

Critical internal organization's forces influencing sustainability of post ERP in UAE service industry

A confirmatory factor analysis approach

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Abstract

Purpose – Despite the wide recognition of enterprise resource planning's (ERP's) multiple uses, little research has examined the internal forces that influence success after ERP implementation in the service industry. This study aims to identify the factors influencing post-implementation ERP capabilities (PERPC) and improving post-implementation sustainability and user satisfaction (PERPSUS). Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) are used for this, with advance managed outsourced solutions (AMOS) and an entanglement view of all firm ERP users.

Design/methodology/approach – A theoretical model is created to explain internal organizational factors impacting post-implementation ERP sustainability and user satisfaction. Data were collected from 152 executive ERP users in two organizations in the UAE. Two CFA models were created.

Findings – The results show that adoption by internal organizational forces leads to more sustainable post-implementation ERP. A 69 per cent variance in user satisfaction and post-implementation ERP sustainability was found through a PERPC model and its dimensions, which are significantly highly correlated.

Research limitations/implications – ERP professionals and stakeholders believe that identification of ERP capabilities (ERPCs) and user satisfaction must be multi-dimensional.

Practical implications – CIOs and ERP professionals could use these results to increase the success of ERP in the service industry, and they can support the inclusion of post-implementation ERP practices.

Originality/value – Using AMOS, this paper explores the role of ERPCs in system sustainability and user satisfaction in the service sector, utilizing stakeholder perspectives and an entanglement view of ERP users in the service industry.

Keywords Sustainable development, Technology management, Technological change

Paper type Research paper



1. Introduction

Understanding the risks of enterprise resource planning (ERP) will help companies achieve sustainable business success using an ERP system (Pan *et al.*, 2011). While many companies experience challenges after implementing ERP, in diverse industries and business functions, continuous ERP improvement helps sustain a seamless alignment between the structure of an organization and its ERP applications (Peng and Nunes, 2017). This paper explores how

perceptions of ERP users affect ERP implementation, examining key ERP users at various levels who are involved in pre- and post-implementation (Abdinnour and Saeed, 2015). It draws on the technology–organization–environment (TOE) theory, which states that the adoption of a new technology by a firm is influenced by the technological, organizational and environmental contexts (Kevin *et al.*, 2004). ERP capability (ERPC) is broadly defined as the distinctive capability of a firm for ERP, relative to operational performance (Cotteleer, 2001), signaling loyal and profitable customers relative to the ERP environment, company's financial performance, customer relationship management (CRM), user satisfaction and customer loyalty (Kolís and Jirinova, 2013).

This paper also views the post-implementation ERP capabilities (PERPC) from a socio-materialistic perspective, which takes management, people and technology all into account (Akteer *et al.*, 2016). Socio-materialism produces a balanced view by interlinking management, business users and IT staff. Accordingly, this paper presents an interconnected conceptualization of three PERPC dimensions (management, technology and human resources) to highlight the importance of the relationship among them for high-level efficiency and effectiveness as firms improve ERP and obtain competitive advantages. Specifically, we propose a relationship between PERPC, business sustainability and ERP user satisfaction (ERPSUS), an understudied relationship, despite the existing empirical evidence of the contributions of ERP (Forslund, 2010). The literature includes findings of the importance of ERP business strategy alignment in ERP implementation and company performance, defined as the extent to which ERP strategies are aligned with the overall business strategy of the organization (Wynn, 2009). Companies perceive ERP strategies as the prerequisite for future adoption of ERP and its successful implementation (Pan *et al.*, 2011). In the same vein, this study addresses the importance of post-implementation ERP business strategy (PERPBS) alignment for the sustainability and user satisfaction of ERP, considering that ERP impacts both business strategy and organizational capabilities, ultimately enhancing firm performance (HassabElnaby *et al.*, 2012). At present, firms are faced with the challenge of remaining competitive by expanding to new markets and exceeding customer expectations (Alhakimi and Alzahary, 2015). Peng and Nunes (2017) clearly showed that companies are still encountering many challenges and problems in the post-implementation phase of ERP. Currently available ERP research frameworks do not adequately address the issue of organizational internal forces of post-implementation and post-implementation ERP sustainability in exploring issues in post-implementation ERP (Jain, 2008). We are interested in post-implementation ERP sustainability in the UAE service sector, taking a user perspective.

This paper adopts a post-implementation perspective. Although internal forces have impacts on the achievement of business benefits beyond implementation (Saha, 2016), extant research neglects post-implementation perspectives on ERP sustainability and user satisfaction (Glowalla and Sunyaev, 2014). We examine the capabilities of post-implementation ERPCs relative to internal organizational forces by addressing post-implementation ERP sustainability in the service sector. Managers working in ERP environments seek approaches allowing organizations and decision makers to determine which areas are worth paying attention to in post-implementation ERP. It has also been widely reported that large numbers of ERP implementations fail to meet business expectations due to the complexity of the post-environment ERP software and the intangible nature of both benefits and cost, which have evolved over time (Stefanou, 2001). Thus, a broad perspective on ERP systems' evaluation is needed in the post-implementation phase of ERP. Therefore, we consider both internal forces and point of view of the system user, aiming to fill the gap in the literature by introducing a new sustainability framework.

Most research in ERP addresses the critical success factors and managerial issues, and no frameworks found in the literature have suggested any possibility of adapting a post-implementation ERP system to internal forces. Our study goes beyond these in several ways, developing and validating a PERPC model and testing the direct effects of PERPC on ERPSUS, as well as the moderating effects of PERPBS on the PERPC–ERPSUS relationship. It addresses the following research question: “What internal factors and blocks influence post-implementation sustainability and user satisfaction for service organizations?”

The paper is organized as follows. In Section 1, definitions of post-implementation capability, the conceptual model and hypothesis development are presented. Next, the paper elaborates the method and analytical techniques used, following which, it presents the findings. Finally, it identifies the study's theoretical and practical contributions, providing guidelines for future studies. It appears that little ERP research focuses on conceptualizing the capability requirements that are key for predictions of performance (Aker *et al.*, 2016). Thus, we present the TOE theory to show how firm sustainability and ERP user satisfaction are enhanced only when capabilities are understood to be valuable. In Section 2, the literature on the subject is surveyed, and Section 3 presents the given research framework, in which the formal hypotheses of the study are laid. Section 4 describes the research methodology and sampling framework for data collection. Section 5 elaborates the analyses and findings in the paper. Finally, Section 6 concludes the paper, indicating some directions for future research.

2. Literature review

2.1 ERP sustainability and system-user satisfaction

Researchers have confirmed a relationship between the user's position in the organization and perceived usefulness of the system (Mitakos *et al.*, 2010). The technology acceptance model (TAM), which was introduced by Davis (1989) to identify major components and factors related to user attitudes toward accepting new technologies, is based on the internal beliefs of the employees and system users. Perceived usefulness and user satisfaction are central to system acceptance behaviors, as those variables indirectly affect system-user behaviors relative to system usage (Chung *et al.*, 2009). The TAM considers individual behaviors to be influenced by the perceived usefulness of the IT product (Elkhani *et al.*, 2014). Perceived usefulness is the degree to which the individual believes that the usage of a particular system will support and enhance individual performance, which in turn enhances individual satisfaction. Perceived usefulness also has an impact on the degree of system user satisfaction, which is impacted by system quality and its benefits for the individuals (Mitakos *et al.*, 2010). The TAM posits a significant relationship between the perceived usefulness of a new system or technology and its future usage. Previous researchers have also indicated that there are different factors that affect the level of user satisfaction in an ERP system, and this satisfaction can be traced among system users in different entities or departments in the company. Thus, satisfaction of system users has a significant relationship to the position of the system user in the ERP environment, and it is considered a major measure of post-implementation sustainability factors that maximize the value and satisfaction of ERP for users. A recent study conducted at the University of Maryland (Chung, 2007) reports that 65 per cent of executives believe that ERP systems have at least a moderate chance of hurting their businesses due to implementation problems and user satisfaction of users. The significance of this paper lies in its exploration of how internal forces in the organization influence post-implementation ERPCs in the service industry to mitigate the challenges and digest the complexity of post-implementation ERP.

2.2 TOE theory

The TOE framework was developed to examine firm-level adoption of information technology (IT) products and services. It is considered to be a widespread theory of IT adoption (Kevin *et al.*, 2004). Technological, environmental and organizational dimensions have given TOE advantages over other adoption models in the study of technology adoption and IT product capabilities. Hence, it provides a holistic picture for system capabilities and user adoption of technology, as well as for developing better organizational system capabilities using the technology (Wang *et al.*, 2010; Gangwar *et al.*, 2014; Zhu *et al.*, 2004).

Overall, capabilities are a unique type of resources, the use of which is to enhance the productivity of other resources possessed by a firm (Morgan *et al.*, 2009). Because ERP is a key organizational capability using individual resources in an organization that can transform the firm and support its performance, the organizational dimension in TOE plays a critical role in management research. This review suggests the organizational aspect of TOE as a compulsory framework for integrating PERPC dimensions and their effects on ERPSUS, as well as exhibiting the importance of the strategy alignment of ERP associated with the overall relationship between capabilities–sustainability and user satisfaction.

The role of ERPCs is well established in the study of information systems, which explores the role of technology in enhancing firm and user performance. Using the organizational part of the TOE theory, the literature on ERPCs recognizes IT resources as a key source of competitive advantage for sustaining a business and satisfying its users (Barki *et al.*, 2008). ERPCs are key dimensions in the ERP environment, and a review of the current literature on the ERP domain confirms that most studies of PERPC take advantage of TOE using internal resources.

2.3 Post-implementation ERPC

Worldwide ERP investment continues to grow as firms search for sustained competitive advantages and are increasingly challenged by other firms using ERP, which has emerged as an exciting frontier of productivity and opportunity in the last few years. ERP is used by large and medium-sized companies to provide a single data repository and single platform to enhance and increase their competitive advantage. The effective use of an enterprise system is one of the most important determinants for supporting corporate competitive advantages and productivity. Identifying system capabilities to enhance CRM and business flow (Shatat, 2015; Barki *et al.*, 2008), ERPCs can transform the way that firms do business and impact the overall performance of ERP in organizations (Shkurti (Perri) *et al.*, 2014), potentially impacting the realization of business value (Uwizemungu and Raymond, 2012).

Companies that have invested in ERP systems show better performance across a wide variety of financial metrics (Nicolaou and Reck, 2004). If ERP is implemented properly, it has a positive impact on company performance; however, poor implementation negatively impacts performance among ERP users and ERPCs (Motwani and Sharma, 2015). Indeed, investment in ERP still poses challenges due to the missing links among user satisfaction, system capabilities and organizational performance. Some scholars have gone so far as to suggest that investment in ERP is essential to business expansion, cost savings and removal of frustration and inefficiencies (NetSuite Readies Businesses for What's Next at SuiteWorld, 2017). The ERP literature identifies three key building blocks in PERPC: organizational (i.e. readiness in business processes and interactive communication and training), physical (i.e. IT setup) and human (e.g. skills and knowledge). For example, Abdolvand *et al.* (2008) suggest that the focus for post-implementation should be on

management capabilities across all functions of the operation. Liu *et al.* (2011) note that individual users in an organization transform ERP system functionalities to better support PERPC and company performance. Therefore, the potential relationship between individual and company ERP assimilation could improve ERP assimilation at the individual level. Drawing on the TOE theory, the critical challenges of PERPC can be concluded to be knowledge management, interactive communications and organizational readiness and support.

2.3.1 Organizational readiness and support. Continuous improvement and ongoing organizational support have been found to have a positive influence on post-implementation success of ERP and on its performance (Ha and Ahn, 2014). ERP attempts to bring all business units and business functions together and integrate them so that they can talk to each other and host their data in a single system and data repository to be accessed by all business units in the company. The implementation and support of ERP systems is not easy: it is long and complicated and entails major changes in corporate business processes and human resource management, thus requiring extensive human and financial resources (Ip, 2010). The pre-implementation processes are considered key factors in post-implementation success and user satisfaction (Longinidis and Gotzamani, 2009). Business processes and visibility studies are important for managing the projects and ERP programs, using a business case to find critical success factors for project completion (Schmidt, 2016). If the goals are set, the goals and a clear plan are created and justified at an early stage, through a feasibility study or business case, this can help manage management's expectations at a later stage. The establishment of business performance indicators can also support the business case or feasibility study and make it stronger (Garg and Garg, 2014). The readiness of business processes is important for supporting any business change, whether it involves market need, competitors or customers, process re-engineering is always the solution. Companies should create prerequisites before engineering business processes begin (Jackson, 1997). Agile business processes, leadership, the working environment, top management, supportive management, resistance to change and IT are all organizational readiness indicators to measure critical success and failure. Most ERP studies address and analyze readiness for a given business process before it is implemented.

2.3.2 Knowledge management capability. Usability and user experience are always linked to the success of post-implementation of ERP and satisfaction of system users. There are three main factors that can affect the level of PERPC: system users' interactions with IT employees, pre-implementation processes and ERP adaptability (Longinidis and Gotzamani, 2009). Some studies suggest that the participation of system users in the implementation phase will always improve the PERPC (Ji-Tsung and Marakas, 2006). Other research concludes that the position of the employees in the organization hierarchy, their education level and educational background and their computer experience positively impact the success of ERP (Longinidis and Gotzamani, 2009). Knowledge and talent are challenges that impact ERP and have been identified as critical success factors for ERP implementation. However, a review of the existing literature shows a lack of comprehensive research on the role of knowledge and talent following the implementation phase of ERP.

Despite the various possible positive outcomes of adopting ERP systems, post-implementation ERP poses a number of challenges (Palanisamy, 2008). Other analysis has shown a positive significant impact of post-implementation ERP knowledge creation on ERP success. Further, ERP knowledge retention following implementation positively affects post-implementation ERP system success (Migdadi and Khair Saleem, 2016). Knowledge is a strong strategic tool within organizations, necessary for sustaining competitive

advantage. Numerous studies have examined knowledge management and its relationship to organizational performance, with its lack of integration with systems. Knowledge has also had an impact on ERP success and system sustainability. Specifically, knowledge management and resource capability have a strong relationship with knowledge creation, which further influences the success of ERP (Jeng and Dunk, 2013). Other studies recommend identifying the knowledge activities necessary for a successful and sustained outcome; for example, knowledge of the knowledge of others within the organization was considered critical for supporting project implementation sustainability (Lech, 2014). In summary, good knowledge management supports a suitable use of ERP, and consequently leads to improvements in system capability (Chaabouni and Yahia, 2014). Li *et al.* (2006) proposed a knowledge management system consisting of different knowledge agent platforms that can effectively manage and support ERP products.

2.3.3 Interactive communication. The post-implementation ERP is where the real challenges occur: most companies encounter difficulties in using a new ERP system (Pan *et al.*, 2011). The effective use of an enterprise system is one of the most important determinants for supporting competitive advantages and productivity, while the participation of users in ERP implementation is one of the most effective ways of ensuring a successful ERP implementation is delivered (Barki *et al.*, 2008). The relationship between IT staff and system users likewise affects the outcome of ERP systems: because an ERP system may cause comprehensive changes to a business, supporting the system's users is very important to enhancing users' feelings toward the system (Pei-Hung *et al.*, 2016). There are two main factors that can affect post-implementation success from an interaction point of view: the interactions of the system users with IT employees and users' participation (Longinidis and Gotzamani, 2009). Previous studies propose that the participation of system users in the implementation phase will always improve the post-implementation success of ERP (Ji-Tsung and Marakas, 2006). User satisfaction is important for the performance of an information system because continuous improvement of such a system after implementation allows the users of the system to gain the confidence to control the quality of the system and its outcomes. In summary, user participation and interactions with the IT department lead to greater user commitment and greater ERP support (Pei-Hung *et al.*, 2016).

Participation and interaction empower employees to have more control over their day-to-day tasks in the work environment (Wagner and Newell, 2007). The idea here is that the ERP users develop feelings of ownership for the product when they participate in the initial stages of ERP implementation (Barki *et al.*, 2008). The interactions of the individual users in an organization transform the system functionalities of ERP to support its post-implementation success and improved company performance, and the company can improve ERP at the individual level (Liu *et al.*, 2011). Reported ERP failures are always found to depend on critical success factors related to system user participation and system interactions (Jameel Qureshi and Abdulkhalq, 2015). The involvement of non-ERP users deep in the system is highly recommended, along with external system users from the customer side who can add value to the post-implementation implementation. Thus, the user acceptance model is critical for covering all stockholders (Babu and Dalal, 2006).

2.3.4 Post-implementation ERPCs, business strategy alignment and user satisfaction. PERPBC is defined to be the extent to which post-implementation ERPCs and success are aligned with the organization's overall strategy of the organization. The success of post-implementation ERP depends on the concrete patterns developed between the IT strategy and business strategy, IT maturity, the strategic role of IT and organizational change. The

existing research demonstrates that IT strategies and the strategic decision-making process adopted explain the relationship between IT products and software success that reflects user satisfaction (Tran, 2012). Before the implementation of any ERP project, it is critical to ensure that the entire organization understands the strategy and reasons for ERP implementation. A strategy might determine milestones, as a training program strategy would do, based on the firm's current needs and previous training strategies adopted. Understanding what training is required will help the training program be tailored to best meet end-user satisfaction. Organizations can increase user satisfaction levels with these activities by adopting a supporting strategy (Moore *et al.*, 2007). Employees can also greatly benefit from the development of a business architecture providing improved alignment with the IT strategy (Li, 2010).

Greater synchronization between ERP and business strategies increases synergies among different functional units in the firm and positively impacts employee and user satisfaction. As a result of the greater synchronization of the ERP environment, it is possible to positively impact ERP by overcoming a particular firm's particular challenges. Not enough is known of the impact of PERPBC on PERPC–PERPSUS. Many companies struggle with such problems, often because of a mismatch between the organization's existing capabilities and its IT capabilities. In short, ERP implementation and deliverables of ERP do not align with the way companies actually arrive at decisions to realize their business goals. Therefore, PERPBC is a distinctive capability allowing firms to link overall capability with firm performance, which will reflect the user satisfaction of employees. ERP also supports strategic organizational capabilities, which can help firms match resources with market needs and opportunities. The main way, therefore, in which PERPC can help organizations achieve employee satisfaction is by aligning ERPC with the strategic plan. PERPC can influence organizational performance and employee satisfaction, but it depends on a firm's ability to leverage other capability resources within the firm. Employees always moderate the relationship between organizational change (e.g. ERP) and employee satisfaction (Feng, 2015). Thus, we posit that PERPBS will be a moderator for the relationship between PERPC and ERPSUS.

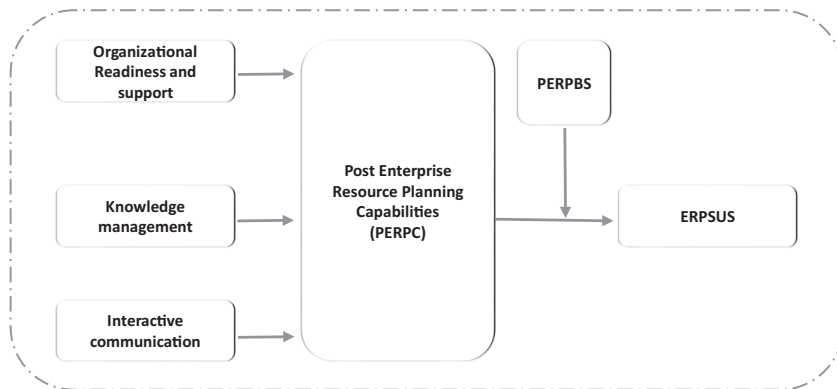
2.4 Post-implementation ERPCs and satisfaction of system users

Research findings also show that user adoption of ERP has a strong positive impact on the user benefits of ERP (Eid and Abbas, 2017). The pre-implementation stage, which is highly correlated with the post-implementation stage, is another key factor in the satisfaction of system users. Many factors significantly affect the level of ERP, such as “ERP adaptability” and “interaction with the IT department” (Longinidis and Gotzamani, 2009). Other studies consider training satisfaction to be part of user satisfaction, relating it to ERP success and ease of use (Bradley and Lee, 2007). ERPCs improve information accessibility and visibility across the enterprise and allow users to make more effective operational and strategic decisions that positively impact their satisfaction in different areas, such as better manpower planning, enhanced inventory control and improvement of on-time delivery (Annamalai and Ramayah, 2011).

3. Research framework and hypotheses

The theoretical framework and hypotheses come out of the purpose of this study and are based on the internal organizational items identified from the literature survey. The following theoretical research framework and hypotheses (Figure 1) show how the impact of

Figure 1.
Theoretical
framework and
hypothesized inter-
relationships



internal organizational forces on post-implementation ERP success and user satisfaction in the UAE service sector is examined:

- H1.* Post-implementation ERPCs are significantly related to ERP system user satisfaction.
- H2.* Organizational readiness and ongoing support are significantly related to ERPCs.
- H3.* Knowledge management capabilities are significantly related to ERPCs.
- H4.* Interactive communication is significantly related to ERPCs.
- H5.* PERPBS is a moderator for the relationship between PERPC and ERPSUS.

The following section validates all hypotheses and completes the theoretical framework shown in [Figure 1](#) by empirically analyzing the data with confirmatory factor analysis (CFA) using advance managed outsourced solutions (AMOS). Drawing on TOE, literature review and entanglement view, the research model used conceptualizes the PERPC factors presented in [Figure 1](#), a proposed conceptual framework conceptualizing post-implementation ERPCs, sustainability and user satisfaction with the ERP. This conceptual frame presents ERP sustainability and user satisfaction practices as a core for that model; the model illustrates and addresses the relationships between the user satisfaction practices and ongoing reviews of the post-implementation ERP systems as key factors for enhancing user satisfaction and system sustainability. The conceptual framework illustrates how both variables are highly influenced by factors such as organizational readiness and support, interactive communication, knowledge and talent capability. The model illuminates the moderating impact of PERP strategy on the PERPC–ERPSUS relationship as well. Despite the importance of measuring ERP user satisfaction and system sustainability, a need remains for researchers to address and analyze the overall system suitability or how it should be measured from a system-user point of view. User satisfaction is an important consideration for the assessment of the success of an ERP implementation ([Goel et al., 2013](#)). Other researchers suggest that benefits are more effective for user satisfaction in ERP projects, so firms that intend to succeed in ERP projects should emphasize the satisfaction of ERP users ([Saatçioglu, 2009](#)).

4. Research methodology

4.1 Research context

The UAE has a high-growth economy, which is quickly diversifying into such areas as services, manufacturing, logistics and finance. To support and promote this burgeoning industry, a noticeable technology boom has occurred in this country. According to the World Digital Competitiveness Ranking (2017), the UAE ranks first in competitiveness in the Middle East and North Africa region. This result shows that technology is the focus of the support given by the UAE to the service industry.

4.2 Research design

The purpose of this study is to test a number of hypotheses and investigate the hypothetical relationships in successful post-implementation ERP in the UAE. Methodological rigor is enhanced when scholars shift from an exploratory study to a hypothesis testing one (Sekaran and Bougie, 2010). This study uses a quantitative approach, distributing a survey to respondents working in two service companies. At first, an exploratory factor analysis (EFA) test was used on the responses to identify the internal factors for the post-implementation ERP sustainability and user satisfaction. In the second stage, first-order model analyses were conducted using AMOS software to test the relationships among the factors. Finally, a second-order model was generated to test the impact of the internal factors of the organization on the sustainability and user satisfaction of post-implementation ERP.

4.3 Sample selection and data collection

A survey-based approach, including a generalized questionnaire containing five items related to personal and company information, was used to test post-implementation ERP practices in the service industry in the UAE. Items within each construct were structured in the form of a survey questionnaire, with all questions evaluated on a five-point Likert scale, ranging from 1 to 5. The survey was conducted during the fall of 2017, with the survey instrument administered via email to the service industry respondents in the UAE, using a web-based service, Survey Monkey. That is, an online survey was sent to a sample of 152 users of ERP systems. Of 152 questionnaires, 103 were successfully completed and returned, an effective rate of 67.76 per cent. These users had different ERP backgrounds, and operational, functional and technical managers were chosen to be among the respondents because they are the most knowledgeable on ERP implementation; this choice of respondent is in line with Bradford and Florin's (2003) suggestion. The characteristics of the survey participants are given in Table I.

4.4 Population of interest and unit of analysis

The subjects of this study are ERP users and the successful implementation of a new ERP system in a company in the service industry. The subject company developed a new ERP system in 2015, and it included the following modules: CRM; (sales, service and marketing), customer service, online portals, integration with back-office finance and human resource modules. This new generation of CRM system was expected to reduce paperwork, streamline ERP and institute electronic processes to improve the efficiency of the enterprise. The implementation of the ERP system is still undergoing post-ERP support and enhancement. The total number of employees of the company is approximately 1,500. Sekaran and Bougie (2010) find that the objective of the study determines the unit of analysis. The current study examines the factors affecting the post-implementation ERP implementation projects in the UAE. Therefore, the unit of analysis will be ERP users within the target company. The respondents also represented the unit of analysis. As a result, key

Table I.
Demographics of
survey sample: 103
respondents

Demographics	Category	Count	(%)
Age	20-30	10	9.7
	31-40	50	48.5
	41-50	43	41.7
Gender	Male	37	46
	Female	66	64
Education	Undergraduate degree	25	24
	Graduate degree	78	76
Work experience with ERP systems	1-5 Years	41	40
	6-10 Years	33	32
	11 years and above	29	28
IT background	Yes	60	58
	No	43	42

users were selected from all sections through varying levels, including executives, senior managers, managers, technical professionals, directors, middle managers and junior employees who were using the system.

4.5 Instrument development

Some items were taken from prior studies, while others were developed specifically for this study, to fit the context of satisfaction with post-implementation ERP. These questions were reviewed by two IT executives who participated in the survey; using their feedback, the questionnaire was slightly changed, and new items were added. Scales were customized to fit the context of an ERP study, ensuring that they were applicable to ERP users. For ERP business users, relevant demographic variables were tracked, such as age, gender, experience and education, to avoid any demographic bias. The questionnaire consisted of three sections. Section 1 contained an introduction that exposed the identity of the researchers and expressed the rationale of the survey, as well as thanking the participant for taking the time to respond to it. In Section 2, a range of demographic data, including as work experience with ERP systems, gender, educational background, IT experience and age, were collected. In Section 3, the main survey questions were provided and measured using a five-point Likert scale, with anchors from “strongly disagree” to “strongly agree”. This study defined post-implementation ERPCs in two dimensions, i.e. organizational impact and user satisfaction. These criteria are in line with the model of Jones *et al.* (2008) for ERP system success. To ensure the reliability of the questionnaire, a pilot survey was conducted, with a total of 26 respondents, recruited from among ERP business users. This allowed the proposed PERPC model to be tested for robustness before the final data collection. Of the 26 potential participants, 21 completed the questionnaires. The SPSS software 16.0 was used to test the pilot data, and the questionnaire was considered to be reliable: all Cronbach’s α values were above 0.7, as suggested by Qu (2007).

5. Data analysis and findings

The first part of the analysis uses descriptive analysis to show the respondent profiles. Its second part examines the effects of PERBC on ERP suitability and user satisfaction using EFA, descriptive statistics and CFA.

5.1 Demographic characteristics of the respondent sample

A summary of the respondent profiles is presented in [Table I](#). A total of 103 respondents participated in the survey, of which 58 per cent were aged 31-40, and 42 per cent were 41-50 years old. In all, 64 per cent were female, while 46 per cent were male. The data show that 76 per cent of the respondents held a graduate degree, and 24 per cent had an undergraduate degree. The work experience with ERP systems ranges from 1-5 years (40 per cent) to 6-10 years (32 per cent), and more than 11 years (28 per cent); furthermore, 58 per cent of the respondents had an IT background, and 42 per cent did not.

5.2 EFA and discussion of results

EFA is a powerful tool for investigating the underlying variable structures ([Osborne and Fitzpatrick, 2012](#)). It is also a very popular statistical technique, used in communication research, and the core of the PERPC model is founded upon communication ([Hee et al., 2002](#)). EFA was used to explore the factors that could influence PERPC and PERPSUS.

Factor patterns and item loadings are presented in a rotated component matrix in [Table II](#). The next step is to examine the content of questions that load highly and on the same factor to identify common themes. Questions loading on factor 1 seem to relate to different aspects of business process training and training programs; therefore, we label this factor *organizational*

Reflective construct		Items	Loading	CR	AVE
Readiness of organization	4	The user manual does not require specialized knowledge	0.923	0.87	0.55
	5	I prefer using ERP because of what it stands for, its values	0.921		
	7	Readiness of the business processes	0.910		
	8	Documented business processes	0.533		
	6	The level of understanding was improved after the training	0.522		
	22	The training gives me confidence in the new ERP system	0.479		
Interactive communication	1	My corporation has an IT division regarding ERP issues	0.954	0.81	0.78
	2	Communication with IT division	0.953		
	3	Participation contributes toward the success of the ERP system	0.950		
	23	Participation had a significant influence on the ERP system	0.626		
Post-ERP capabilities	14	ERP has timely information	0.901	0.84	0.47
	15	The information in the ERP system is important	0.806		
	16	The information on the ERP system is relevant	0.700		
	17	Our ERP system has good features	0.666		
	18	Using the ERP system makes the job easier	0.489		
	19	Using the ERP system enhances job effectiveness	0.447		
ERP satisfaction	11	Provide adequate feedback on the ERP system	0.691	0.53	0.40
	9	Generally satisfied	0.641		
	13	The quantity and quality of training	0.492		
	12	Keen to form a strong relationship with IT staff	0.477		
Knowledge management	10	Knowledge of the ERP system	0.809	0.51	0.52
	21	IT division has every intention of giving help and support	0.678		
	20	IT division has sufficient knowledge of ERP	0.672		

Table II.
Assessment of the
first-order, reflective
model

readiness. It consists of six items and accounts for 18.41 per cent of the variance. The questions loaded highly on factor 2 all seem to relate to interaction and communication; therefore, we label this factor *interactive communication*. It accounts for 18.145 per cent of the variance. The questions loaded highly on factor 3 all seem to relate to measuring post-implementation success; therefore, we label this factor *post-implementation success*. It accounts for 15.654 per cent of the variance. The questions that load highly on factor 4 all seem to relate to user satisfaction and ERP sustainability from the quality perspective; therefore, we label this factor *ERP sustainability and user satisfaction*. It accounts for 8.97 per cent of the variance. The questions that load highly on factor 5 all seem to relate to the knowledge required to sustain an ERP product; therefore, we label this factor *knowledge management*. It accounts for 7.891 per cent of the variance. Furthermore, internal consistency and content validity were tested. Table II shows the construct reliability (CR) and average variance extracted (AVE) of the measurement model. For the determination of reliability, internal consistency is calculated, which is a measure of the reliability of different survey items, intended to measure the same characteristics (Górecki *et al.*, 2018). CR is used to measure the reliability of a construct in the measurement model and estimates the consistency of the construct itself, including equivalence, offering a more retrospective approach to the overall reliability (Górecki *et al.*, 2018). Values of 0.50 or greater are indicative of good scale reliability (Machado, 2016). The composite reliability (CR) of “Readiness of organization” is 0.87; of “Interactive communication”, it is 0.81; of “Post-implementation ERPCs”, it is 0.84; of “ERP satisfaction”, it is 0.53; and of “Knowledge management”, it is 0.51, so we can conclude that the CR of the constructs in the measurement model are all above 0.50. This means that all constructs in the measurement model have good reliability.

The Kaiser–Meyer–Olkin (KMO) test and Bartlett’s test of sphericity were conducted to determine post-implementation ERPCs, post-implementation sustainability and user satisfaction in the data. The results are shown in Table III.

The KMO test and Bartlett’s test ($KMO > 0.5$) show that these items are suitable for the factor analysis performed, and there are no serious issues in the data. Bartlett’s test of sphericity (significance at $p < 0.05$) shows that the correlation among the items is sufficient to run factor analysis. The EFA was used because the extraction method and varimax rotation on the 24 items showed a preferable load, greater than 0.40, on the relevant factor (Akter *et al.*, 2016).

The reliability results of the new model are presented in Table V, and they indicate strong measures: they range from 0.572 to 0.947, above the recommended threshold value (Akter *et al.*, 2016). Five constructs were measured in this study: organizational readiness and support, interactive communication, knowledge management and system experience, post-implementation success and ERP sustainability and user satisfaction. As shown in the correlation analysis (Table IV), the company’s readiness shows a strong correlation with interactive communication about the ERP. No significant relationship was found of knowledge management to interactive communication or to organizational readiness. The scales used to measure the variables in the proposed framework were found to be reliable

Table III.
KMO test and
Bartlett’s test

KMO measure of sampling adequacy	0.857
Bartlett’s test of sphericity	
Approximate chi-square	2,498.552
df	253
Significance	0.000

and valid. Post-implementation ERPCs and the factors impacting ERP sustainability and user satisfaction are evaluated using these means. CR is defined as the degree of consistency of response over the construct. Thus, the reliability coefficient is generally used for this reliability test, as shown in Table V.

Next, regression analyses were run to determine which factors have a significant impact on post-implementation ERPCs and post-implementation user satisfaction with the ERP system, followed by a discriminant analysis to test the importance of each factor in distinguishing between organizations with high and low levels of post-implementation user satisfaction with the ERP system. Table V shows the mean, SD, reliability statistics and construct validity analysis for each factor. Interactive communication in the organization reaches a score of 3.34 on a scale of 1-5. The levels of interactive communication and knowledge management factors are high, while the levels of post-implementation success, user satisfaction and organizational readiness are low, indicating that the employees of these organizations did not consider their organizations were ready for ERP. Post-implementation sustainability and user satisfaction had the lowest mean among all constructs, and interactive communication and knowledge management had the highest means.

Convergent validity shows the extent to which indicators of a specific construct converge or whether any item should have a substantial correlation with a sum score computed from all other items in the particular scale (Watt *et al.*, 2009). Here, convergent validity was evaluated using Bentler–Bonett's normed fit index (NFI), which gives the degree to which the different approaches to measuring a given factor generate the same result. NFI values of 0.90 and above indicate satisfactory fit (Akte *et al.*, 2016). In addition, as shown in Table V,

	Interactive communication	Readiness of organization	PERPC	PERPSUS	Knowledge management
Interactive communication	1				
Readiness of organization	0.513**	1			
PERPC	0.431**	0.632**	1		
PERPSUS	0.273**	0.474**	0.552**	1	
Knowledge management	−0.099	−0.050	−0.031	0.096	1

Table IV.

Notes: *Correlation is significant at the 0.05 level (two-tailed); **correlation is significant at the 0.01 level (two-tailed)

Descriptive statistics
and correlations

Post-ERP practice	Mean	SD	Cronbach's α	Convergent validity Bentler–Bonett NFI	Discriminant validity Factor Cronbach's α – average correlation between factors
Interactive communication	3.34	0.98	0.947	0.999	0.81
Readiness of organization	2.68	0.83	0.895	0.995	0.87
Knowledge management	3.21	0.79	0.572	1.00	0.51
Post-ERP capabilities	2.44	0.74	0.864	0.941	0.84
Post-ERP sustainability and user satisfaction	2.34	0.59	0.590	1.00	0.53

Table V.

Descriptive statistics
influencing system
user satisfaction and
construct validity
analysis

the factor loadings of latent-to-observed variables should be above 0.50 (Hair *et al.*, 2010). In addition, factor loading for all observed variables in [Table II](#) range from 0.48 to 0.95. This clearly indicates that the variables or items observed are adequate and correspond to their constructs. Thus, we can confirm convergent construct validity.

Discriminant validity was tested as well, to confirm that latent constructs and their indicators are distinguished from other constructs and their indicators. Discriminant validity, defined as the extent that measures of different constructs diverge from or correlate with one another ([Engelland *et al.*, 2016](#)). Two common methods are used to assess discriminant validity. First, it is calculated by comparing Cronbach's α of the latent construct to its mean correlations with other constructs, and the significant differences between these measures confirms the discriminant validity ([Akter *et al.*, 2016](#)). As shown in [Table V](#), the five constructs are distinct. Second, the study acquires more confidence in discriminant validity by examining the cross-loading between factors, which indicates that items are more strongly related to their own factors than to the factors of other items. Therefore, all factors share a substantial amount of variance with their own items. Overall, the measurement model was considered satisfactory due to the evidence of adequate reliability (AVE > 0.50, CR > 0.80) and convergent validity (loadings > 0.75). [Table V](#) shows the calculations for discriminant and convergent validity.

The calculated AVE and CR were calculated, and the reliability of all measurement scales was confirmed. AVE is used to measure the amount of variance that each factor captures from its items relative to measurement error, whereas CR measures the internal consistency of the given factor ([Akter *et al.*, 2016](#)). The tests are conducted to indicate the extent of association between each factor and its items. The CR and AVE values for all items are close to or exceed the 0.80 and 0.50 cutoff values, respectively: the lowest AVE is 0.34 for PERPSUS and the lowest CR is 0.51 for knowledge management. All of these values are close to the recommended thresholds. All item loadings and values for CR and AVE exceed the cutoff values, ensuring reliability and convergent validity. As shown in [Table V](#), we calculated the square root of the AVE, using the correlation matrix. As the resultant values exceed the intercorrelations of the factors with the other factors, discriminant validity is confirmed. This test indicates that the factors do not share a single type of items, and they are conceptually distinct from each other. Thus, in the research model, each construct and its measures effectively distinguish themselves from other constructs and their measures.

5.3 CFA

CFA was performed to assess the measurement and adequacy of the hypothesized model for all items simultaneously (five constructs and 21 items) in the 102 validated samples. AMOS software was used for this analysis.

EFA identified organizational readiness and support, interactive communication, knowledge management and system experience, post-implementation success and ERP sustainability and user satisfaction as *a priori* factors of post-implementation ERPC practices in the service industry, all of which are presented in a rotated component matrix ([Table II](#)). In the first-order model, organizational readiness and support, interactive communication, knowledge management and system experience, post-implementation success and ERP sustainability and user satisfaction are correlated measurement factors for post-implementation ERPCs. Alternatively, post-implementation ERPCs and their relation to post-implementation sustainability and user satisfaction were operationalized as a second-order model, where the five factors are governed by a higher-order factor, i.e. the post-implementation ERPCs and their impact on post-implementation sustainability and user satisfaction.

Figure 2 shows the final measurement model (a CFA model) and specifies the relationships that suggest the way in which the measured variables represent a construct that is not directly measured (Górecki *et al.*, 2018). This model was assessed using AMOS 20.0 to examine convergent and discriminant validity. It shows the final measurement model of post-implementation ERP factors impacting ERPCs and the satisfaction of system users. The two-headed arrow is placed between the two observed variables using AMOS to reduce the value of χ^2 and achieve an acceptable model fit (Górecki *et al.*, 2018). The figure implies that organizational readiness and support, interactive communication, knowledge management and system experience, post-implementation success and ERP sustainability and user satisfaction are correlated. The fit indices, also shown in Figure 2, show an acceptable loading, which is statistically significant for the post-implementation ERPCs in service organizations. This shows that the construct “Post-implementation ERP sustainability and user satisfaction” has high positive correlations with “Organizational

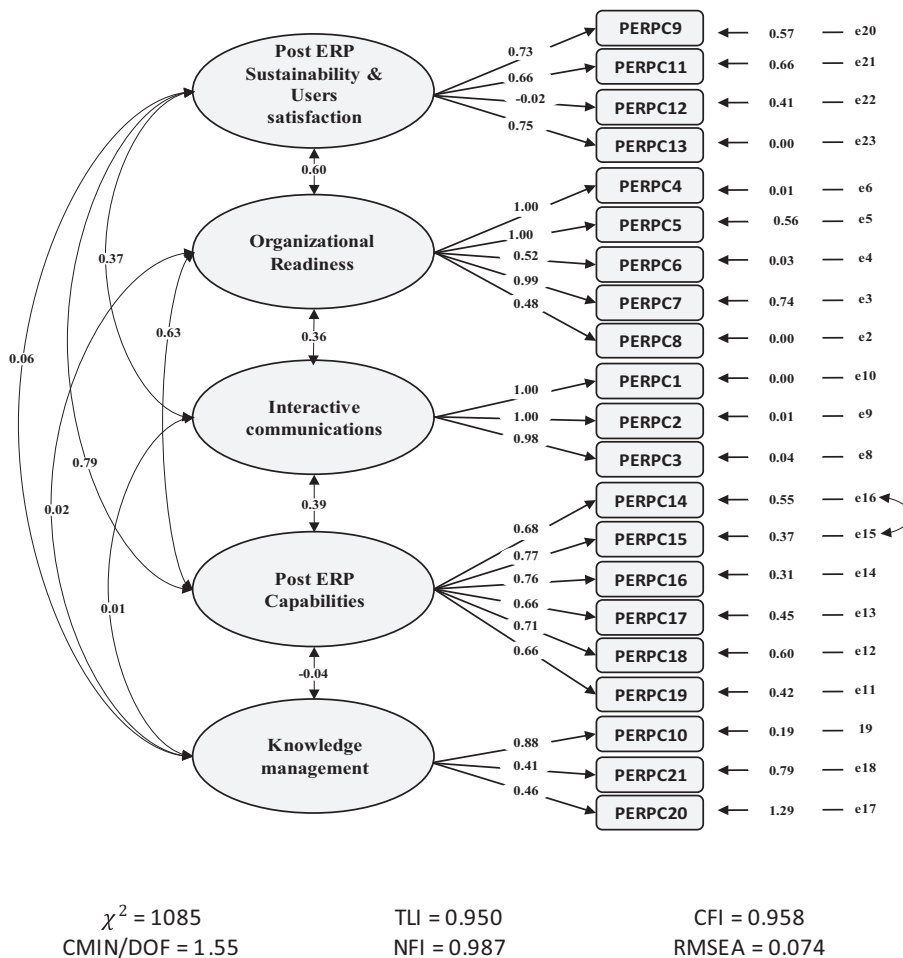


Figure 2.
First-order
measurement model
for post-
implementation
ERPCs model

readiness” and “Post-implementation ERPCs” of 0.60 and 0.79, respectively. However, the construct “post-implementation ERP sustainability and user satisfaction” has a low positive correlation with “Interactive communication” and “Knowledge management”: 0.37 and 0.06, respectively. Similarly, “Organizational readiness” has a low positive correlation with “Interactive communication” and “Knowledge management” (0.36 and 0.02, respectively). However, the construct “Organizational readiness” has a high positive correlation with “Post-implementation ERPCs”, with 0.63. Along the same lines, the construct “Interactive communication” has a low positive correlation with “post-implementation ERP capabilities” and “Knowledge management” (0.39 and 0.01). Similarly, “Post-implementation ERPCs” has a low negative correlation with “Knowledge management” (−0.04).

Model fit indices such as the comparative fit index (CFI), NFI, root mean square of error approximation (RMSEA) and Tucker–Lewis index (TLI), were selected to judge the model fit (Garg and Khurana, 2017; Satapathy, 2014; Bandyopadhyay and Roy, 2011). To obtain an acceptable fit, CFI, NFI, and TLI should be greater than 0.9, and RMSEA must be lower than 0.08 (Garg and Khurana, 2017). Figure 2 shows the summary of indices for the measurement model. The CFI, NFI and TLI values are 0.958, 0.987 and 0.950, respectively. The RMSEA shows a value of 0.074, and its value meets the cutoff of the threshold, representing an acceptable model fit.

After analyzing the proposed model using CFA, the structural PERPC model and hypothesized relationships were constructed using the maximum likelihood estimation method and a covariance matrix, with 23 measurement items. The results of the test of the second-order model PERPC (Figure 3) imply that higher-order latent factors, i.e. the overall trait of post-implementation ERPC, govern the correlations among organizational readiness and support, interactive communication, knowledge management and system experience, post-implementation success and ERP sustainability and user satisfaction, which are the correlated measurement factors for post-implementation ERPC. The second-order model also produces an acceptable goodness of fit. An examination of the second-order model of the post-implementation ERPCs shows that the significance of the coefficient estimates for all five factors are correlated measurement factors for post-implementation ERPC, which describe higher-order relationships of the five factors. The highest- and the lowest-impact barriers appear to be those of organizational readiness and knowledge management, respectively.

To identify the moderating effects between PERPC and PERPSUS, we applied regression process Model 1. To test moderation, we looked at the interaction effects between PERPC and PERPSUS and whether or not such effects were significant. The results from the regression model are displayed in Table VI, including interaction effects between PERPC and PERPSUS and the moderator.

According to Hayes (2013), the process output shows a significant interaction, $p = 0.000$, and zero does not lie between LLCI and ULCI. Therefore, a moderation is occurring through business strategy, and it has an impact before and after ERP implementation. The findings confirm the superior predictive power of the interaction model using the ERP strategy.

5.3.1 Hypothesis testing of the structural model and discussion. Table VII and Figure 3 show an analysis of path coefficients with ERPCs. This analysis reveals the significance of the hypothesized relationships among the five influence perceptions and PERPC. The following the performance of SEM indicate that hypotheses formulated for this study are supported statistically. The results not only indicate that these factors are well controlled but also that management must decide how to mitigate or eliminate significant risks and increase the success and user satisfaction of post-implementation ERP.

H1 hypothesized that organizational readiness would have a significant and positive impact on PERPC. The results show (Table VII; Figure 2) that H1 is strongly supported with

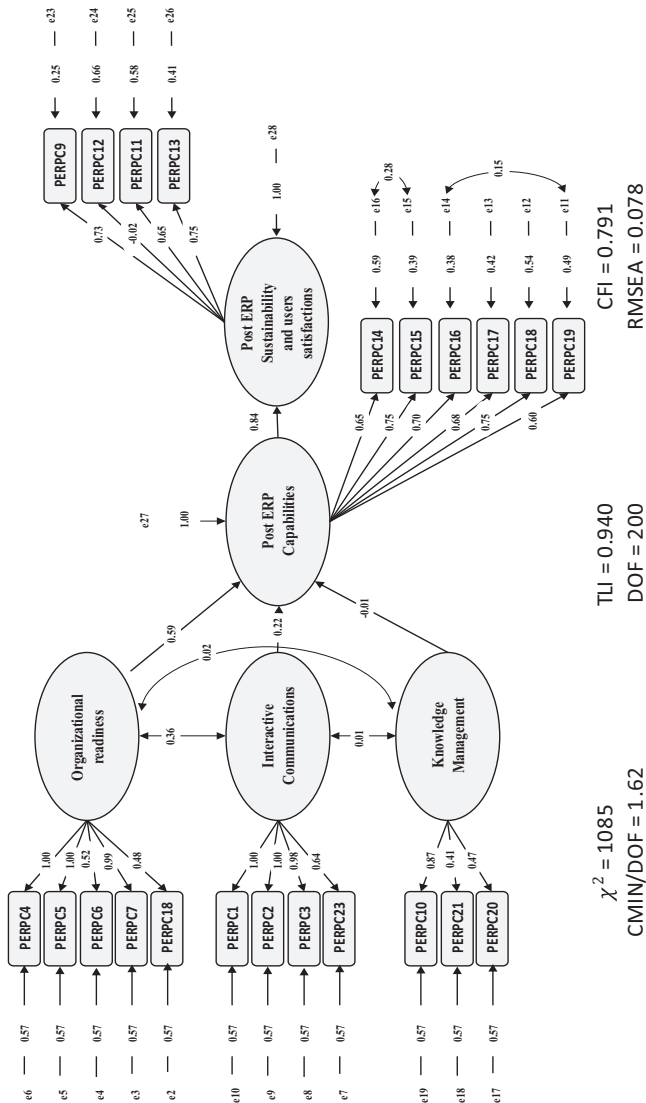


Figure 3.
Second-order
measurement model
for post-
implementation
ERPs model

Table VI.
Construct validity
analysis

	R	R ²	MSE	F	df1	df2	p
	0.5857	0.3430	0.2389	17.2283	3.0000	99.0000	0.0000
		Coefficient	SE	t	p	LLCI	ULCI
Constant		0.2648	0.5667	0.4672	0.6414	−0.8598	1.3893
BS		0.7003	0.3521	1.9890	0.0495	0.0017	1.3989
PERSMC		0.8844	0.2091	4.2305	0.0001	0.4696	1.2992
int_1		−0.3154	0.1371	−2.3000	0.0235	−0.5876	−0.0433
	BS	Effect	SE	t	p	LLCI	ULCI
	1.0000	0.5690	0.0911	6.2459	0.0000	0.3882	0.7497
	2.0000	0.2535	0.1025	2.4728	0.0151	0.0501	0.4570

Table VII.
Fit indices of model
and validity

Relationship	Standard path coefficients		p-value and support	
	Estimates (β)		of hypothesis	Support of hypothesis
Organizational readiness → PERPC	0.59		0.013	H1 supported
Interactive communication → PERPC	0.22		0.002	H2 supported
Knowledge management → PERPC	−0.01		0.022	H3 supported
Post ERP Capabilities → PERPSUS	0.84		0.019	H4 supported

a standardized coefficient, $\beta = 0.59$, at the significance of $p = 0.013$. Hence, organizational readiness has a greater effect on PERPC than the other factors, and this confirms the results of previous work (Longinidis and Gotzamani, 2009; Schmidt, 2016; Jackson, 1997). *H2* hypothesized that interactive communication would have a significant and positive impact on PERPC. The results show that *H2* is supported, with a standardized coefficient, $\beta = 0.22$, at a significance of $p = 0.002$, and this also confirms the results of previous work (Barki et al., 2008 and Pei-Hung, et al., 2016). This implies that effective interactive communications positively contribute to PERPC. *H3*, for its part, proposes that knowledge management would have a significant and positive impact on PERPC, which is confirmed by the estimates of $\beta = -0.01$; $p = 0.022$. These imply that the knowledge management contributes less to PERPC. Finally, *H4* predicts that PERPC would have a positive and significant effect on PERPSUS, which is confirmed with the consideration of moderating effects between PERPC and PERPSUS. Zero does not lie between LLCI and ULCI, as per Hayes (2013). Therefore, moderation through business strategy does occur and has an impact on PERPSUS.

6. Discussion and conclusion

This study examines whether the organizational internal factors proposed by the organizational aspects of the TOE framework influence the sustainability and user satisfaction of post-implementation ERP in the post-implementation ERPCs. The results show that the three organizational factors played a significant role in the post-implementation ERPCs, at different impact levels. It was found that organizational aspect factors had a positive, significant effect on post-implementation ERPCs. The proposed

hierarchical PERPC model measures the impact of organizational readiness capability, interactive communications capability and knowledge management capability on ERP sustainability and ERP users' satisfaction. The PERPC model was developed to capture multidimensional capability in the ERP environment and to frame its impact on PERPSUS. Post-implementation system capabilities had a positive association with all primary dimensions, with organizational readiness emerging as the strongest. This finding suggests that greater gains in overall PERPC could be achieved through organizational readiness. The results of this study lead to the conclusion that there is positive relationship between organizational readiness and PERPC. This result supports the findings of [Zhu *et al.* \(2010\)](#) and [Federici \(2009\)](#). This paper identifies agile business processes, leadership, the working environment, top management, supportive management, resistance to change and IT as organizational readiness indicators that measure critical success and the failure of post-implementation ERP implementation. It is crucial to establish business performance indicators that can support the feasibility of business readiness, as reported by [Garg and Garg \(2014\)](#) and [Zabjek *et al.* \(2009\)](#). Organizational readiness leads to taking an active role in leading the post-implementation ERP projects.

Interactive communication capability is also identified as a significant dimension, indicating that the achievement of post-implementation success relies heavily on interactive communication. The results of this study support the contention of a positive relationship between interactive communication and PERPC success. This result confirms the results of [Arthur \(2016\)](#) and [Fryling \(2010\)](#). Increasing communication effectiveness between the entire ERP team and remainder of the firm will improve strategic decision-making and strengthen the PERPC. This is in line with the results of [Barki *et al.* \(2008\)](#), [Pei-Hung *et al.* \(2016\)](#) and [Liu *et al.* \(2011\)](#), which indicate the importance of user participation in ERP implementation as an effective means of supporting a successful ERP implementation. Furthermore, confirmation is also found that the relationship and interactions between IT staff and system users likewise affects the outcome of the ERP systems. [Longinidis and Gotzamani \(2009\)](#) discuss and confirm the interactions of ERP users with IT staff in the implementation processes. It has also been shown that the participation of ERP users in the adoption phase always improves user satisfaction with the system ([Ji-Tsung and Marakas, 2006](#)). Companies implementing ERP should maintain interactive communications to control and support the post-implementation ERP process. The ERP-adopting organization should clearly establish the interactive communication plan and ensure it is carefully assessed. Furthermore, it is necessary to prepare and set up a detailed communication plan with clear objectives and deliverables with measurable results. Finally, the ERP project management team should communicate all aspects of the project, including balancing business needs, resource needs, enhancements and road map of post-implementation ERP.

Previous studies also are in line with our finding; [Saini *et al.* \(2013\)](#) highlight that the success of a post-implementation ERP is measured by the amount of interaction between the internal parties. User participation in ERP implementation is one of the most effective ways of supporting a successful ERP implementation ([Barki *et al.*, 2008](#)). [Pei-Hung *et al.* \(2016\)](#) demonstrated that the importance of the relationship between IT staff and system users also affects the outcomes for the ERP systems. Previous studies showed that participation by system users in the implementation phase will always improve post-implementation success ([Ji-Tsung and Marakas, 2006](#)). In summary, user participation and interactions with users will lead to greater user commitment and greater ERP support. The commitment of ERP users significantly influences the post-implementation process. Individual users' interactions in an organization empower employees to acquire more control over their day-to-day tasks in the work environment and transform the ERP system functionalities to

support post-implementation success and company performance. As a result, the company can improve the ERP at the individual level (Liu *et al.*, 2011; Wagner and Newell, 2007; Hung *et al.* (2012). The importance of developing a positive relationship with ERP implementation partners to achieve the goal of long-term viability in post-implementation of ERP is clear. Consequently, interactive communication has impacts and can be considered to be an internal force driver affecting long-term viability in post-implementation.

Knowledge management is identified as a third key component of the PERPC model, and the need for versatility in it across the firm was emphasized, to ensure information flow and to develop a robust ERP models. Usability and user experience have an impact on the success of post-implementation ERP and user satisfaction. Jayawickrama *et al.* (2017) identified various types of ERP-related knowledge that measure organizational impact and ERP satisfaction. Lodhi *et al.* (2014) recommend that employees, as internal forces, should enhance their absorptive capacity through ongoing training to enhance quality and their knowledge of ERP. The knowledge of the educational background and education level have been proven to have an impact on the success of ERP (Longinidis and Gotzamani, 2009). The need for knowledge and talent are challenges that influence post-ERP and have been identified as critical success factors for ERP implementation. This confirms the finding that knowledge management is a strong strategic tool for any organization and is necessary for sustaining competitive advantages.

The findings show that the higher-order PERPC construct has a strong, significant impact on PERPSUS. This result confirms that the emphasis on PERPC is a perfect starting point for identifying and solving post-implementation challenges. The findings of the structural model confirm that PERPC is a significant predictor of PERPSUS (explaining 50 per cent of the variance). These findings confirm that PERPBS is a significant moderator and a necessary condition for strong post-implementation sustainability and user satisfaction of ERP. The interaction model explains around 40 per cent of the variance. These findings suggest that companies should consider PERPC and PERBS to be important strategic antecedents that influence PERPSUS. They also confirm the fit between capability for ERP and post-implementation strategy can help firms perceive and assess their micro and macro environments (Aker *et al.*, 2016). Overall, the findings of this study can minimize confusion over the role of ERP strategic alignment in ERP sustainability and user satisfaction. They emphasize the importance of PERPC development and the strong alignment between PERPC and PERPSUS to achieve improved ERP and satisfied users. These findings are in line with those of Goni *et al.* (2017), who find that organizations can increase their sustainability margins by ensuring a tight alignment between IT capabilities and strategy. Prior studies in IT capability research also support the importance of strategy alignment, focusing on business-process enhancements and process-oriented capabilities (Lockamy and Smith, 1997).

7. Implications and limitations

This study succeeds in examining the factors affecting the sustainability of post-implementation ERP and user satisfaction in the UAE service sector. The paper also analyzes the inter-relationships between factors and their impacts on the post-implementation ERP suitability implementation. It further makes several contributions to post-implementation implementation study:

- It contributes to the academic research by producing empirical evidence to support theories affecting post-implementation ERP sustainability and user satisfaction.
- The study empirically verifies that organizational readiness, interactive communication, knowledge management and post-implementation ERPCs factors positively affect the sustainability of post-implementation ERP.

- The results attained are largely consistent with those of prior studies conducted in other sectors and developed countries.
- This work develops a scale of three primary PERPC constructs and their associated measurements. The empirical findings contribute to the identification of the required capabilities (technical and non-technical) an organization should have to succeed post-implementation.
- It extends a new conceptual model that connects multiple dimensions, and drawing on the TOE theory, substantiates that PERPC is a hierarchical construct having a strong influence on PERPSUS.
- It explores the dimensions of PERPC and their connection with ERP sustainability and user satisfaction. Further, the study adds theoretical accuracy, analyzing and measuring the moderating effects of PERPBS on PERPSUS.
- The findings of the study have huge implications for organizations in the service industry that implement ERP, such as retail, customer service and public-sector organizations. By improving PERPC and introducing an aligning strategy, firms can better serve their business uses' needs.
- Future work can use these findings as a foundation to support the post-implementation ERP or as a prerequisite for new ERP implementation. In addition, it allows the benefit of understanding business-related decisions.

Despite the useful findings of this empirical, some limitations that must be highlighted remain:

- The findings of this study are restricted to the service industry in the UAE and may not be generalizable for other geographic areas or industries.
- We have addressed widely proposed factors drawn from the literature, which could influence the post-implementation ERP in the UAE context, but there might be some factors that are more or less important but were not included in the research.
- The study uses perceptual data provided by experienced ERP users who were involved in post-implementation ERP in a service-sector organization, which may not provide clear measures for performance.

However, these limitations can be overcome by using multiple methods for collecting data in future studies; they will pave the way for future research. To enhance the generalizability of the findings, future studies using similar parameters in other industries in different geographic areas could be conducted.

This study demonstrated the importance of new internal critical factors for organizations for post-implementation ERP sustainability. However, the service-industry decision makers and IT decision makers must design their policies and strategic goals to align with the internal and external dimensions of ERP sustainability. To simplify the complexity of ERP sustainability in the service sector, the 80/20 principle (Koch, 2011) could be utilized. This principle states that 80 per cent of the problems arise from 20 per cent of causes. As shown in this study, IT and business decision makers should target interactive communication and knowledge management through different channels, in addition to managing relationships among stakeholders. This study describes an investigation of how the satisfaction with and suitability of the post-implementation ERP system is shaped by the organization's internal forces. This suggests that ERP users shape their experience of the ERP system through these frames. Addressing these issues will eliminate 80 per cent of the ERP sustainability needs, reaching an acceptable resolution.

References

- Abdinnour, S., and Saeed, K., (2015), "User perceptions towards an ERP system", *Journal of Enterprise Information Management*, Vol. 28 No. 2, pp. 243-259, available at: <http://adezproxy.adu.ac.ae/docview/1652625782?accountid=26149>
- Abdolvand, N., Albadvi, A. and Ferdowsi, Z. (2008), "Assessing readiness for business process reengineering", *Business Process Management Journal*, Vol. 14 No. 4, pp. 497-511, doi: <http://dx.doi.org/adezproxy.adu.ac.ae/10.1108/14637150810888046>.
- Akter, S.S., Wamba, S.F., Gunasekaran, A.A., Dubey, R.R. and Childe, S.S. (2016), "How to improve firm performance using big data analytics capability and business strategy alignment?", *International Journal of Production Economics*, pp. 182113-131.
- Alhakimi, W. and Alzahary, A. (2015), "An assessment of organizational readiness for ERP implementation", *Euro Asia Journal of Management*, Vol. 25 Nos 1/2, pp. 55-77.
- Annamalai, C. and Ramayah, T. (2011), "Enterprise resource planning (ERP) benefits survey of Indian manufacturing firms", *Business Process Management Journal*, Vol. 17 No. 3, pp. 495-509, available at: <http://dx.doi.org/adezproxy.adu.ac.ae/10.1108/1463715111136388>
- Arthur, E.A. (2016), "Successful enterprise resource planning system implementation: a higher educational managerial perspective (Order No. 10243473)", Available from ProQuest Dissertations and Theses Global: The Humanities and Social Sciences Collection. (1844988606), available at: <http://adezproxy.adu.ac.ae/docview/1844988606?accountid=26149>
- Babu, T.K.S. and Dalal, S.S. (2006), "ERP implementation issues in SMEs: 'Microsoft great plains' implementation in a BPO organization", *South Asian Journal of Management*, Vol. 13 No. 1, pp. 61-75, available at: <http://adezproxy.adu.ac.ae/docview/222724750?accountid=26149>
- Barki, H., Paré, G. and Sicotte, C. (2008), "Linking IT implementation and acceptance via the construct of psychological ownership of information technology", *Journal of Information Technology*, Vol. 23 No. 4, pp. 269-280, doi: <http://dx.doi.org/adezproxy.adu.ac.ae/10.1057/jit.2008.12>.
- Bradford, M.M. and Florin, J.J. (2003), "Examining the role of innovation diffusion factors on the implementation success of enterprise resource planning systems", *International Journal of Accounting Information Systems*, Vol. 4 No. 3, p. 205.
- Bradley, J. and Lee, C.C. (2007), "ERP training and user satisfaction: a case study", *International Journal of Enterprise Information Systems*, Vol. 3 No. 4, pp. 33-39, 41-50, available at <http://adezproxy.adu.ac.ae/docview/222692148?accountid=26149>
- Chaabouni, A. and Yahia, I.B. (2014), "Contribution of ERP to the decision-making process through knowledge management", *Journal of Decision Systems*, Vol. 23 No. 3, pp. 303-317, available at: <http://adezproxy.adu.ac.ae/docview/1626833522?accountid=26149>
- Chung, B. (2007), "An analysis of success and failure factors for ERP systems in engineering and construction firms", University of Maryland, Retrieved from: <https://drum.lib.umd.edu/bitstream/handle/1903/7644/umi-umd-4917.pdf;sequence=1> (accessed 7 November 2007).
- Cotteleer, M.J. (2001), "Operational performance following ERP implementation (Order No. 3004730)", available from ProQuest Central; ProQuest Dissertations and Theses Global: The Humanities and Social Sciences Collection. (251798093), available at: <http://adezproxy.adu.ac.ae/docview/251798093?accountid=26149>
- Davis (1989), "Technology acceptance model", IS Theory, available at: https://is.theorizeit.org/wiki/Technology_acceptance_model (accessed 13 March 2017).
- Eid, M.I.M. and Abbas, H.I. (2017), "User adaptation and ERP benefits: moderation analysis of user experience with ERP", *Kybernetes*, Vol. 46 No. 3, pp. 530-549, available at: <http://adezproxy.adu.ac.ae/docview/1881411480?accountid=26149>
- Elkhani, N., Soltani, S. and Nazir Ahmad, M. (2014), "The effects of transformational leadership and ERP system self-efficacy on ERP system usage", *Journal of Enterprise Information Management*, Vol. 27 No. 6, p. 759, available at: <http://adezproxy.adu.ac.ae/docview/1660746148?accountid=26149>

- Engelland, K.A., Holland, D.D. and Piper, R.T. (2016), "Assessing convergent and discriminant validity of the motivation construct for the technology integration education (TIE) model", *Journal of Higher Education Theory and Practice*, Vol. 16 No. 1, pp. 37-50, available at: <http://adezproxy.adau.ac.ae/docview/1791293200?accountid=26149>
- Federici, T. (2009), "Factors influencing ERP outcomes in SMEs: a post-introduction assessment", *Journal of Enterprise Information Management*, Vol. 22 Nos 1/2, pp. 81-98, available at: <http://dx.doi.org/adezproxy.adau.ac.ae/10.1108/17410390910922840>
- Feng, J. (2015), "Dynamics of collective employee satisfaction in changing organizations: examining the role of employee flow (Order No. 3707166)", available from ProQuest Dissertations and Theses Global: The Humanities and Social Sciences Collection. (1695832282), available at: <http://adezproxy.adau.ac.ae/docview/1695832282?accountid=26149>
- Forslund, H. (2010), "ERP systems' capabilities for supply chain performance management", *Industrial Management and Data Systems*, Vol. 110 No. 3, pp. 351-367, doi: <http://dx.doi.org/adezproxy.adau.ac.ae/10.1108/02635571011030024>.
- Fryling, M. (2010), "Total cost of ownership, system acceptance and perceived success of enterprise resource planning software: Simulating a dynamic feedback perspective of ERP in the higher education environment (Order No. 3402347)", Available from ProQuest Dissertations and Theses Global: The Humanities and Social Sciences Collection. (305239736), available at: <http://adezproxy.adau.ac.ae/docview/305239736?accountid=26149>
- Gangwar, H., Date, H. and Raoot, A.D. (2014), "Review on IT adoption: insights from recent technologies", *Journal of Enterprise Information Management*, Vol. 27 No. 4, pp. 488-502, available at: <http://adezproxy.adau.ac.ae/docview/1660759556?accountid=26149>
- Garg, P. and Garg, A. (2014), "Factors influencing ERP implementation in retail sector: an empirical study from India", *Journal of Enterprise Information Management*, Vol. 27 No. 4, p. 424, available at: <http://adezproxy.adau.ac.ae/docview/1660759557?accountid=26149>
- Garg, P. and Khurana, R. (2017), "Applying structural equation model to study the critical risks in ERP implementation in Indian retail", *Benchmarking*, Vol. 24 No. 1, pp. 143-162, available at: <http://adezproxy.adau.ac.ae/docview/1858601212?accountid=26149>
- Glowalla, P. and Sunyaev, A. (2014), "ERP system fit – an explorative task and data quality perspective", *Journal of Enterprise Information Management*, Vol. 27 No. 5, pp. 668-686, available at: <http://adezproxy.adau.ac.ae/docview/1660745161?accountid=26149>
- Goel, S., Kiran, R. and Garg, D. (2013), "Predictors for user satisfaction in enterprise resource planning implementation in technical educational institutions", *International Information Institute (Tokyo).Information*, Vol. 16 No. 5, pp. 2885-2894, available at: <http://adezproxy.adau.ac.ae/docview/1406224907?accountid=26149>
- Goni, F.A., Chofreh, A.G., Mukhtar, M., Sahran, S., Shukor, S.A. and Klemeš, J.J. (2017), "Strategic alignment between sustainability and information systems: a case analysis in Malaysian public higher education institutions", *Journal of Cleaner Production*, 168263-270, doi: [10.1016/j.jclepro.2017.09.021](https://doi.org/10.1016/j.jclepro.2017.09.021).
- Górecki, T., Krzyśko, M., Waszak, Ł. and Wolyński, W. (2018), "Selected statistical methods of data analysis for multivariate functional data", *Statistical Papers*, Vol. 59 No. 1, pp. 153-182, doi: <http://dx.doi.org/adau-lib-database.idm.oclc.org/10.1007/s00362-016-0757-8>.
- Ha, Y.M. and Ahn, H.J. (2014), "Factors affecting the performance of enterprise resource planning (ERP) systems in the post-implementation stage", *Behaviour and Information Technology*, Vol. 33 No. 10, pp. 1065-1081, doi: [10.1080/0144929X.2013.799229](https://doi.org/10.1080/0144929X.2013.799229).
- HassabElnaby, H.R., Hwang, W. and Vonderembse, M.A. (2012), "The impact of ERP implementation on organizational capabilities and firm performance", *Benchmarking*, Vol. 19 Nos 4/5, pp. 618-633, doi: <http://dx.doi.org/adezproxy.adau.ac.ae/10.1108/14635771211258043>.
- Hayes, A.F. (2013), "Introduction to mediation, moderation, and conditional process analysis; a regression-based approach", *Reference and Research Book News*, Vol. 28 No. 4, available at: <http://adezproxy.adau.ac.ae/docview/1416243165?accountid=26149>

- Hee, S.P., Dailey, R. and Lemus, D. (2002), "The use of exploratory factor analysis and principal components analysis in communication research", *Human Communication Research*, Vol. 28 No. 4, pp. 562-577, available at: <http://adezproxy.adu.ac.ae/docview/199400049?accountid=26149>
- Hung, W.H., Ho, C., Jou, J. and Kung, K. (2012), "Relationship bonding for a better knowledge transfer climate: an ERP implementation research", *Decision Support Systems*, Vol. 52 No. 2, p. 406, available at: <http://adezproxy.adu.ac.ae/docview/906391970?accountid=26149>
- Ip, C. (2010), "Critical success factors in enterprise resource planning system implementation: an analysis (Order No. 3425878)", available from ProQuest Central; ProQuest Dissertations and Theses Full Text: The Humanities and Social Sciences Collection. (759240980), available at: <http://adezproxy.adu.ac.ae/docview/759240980?accountid=26149>
- Jackson, S. (1997), "Development of a self-assessment model of organisation readiness for business process re-engineering (Order No. U099731)", Available from ProQuest Dissertations and Theses Global: The Humanities and Social Sciences Collection. (301608280), available at: <http://adezproxy.adu.ac.ae/docview/301608280?accountid=26149>
- Jain, V. (2008), "A framework for sustainable ERP value (Order no. 3316122)", Available from ABI/INFORM Global. (304641599), available at: <http://adezproxy.adu.ac.ae/docview/304641599?accountid=26149>
- Jameel Qureshi, M.A. and Abdulkhalaq, A.A. (2015), "Increasing ERP implementation success ratio by focusing on data quality and user participation", *International Journal of Information Engineering and Electronic Business*, Vol. 7 No. 3, pp. 20-25.
- Jayawickrama, U., Liu, S. and Hudson Smith, M. (2017), "Knowledge prioritisation for ERP implementation success", *Industrial Management and Data Systems*, Vol. 117 No. 7, pp. 1521-1546, available at: <http://adezproxy.adu.ac.ae/docview/1927752578?accountid=26149>
- Jeng, D.J. and Dunk, N. (2013), "Knowledge management enablers and knowledge creation in ERP system success", *International Journal of Electronic Business Management*, Vol. 11 No. 1, pp. 49-59, available at: <http://adezproxy.adu.ac.ae/docview/1353551844?accountid=26149>
- Ji-Tsung, B.W. and Marakas, G.M. (2006), "The impact of operational user participation on perceived system implementation success: an empirical investigation", *The Journal of Computer Information Systems*, Vol. 46 No. 5, pp. 127-140, available at: <http://adezproxy.adu.ac.ae/docview/232577399?accountid=26149>
- Jones, M.C., Zmud, R.W. and Clark, Thomas, D. Jr (2008), *ERP in Practice: A Snapshot of Post-Installation Perception and Behaviors*, *Communications of the Association for Information Systems*, Vol. 23, p. 25, available at: <http://adezproxy.adu.ac.ae/docview/200746688?accountid=26149>
- Kevin, Z.K., L., Kraemer. and Dedrick, J. (2004), "Information technology payoff in E-business environments: an international perspective on value creation of E-business in the financial services industry", *Journal of Management Information Systems*, Vol. 21 No. 1, pp. 17-54, available at: <http://adezproxy.adu.ac.ae/docview/218914903?accountid=26149>
- Kolis, K., and Jirinova, K. (2013), "The impact of the customer relationship management on a company's financial performance", Paper presented at the 129-135, available at: <http://adezproxy.adu.ac.ae/docview/1467639896?accountid=26149>
- Lech, P. (2014), "Managing knowledge in IT projects: a framework for enterprise system implementation", *Journal of Knowledge Management*, Vol. 18 No. 3, pp. 551-573, available at: <http://adezproxy.adu.ac.ae/docview/1660768499?accountid=26149>
- Li, C. (2010), "Improving business – it alignment through business architecture (Order No. 3444219)", available from ProQuest Central; ProQuest Dissertations and Theses Global: The Humanities and Social Sciences Collection. (858204513), available at: <http://adezproxy.adu.ac.ae/docview/858204513?accountid=26>
- Li, Y., Liao, X.W. and Lei, H.Z. (2006), "A knowledge management system for ERP implementation", *Systems Research and Behavioral Science*, Vol. 23 No. 2, pp. 157-168, available at: <http://adezproxy.adu.ac.ae/docview/196896216?accountid=26149>

- Liu, L., Feng, Y., Hu, Q. and Huang, X. (2011), "From transactional user to VIP: how organizational and cognitive factors affect ERP assimilation at individual level", *European Journal of Information Systems*, Vol. 20 No. 2, pp. 186-200, doi: [http://dx. doi.org.adezproxy.adu.ac.ae/10.1057/ejis.2010.66](http://dx.doi.org/adezproxy.adu.ac.ae/10.1057/ejis.2010.66).
- Lockamy, A. and Smith, W.I. (1997), "A strategic alignment approach for effective business process reengineering: linking strategy", *International Journal of Production Economics*, Vol. 50 Nos 2/3, p. 141.
- Lodhi, R.N., Aftab, F., Mahmood, Z. and Cheema, F.-. (2014), "Success of absorptive capacity for enterprise resource planning (ERP) system: empirical evidence from Pakistan", *Global Management Journal for Academic and Corporate Studies*, Vol. 4 No. 2, pp. 26-37, available at: <http://adezproxy.adu.ac.ae/docview/1925704273?accountid=26149>
- Longinidis, P. and Gotzamani, K. (2009), "ERP user satisfaction issues: insights from a Greek industrial giant", *Industrial Management and Data Systems*, Vol. 109 No. 5, pp. 628-645, doi: <http://dx. doi.org.adezproxy.adu.ac.ae/10.1108/02635570910957623>.
- Machado, L.B. (2016), "Developing a model to measure audit process effectiveness in a medical device organization (Order no. 10254842)", Available from ABI/INFORM Global. (1886461113), available at: <http://adezproxy.adu.ac.ae/docview/1886461113?accountid=26149>
- Migdadi, M.M. and Khair Saleem, A.Z.,M. (2016), "An empirical investigation of knowledge management competence for enterprise resource planning systems success: insights from Jordan", *International Journal of Production Research*, Vol. 54 No. 18, pp. 5480-5498, doi: <http://dx. doi.org.adezproxy.adu.ac.ae/10.1080/00207543.2016.1161254>.
- Mitakos, T., Almaliotis, I. and Demerouti, A. (2010), "An auditing approach for ERP systems examining human factors that influence ERP user satisfaction", *Informatica Economica*, Vol. 14 No. 1, pp. 78-92, available at: <http://adezproxy.adu.ac.ae/docview/1433237690?accountid=26149>
- Moore, R., Jackson, M.J. and Wilkes, R.B. (2007), "End-user computing strategy: an examination of its impact on end-user satisfaction", *Academy of Strategic Management Journal*, Vol. 6, pp. 69-89, available at: <http://adezproxy.adu.ac.ae/docview/215101338?accountid=26149>
- Morgan, N.A., Slotegraaf, R.J. and Vorhies, D.W. (2009), "Linking marketing capabilities with profit growth", *International Journal of Research in Marketing*, Vol. 26 No. 4, p. 284, available at: <http://adezproxy.adu.ac.ae/docview/860912292?accountid=26149>
- Motwani, B. and Sharma, R.K. (2015), "Impact of enterprise resource planning (ERP) implementation process on users performance", *Anvesha*, Vol. 8 No. 1, pp. 44-56, available at: <http://adezproxy.adu.ac.ae/docview/1710986933?accountid=26149>
- NetSuite Readies Businesses for What's Next at SuiteWorld (2017), PR Newswire, Retrieved from: <http://adezproxy.adu.ac.ae/docview/1892423741?accountid=26149>
- Nicolaou, A.I. and Reck, J.L. (2004), "Firm performance effects in relation to the implementation and use of enterprise resource planning systems/discussion of: firm performance effects in relation to the implementation and use of enterprise resource planning systems/reply to discussion of: firm performance effects in relation to the implementation and use of enterprise resource planning systems", *Journal of Information Systems*, Vol. 18 No. 2, pp. 79-105, Retrieved from: <http://adezproxy.adu.ac.ae/docview/235874673?accountid=26149>
- Osborne, J.W. and Fitzpatrick, D.C. (2012), "Replication analysis in exploratory factor analysis: what it is and why it makes your analysis better", *Practical Assessment, Research and Evaluation*, Vol. 17 No. 15, p. 8, available at: <http://adezproxy.adu.ac.ae/docview/1314325150?accountid=26149>
- Palanisamy, R. (2008), "organizational culture and knowledge management in ERP implementation: an empirical study", *The Journal of Computer Information Systems*, Vol. 48 No. 2, pp. 100-120, available at: <http://adezproxy.adu.ac.ae/docview/232575115?accountid=26149>
- Pan, K., Miguel, B.N., Chao, G. and Peng, (2011), "Risks affecting ERP post-implementation", *Journal of Manufacturing Technology Management*, Vol. 22 No. 1, pp. 107-130, doi: <http://dx. doi.org.adezproxy.adu.ac.ae/10.1108/17410381111099833>.

- Pei-Hung, J., Hsiao-Lan, W. and Chung-Che, T. (2016), "Model of post-implementation user participation within ERP advice network", *Asia Pacific Management Review*, Vol. 21 No. 2, pp. 92-101, doi: [10.1016/j.apmr.2015.11.001](https://doi.org/10.1016/j.apmr.2015.11.001).
- Peng, G.C. and Nunes, M. (2017), "Establishing an evidence-based 9D evaluation approach for ERP post-implementation", *Industrial Management and Data Systems*, Vol. 117 No. 2, pp. 398-424, available at: <http://adezproxy.adu.ac.ae/docview/1874315445?accountid=26149>
- Qu, X. (2007), "Multivariate data analysis (6th ed.)", *Technometrics*, Vol. 49 No. 1, pp. 103-104, available at: <http://adezproxy.adu.ac.ae/docview/213687601?accountid=26149>
- Saatçioğlu, Ö.Y. (2009), "What determines user satisfaction in ERP projects: benefits", *Barriers or Risks? Journal of Enterprise Information Management*, Vol. 22 No. 6, pp. 690-708, doi: <http://dx.doi.org/adezproxy.adu.ac.ae/10.1108/17410390910999585>.
- Saha, R. (2016), "Factors influencing organizational commitment – research and lessons", *Management Research and Practice*, Vol. 8 No. 3, pp. 36-48, available at: <http://adezproxy.adu.ac.ae/docview/1827601495?accountid=26149>
- Satapathy, S. (2014), "An analysis for service quality enhancement in electricity utility sector of India by SEM", *Benchmarking*, Vol. 21 No. 6, pp. 964-986, available at: <http://adezproxy.adu.ac.ae/docview/1658143976?accountid=26149>
- Schmidt, M. (2016), "Building business case analysis", business-case-analysis.co, available at: www.business-case-analysis.com/business-case.html (accessed 7 October 2016).
- Sekaran, U. and Bougie, R. (2010), *Research and Markets: Research Methods for business – A Skill Building Approach*, 5th edition. (2010, Jun 16). M2 Presswire, available at: <http://adezproxy.adu.ac.ae/docview/498172108?accountid=26149>
- Shatat, A.S. (2015), "Critical success factors in enterprise resource planning (ERP) system implementation: an exploratory study in Oman", *Electronic Journal of Information Systems Evaluation*, Vol. 18 No. 1, pp. 36-45.
- Shkurti (Perri), R., Mbreshtani, A. and Maloku, E. (2014), "Impact of ERP on performance of Albanian companies; a factorial analysis", *Journal of Information Systems and Operations Management*, pp. 1-14, available at: <http://adezproxy.adu.ac.ae/docview/1537947222?accountid=26149>
- Stefanou, C.J. (2001), "A framework for the ex-ante evaluation of ERP software", *European Journal of Information Systems*, Vol. 10 No. 4, pp. 204-215, available at: <http://adezproxy.adu.ac.ae/docview/218785345?accountid=26149>
- Tran, K.T. (2012), "Software reuse success strategy model: an empirical study of factors involved in the success of software reuse in information system development (Order No. 3515402)", available from ProQuest Central; ProQuest Dissertations and Theses Global: The Humanities and Social Sciences Collection. (1021037236), available at: <http://adezproxy.adu.ac.ae/docview/1021037236?accountid=26149>.
- Uwizeyemungu, S. and Raymond, L. (2012), "Impact of an ERP system's capabilities upon the realisation of its business value: a resource-based perspective", *Information Technology and Management*, Vol. 13 No. 2, pp. 69-90, doi: <http://dx.doi.org/adezproxy.adu.ac.ae/10.1007/s10799-012-0118-9>
- Wagner, E.L. and Newell, S. (2007), "Exploring the importance of participation in the post-implementation period of an ES project: a neglected area", *Journal of the Association for Information Systems*, Vol. 8 No. 10, pp. 508-524, available at: <http://adezproxy.adu.ac.ae/docview/198898900?accountid=26149>
- Wang, Y., Wang, Y. and Yang, Y. (2010), "Understanding the determinants of RFID adoption in the manufacturing industry", *Technological Forecasting and Social Change*, Vol. 77 No. 5, p. 803, available at: <http://adezproxy.adu.ac.ae/docview/205258246?accountid=26149>
- Watt, T., Bjorner, J.B., Groenvold, M., Rasmussen, Å.K., Bonnema, S.J., Hegedüs, L. and Feldt-Rasmussen, U. (2009), "Establishing construct validity for the thyroid-specific patient reported

- outcome measure (ThyPRO): an initial examination", *Quality of Life Research*, Vol. 18 No. 4, pp. 483-496, doi: <http://dx.doi.org/10.1007/s11136-009-9460-8>.
- Wynn, M. (2009), "Information systems strategy development and implementation in SMEs", *Management Research News*, Vol. 32 No. 1, pp. 78-90, doi: <http://dx.doi.org/adezproxy.adu.ac.ae/10.1108/01409170910922041>.
- Zabjek, D., Kovacic, A. and Mojca, I.S. (2009), "The influence of business process management and some other CSFs on successful ERP implementation", *Business Process Management Journal*, Vol. 15 No. 4, pp. 588-608, available at: <http://dx.doi.org/adezproxy.adu.ac.ae/10.1108/14637150910975552>
- Zhu, Y., Li, Y., Wang, W. and Chen, J. (2010), "What leads to post-implementation success of ERP? An empirical study of the Chinese retail industry", *International Journal of Information Management*, Vol. 30 No. 3, p. 265, available at: <http://adezproxy.adu.ac.ae/docview/193974086?accountid=26149>

Further reading

- Al-Sehali, S. (2000), "The factors that affect the implementation of enterprise resource planning (ERP)", in the international Arab gulf states and United States companies with special emphasis on SAP software (Order No. 9992042). Available from ProQuest Central; ProQuest Dissertations and Theses Full Text: The Humanities and Social Sciences Collection. (304654518), available at: <http://adezproxy.adu.ac.ae/docview/304654518?accountid=26149>
- Amit, R. and Schoemaker, P.J. (1993), "Strategic assets and organizational rent", *Strategic Management Journal*, Vol. 14 No. 1, pp. 33-46.
- Amoako-Gyampah, K.K. (2007), "Perceived usefulness, user involvement and behavioral intention: an empirical study of ERP implementation", *Computers in Human Behavior*, Vol. 23 No. 3, pp. 1232-1248.
- Awa, H.O., Ojiabo, O.U. and Orokor, L.E. (2017), "Integrated technology-organization-environment (T-O-E) taxonomies for technology adoption", *Journal of Enterprise Information Management*, Vol. 30 No. 6, pp. 893-921, available at: <http://adezproxy.adu.ac.ae/docview/1940544194?accountid=26149>
- IMD (2017), "World digital competitiveness index", IMD World Competitiveness Center, available at: www.imd.org/globalassets/wcc/docs/release-2017/world_digital_competitiveness_yearbook_2017.pdf (13 July 2017)
- Kozlenkova, I.V., Samaha, S.A. and Palmatier, R.W. (2014), "Resource-based theory in marketing", *Journal of the Academy of Marketing Science*, Vol. 42 No. 1, pp. 1-21, doi: <http://dx.doi.org/adezproxy.adu.ac.ae/10.1007/s11747-013-0336-7>.
- Kull, A.J., Mena, J.A. and Korschun, D. (2016), "A resource-based view of stakeholder marketing", *Journal of Business Research*, Vol. 69 No. 12, pp. 5553-5560, doi: [10.1016/j.jbusres.2016.03.063](https://doi.org/10.1016/j.jbusres.2016.03.063).
- Makadok, R. (1999), "Interfirm differences in scale economies and the evolution of market shares", *Strategic Management Journal*, Vol. 20 No. 10, pp. 935-952.
- Mandal, K., Bandyopadhyay, G. and Roy, K. (2011), "Quest for different strategic dimensions of channel management: an empirical study", *Journal of Business Studies Quarterly*, Vol. 3 No. 2, pp. 25-44, available at: <http://adezproxy.adu.ac.ae/docview/1009899761?accountid=26149>
- Moalagh, M. and Ravasan, A.Z. (2013), "Developing a practical framework for assessing ERP post-implementation success using fuzzy analytic network process", *International Journal of Production Research*, Vol. 51 No. 4, pp. 1236-1257, doi: [10.1080/00207543.2012.698318](https://doi.org/10.1080/00207543.2012.698318).

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