin Heidelberg, 2010, pp. 264-273.

[24]   L. Häkkinen and O.-P. Hilmola, "Life after ERP implementation: Long-term development of user perceptions of system success in an after-sales environment," *Journal of Enterprise Information Management,* vol. 21, pp. 285-310, 2008.

[25]   V. Vathanophas, "Business process approach towards an inter-organizational enterprise system," *Business Process Management Journal,* vol. 13, pp. 433-450, 2007.

[26]   A. Madapusi and D. D'Souza, "Aligning ERP systems with international strategies," *Information Systems Management,* vol. 22, pp. 7-17, 2005.

[27]   V. Botta-Genoulaz, P.-A. Millet, and B. Grabot, "A survey on the recent research literature on ERP systems," *Computers in industry,* vol. 56, pp. 510-522, 2005.

[28]   C. Sheu, B. Chae, and C. L. Yang, "National differences and ERP implementation: issues and challenges," *Omega,* vol. 32, pp. 361-371, 2004.

[29]   K. H. Rolland and E. Monteiro, "Balancing the Local and the Global in Infrastructural Information Systems," *Information Society,* vol. 18, pp. 87-100, 2002.

[30]   M. L. Markus, C. Tanis, and P. C. Van Fenema, "Enterprise resource planning: multisite ERP implementations," *Communications of the ACM,* vol. 43, pp. 42-46, 2000.