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# Empowering benefits of ERP systems implementation: empirical study of industrial firms

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## Abstract

**Purpose** – Enterprise resource planning (ERP) is a useful system in today's organizations that can lead to numerous benefits for them. The employees and managers are the most important stakeholders of this system that can both affect it and be affected by it. This paper aims to study the empowerment benefits resulted from ERP implementation in industrial companies.

**Design/methodology/approach** – This paper investigated the ERP benefits through survey by defining 31 empowering benefits for this enterprise system based on reviewing the literature and classifying them into four groups of empowering benefits including informative, communicative, growth and learning and strategic benefits. Statistical population of the study is the core specialist and managers of these corporations.

**Findings** – The results indicated that the communicative, strategic and informative empowering benefits are as important common advantages. Furthermore, the results of computing the regression coefficient represent that the empowering benefits of strategic, informative, communicative and growth and learning had the maximum impact on the firms' empowering benefits from ERP implementation.

**Originality/value** – The findings of this study provide a general overview of what to expect from ERP with respect to empowerment and based on it, features, modules and innovations that should be present for realizing these expectations can be determined.

**Keywords** Empirical Study, Enterprise resource planning (ERP), Empowering benefits

## 1. Introduction

Regarding the abundance of information in organizations, nowadays implementing a system that can manage the information appropriately is worthwhile. Enterprise resource planning (ERP) is a system that by establishing integrity, solving crucial issues including saving repetitive information in sporadic systems of organization and re-entering the existent information in systems resolves the problems like lack of effective communication among various functions and lack of access to appropriate information at required time (Davenport, 1998). Capabilities of this system caused that besides the commercial units, public and private organizations also initiated to implement it and provided the basis for developing customer services. The most important stakeholders of this system are employees and managers because of the fact that they are interacting with this system.

Today, managers cannot expect high results from their staff unless they provide the grounds of achieving such results in them (Hayton, 2005) and by developing the required ground, equip their human resources with required knowledge and skill for them to guide other resources of the organization into the acquisition of growth and development (MacMillan, 1987). Employee empowerment is one of the requisites of providing these grounds that include a wide range of activities from pretending empowerment (Rosenthal et al., 1997) to higher levels of cooperation and granting the actual power (Greasley et al., 2008). This potential concept can be followed by lots of advantages for organizations. Perhaps the best interpretation of these advantages is the win-win situation for organizations and employees (Lashley, 1999).

The results of some studies showed that lack of employees' power in applying ERP is the most important reason for failure of the projects of this system (Sehgal and Stewart, 2003). Thus, employee empowerment in stages of pre-implementation, during implementation and even post-implementation of these systems is obligatory. On the contrary, the question that can be posed here is that whether implementing ERP would basically lead to empowering benefits for employees and managers. Investigating the impacts and benefits of ERP in organizations and determining direct and indirect influences on empowerment of organizational employees is an important issue which should be taken into consideration despite the fact that to my best knowledge, no study has been conducted in this field so far. Regarding the fact that large companies in Iran have initiated implementation and use of ERP in the recent years, the present study intends to investigate empirically and compare the empowering benefits of employees and managers resulted from ERP in three holding companies of Iran Khodro Industrial Group Company, Saipa Company and Isfahan Zob Ahan Factory. Based on the aforementioned information, the main research question is:

**RQ1.** Does ERP implementation lead to acquisition empowering benefits in the firms?

Answering this question can somehow be analysis of benefit to cost in implementing this costly system from human resource perspective in these Iranian companies, and it can bring better insight for other companies on how to purchase and use this system. The significance of answering this question duplicates when the aforementioned question has not been addressed and responded in any of the studies done so far, and this indicates a research gap that the present study tries to fill.

## **2. Literature review**

### **2.1 Enterprise resource planning**

At the beginning of 1990, establishing integrator systems of organization's resources and information systems that function at organizational level sets the stage for introducing ERP which is also known as SAP R/3 system (Wortmann et al., 2000). The systems of ERP are comprehensive software programs that support vital functions of organization (Motiwalla and Thompson, 2012) and by integrating key management and business functions, provide an appropriate view of what occurs in an organization in financial, human resource, manufacturing fields, supply chain, etc. (Davenport, 1998; James and Wolf, 2000). From Kumar and Hillegersberg's (2000) point of view, these systems are package of information systems that integrate information and processes across the operational units of organization.

Although organizations are always content with reducing the expenses resulted from implementing ERP, in actuality, counting the tangible and intangible advantages of implementing this system is difficult (Ho, 2007). By providing the accurate information, these systems contribute to improving decision-making at the appropriate time and in an integrated manner, and they bring numerous advantages with them for organizations (Trott and Hoecht, 2004). The key advantage of organizational integrated systems is the integrity of information. This integrity can be an alternative for task software with weak connections and can significantly reduce expenses of supporting the infrastructure. Moreover, improving the operational integrity caused by business systems can have positive influence on the whole organization and thereupon on the organization functions (Hendricks et al., 2007).

ERP is an alternative for complex user interface and dispersed systems that standardizes and automatizes inter functionally transactions. Cutting the order cycle (from receiving an order to delivery of product) causes improvement in servicing and facilitates the process of delivery (Cotteleer and Bendoly, 2006; McAfee, 2002). The automation of financial transactions by ERP system eliminates the expenses of registering the financial information at the end of the fiscal year (Mabert et al., 2000, 2003; McAfee, 1999; Stratman, 2001).

Hendricks et al. (2007) by studying 186 firms investigated the impacts of ERP at the post-implementation stage of the system. Their study mostly focused on the financial impacts and profitability of the organization, and the results confirmed its positive influence on the profitability. Kanellou and Spathis (2013) studied the effects of ERP system on accounting processes. They investigated the influence of this system in forms of accounting benefits and satisfaction resulted from it. Besides studying the benefits, some researchers have studied usage of this system in organizations and the factors that can lead to the realization of the usage of this system (Chou et al., 2005). One of these usages is prompt decision-making with the aid of ERP system, as Wu and Wang (2007) indicated that developing the capability of decision-making of organizational employees is the result of informative benefits of this system in organization.

## **2.2 Employee empowerment**

Empowerment is an issue that has been the focus of discussion for continuous years, and it is also known as one of the criteria that leads to results such as effectiveness, efficiency and satisfaction of employees (Sehgal and Stewart, 2003). This concept has numerous interpretations in such a way that Zimmerman (1995) believes that providing a definition for empowerment is easy; everyone develops a thought about it in his mind but in fact, very few people have gained mastery of it. Versatility in the literature on empowerment enriches its content; however, this prevents having access to integrity and presenting a comprehensive model (Littrell, 2007). Anyway, in the presented definitions for empowering factors and dimensions such as commitment, job structure, transfer of power or authority, communication power, sharing resources, information and knowledge, intrinsic motivation and perception can be seen (Robbins et al., 2002). Table I shows some of the definitions presented for empowerment.

From the perspective of the impact of technology on empowerment, some researchers acknowledged in their studies that applying technology in organizations can affect human resources. In one of these studies, Khoshalhan et al. (2010) state that technology provides the possibility of altering human resources to the extent that from their view, using technology through passage of time can lead into employee empowerment. On the other hand, this empowerment imposes changes in technology. Figure 1 represents their idea.

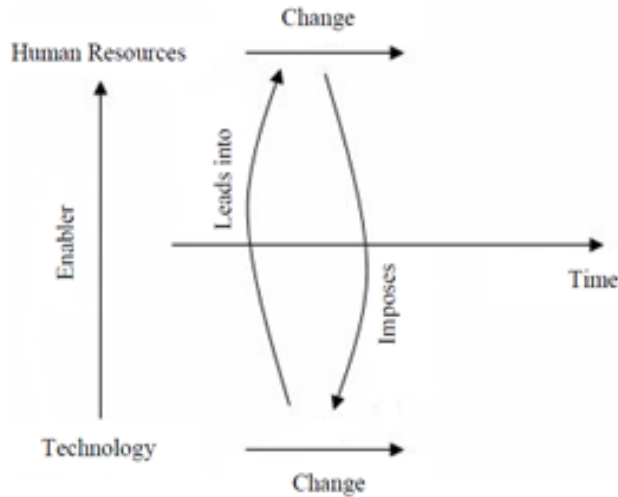


Figure 1. Interaction of technology and human resources (Khoshalhan et al., 2010)

Table 1. Some definitions presented for empowerment

Source	Definition
(McNamara, 2001)	The combination of systems, methods, and actions that have been applied with respect to objectives of the organization by developing capability and competence of individuals in order to promote productivity, growth, and prosperity of the organization and its human resources.
(Lawler, 1994)	It is the process through which the manager is assisted to acquire the necessary ability for independent decision making. This process not only affects performance of employees but also it affects their personality and it means delegating the authority to the lowest levels of the organization.
(Savage, 2001)	It is the process through which the employees improve their performance by acquiring knowledge, skills, and motivation. Thus, empowerment is the process that begins from upper-level management and continues to the lowest level.
(Whetten & Comeron, 1998)	It means giving power to employees. That is, to help them increase their self-confidence and overcome their weaknesses and give them intrinsic motivation and energy for doing the activities. Empowerment is not representative of power to employees by itself. However, power like empowerment means the ability of doing chores.
(Conger & Kanugo, 1998)	The process of increasing self-efficiency of employees by identifying and omitting conditions that causes inability for employees.
(Spreitzer, 1995; Thomas & Velthouse, 1990)	Thomas and Velthouse added a psychological expression to empowerment and they considered it as a collection of cognitive motivation areas that besides self-efficiency, it includes three other cognitive aspects of sense of autonomy (right of choice), sense of being meaningful, and sense of effectiveness. Later Spreitzer added another dimension to the concept of psychological empowerment which includes sense of competence and self-sufficiency.

(Fox, 1998)	Fox defines this term with regard to mechanic and organic approaches. In mechanic approach from his view, empowerment is as follows: resign of responsibilities and accounting for results and in organic approach, empowerment is risk, growth, change, understanding employees' needs, the way of behaving with employees as being empowered, making teams in order to encourage cooperative behaviors, encouraging taking risks intelligently, and trusting employees.
(Page & Czuba, 1999)	It is a social multi-dimensional process that helps people to adjust their lives and empower them by attending to the issues that are important to them.
(Blanchard et al., 2003)	Blanchard et al. associate empowerment to providing conditions for offering the best mental resources in each aspect of organization functions. From their opinion, the purpose of empowerment is that the most competent employees can have the most penetration with the most appropriate technique. They consider empowerment as a three-stage procedure consisted of information, work autonomy, and independence all across the boundaries of organization and replacing autonomous teams with hierarchies.
(Lee, 2001)	Lee regards empowerment as a basis for increasing dialogues, critical thinking, and taking part in activities of small groups and acknowledges that allowing the activities to go beyond sharing and processing of experiences, thoughts, meetings, and conversing are the main constituents of empowerment.

### 2.3 Empowering benefits of enterprise resource planning

Different researchers have introduced various benefits for ERP in their studies. Some stated the benefits of this system for employees and investigated the effective factors resulted from this system on the performance of organizational employees (Bejjar and Boujelbene, 2013). McAfee (2002) has studied the organizational influences of ERP in forms of operational functions. Schubert and Williams (2010) by comparing 14 cases have divided the benefits of this system into four main categories of strategy of business planning/processes, management/resources, function field/operations, information technology and infrastructure/constituents of technology. Sun et al. (2005) have assessed ERP by investigating five categories of key factors including management/organizational success, process, technology, data and human resource. Two of these factors are associated with human factors. The factors of management and human resource refer to two groups of organizational employees that can be investigated with regard to empowerment in a way that from Sun et al.'s (2005) point of view, employee empowerment is done by this system through aspects of education, learning and developing skills and knowledge management. Cheng and Wang (2006) in studying the relations and impacts of re-engineering on ERP benefits have considered five categories resulted from implementation of ERP which include operational, management, strategic, information technology infrastructure and organizational benefits. Organizational benefits are also consisted of six sub-benefits which are: changing job pattern, facilitating organizational learning, empowering, creating mutual perspective, changing the work focus, elevating spirit and satisfaction of employees. Chand et al. (2005) also have studied the benefits of this system by considering the approach of balanced scorecard approach. They studied the benefits based on four categories of financial, customer, internal processes and growth and innovation.

Table II presents frequency analysis of empowering benefits of ERP introduced in previous studies. These benefits that have been used as criteria for designing questions of the questionnaire, have been classified into four groups of informative empowering benefits (seven benefits) (Wu and Wang, 2007), communicative empowering benefits (five benefits)(The Institute of Cost Accountants of India, 2012), empowering benefits of growth and learning (six benefits) (Bansal and Narula, 2014; Sun et al., 2005; Velcu, 2007) and strategic empowering benefits (13 benefits)

(Cheng and Wang, 2006; Shang and Seddon, 2000).

Table 2. Empowering benefits of ERP based on previous studies

(Dantes & Hasibuan, 2011)	(Huang et al., 2009)	(Shang & Seddon, 2000)	(Genoulaz & Alain, 2005)	(Spathis & Ananiadis, 2005)	(Dey et al., 2010)	(Saatcioglu, 2009)	(Olhager & Selldin, 2003)	(Gattiker & Goodhue, 2002)	(Holsapple & Sena, 2005)	(Davenport & Brooks, 2004)	(Spathis & Constantinides, 2003)	(Ling & Minder, 2004)	(Singla, 2008)	(Chand et al., 2005)	Empowering Benefits
Informative Empowering Benefits															
		*												*	Providing the required information for employees and managers at the appropriate time with the appropriate quality
		*													Managing possibility (entering, updating, deleting) the organizational information for employees and managers
				*					*	*	*		*		Increasing flexibility and speed in creating, processing, and sharing information among employees and managers
			*									*	*		Increasing access of employees and managers to decision support and important operational information for clarifying planning of business activities
					*									*	Increasing access to customers' and suppliers' information for employees and managers



(Dantes & Hasibuan, 2011)				*	*	*										Empowering Benefits	
(Huang et al., 2009)																	Decreasing time and errors in entering information for employees and managers
(Shang & Seddon, 2000)								*		*							Providing a suitable atmosphere for the free flow of information among employees and managers
(Genoulaz & Alain, 2005)			*														
(Spathis & Ananiadis, 2005)			*														
(Dey et a;., 2010)			*														
(Saatcroglu, 2009)																	
(Olhager & Selldin, 2003)																	
(Gattiker & Goodhue, 2002)								*									
(Holsapplea & Sena, 2005)																	
(Davenport & Brooks, 2004)								*									
(Spathis & Constantinides, 2003)																	
(Ling & Minder, 2004)								*									
(Singla, 2008)																	
(Chand et al., 2005)																	
Empowering Communicative Benefits																	
			*				*		*		*	*				Increasing communication among different units of organization	
			*													Enhancing communication among employees and managers	
									*							Establishing coordination among units and as a result harmony and communication among internal units of organization	
*			*	*	*	*	*		*							Enhancing communication with customers and suppliers for employees and managers	
		*														Enhancing communication and prompt access to colleagues and managers and related organizations outside	

(Dantes & Hasibuan, 2011)																	Empowering Benefits	
(Huang et al., 2009)																		for employees and managers
(Shang & Seddon, 2000)																		Empowering Benefits of Growth and Learning
(Genoulaz & Alain, 2005)																		
(Spathis & Ananiadis, 2005)																		
(Dey et a;., 2010)																		
(Saatcioglu, 2009)																		
(Olhager & Selldin, 2003)																		
(Gattiker & Goodhue, 2002)																		
(Holsapplea & Sena, 2005)																		
(Davenport & Brooks, 2004)																		
(Spathis & Constantinides, 2003)																		
(Ling & Minder, 2004)																		
(Singla, 2008)																		
(Chand et al., 2005)																		
for employees and managers																		
Empowering Benefits of Growth and Learning																		
		*															Facilitating organizational learning for employees and managers	
		*															Sharing information and knowledge in organization	
*					*			*						*	*		Possibility of applying the best available practices in business environment for employees and managers	
		*															Establishing collaboration among employees and managers	
		*															Developing creativity and innovation in organization	
*															*		Developing skills of employees and managers in different fields such as applying information technology, decision making, etc.	
Strategic Empowering Benefits																		
		*															Enabling managers for optimum planning	
									*								Promoting the ability of solving complex issues by employees and managers	

[illegible]

(Dantes & Hasibuan, 2011)	(Huang et al., 2009)	(Shang & Seddon, 2000)	(Genoulaz & Alain, 2005)	(Spathis & Ananiadis, 2005)	(Dey et al., 2010)	(Saatcioglu, 2009)	(Olhager & Selldin, 2003)	(Gattiker & Goodhue, 2002)	(Holsapple & Sena, 2005)	(Davenport & Brooks, 2004)	(Spathis & Constantinides, 2003)	(Ling & Minder, 2004)	(Singla, 2008)	(Chand et al., 2005)	<b>Empowering Benefits</b>
															managers
								*							centralizing the activities for managers
						*						*		*	Increasing control power for managers in various aspects of organization (manufacturing, financial, processes, etc.)

### 3. Methodology

The present research with regard to purpose is practical, and with respect to data collection technique is a descriptive study. By using SPSS software for examining the hypotheses, one-sample t-test (regarding the parametric data) has been used, and for ranking (or determining the impact of) benefits in each one of the companies under investigation, b statistic has been used. Data collection instrument is a questionnaire that is developed by the researcher based on the specified empowering benefits of the literature reviewed. The research questionnaire has been shown in the Appendix. Statistical population of the study includes core specialists and managers of Iran Khodro Industrial Group Company, Saipa Company and Isfahan Zob Ahan Factory. In each one of these companies, 30 questionnaires have been filled. Cronbach's alpha of the questionnaire is 0.814 which shows the reliability of it. Validity of the questionnaire also has been confirmed by the professors of universities of Tehran. Regarding the topic of the study, it is apparent that organizations that have implemented ERP system must be addressed for this study and its data collection. However, the corporations that have used this system usually have not developed magnificently in early years of implementation and in some cases, they have experienced decrease in efficiency. Error in process reengineering selecting an appropriate system, mapping and making changes in systems, estimating the required time and resource, management errors and lack of training for end users are the most important reasons for decrease in efficiency in these organizations. Caldwell (1998) states that during implementation of ERP system there are three transition phases. In the first phase, because of the change in processes, new processes are being developed and the organization is learning and the efficiency decreases.

This phase approximately lasts from three to nine months. The second phase consists of developing new occupational skills, organizational changes and integrating and adding new innovations. The third phase is when ERP begins to be profitable and the processes of organization reaches to an appropriate level of efficiency. According to the aforementioned information, for the case study, corporations that have completed at least nine months of ERP implementation in their system and whose system has reached the required consistency must be selected. Furthermore, as the present study has been conducted in Iran, other prerequisites have also been considered. At the present time, the status of ERP products in Iran is disturbed and lots of Iranian informatics companies claim to provide products in this regard. However, according to the investigator's familiarity with the market and the results of investigation on implementing organizations, invalid products can have negative impacts on the study. Therefore, in this study just the corporations that have used valid international products have been under investigation. Three large companies of Iran Khodro Industrial Group Company, Saipa Company and Isfahan Zob Ahan Factory as pioneers of implementing ERP in Iran have initiated to implement the foreign product of this system for years and that is the reason behind being selected for the study. With the consideration of these prerequisites, respondents' qualification can be verified.

Figure 2 is showing the steps to this survey.

## 4. Findings

### 4.1 Descriptive statistics

From the 90 samples gathered from the three companies, 74 men (82.2 per cent) and 16 women (7.8 per cent) and also considering the organizational position; 21 respondents (23.3 per cent) were deputies and middle-management; 29 persons (32.2 per cent) were supervisors; and 40 persons (44.5 per cent) were specialists of organizational units, and the average of their work experience was 16.2 years. With respect to academic education, 26 respondents (28.9 per cent) hold bachelor's degree; 46 respondents (51.1 per cent), master's degree; and 18 respondents, (20 per cent) PhD. According to the topic of the study, by using purposive sampling, efforts have been made to select respondents who are experienced,

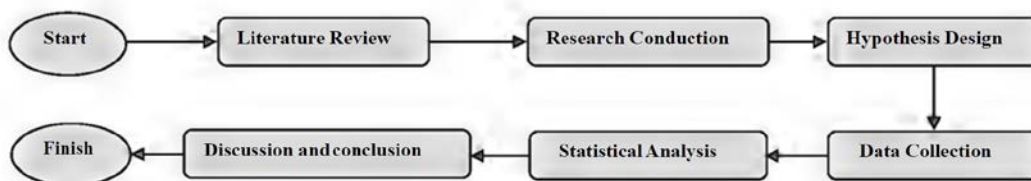


Figure 2.Steps of methodology

educated and have sufficient experience in organizational affairs, understanding of ERP system and also respondents who are influential in organization and the units they work in.

## 4.2 Hypothesis testing

In any of the companies, the main hypothesis is “The mean of each of empowering benefits groups is greater than average level.” Five-point Likert scale has been used in the questionnaire, so average level is number three. Regarding the three companies and four empowering benefits groups, there are 12 hypotheses in this research. For studying these hypotheses, one-sample t-test has been used. As a sample, H0 and H1 for informative empowering benefits about each one of these three companies are:

H0. The mean of informative empowering benefits is greater than the average level.

H1. The mean of informative empowering benefits is not greater than the average level.

The results of Table III show that in Iran Khodro Industrial Group Company, the significance for the variable of communicative empowering benefit is less than 0.05 ( $\alpha = 0.05$ ). Thus, H0, which is the mean of that variable is equal and less than three, cannot be supported. The t-statistic for this variable is also greater than 1.96 and is at the critical point of the test. In other words, mean difference from three is meaningful. As a result, communicative empowering benefits in Iran Khodro Industrial Group Company has mean above three (average level). Regarding other variables, because two other necessary conditions have not been observed, the results were not the same. In fact, H0 of empowering benefits of informative, strategic and growth and learning have been rejected in this company.

The results of Table IV show that in Saipa Company, the significance for variables of empowering benefits of strategic, communicative and informative is less than 0.05 ( $\alpha = 0.05$ ). Therefore, H0, which the means of these variables is equal and less than three, is not supported. The t-statistic for these three variables is greater than 1.96 and is located at the critical point of the test. In other words, mean differences from three are meaningful. As a result, in Saipa Company, empowering benefits of strategic, communicative and informative have means greater than three (average level) but the same cannot be said about empowering benefits of growth and learning because two necessary conditions have not been observed.

Table III. One-sample t-test for Iran Khodro industrial group company

Variable	T	Level of Significance	Supporting or Rejecting the Hypothesis
Informative Empowering Benefits	0.786	0.010	Rejected
Communicative Empowering Benefits	4.907	0.010	Supported
Empowering Benefits of Growth and Learning	0.786	0.000	Rejected
Strategic Empowering Benefits	1.234	0.050	Rejected

Table IV. One-sample t-test for Saipa company

Variable	T	Level of Significance	Supporting or Rejecting the Hypothesis
Informative Empowering Benefits	8.670	0.010	Supported
Communicative Empowering Benefits	2.543	0.010	Supported
Empowering Benefits of Growth and Learning	0.881	0.000	Rejected
Strategic Empowering Benefits	8.728	0.000	Supported

The results of Table V show that in Isfahan Zob Ahan Factory the significance for all variables is less than 0.05 ( $\alpha = 0.05$ ). Therefore,  $H_0$  is not supported, as the means of the variable is equal and less than 3. The amount of t-statistic is also greater than 1.96 for all these variables and is located at the critical point. In other words, mean differences from three are meaningful. As a result, all four benefits in Isfahan Zob Ahan Factory have means above three (average level).

### 4.3 Ranking of empowering benefits

In this section, the main question is which four groups of ERP empowering benefits have the highest impact on the firms' empowering benefits from ERP implementation. The regression equation is:

Firm's empowering benefits from ERP implementation

$\frac{1}{4} b_1 \Delta \text{ERP Strategic Empowering Benefits}$

$+ b_2 \Delta \text{ERP Empowering Benefits of Growth and Learning} + b_3 \Delta \text{ERP}$

Communicative Empowering

Benefits

$+ b_4 \Delta \text{ERP Informative Empowering Benefit} + a$

The  $b$  in this research is the coefficient of independent variable in regression. The amount of this variable shows impact on the dependent variable. The larger the amount of  $b$  for a variable means the highest impact for that variable, and we used it for ranking.

In Iran Khodro Industrial Group Company, only communicative empowering benefits variable has the mean greater than three. Thus, ranking cannot be done for it.

In Saipa Company, strategic, communicative and informative empowering benefits have the statistical mean greater than three. For determining which one has the highest impact on the firm's empowering benefits from ERP,  $b$  statistic has been calculated. The results of Table VI show that empowering benefits of informative, strategic and communicative have the most impact in Saipa Company empowering benefits from ERP implementation.

In Isfahan Zob Ahan Factory, empowering benefits of strategic, growth and learning, communicative and informative have the mean greater than three. The results of Table VII show that empowering benefits of strategic, informative, communicative and growth and learning have the most impact in Isfahan Zob Ahan Factory empowering benefits from ERP implementation respectively.

Variable	T	Level of Significance	Supporting or Rejecting the Hypothesis
Informative Empowering Benefits	7.440	0.000	Supported
Communicative Empowering Benefits	14.156	0.000	Supported
Empowering Benefits of Growth and Learning	6.782	0.000	Supported
Strategic Empowering Benefits	12.830	0.000	Supported

Table V. One-sample t-test for Isfahan Zob Ahan Factory

Ranking	Variable	$\beta$ Statistic
1	Informative Empowering Benefits	0.724
2	Strategic Empowering Benefits	0.582
3	Communicative Empowering Benefits	0.423

Table VI. Ranking variables based on importance level in Saipa Company

#### 4.4 Discussions

The main question of this research is “Does ERP implementation lead to acquisition empowering benefits in the firms?” For responding this question, a survey has been designed in which its statistical population includes core specialists and managers of three companies. The findings resulted from hypothesis testing indicate that in Iran Khodro Industrial Group Company, only the empowering benefits of communicative has the mean above the average level but empowering benefits of informative, strategic and growth and learning do not. In Saipa Company, empowering benefits of strategic, communicative and informative have means above the average level, but it is not the same for empowering benefits of growth and learning. In Isfahan Zob Ahan Factory, all four benefit groups have means above the average level. Findings resulted from ranking these four groups of benefits show that in Saipa Company, empowering benefits of informative, strategic and communicative and in Isfahan Zob Ahan Factory, empowering benefits of strategic, informative, communicative and growth and learning have the highest impact on these firms’ empowering benefits from ERP.

Based on the calculation of the  $b$  statistic, we can say that ERP in Isfahan Zob Ahan Factory has had the highest strategic function, while in Saipa Company, informative function was the highest. About Iran Khodro Industrial Group Company, with regard to support of only one hypothesis, we can say that this system merely has communicative function for this company. This result is in accordance with reality as at the present time. In Iran Khodro Industrial Group Company, in actuality, only the modules of supply chain and stock control are being used.

Regarding the lack of support for the means of empowering benefits of growth and learning being above the average level for two companies of Iran Khodro Industrial Group Company and Saipa Company and support of it in Isfahan Zob Ahan Factory, it can be said that just Isfahan Zob Ahan Factory has achieved the aims of growth and learning resulted from ERP implementation in the company.

Due to informative empowering benefits, implementing ERP resulted in better management of organizational information and basically by establishing an integrated and focused data base, informative empowerment of employees has been developed in entering, retrieving, updating and



deleting data. Managers and employees are assured of security of data and omission of inconsistency of data, and they have access to all internal and external information simultaneously with the aid of this system. As Wu and Wang (2007) indicated, this system brings numerous informative benefits for organizations.

Due to the communicative empowering benefits, this system leads to promotion of internal and external organizational communication and enhancement of coordination among the staff of organization. Because of having modules such as supply chain management and customer

Ranking	Variable	$\beta$ Statistic
1	Strategic Empowering Benefits	0.801
2	Informative Empowering Benefits	0.647
3	Communicative Empowering Benefits	0.474
4	Empowering Benefits of Growth and Learning	0.242

Table VII. Ranking variables based on importance level in Isfahan Zob Ahan factory

relationship management, it can develop communicative empowerment of employees and managers in communicating with organizational environment.

The empowering benefits of growth and learning, facilitating organizational learning, sharing information and knowledge in organization, possibility of applying the best existent practices in business environment and developing the skills of employees and managers in the fields such as application of information technology, decision-making, etc. are among the factors that can lead to the development of employee empowerment. Furthermore, embedding the modules of knowledge management in this system can provide the requisites and infrastructures for development of organizational knowledge. As it has been mentioned previously, according to Sun et al. (2005) also employee empowerment is done by ERP through education, learning and developing skills and knowledge management.

Because of strategic empowering benefits, this system can be useful for optimum planning, increasing the control power of managers, being in line with the changes in customers' needs and environmental changes, etc., and develops strategic empowerment of employees and managers.

Incomplete deployment of ERP system and hence incomplete transmission of all data into this system, are the main reasons of failure in achieving ERP empowering benefits of growth and learning. Therefore it should be considered that to achieving ERP empowering benefits of growth and learning, firms require enough time period for adapting employees with the new system and its new processes. The main value of ERP is improving and integrating processes of ordering, manufacturing, financial, human resource, inventory control, customer relationship, etc. in the organization. However, if no change occurs in employees' attitude and behavior, this value will not be reached. Employees will resist in using EPR software and will have IT department to change the software to adapt with current activities, if it is not believed that the ERP processes are better than the current processes. Therefore, implementing business process reengineering (BPR) is essential before implementing ERP. Moreover, training employees for the new processes should be emphasized in using ERP system. Unfortunately, ERP developer companies in Iran concentrate more on training ERP software use, rather than training new processes of ERP implementation which are linked to main activities of employees. In Iran Khodro Industrial Group Company and Saipa Company, the mentioned issues have less importance, and their managers focus only on purchasing ERP software without paying any attention to BPR, employees training, change management and cultural issues in ERP implementation. In Iran Khodro Industrial Group Company, main reason of failure in achieving ERP empowering benefits

of strategic is the weakness in IT strategic planning because of lack of attention to strengths, weaknesses, opportunities and threats. In addition, this planning depends on manager's taste, and because of management instability, these failure reason has more negative effects.

## **5. Conclusions and recommendations**

This investigation shows that among three companies that have been studied here, at present, just Isfahan Zob Ahan Factory almost benefits from all modules of ERP. Thus, support of all hypotheses for this company seems natural. However, the empowering benefits of growth and learning of this system in Isfahan Zob Ahan Factory has the lowest importance in comparison with other benefits, and in Iran Khodro Industrial Group Company and Saipa Company, the hypothesis of being above the average is rejected for the mean of this group of benefits (growth and learning) but this can be because of the attitude toward this system. It seems that the attitude toward this system is merely like software in Iranian companies and much attention is not paid to the impacts of it in the fields of institutionalizing change and innovation, establishing grounds of creating and sharing knowledge and developing the culture of cooperation in organization. It is recommended that by the change of this attitude and accurate management of it, the highest benefits be resulted from this system in this respect.

Undoubtedly, implementing ERP always imposes changes to organizations. However, numerous efforts have been made in managing the changes toward the organizational development. However, Kwahk and Lee (2008) stated that perhaps resistance against change is the most important reason for the failure from this perspective. For decreasing this resistance, there are different remedies. Preparing users can play a key role in decreasing this resistance. Users' understanding of results of implementation of these systems is another remedy that can decrease such a resistance. The results of this study can be used for bringing knowledge and assurance for users of ERP with regard to the empowering benefits of it and as a result, it will probably result in their cooperation in successful application of these systems. For sure, in case users believe that this system contributes in helping them in doing their chores successfully and they believe the fact that it will finally lead developing communicative, informative and knowledge empowerment, they will be encouraged to use this system more than before.

The limitations of filling the questionnaire such as lack of interest of some of respondents to answer the questionnaire, lack of sufficient care and attention while answering and possible misinterpretations of some of the respondents to some of the questions are undoubtedly among the major limitations of this investigation. In fact, the questionnaire itself can be regarded as a limitation itself. That is, it investigates the attitude of people and not the reality. However, while distributing the questionnaires, the investigator has tried to clarify the vagueness of questions by providing the necessary explanations.

For future studies, it is suggested that by changing the statistical population especially by selecting business corporations having ERP, a similar study be conducted based on the indices of this investigation in these three corporations and a comparison be done.

In regarding to implications for research and practice, the findings of this study provide a general overview of what to expect from ERP with respect to empowerment and based on it, features, modules and innovations that should be present for realizing these expectations can be determined. Indices and criteria determined in this study for empowering benefits of ERP is totally scientific and are based on reviewing the documented available literature on the topic and can be quite applicable for organizations. It is suggested that while purchasing and implementing ERP, companies pay attention to the features of the product that will result in employee empowerment. For example, the availability of communicative systems, such as chat, e-mail and forums, in this system can develop organizational communication and harmony.

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## Appendix. Survey instrument

1.	What is your gender?
	<input type="radio"/> Male <input type="radio"/> Female
2.	What is your organizational position?
	<input type="radio"/> Deputies and Middle-Management <input type="radio"/> Supervisors <input type="radio"/> Specialists
3.	What is your academic education?
	<input type="radio"/> Bachelor's degree <input type="radio"/> Master's degree <input type="radio"/> PhD's degree
4.	How much is your work experience?
	<input type="radio"/> 5 to 10 years <input type="radio"/> 10 to 20 years <input type="radio"/> 20 to 30 years <input type="radio"/> More than 30 years

**What is the degree of each achieved empowering benefit in your organization post – implementation of ERP system:**

Informative Empowering Benefits		Achieved level				
1.	Providing the required information for employees and managers at the appropriate time with the appropriate quality	VL	L	M	H	VH
2.	Managing possibility (entering, updating, deleting) the organizational information for employees and managers	VL	L	M	H	VH
3.	Increasing flexibility and speed in creating, processing, and sharing information among employees and managers	VL	L	M	H	VH
4.	Increasing access of employees and managers to decision support and important operational information for clarifying planning of business activities	VL	L	M	H	VH
5.	Increasing access to customers' and suppliers' information for employees and managers	VL	L	M	H	VH
6.	Decreasing time and errors in entering information for employees and managers	VL	L	M	H	VH
7.	Providing a suitable atmosphere for the free flow of information among employees and managers	VL	L	M	H	VH
<b>Communicative Empowering Benefits</b>						
8.	Increasing communication among different units of organization	VL	L	M	H	VH
9.	Enhancing communication among employees and managers	VL	L	M	H	VH
10.	Establishing coordination among units and as a result harmony and communication among internal units of organization	VL	L	M	H	VH
11.	Enhancing communication with customers and suppliers for employees and managers	VL	L	M	H	VH
12.	Enhancing communication and prompt access to colleagues and managers and related organizations outside for employees and managers	VL	L	M	H	VH
<b>Empowering Benefits of Growth and Learning</b>						
13.	Facilitating organizational learning for employees and managers	VL	L	M	H	VH
14.	Sharing information and knowledge in organization	VL	L	M	H	VH
15.	Possibility of applying the best available practices in business environment for employees and managers	VL	L	M	H	VH
16.	Establishing collaboration among employees and managers	VL	L	M	H	VH
17.	Developing creativity and innovation in organization	VL	L	M	H	VH
18.	Developing skills of employees and managers in different fields such as applying information technology, decision making etc.	VL	L	M	H	VH
<b>Strategic Empowering Benefits</b>						
19.	Enabling managers for optimum planning	VL	L	M	H	VH
20.	Promoting the ability of solving complex issues by employees and managers	VL	L	M	H	VH
21.	Managing time and resources better for employees and managers	VL	L	M	H	VH
22.	Cooperation of all employees in developing new organizational strategies	VL	L	M	H	VH
23.	resign of authority to employees	VL	L	M	H	VH
24.	Faster accountability and synchronization of employees and managers to business changes	VL	L	M	H	VH
25.	Promoting the ability of accountability and the level of employees' and managers' servicing to customers' needs	VL	L	M	H	VH
26.	Contributing to creation of a mutual and general perspective among employees with regard to organization's missions and strategies	VL	L	M	H	VH
27.	Providing all kind of operational and management reports and alerting in critical periods of certain indices	VL	L	M	H	VH
28.	Enhancing the decision making process for employees and managers	VL	L	M	H	VH
29.	Centralizing the activities for managers	VL	L	M	H	VH
30.	Increasing control power for managers in various aspects of organization (manufacturing, financial, process, etc.)	VL	L	M	H	VH
31.	Creating synergy among all employees and managers of the organization	VL	L	M	H	VH