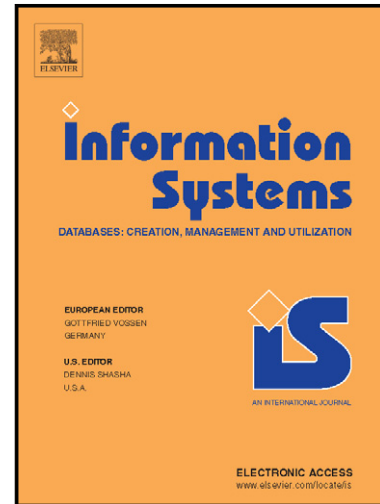


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Challenges of Enterprise Resource Planning Implementation in Iran Large Organizations

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ABSTRACT

An Enterprise Resource Planning (ERP) system is a fully integrated business management system covering functional areas of an enterprise like Logistics, Production, Finance, Accounting and Human Resources. The implementation of this system is a difficult and high cost proposition that places tremendous demands on corporate time and resources. Most of the ERP implementations have been classified as failures because they did not achieve predetermined corporate goals. The main goal of this research is determining the most important challenges of ERP implementation in Iran large organizations and our case study was the Isfahan Telecommunication. The population of this study consists of the 1500 employees of this organization from which 40 experts and employees were selected randomly and uniformly as a sample. We used questionnaire and interviews to collect data and analyzed them by SPSS using one sample t-test. The result of the study shows that the most important challenges of ERP implementation are organizational barriers, especially lack of human resources with the weighted average of 267.33. The next important issues of ERP implementation are technological factors such as unbalanced combination in team projects and then individual factors like lack of senior executives' involvement with the weighted average of 48.8 are the least important challenges in ERP implementation.

KEYWORDS: Enterprise Resource Planning, Implementation, Technological Factors, Manufacturing Resource Planning, Iran.

1. INTRODUCTION

In today's competitive business environment, companies try to provide customers with goods and services faster and less expensively than their competition. How do they do that? Often, the key is an efficient, integrated information system. An Enterprise Resource Planning (ERP) system can help a company integrate its operations by serving as a company-wide computing environment that includes a shared database—delivering consistent data across all business functions in real time [1] As Hitt, Wu, and Zhou (2002) stated, “the standardized and integrated ERP software environment provides a degree of interoperability that was difficult and expensive to achieve with stand-alone, custom-built systems.”[2]

Implementing of the ERP, as other information systems, faces several issues and challenges . [3] It is interesting that only 63-percent of organizations consider their ERP project as a “success” around the world in 2014 [4], and this rate is much lower for Iranian organizations, which ERP is new to them and have failed in most of the cases. According to Helo et al., (2008), “Unlike other information systems, the major problems of ERP implementation are not technologically related issues such as technological complexity, compatibility, standardization, etc. but mostly [about] organization and human related issues like resistance to change, organizational culture, incompatible business processes, project mismanagement, top management commitment, etc.”[5] Top ten issues of ERP implementation are:[6]

1. Lack of senior manager commitment
2. Ineffective communications with users
3. Insufficient training of end-users
4. Failure to get user support
5. Lack of effective project management methodology
6. Conflicts between user departments
7. Attempts to build bridges to legacy applications
8. Composition of project team members

9. Failure to redesign business process
10. Misunderstanding of change requirements

In this paper, after describing ERP concepts and literature, we introduce the most important issues and challenges of implementing of an ERP system, specifically in large organizations and then through an exploratory research by using a Likert scaled questionnaire which its respondents were 40 employees and experts in one of the large organizations in Iran, Isfahan Telecommunication, we determine the most challenging issues and problems of implementing an ERP system that results in failure of implementation and after that we suggest some solutions to overcome the issues of implementing an ERP system.

2. THEORETICAL CONCEPTS

2.1. ERP System

Enterprise Resource Planning was born from its predecessor, Manufacturing Resource Planning (MRP). During its formative years in the 1960s, MRP was referred to as Manufacturing Requirements Planning. MRP and the first ERP systems were designed as an organizational and scheduling tool for manufacturing firms. The function of the next generation of ERP software systems stretched beyond the confines of what it could do for an individual manufacturing firm's internal use, and began including customers and suppliers. [7]

ERP provides two major benefits that do not exist in non-integrated departmental systems: (1) a unified enterprise view of the business that encompasses all functions and departments; and (2) an enterprise database where all business transactions are entered, recorded, processed, monitored, and reported. This unified view increases the requirement for, and the extent of, interdepartmental cooperation and coordination. But it enables companies to achieve their objectives of increased communication and responsiveness to all stakeholders. [8] ERP allows different departments with diverse needs to communicate with each other by sharing the same information in a single system. ERP thus increases cooperation and interaction between all business units in an organization on this basis. [9] Its goals include high levels of customer service, productivity, cost reduction, and inventory turnover, and it provides the foundation for effective supply chain management and e-commerce. It does this by developing plans and schedules so that the right resources—manpower, materials, machinery, and money—are available in the right amount when needed. Fig.1. shows the ERP extension. As it is shown in Fig 1, ERP incorporates other business extensions such as supply chain management and customer relationship management.[10]

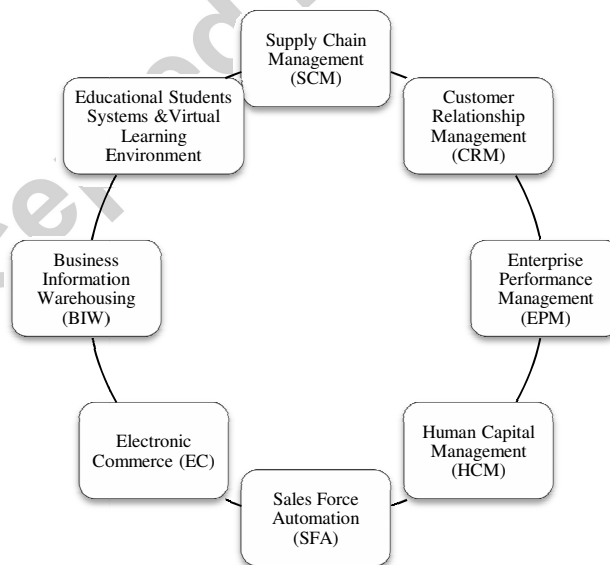


Figure 1. ERP extension [10]

2.2. Challenges of ERP Implementation

Implementing an ERP system is not an inexpensive or risk-free venture. In fact, 65% of executives believe that ERP systems have at least a moderate chance of hurting their businesses because of the potential for implementation problems.[11]. According to the Panorama Consulting's 2014 ERP report, only 63-percent of respondents consider their ERP project a "success." Nearly one quarter of respondents (21-percent) are "neutral" or "don't know" if their

project was a success, indicating that organizations might not have created a business case, conducted a post-implementation audit or communicated about project results. Nearly one in five respondents (16-percent) indicates that their organization's ERP project was a failure.[4]

Despite ERP's promises to benefit companies and a substantial capital investment, not all ERP implementations have successful outcomes. ERP implementations commonly have delayed an estimated schedule and overrun an initial budget. [5]

Furthermore, the literature indicates that ERP implementations have sometimes failed to achieve the organization's targets and desired outcomes. Most of the researches reported that the failure of ERP implementations was not caused by the ERP software itself, but rather by a high degree of complexity from the massive changes ERP causes in organizations.[12]

Carton and Adam (2003), who reported four case studies of ERP implementation in Irish manufacturing firms, indicate a number of issues for ERP implementation as below: [13]

- shifting to ERP can be a painful learning process, requiring unlearning old ways of working
- subsidiaries of multinational firms are often faced with changes imposed, rather than designed
- implementation of ERP systems usually lead to integration of data, which has the effect of centralizing ownership, away from the multinational subsidiary
- IT support also is often centralized (as a way to reduce IT cost), while responsibility for accurate data entry is shifted back to the point of entry, increasing the responsibility and work of the subsidiary
- ERP implementation can often change the balance of power within organizations, usually favoring central administration at the expense of subsidiaries

3. RESEARCH METHODOLOGY

In this paper, after reviewing the literature and discussions with ERP professors and experts, the ERP implementation barriers identified and then by setting appropriate questionnaire which has been confirmed by the professors and ERP experts in Isfahan Telecommunications, the hypothesis has been tested.

We can consider this study as a developing research because the challenges of ERP implementation were categorized by using the existing literature and interviews with ERP experts, and then with the help of the questionnaire and interviews, the condition of the Isfahan Telecommunication in terms of barriers to ERP implementation was discussed. Also, since the way of gathering information was a fieldwork in an ERP specialist's population, it can be also a fieldwork study. With respect to the method of data collection, this study can be seen as a descriptive survey research which describes the characteristics of the studied population included the nature of the situations and relationship. Finally, since the study was done in the Isfahan Telecommunication, as a live and dynamic organization, and its results can be used practically, it is an applied research as well.

The study population consists of the executives, specialists, all engineers and experts in Isfahan Telecommunications who their activities are steering system, handling the user's needs and solving the probable problems .Since the inferential statistics can analyses the data more accurately, the simple random sampling was used in this study. In this type of sampling, all of the defined population members have an equal and independent chance of being in the sample. This means that the selection of a member does not have any effect on the other members of the population selection. The sample size was calculated from the following formula:

$$n = \frac{NZ_{\frac{\alpha}{2}}^2 p(1-p)}{\varepsilon(N-1) + Z_{\frac{\alpha}{2}}^2 p(1-p)} \quad (1)$$

Where N is the size of the statistical population, n is the size of statistical sample, $\varepsilon = 0.05$ is the allowable error, $Z_{\alpha/2}$ is the normal variable of the corresponding unit with a 95% confidence level = 96. 1 and P is the proportion estimate of the variable attribute.

Since the proportion estimate of the variable attribute was not specified and also in order to ensure adequate sample size, P was considered, 0.5; because when all the conditions are constant, $P = 0.5$ ensures the maximum probable size of the sample and also ensures that the sample size is sufficiently large so that can be generalized to the population. Thus, the formula for sample size is equal to 61. 29 \approx 40.

In this study, the main question facing researchers is: "what are the main challenges of ERP Implementation in Isfahan Telecommunication?". We tested the basic hypothesis in the format of three other assumptions, to get the answer of the question:

The main hypothesis:

"Implementation of ERP in Isfahan Telecommunications is facing several challenges."

Secondary assumptions:

- Organizational factors (lack of human resources) are as a challenge to the implementation of ERP in Isfahan Telecommunication.
- Individual factors are as a challenge to the implementation of ERP in Isfahan Telecommunication.
- Technological factors are as a challenge to the implementation of ERP in Isfahan Telecommunication.

To test these assumptions, a questionnaire was set by reading professional articles and consultation with teachers and professors. We decided to use questionnaire firstly owing to the great scope of the research and secondly because respondents were more familiar and comfortable with questionnaire and could answer several questions quickly, additionally this method collects data in a standardized way as can be analyzed more scientifically and easily. The questions of this questionnaire were designed based on the factors which have been identified as critical success factors of ERP implementation by scientific papers, theses and books, so that in the absence of these factors, ERP project would fail. In this study, with respect to the goal of study, type of hypotheses, and also the aim of the questionnaire which was assessing the respondents' agreement with the questionnaire questions in five different spectrums and moreover facility of the Likert scale construction and interpretation in comparison with other measures, this scale was used and hence each specific question was evaluated by using a range of five options: very low, low, medium, high and very high. The main vital factors of ERP implementation in Isfahan Telecommunication were obtained from the main factors of ERP implementation by consultation with the professors as follows:

1. Lack of human resources
2. Staff reluctance and resistance to change
3. Lack of senior executives and management involvement
4. Lack of flexibility and a good understanding of the all organization dimensions to align processes with ERP
5. Absence of a balanced combination in the project teams which leads to poor communication and units conflict
6. Difficulty in coordinating and training software for ERP implementation

3.1. Reliability Test of The Questionnaire

The most famous tool for testing the reliability of a questionnaire is Cronbach's alpha coefficient. Cronbach's alpha reflects the positive correlation of the set members and is computed as follows.

$$\alpha = \frac{K}{K - 1} \left(1 - \frac{\sum S_i^2}{S_{sum}^2} \right) \quad (2)$$

α = Alpha coefficient

i = Subset numbers of the questionnaire questions

S_i^2 = Total variance

S_{sum}^2 = Variance of the test

Cronbach's alpha coefficient can be in the range between zero and +1. Alpha values less than 0.6 indicates poor reliability, 0.7 shows an acceptable reliability range and more than 0.8 shows good validity. [14]

Pre-test was used to determine the reliability of research. The correlation between the answers of the questionnaire was calculated by the split method using the Gutman coefficient which was 0.6725.

Cronbach's alpha coefficients for the first part of the questions was 0.9320 and for the second part was 0.9000 which indicates good and acceptable reliability.

3.2. Analysis of the Questions and Hypotheses

Analysis of questionnaire is assessing the hypothesis, in which data obtained from the questionnaire were tested by using SPSS software. The commonly used test for these conditions is the one sample t test which is a parametric test that determines whether the sample mean is statistically different from a known or hypothesized population mean. This test has two default assumptions as follows: All observations have to follow a normal distribution, and also all observations should be independent. According to the central limit theorem, the distribution is normal; this theorem indicates that the additive coaction of a large number of independent random variables generally leads to probabilities that can, at least approximately, be calculated according to the normal distribution.[15] Moreover due to the sampling method, the second default assumption is also set.

4. RESULTS

We used the weighted average as the central index and the standard deviation as the indicator of the distribution of the sample test to analyze the main assumption. This test determines whether the number of the cases in the sample is significantly different from the expected number or proportion or not? In this test, Likert 5 choice questions were used. Weighted average obtained (267.33) with standard deviation (49.67) has a significant difference compared with the expected average of human resources lack (290.5).

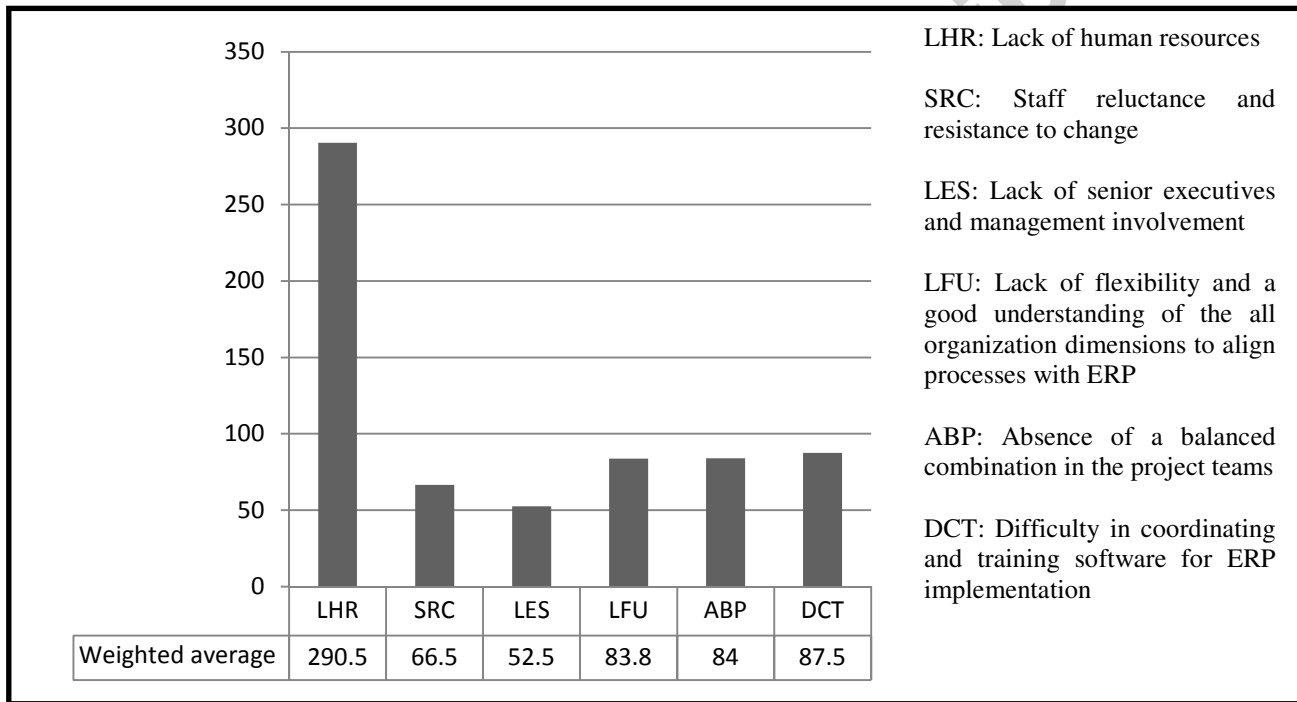


Figure .2 One sample test results of ERP implementation challenges compliance in Isfahan Telecommunication

Figure 2 shows that the obtained weighted average have significant difference with the expected average of each subscale. This means that this difference is not due to measurement error or accident.

4.1. The First Hypothesis

One sample t-test was used to determine the first assumption test, which is shown in table 1.

Table 1. Statistical test results of organizational factors (one sample t-test)

Organizational factors	One sample t-test (number of test -3)					
	(t) amount	Degree of freedom (dg)	Sig.(2tailed)	Difference of averages	95% Standard error	
					low	high
	13.851	36	0.000	0.714	0.612	0.816

Table 2. One sample statistics of organizational factors

Organizational factors	Number	Average	Standard deviation	Average deviation
	40	3.714	0.579	0.0516

In the first hypothesis, since the volume of data that is larger than 30, and according to the central limit theorem, the distribution of the statistical population is normally distributed. Given the normal distribution, in order to explain and interpret variables, one-sample t-test with equal amount of number 3 (Test Value = 3) and 95% confidence interval (5% error) was used. In this case, if the P-Value is greater than 0.05, the evaluated variable has no meaningful difference with the test number (3), so the evaluated case does exist in the population averagely, and if the amount of P-Value is less than 0.05, the measured variable has significant difference with the test number, in this case, if the studied factor average is greater than 3, the studied factor does exist in the population strongly. As discussed above and as shown in Table 1, challenges related to organizational factors does strongly exist in ERP implementation at Isfahan Telecommunication.

4.2. The Second Hypothesis

The same test as the first hypothesis was used to evaluate the second hypothesis. Table 4 and 5 show the second hypothesis test results.

Table 3. Statistical test results of individual factors (one sample t-test)

Individual factors	One sample t-test (number of test -3)					
	(t) amount	Degree of freedom (dg)	Sig.(2tailed)	Difference of averages	95% Standard error	
					low	high
	-0.737	36	0.463	-0.029	-0.1085	0.497

Table 4. One sample statistics of individual factors

Individual factors	Number	Average	Standard deviation	Average deviation
	40	2.97	0.428	0.0399

As shown in Table 3, individual factors are also one of the ERP implementation challenges in Isfahan Telecommunication in an intermediate level, because the P-Value is greater than 0.05.

4.3. The Third Hypotheses

The third hypotheses was evaluated also by the one sample t-test, the results of this test is shown in following tables.

Table 5. Statistical test results of technological factors (one sample t-test)

Technological factors	One sample t-test (number of test -3)					
	(t) amount	Degree of freedom (dg)	Sig.(2tailed)	Difference of averages	95% Standard error	
					low	high
	11	36	0.000	2.05	1	2

Table 6. One sample statistics of technological factors

Technological factors	Number	Average	Standard deviation	Average deviation
	40	2.054	1.078	0.001

As shown in Table 5, technological factors are one of the ERP challenges in Isfahan Telecommunication at a strong level, because the P-Value is less than 0.05.

Friedman test determines whether the factors priority is the same, or at least two factors are significantly different. Variables' prioritizing was used for K correlated samples. The test results in two outputs. The first output is descriptive statistics that indicate the average rank of each variable and the second output is analysis statistics that provide the degree of freedom and the calculated error. Given in Table 6, it indicates that the organizational factors including lack of human resources, lack of flexibility and a good understanding of the all dimensions to align the processes with ERP, have the greatest impact as the ERP implementation challenges in large organizations.

Technological factors, including lack of balance in the composition of the project teams, which leads to poor communication and units' conflict, difficulties with coordination and training software for the ERP implementation, and finally individual factors, such as staff reluctant and resistance to accept changes and also lack of management and senior executives' involvement, are in the next places, respectively.

5. CONCLUSION AND SUGGESTIONS

The main object of this research was determining the most important challenges of ERP implementation in large organizations in Iran; we selected Isfahan Telecommunication as the case study. In this paper, the main issues were classified into 3 main categories, and then, analyzing the collected data from the questionnaire and interviews showed these results:

1. Organizational barriers are the most important ERP implementation challenges.
2. The second important issues are technological factors.
3. The individual factors are the least important challenges of the ERP implementation.

We recommend below suggestion to overcome these issues in an ERP implementation:

1. First stage of an ERP implementation is providing the necessary infrastructure and resources including proper software package or adequate server. Most of the ERP failures in Iran are because of the inadequate and inappropriate software and hardware requirements.
2. As it is said, implementing ERP will result in changes in some organizational processes and it is widely believed that Business process reengineering (BPR) is a basic aspect of ERP implementation.[16] In other words, BPR is a prerequisite to take full advantages of ERP,[17] so organizations have to implement BPR correctly in order to achieve the ERP goals.
3. The company should clearly define what positive results can be expected from the use of the ERP system before or during ERP implementation. This can make the system more useful, and help the users to understand why they should use the ERP system.
4. The ERP system should be easy to use. A complex system decreases its usefulness, and also makes users reluctant to use it. The system should be carefully designed to be user friendly, considering the screen design, user interface, page layout, help facilities, menus, etc.
5. Managers and experts should pay attention to the ERP benefits and have high commitment in ERP implementation; this would encourage the other employees to use ERP system too.

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Appendix

Table A. One sample test results of ERP implementation challenges compliance in Isfahan Telecommunication

Scale and subscale	Number of Respondents	Obtained weighted average	Standard deviation	t quantity	Significant	Degree of freedom	Number of questions	Expected average
Lack of human resources	40	267.33	49.67	-2.55	0.01*	11	4	290.5
Staff reluctance and resistance to change	40	63.06	11.49	-1.77	0.008*	14	5	66.5
Lack of senior executives and management involvement	40	48.8	9.46	-2.34	0.02*	15	6	52.5
Lack of flexibility and a good understanding of the all organization dimensions to align processes with ERP	40	77.43	16.78	-2.01	0.04*	21	8	83.8
Absence of a balanced combination in the project teams	40	78.15	16.06	-2.09	0.04*	22	8	84
Difficulty in coordinating and training software for ERP implementation	40	76.66	13.73	-4.86	00.00*	18	6	87.5

*= p = 0.05

Table B. Data derived from the questionnaire

Job Position	Manager	Project Manager	Manager	Expert	Expert	Supervisor	Project Manager	Assistant Manager	Expert	Vice President
Gender	Male	Male	Male	Male	Female	Male	Male	Female	Male	Male
Age	45	38	41	44	38	42	41	45	34	40
Q 1	2.00	2.00	3.00	3.00	3.00	2.00	1.00	2.00	3.00	4.00
Q 2	3.00	2.00	3.00	1.00	3.00	2.00	3.00	2.00	3.00	3.00
Q 3	2.00	1.00	2.00	1.00	4.00	3.00	2.00	2.00	4.00	4.00
Q 4	2.00	2.00	3.00	2.00	2.00	2.00	3.00	3.00	4.00	2.00
Q 5	1.00	2.00	2.00	1.00	4.00	2.00	3.00	3.00	2.00	3.00
Q 6	3.00	2.00	2.00	1.00	4.00	1.00	2.00	3.00	3.00	4.00
Q 7	4.00	1.00	3.00	2.00	4.00	2.00	3.00	3.00	3.00	3.00
Q 8	3.00	2.00	3.00	2.00	3.00	2.00	3.00	2.00	3.00	3.00
Q 9	3.00	1.00	3.00	2.00	3.00	3.00	2.00	3.00	3.00	4.00
Q 10	3.00	1.00	3.00	2.00	4.00	3.00	2.00	1.00	3.00	4.00
Q 11	3.00	3.00	3.00	2.00	2.00	3.00	1.00	3.00	4.00	3.00
Q 12	3.00	3.00	2.00	2.00	3.00	3.00	1.00	2.00	3.00	4.00
Q 13	2.00	2.00	2.00	2.00	3.00	3.00	1.00	3.00	3.00	4.00
Q 14	3.00	2.00	2.00	2.00	4.00	2.00	2.00	2.00	4.00	4.00
Q 15	3.00	1.00	2.00	2.00	2.00	3.00	4.00	4.00	5.00	3.00
Q 16	3.00	2.00	3.00	2.00	2.00	3.00	2.00	3.00	3.00	3.00
Q 17	3.00	2.00	3.00	1.00	2.00	3.00	3.00	1.00	3.00	4.00
Q 18	2.00	2.00	3.00	3.00	2.00	4.00	2.00	3.00	2.00	2.00
Q 19	2.00	3.00	3.00	2.00	2.00	4.00	2.00	4.00	3.00	4.00
Q 20	1.00	2.00	3.00	4.00	2.00	4.00	2.00	4.00	4.00	2.00
Q 21	3.00	2.00	2.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00
Q 22	2.00	4.00	4.00	5.00	2.00	4.00	2.00	4.00	4.00	3.00
Q 23	1.00	1.00	2.00	1.00	2.00	4.00	2.00	3.00	3.00	2.00
Q 24	2.00	2.00	2.00	1.00	2.00	3.00	4.00	2.00	3.00	2.00
Q 25	2.00	1.00	2.00	1.00	4.00	2.00	4.00	2.00	1.00	3.00
Q 26	2.00	1.00	3.00	5.00	4.00	2.00	2.00	3.00	4.00	3.00
Q 27	1.00	2.00	4.00	2.00	3.00	3.00	4.00	3.00	3.00	3.00
Q 28	1.00	1.00	4.00	1.00	2.00	4.00	2.00	4.00	4.00	2.00
Q 29	2.00	2.00	2.00	2.00	2.00	3.00	4.00	2.00	3.00	2.00
Q 30	2.00	2.00	3.00	3.00	2.00	3.00	4.00	2.00	2.00	4.00
Q 31	1.00	2.00	3.00	2.00	2.00	4.00	2.00	1.00	2.00	4.00
Q 32	1.00	3.00	4.00	1.00	2.00	4.00	4.00	1.00	3.00	2.00
Q 33	2.00	2.00	4.00	2.00	3.00	2.00	2.00	2.00	3.00	3.00
Q 34	2.00	2.00	2.00	1.00	2.00	4.00	4.00	2.00	4.00	2.00
Q 35	2.00	1.00	2.00	2.00	2.00	4.00	4.00	2.00	2.00	2.00
Q 36	2.00	1.00	2.00	1.00	2.00	4.00	4.00	2.00	4.00	2.00
Q 37	1.00	2.00	2.00	3.00	2.00	4.00	4.00	2.00	3.00	3.00

Job Position	Expert	Expert	Project Manager	Expert	Manager	CFO	Expert	Team Leader	Expert	Project Manager
Gender	Male	Male	Male	Male	Male	Male	Male	Male	Female	Female
Age	35	36	48	51	41	38	29	43	45	44
Q 1	2.00	2.00	2.00	3.00	1.00	2.00	2.00	3.00	3.00	3.00
Q 2	3.00	3.00	3.00	2.00	2.00	3.00	2.00	3.00	1.00	3.00
Q 3	2.00	2.00	2.00	3.00	2.00	2.00	1.00	2.00	1.00	4.00
Q 4	2.00	2.00	2.00	2.00	3.00	2.00	2.00	3.00	2.00	2.00
Q 5	3.00	1.00	2.00	1.00	1.00	1.00	2.00	2.00	1.00	4.00
Q 6	4.00	3.00	3.00	2.00	2.00	3.00	2.00	2.00	1.00	4.00
Q 7	3.00	3.00	3.00	2.00	2.00	4.00	1.00	3.00	2.00	4.00
Q 8	3.00	4.00	2.00	3.00	2.00	3.00	2.00	3.00	2.00	3.00
Q 9	1.00	3.00	2.00	2.00	2.00	3.00	1.00	3.00	2.00	3.00
Q 10	2.00	2.00	2.00	3.00	1.00	3.00	1.00	3.00	2.00	4.00
Q 11	2.00	1.00	2.00	4.00	2.00	3.00	3.00	3.00	2.00	2.00
Q 12	3.00	4.00	3.00	2.00	2.00	3.00	3.00	2.00	2.00	3.00
Q 13	2.00	3.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00
Q 14	2.00	2.00	3.00	2.00	2.00	3.00	2.00	2.00	2.00	4.00
Q 15	2.00	1.00	2.00	2.00	3.00	3.00	1.00	2.00	2.00	2.00
Q 16	2.00	3.00	3.00	3.00	2.00	3.00	2.00	3.00	2.00	2.00
Q 17	2.00	5.00	4.00	2.00	1.00	3.00	2.00	3.00	1.00	2.00
Q 18	3.00	4.00	2.00	4.00	2.00	2.00	2.00	3.00	1.00	2.00
Q 19	3.00	4.00	3.00	4.00	2.00	2.00	3.00	3.00	3.00	2.00
Q 20	2.00	4.00	2.00	4.00	1.00	1.00	2.00	3.00	3.00	3.00
Q 21	2.00	3.00	2.00	4.00	3.00	3.00	2.00	2.00	4.00	2.00
Q 22	2.00	3.00	3.00	2.00	2.00	2.00	4.00	2.00	4.00	2.00
Q 23	1.00	3.00	2.00	3.00	1.00	2.00	1.00	4.00	5.00	2.00
Q 24	1.00	2.00	2.00	3.00	2.00	2.00	2.00	3.00	1.00	3.00
Q 25	3.00	3.00	2.00	3.00	2.00	2.00	2.00	2.00	1.00	4.00
Q 26	3.00	3.00	4.00	3.00	2.00	2.00	2.00	2.00	2.00	4.00
Q 27	2.00	3.00	2.00	4.00	1.00	2.00	2.00	3.00	5.00	3.00
Q 28	3.00	3.00	2.00	3.00	1.00	1.00	1.00	4.00	2.00	3.00
Q 29	1.00	2.00	1.00	2.00	2.00	2.00	2.00	4.00	1.00	2.00
Q 30	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Q 31	3.00	2.00	2.00	2.00	1.00	1.00	2.00	3.00	3.00	2.00
Q 32	2.00	2.00	2.00	3.00	1.00	1.00	3.00	4.00	2.00	2.00
Q 33	3.00	3.00	2.00	2.00	2.00	2.00	3.00	4.00	1.00	3.00
Q 34	3.00	3.00	2.00	3.00	2.00	2.00	2.00	4.00	2.00	2.00
Q 35	2.00	2.00	2.00	4.00	2.00	2.00	1.00	2.00	1.00	2.00
Q 36	3.00	2.00	1.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00
Q 37	1.00	2.00	2.00	4.00	1.00	2.00	2.00	2.00	2.00	2.00

Job Position	Manager	Project Manager	Assistant Manager	Project Manager	Expert	Expert	Supervisor	Expert	Manager	Expert
Gender	Male	Female	Male	Male	Male	Male	Female	Female	Male	Male
Age	50	36	42	47	40	33	40	37	36	36
Q 1	2.00	1.00	2.00	3.00	4.00	2.00	3.00	3.00	2.00	2.00
Q 2	2.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00	2.00
Q 3	3.00	2.00	2.00	4.00	4.00	3.00	3.00	2.00	3.00	2.00
Q 4	2.00	2.00	3.00	4.00	2.00	2.00	2.00	2.00	2.00	3.00
Q 5	2.00	3.00	3.00	2.00	3.00	3.00	2.00	3.00	1.00	1.00
Q 6	1.00	2.00	2.00	3.00	4.00	4.00	1.00	3.00	2.00	2.00
Q 7	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00
Q 8	2.00	3.00	2.00	2.00	3.00	3.00	3.00	2.00	3.00	2.00
Q 9	3.00	2.00	3.00	3.00	4.00	1.00	4.00	2.00	2.00	2.00
Q 10	3.00	3.00	1.00	3.00	4.00	2.00	3.00	2.00	3.00	1.00
Q 11	3.00	1.00	3.00	4.00	3.00	3.00	2.00	3.00	4.00	2.00
Q 12	3.00	1.00	2.00	3.00	4.00	4.00	1.00	3.00	2.00	2.00
Q 13	3.00	1.00	2.00	4.00	4.00	2.00	4.00	3.00	2.00	2.00
Q 14	2.00	2.00	2.00	4.00	4.00	2.00	3.00	3.00	2.00	3.00
Q 15	3.00	4.00	4.00	5.00	4.00	2.00	2.00	3.00	3.00	3.00
Q 16	3.00	3.00	3.00	3.00	3.00	3.00	1.00	3.00	3.00	2.00
Q 17	3.00	3.00	1.00	3.00	4.00	2.00	3.00	4.00	3.00	2.00
Q 18	4.00	2.00	3.00	2.00	2.00	4.00	3.00	4.00	4.00	2.00
Q 19	3.00	2.00	4.00	3.00	4.00	4.00	3.00	4.00	4.00	2.00
Q 20	4.00	2.00	4.00	4.00	2.00	4.00	2.00	4.00	4.00	1.00
Q 21	4.00	4.00	4.00	4.00	4.00	4.00	2.00	3.00	3.00	3.00
Q 22	4.00	2.00	4.00	4.00	3.00	4.00	2.00	3.00	2.00	2.00
Q 23	4.00	3.00	3.00	3.00	3.00	4.00	1.00	3.00	3.00	1.00
Q 24	3.00	4.00	2.00	3.00	2.00	3.00	1.00	2.00	3.00	2.00
Q 25	3.00	4.00	2.00	1.00	3.00	2.00	3.00	3.00	3.00	2.00
Q 26	2.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00
Q 27	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	4.00	2.00
Q 28	4.00	2.00	4.00	4.00	2.00	3.00	3.00	2.00	2.00	1.00
Q 29	3.00	4.00	3.00	3.00	2.00	3.00	1.00	2.00	2.00	2.00
Q 30	3.00	4.00	2.00	2.00	4.00	3.00	2.00	2.00	2.00	2.00
Q 31	4.00	2.00	1.00	3.00	4.00	4.00	3.00	2.00	2.00	1.00
Q 32	4.00	4.00	1.00	3.00	3.00	4.00	3.00	2.00	3.00	1.00
Q 33	2.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00
Q 34	3.00	4.00	2.00	4.00	2.00	4.00	3.00	3.00	3.00	2.00
Q 35	4.00	4.00	2.00	3.00	2.00	4.00	2.00	2.00	3.00	2.00
Q 36	4.00	4.00	3.00	4.00	2.00	4.00	3.00	2.00	2.00	2.00
Q 37	4.00	3.00	3.00	3.00	2.00	4.00	2.00	2.00	2.00	2.00

Job Position	Expert	Assistant Manager	Manager	Expert	Project Manager	Project Manager	Assistant Manager	Manager	Expert	Expert
Gender	Female	Male	Female	Male	Male	Male	Male	Male	Male	Female
Age	40	48	39	32	35	37	40	37	33	28
Q 1	4.00	4.00	5.00	5.00	4.00	5.00	5.00	5.00	4.00	3.00
Q 2	4.00	4.00	5.00	4.00	4.00	4.00	3.00	3.00	4.00	4.00
Q 3	4.00	3.00	5.00	4.00	4.00	4.00	4.00	4.00	5.00	3.00
Q 4	3.00	4.00	5.00	5.00	4.00	5.00	3.00	4.00	4.00	2.00
Q 5	3.00	3.00	5.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00
Q 6	4.00	4.00	5.00	4.00	4.00	5.00	4.00	3.00	5.00	5.00
Q 7	3.00	4.00	4.00	3.00	4.00	4.00	3.00	5.00	4.00	3.00
Q 8	4.00	3.00	3.00	4.00	4.00	3.00	4.00	4.00	5.00	4.00
Q 9	4.00	4.00	5.00	3.00	5.00	5.00	4.00	4.00	5.00	2.00
Q 10	5.00	2.00	5.00	5.00	5.00	4.00	3.00	5.00	5.00	2.00
Q 11	5.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	5.00	4.00
Q 12	4.00	4.00	5.00	5.00	3.00	5.00	3.00	3.00	4.00	2.00
Q 13	4.00	3.00	4.00	4.00	4.00	4.00	5.00	3.00	5.00	3.00
Q 14	4.00	3.00	5.00	4.00	5.00	3.00	4.00	3.00	5.00	2.00
Q 15	5.00	4.00	5.00	5.00	4.00	5.00	5.00	3.00	5.00	4.00
Q 16	5.00	5.00	5.00	5.00	3.00	3.00	4.00	3.00	5.00	4.00
Q 17	4.00	4.00	5.00	4.00	5.00	5.00	3.00	3.00	5.00	3.00
Q 18	4.00	4.00	5.00	5.00	4.00	4.00	4.00	4.00	5.00	3.00
Q 19	3.00	3.00	5.00	4.00	3.00	3.00	3.00	5.00	5.00	3.00
Q 20	2.00	3.00	5.00	3.00	3.00	2.00	2.00	4.00	4.00	4.00
Q 21	2.00	2.00	4.00	4.00	4.00	2.00	3.00	4.00	4.00	3.00
Q 22	2.00	2.00	1.00	4.00	3.00	3.00	2.00	4.00	4.00	2.00
Q 23	3.00	3.00	5.00	5.00	4.00	2.00	3.00	5.00	5.00	2.00
Q 24	4.00	4.00	5.00	5.00	5.00	3.00	5.00	5.00	5.00	4.00
Q 25	4.00	3.00	5.00	4.00	4.00	3.00	4.00	4.00	5.00	4.00
Q 26	3.00	4.00	5.00	4.00	4.00	4.00	3.00	4.00	5.00	3.00
Q 27	3.00	3.00	5.00	4.00	3.00	3.00	4.00	4.00	5.00	2.00
Q 28	5.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	4.00
Q 29	5.00	4.00	5.00	5.00	4.00	5.00	4.00	4.00	5.00	5.00
Q 30	5.00	4.00	5.00	5.00	5.00	5.00	4.00	4.00	4.00	5.00
Q 31	4.00	5.00	5.00	5.00	5.00	5.00	4.00	3.00	4.00	4.00
Q 32	5.00	5.00	5.00	5.00	4.00	5.00	5.00	4.00	5.00	5.00
Q 33	4.00	4.00	4.00	5.00	5.00	5.00	3.00	4.00	4.00	4.00
Q 34	4.00	4.00	5.00	5.00	4.00	5.00	4.00	5.00	5.00	3.00
Q 35	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00
Q 36	5.00	3.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	3.00
Q 37	4.00	3.00	5.00	5.00	4.00	5.00	3.00	5.00	5.00	4.00

Accepted manuscript

- We selected Isfahan Telecommunication as a large organization in Iran to identify the ERP challenges.
- We used questionnaire and interviews to test our hypothesis.
- Organizational barriers such as Lack of human resources are the main ERP implementing challenge.
- Technological factors and individual factors are the next important challenges to implement ERP.
- ERP system should be easy to learn, software and hardware requirement have to be sufficient, appropriate and up to date and managers' commitment and support have to be high.