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Abstract

Purpose – Most small- and medium-sized enterprises (SMEs) use some business management software to manage their daily operations. Ultimately they consider transitioning to an enterprise resources planning (ERP) system. However, implementing ERP system successfully is costly and complex, and often shows high disappointment rates or even abandonment due to need of fit with the business or social culture. In Jordan, large businesses have been using the ERP system for a long time, but SMEs usage of the system is relatively new. The purpose of this paper is to study the effect of ERP implementation success antecedents which consists of training, supportive leadership and ease of use on ERP implementation success itself through a mediating effect of user satisfaction.

Design/methodology/approach – Empirical data were collected using a survey questionnaire which was distributed to ERP users in Jordanian healthcare organizations. A total of 175 responses were collected and analyzed using structure equation modeling.

Findings – A significant relationship was found between these antecedents and ERP implementation success. Furthermore, user satisfaction plays a significant mediating role between ease of use and ERP implementation success.

Practical implications – The outcomes of this study are useful to ERP users as they would be able to strategize future ERP system implementation in different sectors such as education, manufacturing and insurance industry. Finally, the findings may be useful to ERP system adopters in different developing countries.

Originality/value – This is one of the first studies which adequately covers the relationships between antecedents of user satisfaction and ERP implementation success which consists of training, supportive leadership and ease of use on ERP implementation success itself through a mediating effect of user satisfaction.

Keywords ERP systems, Jordan, Structural equation modelling, User satisfaction, Enterprise resource planning system (ERP), Small to medium-sized enterprises (SME)

Paper type Research paper

1. Introduction

Facing the international planning-and-management-oriented world, small and medium-sized enterprises (SMEs) must keep trying hard to improve both the software and hardware used in their facilities to raise their capability and contribute to more effective marketing of their products worldwide. The enterprise resource planning (ERP) system, derived from 1990s management information systems, has been developed to assist enterprises incorporate the information gathered from their own internal

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departments so as to raise their performance (Bradley and Lee, 2007; Kosalge and Ritz, 2015). ERP implementations are plagued with high failure rates and inability to understand promised advantages and the failure rate has been estimated as 60-90 percent (Al-Shamlan and Al-Mudimigh, 2011; Ahmad *et al.*, 2014; Sun *et al.*, 2015). According to Sun *et al.* (2015), the literature has reported over 80 critical success factors for ERP implementation, but companies usually do not know to exploit them. Indeed, although various scholars have different viewpoints of the critical factors fundamental to successful use of the ERP system (see Maditinos *et al.*, 2011; Masa'deh and Altamony, 2012; Tarhini *et al.*, 2015), user satisfaction is the factor identified by most of them as a leading influence on SMEs in this regard. To assess the ERP system, therefore, user satisfaction can be utilized as an important indicator to illustrate if the information system works effectively (Bradford and Florin, 2003; Wang *et al.*, 2008; Ram *et al.*, 2015).

A successful ERP system can be the backbone of business intelligence for an organization because it can provide managers an integrated analysis of the processes involved within it (Lee and Kim, 2007; Al-Jabri and Roztocki, 2015; Fadlalla and Amani, 2015). ERP system can link different areas of an organization, such as industrialized, order management, economic systems, human resources, suppliers and customers, into a tight incorporated system with shared data and visibility (Chen, 2001; Pishdad and Haider, 2013). For instance, ERP system present seamless incorporation of processes across functional areas with better workflow, standardization of a variety of business practices and access to real-time up-to-date data (Ehie and Madsen, 2005; Kharuddin *et al.*, 2015). Implementing ERP system successfully however is not easy, costly and complex, and often shows high disappointment rates or even abandonment due to need of fit with the business or social culture. In Jordan, large businesses have been using the ERP system for a long time, but SMEs usage of the system is relatively new; thus, the focus of this research, is on Jordanian SMEs, with the intention of determining information of value to such companies when they start using the ERP system.

The rest of this paper is organized as follows. It commences with the research background. Then, the research model and hypotheses development are described. It then presents the methodology used for the study followed by its analysis and findings. The discussion and conclusion are then provided and areas for future research are also addressed.

2. Research background

ERP systems consist of a set of software products which are mainly targeted to provide a large diversity of enterprises. These systems sustain day to day operations, decision making and mechanization, streamlining and progress of processes in organizations (Sedera *et al.*, 2004; Burkland and Zachariassen, 2014; Boza *et al.*, 2015). An ERP system can be defined as "an information system that enables the integration of transaction-based data and business processes within and across functional areas in an enterprise" (Parry and Graves, 2008). Some of the type enterprise functions that ERP systems support include supply chain management, inventory control, sales, manufacturing scheduling, customer relationship management, financial and cost management and human resources (Soffer *et al.*, 2002; Abdinnour and Saeed, 2015; Elbardan *et al.*, 2015). Despite the cost concentrated, lengthy and risky process, the rate of implementation of ERP systems has increased over the years. Most of the large international organizations have already adopted ERPs as their de facto standard with the aim of

increasing productivity, effectiveness and organizational competitiveness (Al-Jabri and Roztocki, 2015). In addition, according to Pishdad and Haider (2013), some challenge-related ERP implementation included lack of process, technical, project knowledge, lack of knowledge on the requirement for change and lack of contextualization and organization support.

Since late 1990s, firms have rushed to implement ERP systems. One study found more than 60 percent of Fortune 500 companies had adopted ERP systems (Stewart *et al.*, 2000). The growth in information technology and the increase in global business competition also forced organizations to find new ways of doing business. Moreover, organizations now are trying to find ways to get better their performance and operational effectiveness. Developing new technologies and advanced software applications such as ERP systems are playing the key role in successfully enhancing the performance of organizations (Tsai *et al.*, 2015). ERP systems are cross-functional enterprise systems driven by an integrated suite of software modules that sustain the central internal business processes of a company. The core function of ERP is to provide decision makers an integrated real-time view of core business processes. These modules operate interactively utilizing one database, which shares all information necessary for each module's purpose, as well as user requirements. ERP packages give a workflow engine to create automated work according to business rules and approval conditions so that information and documents can be motivated to operational users for transactional conducts, and to managers for review and approval.

According to Garg (2010) and Burkland and Zachariassen (2014), ERPs link all the separate information systems used in the departments of the companies in one incorporated system causing a better understanding of the whole work of the organizations through sharing information and communications among users. Separate systems did the job correctly in a good way but there was no cooperation to know about the transaction and it's process like the amount, date to be achieved, updates of the process, financial matter, time to market; with the ERPs everyone in any department can know all of the processors of the operation on time and keep the process in better way. Hwang and Grant (2011) mentioned that an organization doesn't have to buy the whole ERP package as a situation to achieve its mission, but these companies may buy a separate package of ERPs like two or more, not all which provides flexibility for these organizations to choose the better ERPs resulting in saving more money and no more costs.

Jordan is emerging as a regional motivation in IT services, and is starting to be known for its growing global outsourcing services. Skilled employees, hard capabilities in IT, a supportive business environment, low costs and the capability of IT companies to successfully struggle globally were stated as main factors to rank Jordan in the ninth place in A.T. Kearney's (2009) Global Services Location Index. Jordanian organizations are adopting ERP systems in both public and private sectors; they also present a motivating case for examining the acceptance of ERP system (Rabaai, 2009). To know the main success factors behind ERP implementation in Jordanian context, however, the researchers conducted a preliminary study. The literature review and the interview-based preliminary study of the Jordanian organizations in healthcare suggests that training, supportive leadership, ease of use and user satisfaction are the most important factors which are representative of ERP implementation success. A lack of these factors is the potential barrier to the gaining of benefits from ERP in healthcare sector. The next section will discuss the research model and hypotheses development.

3. Research model and hypotheses formulation

First of all, five components have been identified from previous research, which are training, supportive leadership, ease of use, user satisfaction and ERP implementation success. The definitions of these components are as below:

Training: training programs aim to train newly hired and current employees in the skills necessary to carry out their job smoothly (Dessler, 1994). Supportive leadership: high management support could improve internal communication and achieve effective harmonization and integration (Doll, 1985). Ease of use: it is the evaluation of the degree to which using the technology is free of effort (Davis *et al.*, 1989). User satisfaction: is the perception that a given technology will help a user complete his/her work goals (Kettinger and Lee, 1997). ERP implementation success: a set of business applications, which link various business units of an organization, such as financial, accounting, manufacturing and human resources, into a tightly integrated single system with a common platform for flow of information across the entire business in a successful way (Rabaai, 2009).

User satisfaction is affected by the training and supporting leadership (Bradford and Florin, 2003). This research explores the relationship between user satisfaction and the training, supportive leadership and ease of use when using ERP system. Training programs intend to train newly hired and existing employees in the skills required for them to carry out their process smoothly (Dessler, 1994; Alavi and Leidner, 2001). The intention of training is to improve an employee's knowledge, skills and abilities, and to change their feelings and guarantee better job performance (Masa'deh *et al.*, 2014). In addition, training can increase user satisfaction (Bradley and Lee, 2007). When enterprises start using the ERP system, superior or inferior training affects user satisfaction while operating the system. On this basis, therefore, this leads to the following hypothesis:

H1. The higher level of the training, the greater effect of user satisfaction.

In an organization, failing to take advantages of technology is mostly caused by the users; rarely does the technology itself fail (Garson, 1993). The problem of after-sale-service quality of the computer is derived from the relationship between the management, which offers the technology, and the users (employees). High management support can develop internal communication and accomplish effective coordination and incorporation. The support can further avoid complicated and complex managerial problems caused by unfairly allocating resources, in order not to harm organizational harmony and cooperation (Al-Syaidh *et al.*, 2015). This is a key factor for the development of the ERP system and executive activities, and it is clear that user participation affects user satisfaction in the use of an ERP system (Bradley and Lee, 2007; Ifinedo and Olsen, 2015). The previous studies indicate that the high management support greatly affects user's recognition of the ERP system in the process of actually using the ERP system and consequently affects the user's satisfaction. As a result, this research presents the second hypothesis as follows:

H2. The higher the level of supportive leadership, the greater influence on user satisfaction.

Ease of use refers to the user's belief that the technology in question is not easy-to-use, specifically, the extent to which the use of free technical assessment effort reaches (Davis *et al.*, 1989). If a particular part of technology or a complex system is extremely or otherwise difficult to use, it is unlikely to be used when there is an alternative way.

Thus, it is difficult to review the use of technology by the operator to be less useful under intentional conditions (Wixom and Todd, 2005; Lee and Chung, 2009; Abbasi *et al.*, 2015). As a result, the researchers formulate the following hypothesis:

H3. The higher the level of ease of use, the greater influence on user satisfaction.

There is sufficient evidence that user satisfaction affects performance (Organ, 1977). Raising staff's satisfaction makes sales members willing to learn more skills, which subsequently improves sales efficiency; hence, a positive correlation exists between user satisfaction and job performance (Bernard and Ajay, 1991). User satisfaction can also affect the variable of personal response; therefore, a significant correlation exists between user satisfaction and performance (Seashore and Taber, 1975). However, the ERP user's satisfaction is an essential key of performance since user satisfaction can manipulate the individual performance (Kositanurit *et al.*, 2006; Ifinedo and Olsen, 2015; Al-Jabri and Roztocki, 2015). As a result, this research presents a hypothesis as follows:

H4. The high level of user' satisfaction causes greater influence on ERP implementation success.

User satisfaction is always considered as a crucial variable of a mediate effect in existing literature (Zhu *et al.*, 2010; Masa'deh *et al.*, 2014). When probing into consumer behavior, customer satisfaction is a mediating factor between service quality and re-consuming. This research anticipates that user satisfaction plays a mediating-effect role among the training, supportive leadership, ease of use and ERP Implementation success factor. According to (Zhu *et al.*, 2010) the hypothesis that user satisfaction plays a mediate-effect role between training and job performance is partly supported, accounting for the fact that job performance plays a part mediate-effect role at this point, a direct relationship exists between training and user satisfaction, and a mediate relationship comes with user satisfaction as well. In addition the hypothesis that user satisfaction plays a mediate-effect role between participation through ease of use and job performance is partly supported, accounting for the fact that job performance plays a part mediate-effect role at this point, a direct relationship exists between participation and user satisfaction, and a mediate relationship comes with user satisfaction as well. In addition the hypothesis that user satisfaction plays a mediate-effect role between supportive leadership and job performance is supported, accounting for the fact that job performance plays a full mediate-effect role at this point and user satisfaction must play a mediate role between supportive leadership and job performance.

As a result, this research presents hypotheses as follows:

H5a. ERP user satisfaction plays a mediating-effect role between the training and the ERP implantation success.

H5b. ERP user satisfaction plays a mediating-effect role between the supportive leadership and ERP implementation success.

H5c. ERP user satisfaction plays a mediate-effect role between ease of use and ERP implementation success.

Furthermore this research will examine the direct effect of training, supportive leadership and ease of use on ERP implantation success, for *H6*, previous study indicated that the majority of ERP implementing companies are unlikely to structure and process compatible with the tools, structure and types of information from ERP system (Krumbholz and Maiden, 2001). In line with this fact, firms implementing ERP

are expected to reengineer their key process to support the ERP system requirement. Given that the implementation of an ERP system involves substantial change, in the company, it is confusion and errors in the adopting company. Therefore, it is very important that people are prepared to change. According to Dezdar and Ainin (2012) companies implementing ERP have to undertake additional training to fill the gap between what the firms knows and what the ERP software requires them to know. In addition *H7* discuss the direct effect of supportive leadership and ERP implementation success, so previous study conclude that when a company starts to use the ERP system, supportive leadership is very important. Not only does management support the budget, they must also respond and answer their staff's questions about the ERP system, thereby helping them to understand more. Furthermore, *H8* discuss the direct effect of ease of use and ERP implementation success, So the complexity of ERP software forces almost all enterprise staff to learn new methods of working and new tools, an organizational culture that supports opens in communications help the organizational learning process which contributes to the success of ERP system implementation through improved relation and increased communication between ERP concepts and end-users (Nah *et al.*, 2007). The hypotheses are formalized as below:

H6. The higher the level of training, the greater influence on ERP implementation success.

H7. The higher the level of supportive leadership, the greater influence on ERP implementation success.

H8. The higher the level of ease of use, the greater influence on ERP implementation success.

To sum up, based on the literature review of the ERP adoption, the above hypotheses were developed for explaining how users can be satisfied when using organizational ERP systems. Figure 1 displays the research's proposed framework.

4. Research measures, sample and data collection

The researchers developed a field survey for Jordanian healthcare users. All the research constructs were measured using closed-end seven-point Likert scale items, with scales ranging from 1 = "strongly disagree" through 4 = "neither agree nor disagree" to 7 = "strongly agree." Training (TR) variable was measured using four

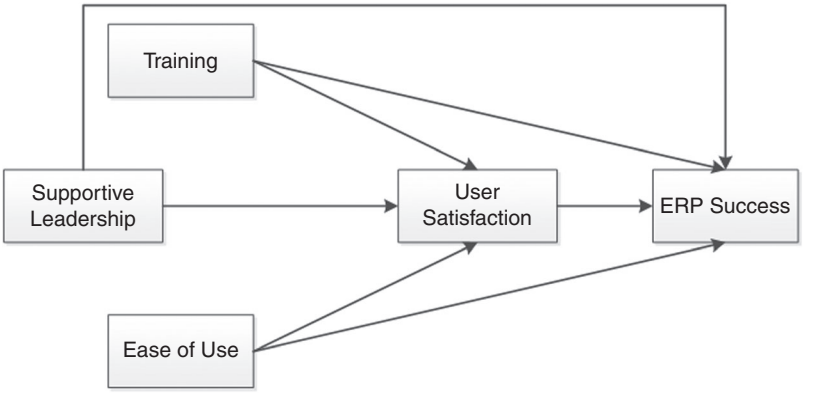

Figure 1.
Research model

items which were drawn from (Simon and Werner, 1996); supportive leadership (SL) was measured using four items which were adapted from (Doll, 1985). Easy-to-use (EF) variable was measured using four items which were drawn from (Henderson and Divett, 2003; Elkhani *et al.*, 2014). User satisfaction (US) was measured using four items were used from Kettinger and Lee (1997). ERP implementation system success (EI) was measured using four items were adapted from Sabherwal and Kirs (1994).

Four Jordanian users and three MIS academic professors are participated in a pilot test. They completed the survey in the presence of the senior authors. Then, they commented on the contents and overall appearance of the questionnaire. Modifications were made to the survey. Moreover, the researchers have chosen the country of Jordan to carry out the data collection since scholars (e.g. Awsi, 2013) called for such research in different sector; and as this may open the gate to further research opportunities. Also, according to Sekaran and Bougie (2013), the non-probability sampling designs consist of convenience sampling and purposive sampling (i.e. judgment and quota sampling); this study uses a non-probability purposive technique, it enables the researchers to choose a number of Jordanian healthcares who are using ERP system. The researchers choose this sector depending on the importance of its contribution to Jordanian economy, and its high level of development in applying information technology in general, which is appropriate for the study objectives.

The sampling method used was judgment sampling which is a type of the purposive sampling. It occurs when the researchers selected a specific organization as a unit of analysis according to some criteria previously defined. Data for this research was obtained from users of Jordanian healthcare firms. The target population of this process, which contributes to the success of ERP system research, is Jordanian healthcare companies that have implemented ERP implementation. The total number of companies stood at four companies. A total of 175 returned the survey with high response rate of 87 percent.

5. Data analysis and results

In order to examine whether the antecedents discussed above could impact ERP Implementation success on healthcare firms, a number of statistical tests were carried out. Indeed, the relationship between four antecedents and ERP implementation success were tested empirically using structural equation modeling (SEM) techniques using the Analysis of Moment Structures software package version 20. Furthermore, SEM was used as it can be divided into two sub-models: a measurement model and a structural model. While the measurement model defines relationships between the observed and unobserved variables, the structural model identifies relationships among the unobserved/latent variables by specifying which latent variables directly or indirectly influence changes in other latent variables in the model (Byrne, 2013; Hair *et al.*, 2010). Table I displays different types of goodness of fit indices in assessing our initial specified model.

Model	χ^2	df	p	χ^2/df	IFI	TLI	CFI	GFI	AGFI	NFI	RMSEA
Initial estimation	2,442.151	773	0.00	3.159	0.711	0.587	0.713	0.72	0.71	0.74	0.101
Final model	824.181	315	0.00	2.916	0.819	0.80	0.816	0.85	0.88	0.83	0.06
Minimum recommended value			0.00	1			0.80				0.05

Table I. Measurement model fit indices

Table I shows that the study constructs fits the data moderately according to the absolute, incremental and parsimonious model fit measures, comprising χ^2 per degree of freedom ratio (χ^2/df), incremental fit index (IFI), Tucker-Lewis index (TLI), comparative fit index (CFI) and root mean square error of approximation (RMSEA). Further, the researchers examined the standardized regression weights for the research's indicators and found that some indicators had a low loading toward the latent variables. In particular (TR4 = 0.382, SL2 = 0.421, EF3 = 0.375, US4 = 0.422, EI3 = 0.324). Moreover, since all of these items did not meet the minimum recommended value of factor loadings of 0.50 (Newkirk and Lederer, 2006), and because the initial fit indices were moderately fit the sample data, then they were all excluded from further analysis. Consequently, the measurement model was modified and showed a better fit to the data, although χ^2/df = 2.91 and RMSEA = 0.06 did change for the final model, the IFI = 0.819, TLI = 0.80, CFI = 0.816, GFI = 0.85, AGFI = 0.88 and NFI = 0.83 indicated better fit to the data after deleting the low factor loading items.

5.1 Analysis of the measurement model

After modifying the final measurement model for the five constructs, the next stage is to assess them for unidimensionality, reliability and validity. The results of the measurement model are presented in Table II, which summarize the standardized factor loadings, measures of reliabilities and validity for the final measurement model.

5.1.1 Unidimensionality and reliability. An examination of the unidimensionality of the research constructs is essential and an important prerequisite for establishing construct reliability and validity analysis (Chou *et al.*, 2007). According to Byrne (2013)

Constructs and indicators	Standard loading	SE	Square multiple correlation	Error variance	Cronbach's α	Composite reliability	AVE
Training					0.90	0.82	0.78
TR1	0.854	0.134	0.551	0.181			
TR2	0.898	0.128	0.781	0.052			
TR3	0.863	0.132	0.732	0.065			
Supportive leadership					0.84	0.91	0.92
SL1	0.820	0.177	0.683	0.067			
SL3	0.568	0.123	0.546	0.132			
SL4	0.769	0.121	0.716	0.059			
Ease of use					0.88	0.90	0.87
EF1	0.801	0.122	0.622	0.069			
EF2	0.751	0.125	0.544	0.155			
EF4	0.786	0.126	0.533	0.164			
Use satisfaction					0.83	0.93	0.90
US1	0.653	0.175	0.512	0.124			
US2	0.828	0.170	0.739	0.078			
US3	0.725	0.185	0.612	0.082			
ERP implementation success					0.80	0.92	0.85
EI1	0.654	0.215	0.313	0.260			
EI2	0.715	0.171	0.298	0.174			
EI4	0.692	0.182	0.464	0.116			

Table II.
Properties of the measurement model

the evaluation of unidimensionality involves the assessment of the standardized factor loadings. Table II illustrates strong evidence for the unidimensionality of the five constructs that specified in the measurement model. All values of the different parameter estimates met the minimum recommended value of 0.50 (Nelson and Cooprider, 1996). Furthermore reliability of the research scales have to be investigated to see the degree to which these scales indicate the research latent constructs. Cronbach's α and composite reliability are seen as useful tests to measure construct reliability (Hair *et al.*, 2010). Table II indicates that all Cronbach's α values for the five constructs exceeded the recommended value of 0.60 (Bagozzi and Yi, 1988) indicating that the instrument is reliable. In addition, as shown in Table II, composite reliability values ranged from 0.82 to 0.93, and were all greater than the recommended value of more than 0.70 as suggested by Hair *et al.* (2010). Consequently, according to the above two tests, all the research constructs in this study are considered reliable.

5.1.2 Convergent and discriminant validity. While convergent validity test is essential in the measurement model to verify if the indicators in a scale load together on a single construct, discriminant validity test is another essential one to verify if the items that developed to measure different constructs are certainly evaluating different constructs. As revealed in Table II, all items were significant and had loadings more than 0.50 on their underlying constructs. Also, all the item loadings were more than twice their standard error. Indeed, discriminant validity was investigated using several tests. First, it could be examined in the measurement model by investigating the shared average variance extracted (AVE) by the latent constructs. Moreover, the correlations among the research constructs could be used to assess discriminant validity by examining if there is any extreme large correlations among them which imply that the model have a problem of discriminant validity. In addition, if the AVE for each construct exceeds the square correlation between that construct and any other constructs then discriminant validity is occurred (Fronell and Larcker, 1981). As shown in Table II, all the constructs explained 50 percent or more of the variance and ranged from 0.78 to 0.92 which met the recommendation that AVE values should be at least 0.50 for each construct (Bagozzi and Yi, 1988). However, as indicated in Table III, discriminant validity was demonstrated since the AVE values were more than the squared correlations for each set of constructs. Therefore, the measures significantly discriminate between the constructs.

5.2 Analysis of the structural model

In order to test the structural model it is essential to investigate the statistical significance of the standardized regression weights (i.e. *t*-value) of the research

	TR	SL	EF	US	EI
TR	0.78				
SL	0.071	0.92			
EF	0.330	0.319	0.87		
US	0.360	0.127	0.322	0.90	
EI	0.122	0.164	0.029	0.320	0.85

Notes: Diagonal elements are the average variance extracted for each of the five constructs; off-diagonal elements are the squared correlations between constructs

Table III.
AVE and square of correlations between constructs

hypotheses at 0.005, 0.01 and 0.05 levels (see Table IV); and the coefficient of determination (R^2) for the research endogenous variables as well.

In addition, this study test the mediating effect of user satisfaction (see Table V), according to Hair *et al.* (2010) if the indirect effect is more than direct effect it can be considered as full mediator. In contrast, if indirect effect is less than direct effect, it is not considered a mediator. However, the coefficient of determination for user satisfaction and ERP implementation success were 0.30 and 0.45, respectively, indicating that the model moderately accounts for the variation of the proposed model.

6. Discussion and implication

This study contributes to the ERP implementation success literature by empirically testing a causal model including four antecedents and the mediating effect of user satisfaction on ERP implementation success. Tables IV and V indicate the path coefficient and *t*-value of each proposed path as well as direct and indirect effect of each path. The hypothesis that a positive relationship exists between training and user satisfaction stands, conforming to the hypothesis presented in this research. Indeed, *H1* was supported in the structural model. As a result, ERP system users must have useful training inside or outside the organization before starting operations in Jordanian healthcare firms in order to be familiar with the modified operation procedures as well as new terminology so that the ERP system will not frustrate them. Furthermore, the hypothesis that a positive relationship exists between supportive leadership and user satisfaction stands as well, conforming to the hypothesis presented in this research which consist with Zhu *et al.* (2010). Consequently, *H2* was supported. So, using the ERP system does not only mean that the data management of the company is advanced, but also those operational procedures for all the company's staff have advanced as well. When a company starts to use the ERP system, supportive leadership is very important. Not only does management support the budget, they must

Table IV. Summary of proposed results for the theoretical model

Hypothesis	Research proposed paths	*t*-value (CR)	Coefficient value (std. estim.)	Empirical evidence
H1	TR → US	2.124	0.101***	Supported
H2	SL → US	2.420	0.101*	Supported
H3	EF → US	2.715	0.206*	Supported
H4	US → EI	2.614	0.209*	Supported
H6	TR → EI	2.441	0.141*	Supported
H7	SL → EI	2.446	0.413***	Supported
H8	EF → EI	2.312	0.114*	Supported

Notes: *$p \leqslant 0.05$; ***$p \leqslant 0.005$

Table V. Mediating effect of user satisfaction

Hypothesis	From	Mediation	To	Direct effect	Indirect effect	Total effect	Mediating
H5a	TR	US	EI	0.170	0.030	0.2	Not mediating
H5b	SL	US	EI	0.065	0.002	0.067	Not mediating
H5c	EF	US	EI	0.003	0.032	0.035	Mediating

also respond and answer their staff's questions about the ERP system, thereby helping them to understand more. In addition to the ease of use issue, the hypothesis that a positive relationship exists between the ease of use and user satisfaction stands, conforms with the hypothesis presented in this research and the literature of Venkatesh *et al.* (2003) and Nwankpa (2015) who tested ERP system end-users across the USA and the findings suggested that ERP system usage is directly related ERP benefit, so ease of use ERP system makes users feel more familiar with input and output, specially if some users do not have fair knowledge with these systems. Accordingly, *H3* was supported. In line with previous studies, the hypothesis that a positive relationship exists between user satisfaction and ERP system implementation, conforms to the hypothesis of this research. Thus, *H4* was supported. This result also fits with the research of Kositanurit *et al.* (2006). According to the existing literature, user satisfaction in large-scale enterprises can enhance the performance in each level of organization. Surprisingly, this study found a mediating effect of user satisfaction between the ease of use and ERP implementation success; and there was no mediating effect between user satisfaction with training and supportive leadership consequently, and ERP implementation success. Thus, while *H5c* was supported; both *H5a* and *H5b* were not. The reason might be that the systems used by average SMEs are unlike the customized ones used by large-scale enterprises. In addition, the ease of use variable may play the fundamental role between ERP system and ERP implementation success more than training and supportive leadership. However, according to Rabaai (2009), low ease of use could be due to the difficulty and unfamiliarity of the interfaces, ineffective end-user education and training, inadequate user involvement and participation in the implementation, or simply user rejection of the technology. Cultures that have successfully adopted ERPs recognize the importance of adequate education and training for end-users in using the new system (Bajwa *et al.*, 2004). Arabic organizations often devalue this however, considering training end-users as an additional cost to be avoided as much as possible (Alenezi *et al.*, 2015). As a cheaper substitute to training, organizations often provide end-users with printed manuals describing the system's functionality, as happened in the majority of organizations surveyed here. While the results suggested most respondents considered the training adequate, it can be argued that the failure to provide significant resources for training purposes has seen short-term gains, but ultimately end-users ignorance and system rejection led to long-term failure. Furthermore, research could examine this more closely, since traditional Jordanian cultural attitudes to training and change management may not match the requirements for successful ERP uptake.

Furthermore, this study found a direct effect between the antecedent variables and ERP implementation success, which confirms the necessity of giving concern for user training for new technology, especially ERP system and top management must pay attention to know the accurate requirements for new technology, especially sharing decisions with users and giving good funds for this technology. Moreover, the ease of use gives more trust for ERP system use to interact and utilize this technology to decrease effort, time and cost. Consequently, *H6-H8* were supported strongly. Initially, Rabaai (2009) argued that training is significant in an ERP implementation project not only to adapt users to the new ERP system but also to help in the organizational change process. Furthermore, getting people educated/trained and keeping them informed throughout the implementation process must be addressed to achieve the benefits of an ERP system (Dorobat and Nastase, 2010). Training might be one of the factors contributing to ERP implementation failure because it requires budgeting, scheduling

and commitment from the company's side along with an experienced consultant to give the training to the end user.

7. Limitations, conclusions and future research

There are some limitations of the study. The first limitation is the utilization of the same informant for our independent, mediating and dependent variables. In addition, further researchers should think about both ERP user and ERP managers to avoid depending on a single source of information as a way of testing the research model from several perceptions. Also, results reported in this study were based on a single country, Jordan, and in turn are applicable exclusively to the Jordanian context. Thus, this raises inquiries regarding the generalizability to other cultures and different contexts. Consequently, further research is needed with regards to several countries since this would help to advance understanding of ERP implementation success issue and the conditions and outcomes of achieving it from different nationwide origins in different contexts.

All in all, although this study investigated several hypotheses and offered empirical support for the acceptance and refusal of some of these hypotheses, more generalizations on the application of the theoretical premises that developed in building the research model will be needed to enrich and building the ERP system theory. That is to say, a more generalized research model that compensates the current research limitations is required. This can be achieved by adding further impacting variables to the model and obtaining a more representative sample from different sectors. Another limitation is that the proposed conceptual model is based on the cross-sectional data from Jordanian healthcare companies. Therefore, longitudinal investigations are preferred for better implications of the ERP systems. In other words, it might be possible that examining the main constructs in this study over a longer period yield more insights into the associations among the research variables.

The current study has contributed to theory by rooting the research "causal" model and its variables in the literature of antecedents and ERP implementation success. The major focus of the current study is on user satisfaction, and its importance to the success of ERP implementation. Consequently, this study is dissimilar to most of the preceding literature, which investigated either the impact of antecedents on user satisfaction, or the impact of user satisfaction on ERP implementation success. In contrast, the current study examines an integrated model that comprises the impact of antecedents on user satisfaction and the impact of user satisfaction on ERP implementation success. It also investigates the direct impact of antecedent on ERP implementation success.

In addition, the study has contributed to practice by recommending approaches and mechanisms which would support users to accomplish and sustain ERP implementation success under several conditions. The causal model could offer firms some indication of the ways in which they can organize their IT to promote ERP implementation success. It could help them to develop their practices and mechanisms driving toward supporting interaction, training and ease of use ERP system. From this point, several initiatives can be introduced to realize ERP system. These would include an understanding and appreciation of the business managers of the information system work environment, an understanding and appreciation of the information system managers of organization requirement and paying more attention to user training. Moreover, the research model could be used by top management, academics and practitioners as an analytical instrument to help firms spot where essential progress is

missing. At the same time, the research model could be used as a practical method to identify the processes that need to be created. Furthermore, based on the above discussion, top management should agree to share responsibility for achieving ERP implementation success.

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Further reading

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