

CHAPTER (5)

CONCLUSION

5.0. Introduction

This chapter consists of six sections. In the first section, the outline of the research is explained. Section two provides the key findings of the study and discussions of the results. Results achieved are compared with those of other similar studies identified in the literature. In the third section, several recommendations are presented for successful implementation of ERP systems based on the research findings. This study resulted in several important theoretical contributions which are presented in the next section. The fifth section offers a number of significant managerial contributions. Several limitations to this study are highlighted in the sixth section. The last section suggests further areas of research directions that might be useful to build on this study.

5.1. Summary of Research

The fundamental aim of this research was recognizing the critical factors associated with the ERP implementation success. The study developed the following four main research questions:

Question (1): What are the critical factors that affect the success of ERP implementation?

Question (2): Why are these factors critical for successful ERP implementation?

Question (3): How does the organizational culture of an ERP adopting company moderate the relationship between critical factors and ERP implementation success?

Question (4): How can ERP systems be implemented successfully?

This research tried to supply answers to the above mentioned questions by completing the following research objectives:

Objective (1): To determine the critical factors that affect the success of ERP implementation.

Objective (2): To analyze the relationship between critical factors and ERP implementation success.

Objective (3): To evaluate the moderating effect of organizational culture on the relationship between critical factors and ERP implementation success.

Objective (4): To investigate how ERP systems can be implemented successfully.

Based on content analysis of the literature, 17 ERP CSF (independent variables) and 11 ERP success measures (dependent variables) were identified. To consider the ERP implementation context in Iran, six key individuals involved in the ERP implementation projects in Iran were consulted. These people were the elite of ERP implementation project managers, ERP consultants, and ERP vendors' representatives. Hence, the proficiency of the individuals representing the state of the art knowledge in a wide range of ERP implementation projects. The researcher provided the six ERP experts with an alphabetized list of 17 ERP implementation critical success factors and 11 ERP success measures that were gleaned from an exhaustive study of the literature pertaining to this topic. The six ERP experts were asked to rank order 17 CSFs and 11 ERP success measures according to

their importance to the ERP implementation practice in the context of Iran. The expert judgments were accumulated in a frequency table so that a composite ranked list was determined. Table (2.14) lists the ERP implementation critical success factors and success measures as selected by the six ERP experts. Detailed analysis of the responses showed that seven different ERP implementation success factors were listed as the most important success factors by the six ERP experts. In addition, two highest frequent success measures were picked up and included in the research framework.

Prior research has been fragmented. Most of the studies employed just one or two characteristics of CSFs in their research (Zhang et al., 2005). In this research, a holistic view of the ‘Organizational, Project, and ERP system’ was considered. Based on the findings in the literature survey and also considering the experts’ judgments about the exclusive environment of ERP implementation in Iran, the final independent and dependent variables were chosen to develop the research framework. The research framework consisted of six independent variables: ‘enterprise-wide communication, business process reengineering, ERP project management, ERP team composition and competence, ERP system quality, and ERP vendor support’. In addition, ‘organizational culture’ as a main difference between developed and developing nations has been overlooked in prior studies (Al-Mashari et al., 2003; Motwani et al., 2002; Yusuf et al., 2004 ; Zhang et al., 2005). Many problems that have led to the failure of ERP implementation have occurred when trying to adopt Western-developed IT applications in many organizations in developing countries (Al-Mashari & Zairi, 2000; Al-Mashari et al., 2006; Rasmy et al., 2005; Soh et al., 2000; Zhang et al., 2005). Therefore, organizational culture was considered as one of variables in this study. Based on the findings of research conducted in another developing countries i.e. Malaysia (Nah et al., 2007; Ramayah et al., 2007) and South Korea (Hong &

Kim, 2002), organizational culture was considered as a moderator variable which moderates the effects of critical success factors on ERP implementation success.

Moreover, using the best measure for evaluating ERP implementation success has been the major concern for researchers. According to the content analysis conducted in the literature review, ERP implementation success was defined based on two dimensions, i.e. organizational impact and user satisfaction. It evaluates optimal success from the business and user perspectives. These criteria are also in line with the prior studies conducted in ERP implementation success (Bradford & Florin, 2003; Hsu et al., 2008; Kim et al. 2005; Nah et al., 2007; Sawah et al., 2008; Zhang et al., 2005). The theoretical bases for this study include DeLone and McLean's (2003) success model combined as well as prior ERP implementation literature as the basis for critical success factors. Consequently, based on content analysis of the literature and expert judgment of several ERP experts, the research framework of this study was formulated.

The target population of the study was Iranian companies that had implemented ERP systems in their organizations. An ERP implementing company was defined as one that has implemented at least two basic modules of the ERP system. Besides, the ERP systems implemented should have gone live for no more than three years for the reasons of employee change and the difficulty of remembering past implementation processes. Unluckily, the target population of ERP user companies in Iran was unidentified. Instead, a variety of sources were utilized to make a complete list of ERP user companies in Iran. A list of 68 ERP adopting companies was determined at the beginning. But after contacting the CIOs of the mentioned companies, the final list decreased to 31 ERP user companies. Since this study aimed to examine ERP implementation success in Iranian firms and critical factors affecting it, only key organizational informants including operational /functional/ unit managers were selected as respondents.

A survey questionnaire was employed to collect data for this study. Items employed in the operationalization of the constructs were adopted from relevant prior research. A seven-point Likert-type scale with anchors ranging from 'strongly disagree' to 'strongly agree' was utilized to measure all question items. The questionnaire consisted of four sections. In section one, there was an introduction which disclosed the identity of the researcher and conveyed the purpose of the survey. It assured the confidentiality of the information provided by respondents and ended on a courteous note, thanking the respondent for taking time to respond to the survey. In section two, a range of demographic data such as age, gender, level of education, ERP usage period, and ERP usage frequency was presented. In section three, 53 questions were provided to tap the elements of the constructs. Finally, the questionnaire included at the end an open-ended question allowing respondents to comment on topics that might not have been fully or adequately covered.

The content validity of the questionnaire was examined through the three following steps as recommended by Cavana et al. (2001). First, the origins or history of each of the items was reported. All questionnaire items had been used and verified by prior researchers. But as a combination of these items was being used, additional validity assessment was needed which is described in the following paragraphs. Second, a further test of content validity was conducted by sending the questionnaire to a group of ERP experts. From the literature review, 28 well-known ERP researchers who published frequently in prominent IS journals were chosen. The problem statement, research objectives, research questions, research framework and questionnaire were sent to them via e-mail. Five of the ERP researchers sent back an e-mail and all confirmed the research framework and questionnaire set. Third, the English questionnaire was translated into the Persian language which was the medium of communication of the respondents. Then, the Persian questionnaire was given to six experts involved in ERP implementation projects in Iran. They were asked to review the

questionnaire separately and let the researcher know of any changes needed. Based on the suggestions of the ERP experts, 32 changes were made in the wording and format of questionnaire. In addition, five items were removed from the questionnaire and one item added to the demographic data. Finally, the modified Persian questionnaire was translated back into English. This was done to ensure that the process of translation was consistent and the Persian and English versions of the questionnaire were as similar as possible.

To ensure the reliability of the questionnaire, a pilot study was conducted and 37 completed questionnaires were collected. The data were tested using the SPSS software 16.0. It was found that the Cronbach alpha values for all the variables were above 0.7, implying that the questionnaire was reliable as recommended by Hair et al. (2006).

After that, the researcher held discussions with the ERP project managers or chief information officers (CIO) of ERP user companies. They were asked to identify a liaison person. Then, in several companies a meeting with the liaison person was arranged to describe the method of distributing, completing and also collecting the completed questionnaires. For the remaining companies, the liaison person was negotiated with via telephone. The liaison persons were also asked to indicate the number of the operational /functional /unit managers who use ERP systems in their companies. Five hundred and sixty-two were identified. After confirming the number for each company, the questionnaires were distributed. On average, three rounds of follow-up were carried out using telephone and email. After constant reminders, 411 completed questionnaires (73%) were collected. The questionnaires were evaluated and 27 questionnaires were left out as they were incomplete. Hence, only 384 questionnaires were selected for subsequent analysis.

In the data analysis stage, the first part involved the use of descriptive statistics to show the frequencies and percentages of the demographic data. The second part of the analysis

examined the effects of CSFs on ERP implementation success, using structural equation modeling (SEM). The SEM analysis was employed with the two-step methodology proposed by Hair et al. (2006). According to this method, after the model has been tailored to form the best measurement model, the structural equation model can be evaluated.

In the first step of SEM analysis, each latent variable was modeled as a separate measurement model whereby the measurement model relates the observed variables (items) to their relevant latent variable. To check model fit indices for each construct, the items were then submitted to a measurement model analysis. Hair et al. (2006) suggested that to provide sufficient unique information to evaluate a model, it is required to report the chi-square (χ^2) value and degrees of freedom, comparative fit index (CFI), and root mean square error of approximation (RMSEA). Some of the initial model fit indices demonstrated a non reasonable fit. So, based on the modification indices, further model modification was set.

Supplementary analyses were carried out to evaluate the psychometric properties of the scales. Convergent validity was evaluated with three measures: factor loading, composite construct reliability, and average variance extracted. The outcomes of convergent validity indicated that the entire factor loadings of the items in the measurement model were greater than 0.70 and each item loaded significantly on its original construct ($p < 0.01$ in all cases). Besides, the composite construct reliabilities were within the generally recommended range of greater than 0.70. Lastly, the average variances extracted were all higher than the accepted level of 0.50. Therefore, all constructs had adequate convergent validity as recommended by Hair et al. (2006). In addition, to confirm discriminant validity for all constructs in the research framework, the average variance shared between the construct and its indicators should be larger than the variance shared between the construct and other constructs (Hair et al., 2006). The outcomes of the discriminant validity test showed that all

constructs shared more variances with their indicators than with other constructs. Hence, the constructs were discriminated enough as suggested by Hair et al. (2006).

Confirmatory factor analysis (CFA) was conducted using AMOS 16.0. The overall effectiveness of the measurement model was studied employing common model fit measures: normed χ^2 , comparative fit index (CFI), and root mean square error of approximation (RMSEA). The CFA results indicated a ratio of CMIN/DF to be 2.659. In addition, the CFI reported for the measurement model was 0.919. Besides, the RMSEA reported for the measurement model was 0.066. All of the fit indices met the acceptable thresholds for a reasonable fitting model, thus suggesting that the measurement model possesses an acceptable fit as proposed by Hair et al. (2006).

In the second step of SEM analysis, the proposed structural model was examined. The maximum likelihood method was employed to estimate all parameters and fit indices. SEM fit indices assess whether the covariance matrix derived from the hypothesized model is different from the covariance matrix resulting from the sample. The SEM package AMOS 16.0 was used to test the relationships hypothesized by the research model. Based on the results of the SEM fit indices, the proposed model provided an acceptable fit for the data. The RMSEA was below the recommended cut off of 0.08 and the CFI was greater than 0.90. Using structural equation modeling and hypotheses testing on the proposed model, it was found that 10 of the 12 hypothesized relationships (Hypotheses 1, 3, 4, 5, 6, 7, 9, 10, 11 and 12) were significant, while two hypotheses were not significantly supported (Hypotheses 2 and 8).

5.2. Summary of Findings

This study developed and empirically tested a model for ERP implementation success in the context of a developing country, namely Iran. An attempt was made to identify the critical factors that are likely to influence the successful implementation of ERP systems. Also, a framework for evaluating the ERP implementation projects was developed. The proposed model analyzed the relationships between six independent variables, i.e. Enterprise-Wide Communication, Business Process Reengineering, Project Management, Team Composition and Competence, ERP System Quality, and ERP Vendor Support with ERP Implementation Success as the dependent variable. In addition, the moderating effect of Organizational Culture on the above mentioned relationships was examined.

Using structural equation modeling and hypotheses testing on the proposed model, it was found that 10 of 12 hypothesized relationships (Hypotheses 1, 3, 4, 5, 6, 7, 9, 10, 11 and 12) were supported, while two hypotheses relationships (Hypotheses 2 and 8) were not significantly supported. The results of the data analysis showed that five critical factors out of six had a significant relationship with ERP implementation success. Enterprise-Wide Communication, Project Management, Team Composition and Competence, ERP System Quality, and ERP Vendor Support were found to have a significant relationship with ERP Implementation Success. However, the Business Process Reengineering was found to have no significant relationship with ERP Implementation Success. Moreover, the results illustrated that Organizational Culture had a moderating effect on the relationships between Enterprise-Wide Communication, Project Management, Team Composition and Competence, ERP System Quality, and ERP Vendor Support with the dependent variable of ERP Implementation success. These findings will be discussed in detail in the following sections. Table (5.1) illustrates the hypotheses tested in terms of the way in which they affected the answers to research questions and objectives.

Table (5.1) Summary of Research Findings

Research Questions	Research Objectives	Research Hypotheses	Research Findings	Prior Research Findings
What are the critical factors that affect ERP implementation success?	To determine the critical factors that affect ERP implementation success.	-	17 CSFs were determined (Table 3.8)	More than 70 percent harmony between findings of prior research and this study (Table 3.8)
Why are these factors critical for successful ERP implementation ?	To analyze the relationship between critical factors and ERP implementation success.	H1: Enterprise-Wide Communication (EWC) positively related with ERP Implementation Success (SUC).	Supported	Al-Mashari et al., 2006; Chien et al., 2007; Colmenares, 2004; Nah et al., 2007; Ramayah et al., 2007; Sedera & Dey, 2006
		H2: Business Process Reengineering (BPR) positively related with SUC.	Not Supported	Correa & Cruz, 2005; Kamhawi, 2007; Liang & Xue, 2004; Reinhard & Bergamaschi, 2001; Zhang et al., 2003
		H3: Project Management (PRM) positively related with SUC.	Supported	Chien et al., 2007; Colmenares, 2004; Kamhawi, 2007; Nah et al., 2007; Sawah et al., 2008; Sedera & Dey, 2006; Zhang et al., 2003
		H4: Team Composition and Competence (TCC) positively related with SUC.	Supported	Chien et al., 2007; Colmenares, 2004; Huang et al., 2004; Ramayah et al., 2007; Sedera & Dey, 2006; Wang et al., 2008
		H5: ERP System Quality (SYQ) positively related with SUC.	Supported	Chen & Liu, 2008; Fan & Fang, 2006; Kamhawi, 2007; Kerimoglu et al., 2008; Uzoka et al., 2008; Zhang et al., 2003
		H6: ERP Vendor Support (VES) positively related with SUC.	Supported	Colmenares, 2004; Guang-hui et al., 2006; Ramayah et al., 2007; Sedera & Dey, 2006; Uzoka et al., 2008; Zhang et al., 2003
How does the organizational culture of an ERP adopting company moderate the relationship between critical factors and ERP implementation success?	To evaluate the moderating effect of organizational culture on the relationship between critical factors and ERP implementation success?	H7: Organizational Culture (ORC) moderates the relationship between EWC and SUC.	Supported	Nah et al., 2007; Ramayah et al., 2007
		H8: ORC moderates the relationship between BPR and SUC.	Not Supported	Hong & Kim, 2002
		H9: ORC moderates the relationship between PRM and SUC.	Supported	Nah et al., 2007
		H10: ORC moderates the relationship between TCC and SUC.	Supported	Nah et al., 2007; Ramayah et al., 2007
		H11: ORC moderates the relationship between SYQ and SUC.	Supported	Hong & Kim, 2002
		H12: ORC moderates the relationship between VES and SUC.	Supported	Ramayah et al., 2007
How can ERP systems be implemented successfully?	To investigate how ERP systems can be implemented successfully?	-	Several recommendations were presented (Section 6.3)	-

5.2.1. Enterprise-Wide Communication

The findings of this study supported the proposed hypothesis (H1) that there is a positive relationship between Enterprise-Wide Communication (EWC) and ERP Implementation Success (SUC). When the communication among stakeholders increases, so too does the level of ERP Implementation Success. As can be seen in Appendix (E), the relative impact of EWC on SUC is the lowest (standardized regression weight = 0.170) compared with the others variables in the proposed model. This implies that communication among management, the ERP project team, the ERP vendor or consultant, and ERP users is relatively critical for implementing ERP systems in Iranian companies. This finding is consistent with the outcomes of studies conducted in western countries like the USA (Amoako-Gyampah & Salam, 2004; Kim et al., 2005; Mabert et al., 2003). More notably, the result of this research shows consistency with the findings of prior research carried out in developing countries like middle east countries (Al-Mashari et al., 2006), South-Asia (Sedera & Dey, 2006), China (Chien et al., 2007), Malaysia (Nah et al., 2007; Ramayah et al., 2007), Taiwan (Chien et al., 2007), Venezuela (Colmenares, 2004) and Mexico (Garcia-Sanchez & Perez-Bernal, 2007).

5.2.2. Business Process Reengineering

Business Process Reengineering (BPR) was hypothesized (H2) to be positively correlated with ERP Implementation Success. However, the hypothesized relationship was not supported. As can be seen in Appendix (E), its impact on SUC is not significant (standardized regression weight = -0.171). This implies that reengineering the process to be aligned with ERP systems is not critical for successful ERP implementation in Iranian companies. This result is not consistent with the findings of prior research conducted in developed countries such as Australia (Grabski & Leech, 2007), Canada (Peslak, 2006),

and the USA (Mabert et al., 2003; Peslak, 2006; Stratman & Roth, 2002; Sun et al., 2005; Umble et al., 2003). But the finding highlights the outcomes of the majority of studies conducted in developing nations, that found no significant relationship between BPR and SUC, especially in the Middle-east region like Bahrain (Kamhawi, 2007), in Latin America such as Brazil (Reinhard & Bergamaschi, 2001) and Chile (Correa & Cruz, 2005), and in China (Liang & Xue, 2004; Zhang et al., 2003).

5.2.3. Project Management

The results of this study supported the proposed hypothesis (H3) that there is a positive relationship between Project Management (PRM) and ERP Implementation Success. As can be seen in Appendix (E), its relative impact on SUC is the highest (standardized regression weight = 0.313) compared with the other variables in the proposed model. This result shows that the effect of PRM on ERP implementing success is more important than the other four factors (SYQ, VES, TCC and EWC). This means that setting up an effective project management is the core determinant of successful ERP implementation in Iranian companies. This result not only supports the findings of previous research in western countries like Australia (Grabski & Leech, 2007), and the USA (Bradley, 2008; Ferratt et al., 2006; Umble et al., 2003), but also confirms the results of research conducted in developing countries such as Middle-East countries (Al-Mashari et al., 2006), Bahrain (Kamhawi, 2007), Egypt (Sawah et al, 2008), Turkey (Kerimoglu et al., 2008), South-Asia (Sedera & Dey, 2006), China (Chien et al., 2007; Guang-hui et al., 2006; Zhang et al., 2003), Taiwan (Chien et al., 2007), Malaysia (Nah et al., 2007), Venezuela (Colmenares, 2004), Mexico (Garcia-Sanchez & Perez-Bernal, 2007) and Poland (Soja, 2006).

5.2.4. Team Composition and Competence

The findings of this study supported the proposed hypothesis (H4) that there is a positive relationship between Team Composition and Competence (TCC) and ERP Implementation Success. As can be seen in Appendix (E), the relative impact of TCC on SUC is the second highest (standardized regression weight = 0.304) compared with the others variables in the proposed model. This means that ERP composition and competence of the ERP team is critical for the success of ERP. The result shows that the effect of TCC on SUC for adopting organizations is more important than the other three factors (VES, SYQ and EWC). The results of previous research in developed nations like Australia (Shanks et al., 2000), Canada (Kumar, Maheshwari, and Kumar, 2003; Peslak, 2006), the UK (Loh & Koh, 2004), and the USA (Barker & Frolick, 2003; Bradley, 2008; Ehie & Madsen, 2005; Ferratt et al., 2006; Muscatello, Small, & Chen, 2003; Nah & Delgado, 2006; Nah et al., 2003; Peslak, 2006; Somers & Nelson, 2004; Stratman & Roth, 2002; Sumner, 2006; Sun et al., 2005; Umble et al., 2003) validate the finding of this study. Moreover, the results of research conducted in developing countries such as Middle-East countries (Al-Mashari et al., 2006), South-Asia (Sedera & Dey, 2006), Singapore (Pan et al., 2008), Taiwan (Chien et al., 2007; Huang et al, 2004; Wang et al., 2008), China (Brown & He, 2007; Chien et al., 2007; Shanks et al., 2000; Woo, 2007; Yusuf et al., 2006), Malaysia (Ramayah et al., 2007), Poland (Soja, 2006), Venezuela (Colmenares, 2004) and Mexico (Garcia-Sanchez & Perez-Bernal, 2007) support the finding of the current study.

5.2.5. ERP System Quality

The findings of this study supported the proposed hypothesis (H5) that there is a positive relationship between ERP System Quality (SYQ) and ERP Implementation Success. As can be seen in Appendix (E), the relative impact of SYQ on SUC is 0.208 (standardized

regression weight). The finding affirms that the ERP implementation success tends to be rated highly when a high-quality ERP system is implemented. The finding of the current study is consistent with results of studies conducted in developing countries such as Bahrain (Kamhawi, 2007), Turkey (Calisir & Calisir, 2004; Kerimoglu et al., 2008), China (Chen & Liu, 2008; Zhang et al., 2003; Zhang et al., 2005), Taiwan (Fan & Fang, 2006), Botswana (Uzoka et al., 2008) and Poland (Soja, 2006).

5.2.6. ERP Vendor Support

The findings of this study supported the proposed hypothesis (H6) that there is a positive relationship between ERP Vendor Support (VES) and ERP Implementation success. As can be seen in Appendix (E), the relative impact of VES on SUC is 0.232 (standardized regression weight) compared with the other variables in the proposed model. This means that ERP support activities are critical for the successful implementation of ERP systems in Iranian companies. The results of previous research in developed nations like the USA (Dowlatshahi, 2005; Muscatello & Chen, 2008; Plant & Willcocks, 2007) and in developing countries such as Middle-East countries (Al-Mashari et al., 2006), South-Asia (Sedera & Dey, 2006), China (Guang-hui et al., 2006; Zhang et al., 2003), Malaysia (Ramayah et al., 2007), Estonia (Ifinedo, 2008), Poland (Soja, 2006), Venezuela (Colmenares, 2004) and Botswana (Uzoka et al., 2008) support the finding of the current study.

5.2.7. Organizational Culture

The results of this research confirmed the hypotheses (H7), (H9), (H10), (H11) and (H12) that state that organizational culture (ORC) moderates the relationship between EWC, PRM, TCC, SYQ, VES as independent variables and ERP implementation success

(SUC) as the dependent variable. However, the hypothesis (8) which states that ORC moderates the relationship between BPR and SUC was not supported. These findings are in harmony with the findings of prior research in other developing countries (Hong & Kim, 2002; Nah et al., 2007; Ramayah et al., 2007).

Some of our findings are similar to prior studies; mostly because Iranian companies have used ERP systems of international vendors which have similar features, quality, and implementation procedure in all countries. For the case of differences, it may occur because of the differences in national and organizational culture, government rules and regulations, and special processes of ERP adopting companies.

While the results of this study were mostly similar to the findings of previous studies, however, this research examined CSFs of ERP implementation using an integrated framework whereas prior studies looked at these CSFs separately. The majority of the prior researchers have used just one or two aspects of ERP implementation success in their studies (Zhang et al., 2005) whereas this study developed and used a comprehensive model of ERP implementation success including organizational, ERP project, ERP system and organizational culture related factors.

The outcomes of this research were generally dissimilar to the results of prior research on the CSFs of other type of information systems. Several recent studies reviewed which investigated the CSFs of Decision Support Systems (DSS), Executive Information systems (EIS) and other type of information systems. As can be seen in Table (5.2), in most cases the CSFs of ERP systems are not applicable for other type of information systems. This difference has been mentioned and confirmed by earlier studies. ERP systems vary from other information systems in many ways, such as scope, scale, complexity, project costs, the need for business process re-engineering, and organizational change (Somers & Nelson, 2001; Klaus et al., 2000). The ERP implementation consists of operational, technological,

managerial, strategic, and organizational related elements (Yu, 2005; Markus & Tanis, 2000). ERP implementation should be considered as an organizational transformation, not as a big information technology project (Wood & Caldas, 2001).

Table (5.2) Comparison ERP CSFs with other Information Systems CSFs

No.	Critical Success Factors	Decision Support Systems		Executive Information Systems		Information Systems	
		Jarupathirun & Zahedi (2007)	Hartono et al. (2007)	Salmeron & Herrero (2005)	Hartono et al. (2007)	Lu et al. (2006)	Hwang et al. (2004)
1	Enterprise-wide communication	N.A.	N.A.	N.A.	N.A.	+	N.A.
2	Business process reengineering	N.A.	N.A.	+	N.A.	+	N.A.
3	Project management	N.A.	N.A.	N.A.	N.A.	+	N.A.
4	Team composition and competence	N.A.	N.A.	+	N.A.	+	+
5	ERP system quality	+	+	+	+	N.A.	N.A.
6	ERP vendor support	N.A.	N.A.	N.A.	N.A.	N.A.	+
7	Organizational culture	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

5.3. Recommendations for Successful ERP Implementation

Based on the findings from this study, this section presents several recommendations for successful implementation of ERP system, as follows. These recommendations have not been in place in the Iranian companies as the researcher has already discussed with the Iranian ERP experts what is available in Iran.

5.3.1. Enterprise-Wide Communication

The decision to implement ERP software usually comes from top managers of an organization because adopting and implementing an ERP system is an expensive and time consuming project. For that reason, once managers decide to implement an ERP system, they must communicate with all stakeholders inside and outside the organization and clarify

and justify their decision. Finding and presenting the business justification for the ERP implementation project is not difficult. The most vital issue is how this justification should be explained to subordinate staff so that they cooperate with the implementation process and not resist the changes that will take place. So, ERP system implementation needs greater amounts of communication than other information system projects. There are many unknowns in an environment of implementing ERP systems and as Al-Mashari and Zairi (2000) stated, the enhanced communication can reduce unnecessary anxiety and lead to greater acceptance of these unknowns. Internally, the company's employees should be aware of the purpose of implementing ERP and the benefits of this system. They are supposed to be informed how ERP system would influence their job and how ERP software benefits them. The ERP project team and consultants are responsible for communicating the progress of implementation to the staff. With effective communication, employees have a prearranged method to find out what is going on with the organization. Moreover, the company's customers and suppliers should be regularly informed so that they know what is happening in the ERP implementation project.

In addition, the ERP system implementation enforces a lot of changes in the business processes. One of the major facilitators for process change is communication. Effective communication will enable the development of reliance and exchange of information necessary for these changes and, finally, the process of technology acceptance. In their implementation of ERP, some companies established broad internal communication channels comprising newsletters, focus groups, web-based archives and e-mail to answer questions about the implementation project and to keep people informed about the latest developments. Maintaining an open information policy during the ERP implementation project is the best way to avoid communication breakdowns. To support this policy, an e-mail system can be employed, but it is necessary to discuss serious problems on the phone

or, rather, face to face. A coordinated communication plan is an effective method which is absolutely necessary to clarify the objectives, benefits, timelines, and popular ideas to all stakeholders at various levels of the organization. Moreover, a proper communication plan should be put in place to keep senior management informed of ERP project progress, impact, risks, and challenges, as Muscatello and Chen (2008) confirmed. The communication plan must detail a number of issues, including demonstration of appropriate software modules, the rationale for the implementation of ERP, briefing strategies and the tactics of the change management, details of the change management of business processes, and the setting up of contact points.

To sum up, ERP adopting companies should set up enough communication channels, such as meetings, notes, newsletters, demonstrations, and roadshows to keep the various stakeholders informed. All stakeholders should be informed about the goals/ objectives/ purposes of the ERP implementation, the progress of the project, and the changes made in the project. Furthermore, useful communication should be facilitated between project team members and ERP users (functional units) to get the users' expectations, requirements, comments, reactions and approval at every level of the implementation project. In addition, efficient communication should be organized among functional departments and units inside the company to keep each other informed at all times. Moreover, the ERP implementing company should not overlook their customers and suppliers in their communication plan.

5.3.2. Business Process Reengineering

From the Social Shaping of Technology (SST) theory perspective (Williams & Edge, 1996), an ERP system is the result of social processes in a unique cultural background, the source of the system. Incorporated in any ERP software is a collection of assumptions,

rules, values, and practices which reflect the requirements of the social context of the ERP vendor. Therefore, the selection of a particular ERP system is acceptance of all stabilized social aspects fixed in the software which reveals a corporate culture viewpoint about how works should be carried out. Several prior studies have emphasized that the popular ERP software designed by developed countries cannot meet the requirements of other enterprises in developing countries, as mentioned by Ngai et al. (2008). When companies in a social context implement ERP software developed in a different social context, they will face misfit problems. Several ERP implementing companies in Asia have experienced similar problems of misfit (Liang, Xue, Boulton, & Byrd, 2004).

In addition, the ERP systems presented by international vendors replicate practices of the U.S. or European industries. Although Western management practices and philosophies have shaped business practices of Asian companies, many of the practices are still unique. Western practices generally need formalized information and working processes. However, these processes are often incompatible with the exclusive practices of many Iranian firms. Western ERP systems cannot provide many requirements of Iranian companies such as the report formats required by the government, Persian user interfaces, and so on. Iranian social practices and cultural values differ noticeably from Western practices (Moghadam & Assar, 2008). Iranians have diverse ways of doing business and there is a misalignment between current business processes and ERP processes.

Organizational fit of the ERP system is essential to the success of the ERP system. To ensure a close match between the ERP adopting organization and the ERP system, companies should cautiously choose the ERP software that corresponds closely to its business process. Given that it is almost impossible to obtain a 100 percent match between business requirements and an ERP system, the implementing company can either modify the ERP system (software adaptation) to adapt to its processes or modify its processes to

adapt to the ERP system (organizational adaptation). ERP adopting companies in Iran started reengineering business processes to align them with ERP requirements. However, they came across two main limitations when conducting BPR. First, Iranian companies have no background and experience in process management orientation and BPR activities. Moreover, the lack of experience of the BPR consulting companies created serious obstacles for process reengineering in Iranian organizations. Second, there were so many Iranian governmental rules and regulations which could not be modified or removed. Many BPR projects in Iran have failed to produce acceptable results due to legal and management obstacles as confirmed by Tarokh, Sharifi, and Nazemi (2008). Consequently, Iranian ERP adopters shifted to customize the ERP systems, even though it took more time and budget. ERP system Customization is an effort to overturn the vendor's preferences, resulting in new software that represents a diverse set of viewpoints about how work should be performed in the user environment.

Based on the study's findings and the above discussion, several suggestions are made to the ERP adopting companies and ERP vendors:

First, because of government standards and exclusive business conditions, the companies have to meet the business practices of their respective country. So, ERP systems may not be able to meet some of the unique requirements of the adopting companies such as different practices, data, and outputs. Any successful ERP project needs a match between the organizational processes and ERP system. Therefore, the ERP implementing company should assess and select ERP software cautiously. The selection of a suitable ERP system is an important step but both a time-consuming and challenging process. Companies intending to select ERP software must have a detailed requirements plan. A thorough assessment of the ERP system features before selecting the ERP vendor is necessary. The first main criterion of an adopting company is to choose ERP software that fits well with its

local requirements. The ERP system should be compatible with existing business processes to minimize the BPR needs. Another important principle when selecting ERP software is flexibility. The adopting company should select a suitable ERP vendor that is able to offer an ERP system with maximum flexibility. In addition, it is also vital for the adopting organization to select those ERP systems that are easy to customize. In such cases, the time and money spent on modification can be minimized.

Second, the Iranian and Western cultures perceive the drastic changes related with BPR in a different way. Unlike Western culture, Iranian culture is more reactive, past-oriented, and unwilling to make organizational changes (Javidan & Dastmalchian, 2003). Iranian executives and staff are not prepared for such an enormous transformation. BPR practices can cause damage to Iranian firms, rather than raising the level of management of these companies and their effectiveness. Convincing Iranian companies to abandon the processes they have put in place and implement a set of new unfamiliar procedures would be a great challenge. It argues that any organizational change must be achieved step by step by using a milder changing strategy such as business process improvement. Business process reengineering is known as a revolutionary method that calls for radical rethinking and the renovation of the current business processes. On the contrary, business process improvement involves evolutionary and milder changes, and consequently, it would have a less drastic impact on the current processes of the organization, as confirmed by Davenport and Stoddard (1994). As a result, following business process improvement approaches is a more suitable reengineering effort in the context of Iranian companies.

Third, various governmental regulations and the legal context of countries force the companies to have country-specific requirements. So, ERP vendors should prepare themselves to deal with problems of the environment in which their ERP software is implemented. The international ERP vendors should localize their ERP systems to reflect

the characteristics of local management. Localization of ERP software means that development of the system fits the requirements of the user's context. The requirements usually depend on country, language, and cultural codes. The business processes in Iranian companies have developed in a diverse regulatory and cultural context, as confirmed by Moghadam and Assar (2008) and they are expected to be different from business models embedded in international ERP systems. As a result, international ERP vendors which intend to penetrate Iran's ERP market should incorporate the Iranian culture into their ERP software. The international ERP vendors are recommended to hire Iranian software engineers and business analysts to improve their ERP products.

5.3.3. Project Management

ERP implementing companies in Iran must have a strategy for effective project management to oversee the process of implementing ERP to avoid overspending and ensure the implementation follows the timetable. Implementing an ERP system is a set of difficult actions which often requires about two years of constant effort and engages all business units. If ERP implementing companies do not comprehend the fundamentals of project management, they will be at risk. In an ERP implementation project, there are some areas that need consideration, such as scope, integration plan, time, quality, cost, human resource, risk, communication, and procurement. The ERP implementation project will be successful if its project management can organize and balance all of the factors properly.

To achieve successful ERP implementation, Iranian firms should assign considerable time prior to starting the implementation to prepare a project plan. A project plan is crucial because a company must develop a comprehensive plan early and predict the costs and time of the project. The ERP implementation plan provides a guide throughout the project and helps the project team to maintain the right focus on the objectives and aims of

implementation. The ERP project plan is employed to steer the implementation of the project, to ensure easy communication between ERP project team members, and to describe management comments on the amount of achievement and schedule. A best practice project plan would cover the project schedule and plans, risk management, and monitoring and feedback, as suggested by Al-Mudimigh et al. (2001).

In sum, ERP adopting companies should clearly establish the ERP implementation project scope and control it throughout the project. The company is required to assess all requests for scope expansion of the ERP project carefully prior to approving them. Moreover, the company should provide and set up a detailed project plan with clear objectives, deliverables, realistic project milestones and end-dates and enforce them with measurable results. The next important effort is to establish the project team and their responsibilities with a clear statement of work and define the performance objectives to coordinate and organize the project activities properly across all different parties involved. Furthermore, it is vital for ERP implementation to assess the project progress on a periodic basis. A formal management process is also needed to track and monitor the vendor's/ consultant's activities and communications. Lastly, the project manager/ project management team should be empowered to manage all aspects of the project, including balancing the business, technical, and change management requirements.

5.3.4. Team Composition and Competence

An ERP implementation project involves all functional units within a company. This project requires the cooperation and effort of end users, business professionals and technical experts. ERP adopting firms generally allocate some of their best workforce to the team implementing ERP. A cross-functional and balanced team must be selected and provided with clear definitions of responsibilities. The ERP project team is supposed to be

composed of business and IT specialists from an external consultant or from within the adopting organization. Using a combination of the company's employees and consultants to work jointly in the ERP project team will allow internal personnel to develop the technical expertise required for the implementation of the ERP system. ERP implementation teams must be multidisciplinary and dedicated teams, which normally include IT experts, operations staff and key users, and consultants with proficiency in managing change and restructuring the business process. It is crucial to form an ERP team which has a balance of skills ranging from management skills, internal and external professionals, IT competencies, to a thorough knowledge of procedures. These technical and business skills of the ERP project team will contribute to the successful implementation of the ERP system. The knowledge and expertise of the ERP project team are vital in providing know-how in the areas where the implementing company requires knowledge. Lastly, the key members of the ERP project are required to be empowered in order to be able to make fast and valuable decisions.

To sum up, ERP adopting companies should assign a well experienced and reputed project champion/ manager who is committed to the ERP project. Also, an ERP implementation team should be established by selecting members from a variety of balanced and cross-functional staff and external consultants. In addition, the ERP implementation team should be chosen from people with the best business (domain knowledge) and technical IS knowledge. Moreover, the team members are needed to work full-time on the ERP implementation project and let them work on the project as their only priority. Furthermore, the ERP team should be authorized to make decisions relating to all aspects of the project, including technical and business issues.

5.3.5. ERP System Quality

ERP system quality refers to the processing capability of the system. Dimensions of ERP system quality in this study include the flexibility and integrity of the system, ease of use, reliability, and usefulness of functions. From an IS management point of view, the outcomes of this research indicated several features of the system that managers can use to increase the chances of ERP implementation success. The results of this study recommended that ERP implementation managers must spend time and effort to ensure that users are satisfied with user friendliness, the system's integrity, and the functionality, reliability, and flexibility of the ERP system because they are recognized as the most important factors that contribute to ERP implementation success. If there is no such interface between end users and ERP system, users' dissatisfaction and resistance to the new systems will become an ongoing problem which consequently leads to the failure of ERP system implementation. An ERP system must be easy to use for end users, if they want to be valuable for the adopting company. Moreover, the ERP software should offer information and outputs that are consistent and dependent, accurate, and sufficient to meet users' needs. These qualities of an ERP system can be verified during software selection and also through configuration of the system.

In addition, as ERP software forces the adopting organization to re-engineer its existing business processes to align them with the system, selecting ERP software of poor quality may possibly result in a reluctant promise to structural design that does not match the strategic goals of the enterprise. The selection of an ERP system of poor quality causes the company to make changes to the system, which are very complicated to manage and highly discouraged by ERP providers. Management of the ERP adopting company must ensure that the ERP software chosen can meet their expectations. Some of the major failures of the ERP implementation projects have happened because the capabilities of new ERP system

are incompatible with the company's current business procedures. It should be kept in mind that a considerable gap between the technical features of the ERP software and the present practices or business requirements of the adopting firm will create extensive disorder.

To conclude, the ERP system should exhibit several capabilities. The ERP system should have enough flexibility to change, to adjust, or to adapt to new conditions, processes, organizational structures, or circumstances. The ERP system must be able to communicate data with other information systems working in diverse functional departments. The ERP system is required to have good features and useful functions to perform the company's duties. The ERP system should provide accurate, consistent and dependent output information. Lastly, the ERP system should be easy to learn and also user friendly. All of these capabilities could be verified in the process of selecting ERP system. The ERP vendor's previous customers should be asked about these ERP capabilities. Additionally, these requirements could be set in the ERP vendor contract.

5.3.6. ERP Vendor Support

ERP system implementation is often a lifetime commitment for enterprises. The latest versions and modules of ERP software should frequently be implemented to narrow the gap between the system and the firm's business processes. Since implementing an ERP system is very difficult, the adopting firm cannot initiate the adoption of such an undertaking without the assistance of external knowledge. Vendor support has often provided updates, technical support, responsiveness and service reliability, emergency maintenance, and user training. In addition, ERP vendors usually employ some tools in the implementation and adaptation stages which are essential facilitators for ERP project success. These ERP tools are employed to obtain a greater understanding of the ERP system as well as business practices in the company. ERP vendors can use these tools, for instance, to support the

customization of existing business procedures without altering the code of the ERP system. These tools are also helpful to reduce both the time and cost of the ERP system implementation.

In addition, using ERP software is not easy even for very qualified managers with excellent IT expertise. So, training users to employ the ERP system is one of the most important activities offered by the vendor. Training for the ERP system should cover all features of the software, be based on the principles of knowledge transfer, and be permanent. Lack of appropriate training can be frustrating for ERP users. But sufficient training and education can facilitate and ensure the successful implementation of ERP. Training and education regarding ERP is important to all the people affected by the ERP system, both inside or outside the company. Training for ERP software is critical to achieve user acceptance. Additionally, training can assist all users to adapt to changes, and it helps to build positive attitudes towards the new ERP software.

Moreover, firms which are going to purchase ERP software must examine closely the ERP vendors. The ERP vendors should be chosen carefully because they play a very important role in determining the final result of the ERP system implementation. When selecting an ERP vendor, the adopting company should check the scope of implementation support it provides and the proficiency of its staff. It is essential that the ERP vendor's personnel must be informed of the functions of the ERP system as well as the business practices of the implementing company. It is also vital that the ERP vendor's staff should be able to work with end users in the ERP adopting company and have excellent interpersonal skills.

To sum up, the ERP vendor is required to provide adequate training to enhance the user's expertise in ERP system usage. The ERP vendor should also provide suitable user manuals, operation guides, user guides, and any recognized documents required for using

ERP system. These requirements could be set out in their ERP implementation contract. In addition, some of the requirements could be checked earlier in the phase of ERP vendor selection. The company which intends to adopt an ERP system should ensure that the ERP vendor meets several requirements. The ERP vendor should have the domain knowledge of the industry and enough experience in implementing ERP systems. The ERP vendor should be checked whether it has communicated well with its prior customers. Furthermore, the ERP vendor's previous customers should be asked about the quality of services and the response time of the ERP vendor.

5.3.7. Organizational Culture

Based on the positive moderating effect of organizational culture on the relationship between critical factors and ERP implementation success, the following recommendations are offered:

First of all, the ERP implementing company has to undertake an exhaustive education course to fill the gap between what the firm knew and what the ERP software needs it to know. ERP packages put a premium on expertise associated with mapping business needs to the procedures and terms utilized by the ERP system vendor. Moreover, since ERP packages have enterprise-wide design, constant learning is required to implement new features of the ERP software. Consequently, the ERP adopting companies need a learning culture (result oriented culture) to gain knowledge and application of the system throughout their staff.

Second, the success of ERP implementation requires a culture of tolerance of risks and conflicts (result oriented culture). To obtain the strategic achievements of the ERP system, the firms must consider the reengineering of the current business processes to fit in with the functionality of the ERP systems. As a result, implementation of the ERP system interrupts

present work procedures and necessitates the development of new patterns and methods of management and control. There may be clashes and disagreements of interests in this process of reengineering. A culture of tolerance of risks and conflicts promotes the creation of innovative thought and stops the acceleration of conflicts. Furthermore, this culture provides an environment to test the possibility and efficiency of these innovative thoughts.

Third, implementing an ERP system involves a group of people including the executives and top management, mid-level managers, and frontline personnel, to take part in the reengineering of the business practices, configuring and adjusting the ERP software. The life cycle of ERP packages is different from other information systems. In ERP system implementation, the staffs from diverse functional areas or business units are required to work together and set up the software. A culture of participative decision making (employee oriented culture) encourages employees to participate in and be committed to ERP implementation project. This involvement offers personnel a sense of possession and they feel more control of their job, which encourages staff to accept ERP software. Furthermore, participation across the firm allows open discussions about important problems, which consequently help the objective congruence between diverse stakeholders and different departments.

Fourth, ERP software requires diverse departments in an organization to share a common central database and restructure the existing business practices, particularly the cross-departmental procedures. This integration of data and business procedures influences the interest of different ERP users. It is usual that the ownership of information is considered a significant source of authority in the firms. To assist partnership and distribution of information and other resources required for the implementation of ERP, a culture of information sharing helps the approval of new business practices and ideas. Thus,

to obtain the essential support for the implementation of ERP, the company needs to maintain a culture of sharing information (employee oriented culture).

Fifth, the implementation of ERP is an interdependent and difficult job which involves inter-marriage between the ERP system and business knowledge placed in diverse business units and professions. So, it is vital for ERP project managers and key users to help end users to employ the ERP software. In addition, with the strong interdependence of ERP packages, the usage of the software by a particular member of staff or unit is influenced by other employees and departments. A culture of collaboration and support makes staff feel prepared to accept responsibility for faults, which consequently facilitates the identification of potential errors. Besides, a culture of collaboration and support (open system culture) can decrease the fear of human resources and enhance their willingness to share their knowledge with others. This culture also indicates that they are valued staff, thereby encouraging them to be concerned about the implementation of the ERP system for the good of the company.

Sixth, implementing ERP software will not only noticeably modify the usual style of function within and between business units, but it will also transform various social systems all over the enterprise. When individuals are not well prepared for the great change to occur, there will be natural resistance which can undermine the full implementation of ERP. Accordingly, the ERP adopting firms need to think about a change management programme before implementing ERP systems.

As a final point, evidence supports the view that the implementation of ERP software often brings changes in the culture of the adopting firm. On the other hand, Iran's cultural values and social practices vary significantly from Western practices (Moghadam & Assar, 2008). Consequently, ERP adopting companies must take into account the cultural diversity among ERP suppliers, consultants and themselves before deciding what ERP system to buy

and implement. Otherwise, they should possibly reduce their ERP implementation projects and accept minimum paybacks, or even discard the system implementation.

5.4. Theoretical Contributions

This study resulted in several important theoretical contributions which are presented in the following paragraphs:

First, this study has contributed to academic research by creating the empirical evidence to support the theories of critical success factors and ERP implementation success. Studies on these critical factors would create an insight into the reasons for the success of ERP projects. This research posits and confirms that enterprise-wide communication, project management, ERP team composition and competence, ERP system quality and ERP vendor support are all positively correlated with ERP implementation success.

Second, this study is the first to conceptualize an integrated relationship between ERP implementation success, organizational factors (EWC-BPR), ERP project factors (PRM-TCC), ERP system factors (SYQ-VES) and organizational culture in one model. This research utilized a comprehensive approach consisted of content analysis, frequency analysis, comparative analysis, International expert judgment validity, and finally Iranian expert judgment validity for developing ERP implementation success model. So, the study focuses on variables which are considered as fundamental in the Iranian context based on the judgment made by the experts as mentioned in the research methodology chapter.

Third, organizational culture has been neglected in previous studies, as stated by Zhang et al. (2005). However, organizational culture affects the implementation of an ERP system particularly in an entirely different cultural environment. Empirical proof from this study suggests that organizational culture is a significant factor which effectively moderates the relationship between several critical success factors and ERP implementation success. The

findings of this research expand stakeholders' understanding with regard to the moderating effect of the organizational culture for ERP implementation success and the complete body of knowledge in this field.

Fourth, the findings of the current study are also significant if the environment of ongoing research is taken into account. The context of Iran signifies a vast number of enterprises and a huge potential market for ERP systems. Iranian businesses started adopting ERP systems as part of a wider business modernization programme involving their processes and management models. However, despite the introduction of ERP systems since the last decade, there is no similar study in Iran in this domain. The majority of the ERP research has been conducted in developed countries and there is a shortage of empirical research in developing countries, as claimed by Ngai et al. (2008). The study of ERP implementation projects in the context of Iran will, therefore, add to the growing body of knowledge on ERP system implementation.

Fifth, this study developed a research model which could be applied in other developing countries in the Middle-East, North Africa, Asia and the rest of the world to test its applicability or for scholars interested in cross-cultural issues of complex ERP implementation projects.

Lastly, from a thorough review of the literature, a significant gap in the literature was identified, which is the lack of research on the critical factors for ERP success and the success of ERP implementation from the key stakeholders' point of view, as described by Finney and Corbett (2007). This research is one of the few that studies ERP implementation success from the viewpoints of key stakeholders (operational/ functional/ unit managers) evaluating the business value derived from the ERP application.

5.5. Managerial Contributions

This research made significant managerial contributions which are mentioned in the next paragraphs:

First, the outcomes of this research present a notice to managers involved in ERP system implementation projects. The current research investigates the critical success factors that are essential in an environment of organizational and technical change associated with the implementation of ERP systems. The results present the managers with the ability to classify strategies, evaluation guides, checkpoints, and measure requirements that offer them a far greater likelihood of ERP implementation success.

Second, this study cautions managers that critical success factors and best practices in developed countries are not necessarily applicable to developing countries. Before the adoption of ERP, a comprehensive misfit analysis will facilitate an awareness of the anticipated benefits of the ERP systems. As a result, when a company is going to select an ERP system, it should pay particular attention to whether the software can be modified without any difficulty if needed or whether its business requirements can be fulfilled.

Third, the results recommend that ERP adopter companies should be aware of the cultural dissimilarities embedded in ERP systems. Firms planning to adopt ERP systems must ensure that open oriented learning, and collaborative and supportive culture are promoted in the organization. The data from the study revealed that the likelihood of ERP implementation increases when organizations have such cultural attributes.

Fourth, the outcomes of this study are also useful in making ERP vendors and consultants familiar with the difficulties of implementation in developing countries and preparing some strategies to overcome the barriers.

Fifth, experiences revealed from this research can be useful to other developing countries with similar cultural, economic and political environments, in the Middle-East and North African region, and other Muslim and developing countries.

Sixth, this study compiled a database of all companies in Iran that are using ERP systems. Now, other relevant agencies in governmental and nongovernmental sections can refer to this database. Also, using this database, ERP vendors can see the potential market and find new companies to approach. In addition, the firms which are going to adopt an ERP system can use these companies as a reference.

Finally, international ERP providers should be cautious in applying approaches to the implementation of ERP systems that have succeeded in one culture into another culture. This research will be useful for international ERP vendors aiming to penetrate overseas markets, to help them to formulate their strategies.

5.6. Research Limitations

Although the findings of this study contribute to a better understanding of the successful implementation of ERP systems, there are several limitations to this study which are highlighted in the following paragraphs:

ERP implementation success dimensions were measured using perceptual and subjective measures. This was due to the difficulty of obtaining the relevant accurate data from the ERP adopting companies. However, common practice in the literature is predominantly subjective and this method of measurement was considered appropriate here as illustrated by prior researchers (Chien et al., 2007; Ehie & Madsen, 2005; Nah et al., 2007).

In addition, several critical success factors were not incorporated in the research model because of practical restrictions such as cost and time. The survey questionnaire covers several pages and including more critical factors would increase its length. Consequently,

the respondents possibly would not participate or the reliability of the responses would be influenced due to the tiredness of respondents.

As a last point, the types of ERP packages used by the participating firms, the size of adopting companies, their industry section, their type of ownership, or any other control variables were not controlled. Because the number of ERP adopting companies in Iran was limited and if the study was to concentrate on the control variables, the number of respondents would be reduced. However, to account for differences among the organization, the companies must be using ERP for the last 3 years.

5.7. Future Research

Since few empirical studies have examined the ERP implementation success in developing countries, there are many paths for the expansion of this research and also future studies:

First, the results of this research could be generalized if it were replicated and validated in other regions and context. This research recommends the viewpoints of companies in Iran in the Middle-East region. It is suggested that future research utilize the same model in other developing nations in the Middle-East, North Africa, South Asia, South-East Asia, and Latin America to test its generalizability and applicability.

Second, this research employed subjective measures of ERP implementation success. It is expected that using objective measures for evaluating ERP implementation success may produce diverse outcomes from the findings emerging from this study. It is suggested to potential researchers to employ some quantifiable measures and compare their outcomes with the findings of the research. The quantifiable measures could be the actual versus the anticipated budget of the ERP project, the actual versus the estimated ERP project time,

operational efficiencies like reduction in cycle time, increased market income, and return on investment on the ERP project.

Third, future studies could use the model to analyze the impact of different brands of ERP software, the size of ERP adopter companies, the type of industries and the firm's ownership on the ERP implementation success.

Finally, this research utilized a survey methodology and cross-sectional sample to collect data. Other research methods, including case studies, can provide more thorough insights and ought to be considered in prospective research. Potential in-depth investigations, probably qualitatively, might be carried out to gain additional insights into the factors related to ERP adopter organizations, ERP project, and ERP innovation itself. In addition, future scholars could try to conduct a longitudinal study to determine the causal relationships between the CSFs and ERP implementation success.