

# Effectiveness analysis of outsourcing activities in the area of operation of the private sector and providing the necessary solutions (case study Khorasan Razavi Gas Company, Iran)

Vahid Etemadi<sup>1</sup> and Alireza khadivian<sup>2</sup>

<sup>1</sup>Employee of Gas Co. ,Human resources, Gas company of mashhad

<sup>2</sup>Employee of Gas Co. ,Department of Exploitation of Gas Company of Mashhad, Islamic Azad University, Neyshabur, Iran.

Received: May 14, 2015

Accepted: August 27, 2015

---

## ABSTRACT

Policy of assigning tasks to non-governmental sector in the National Iranian Gas Company in order to reduce costs, increase productivity and improve service levels has been in the company agenda as a duty and in this context, the planned objectives to outsource activities have increased in Khorasan Razavi Gas Company of Iran in recent years. In this study a model was designed to assess the factors affecting the effectiveness of outsourcing and research hypotheses were formulated on this basis that these assumptions using a variety of statistical tests including Pearson's correlation coefficient and chi-square test were analyzed that all research hypotheses were approved. Helping the Friedman test, ranking of variables in order to determine the most important variable was done and the risk variable obtained the highest degree. Finally, with the help of brainstorming and fish bone method implementing, strategies to improve the effectiveness of outsourcing were offered.

**KEYWORDS:** outsourcing, effectiveness, efficiency, contractor, private sector.

---

## 1. INTRODUCTION

Outsourcing has been noticed as one of the main tools of organizational development, increase productivity and create competitive advantage in today's world. Due to limited resources for each organization in both private and public sector, outsourcing process can be a way to enhance productivity and expand the areas of activity for organizations. In the meantime, some organizations, outsource their process of partial or total [1].

Outsourcing non-core activities of an organization provides business opportunity for new suppliers who are working in the services market to absorb [2].

In iran, because of the various reasons, the extensive use of outsourcing has not been used by administrators. Therefore, researchers and industry executives need to study rules to do it so that under certain and scientific circumstances, we know what, how, when, in what manner and to whom to do [3]. Outsourcing is an approach to the assignment operation, maintenance levels and in different forms to external contractors and enforce a system of control and supervision over the implementation of them.

### 1.1. Reasons for Outsourcing

In the past, outsourcing was used when the organization could not function well, was weak in competition, had reduced capacity, they were faced with financial problems or they were failed in terms of technology while today's organizations that are quite successful, use this tool for restructuring their organizations and managers of these organizations have recognized that the development of key

---

**Corresponding author:** Vahid Etemadi, department of human resource of gas company of Mashhad, Islamic Azad University, Semnan, Iran. E-mail: vahid531222@gmail.com

capabilities to meet customer needs as a critical issue (the audience) is necessary and efforts should be made in this way. In this regard, the main reasons for outsourcing can be stated as follows:

#### **1.1.1. Save money:**

It is the most common reason for the decision to outsource to save costs. Achieving lower costs is due to economies of scale in other businesses. Because of the lack of possibility of creating economies of scale in all its business processes, they use outsource to use the advantage of other businesses.

#### **1.1.2. Focus on the core competence of the organization:**

the available resources of an organization is limited and the organization have to focus its resources on its core competence to be able to remain competitive in the space. Processes or activities that are of vital importance to the organization's core competencies are appropriate processes for outsource. Doing all the business processes of an organization within the organization requires resources, expertise, and attention it is not often enough for the organization and must be provided from foreign sources.

#### **1.1.3. Restructuring costs:**

outsourcing is able to change the ratios like fixed to variable costs. Thus, the possibility of making the fee structure to a variable cost structure is provided and the possibility to predict variable costs increases[4].

#### **1.2. Benefits of Outsourcing:**

- **Reduce operational costs**
- **The focus on their core processes**
- **Quality of the organization's actions**
- **Access to the organization's external expertise**
- **Internal resource mobilization of the main objective of the organization**
- **Improve financial results**
- **Reduce overhead costs**
- **Increase return investment rate**
- **Innovation**
- **Flexibility in the rules and regulations**
- **Adjusted human resources [5].**

#### **1.3. Disadvantages of outsourcing:**

- **The difficulty of control over outsourced processes**
- **The dependence of organization to the supplier**
- **Changes in the working conditions over the time**
- **The difficulty of returning to the pre-outsourcing conditions**
- **uncontrolled effects on organization's employees**
- **Reduction in staff feeling of job security**
- **Increasing primary costs**
- **Need to organize a team to monitor suppliers**
- **changing the cost nature**
- **Increasing risk**
- **transfer of ownership**
- **Information maintenance [5].**

#### **1.4. Outsourcing in Khorasan Razavi Gas Company ,iran**

Policy of assigning tasks to non-governmental sector in the National Iranian Gas Company in order to reduce costs, increase productivity and promotion services as a duty placed on the agenda of the company and this implies a determination to reduce the administration in this area. The main reasons for outsourcing include improving the organization to focus on core activities, achieving superior specialty contractors, reduce costs, increase productivity and improve service levels in which the most common reason for the decision to outsource is cost savings.

Due to the growing gas operations and the need to increase productivity and reduce operating and implementation costs of Khorasan Razavi Gas Company and in order to achieve the objectives of the first and second five-year program of economic, social and cultural rights on the delegate part of public

executive agencies, Khorasan Razavi Gas Company was up to the divestiture of services, facilities and so on to the private sector. Besides the effort and movement towards such a policy, a comprehensive investigation and comprehensive study to determine the effectiveness of divestiture activities is essential. It shall be specified transferring of activities to the private sector, how the problem is solved, and was it possible to increase the quality and satisfaction and reduce costs or not? To this purpose, this project was on the of Khorasan Razavi Gas Company's agenda.

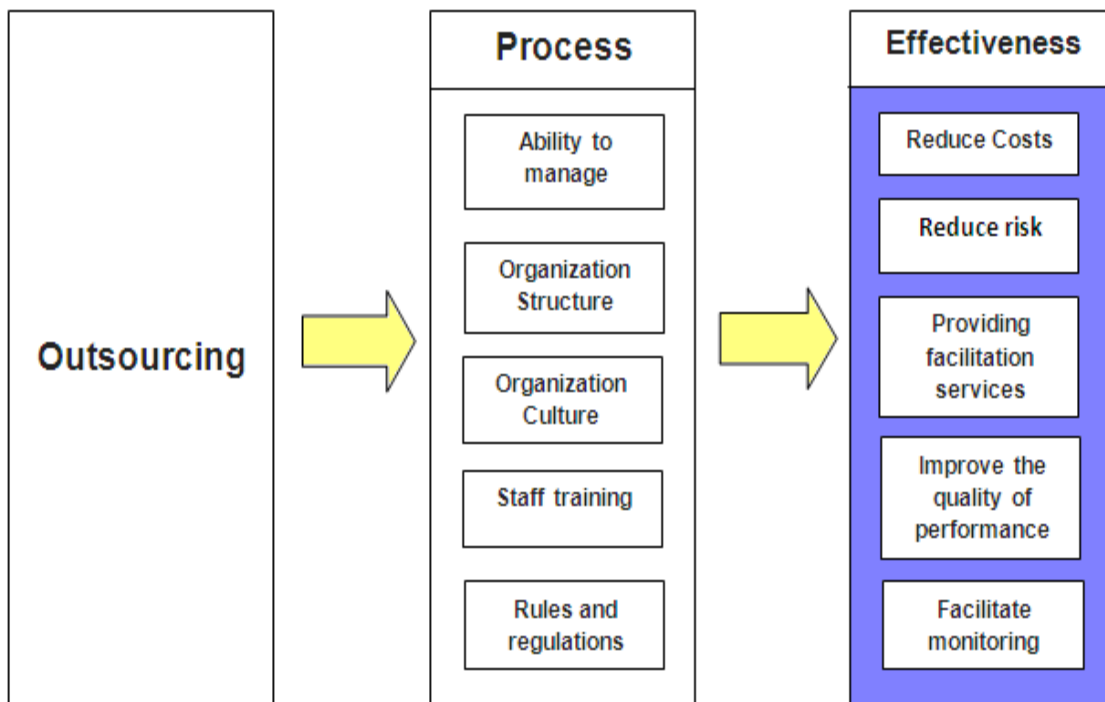
**1.5. Research Objectives**

The main objective of the government and subsequently Khorasan Razavi Gas Company to delegate part of operating in the private sector, is to reduce the large body of government organizations and financial burden on the one hand and public participation in the management of various parts of the country on the other. So the calculation of the effect of divesting activities is necessary to determine the transfer of activities to the private sector, how much of the problem is solved and increase the quality and satisfaction and reduce costs. The secondary objectives of this study are as follows:

- Investigate and identify activities of the company which are transferred to the private sector or are transferable.
- The evaluation of effectiveness of activities in the operational area (rescue, network maintenance and station units) to the private sector.
- Diagnosis the challenges for the operational areas (rescue, network maintenance and station units) to the private sector
- Effect of increase or decrease in the cost of transfers
- Effect of increase or decrease in transfers services and activities
- Analyzing the performance quality and Hypotheses risk by brainstorming and deriving from fish bone diagram and advice.

**1.6. Conceptual Model of Research**

Below, A diagram of the conceptual model has shown that the assumptions of the research are derived from variables of the model.



**Figure 1. Conceptual Model of Research**

## 2. MATERIALS AND METHODS

This research is a descriptive-correlation research in which the relation among the variables was investigated without making any changes in them. The research is a field study and to gather the data a questionnaire was used.

### 2.1. Statistical Population, Sample, and Sampling Method

Statistical population of this research includes all officials of rescue units and repair gas exploitation field of Khorasan Razavi Gas Company whose number is 113. Khorasan Razavi Gas Company currently has 7 areas in Mashhad and a number of different areas of the state. The questionnaires were distributed among all employees of the rescue and repair units of these areas.

In this study, because of the small size of the population and to achieve accurate data and results, rather than using conventional methods of sampling, the census method is used. Census is a way in which data collection is done by the entire population. In other words, in this method, the sample size is equal to the size of the population [6].

### 2.2. Instrument

The main tools for collecting data in this study are:

**2.2.1. library resources, analysis of documents, books, articles, theses, and use of Internet resources.**

**2.2.2. Organizational documents (statistics, performance reports, etc.)**

**2.2.3. Questionnaire** : Much of the data in this study were obtained through questionnaires. The questionnaire is formed of 16 questions with 5-choice Likert scale (1 = very low, 2 = low, 3 = moderate, 4 = high, 5 = very much).

The questionnaire is composed of 16 questions that questions 1 through 3 is related to variable risk, questions 4 through 7 to the variable Supply (flexibility), questions 8 through 11 to quality practice questions 12 through 14 to the variable monitoring (inspection ) and two questions 15 and 16 to the variable cost. Narrative research, the questionnaire shows compatibility of questionnaire with the objectives of the study. In the present study, given that the overall framework of the questionnaire survey is based on a conceptual model of factors and indicators so the narrative is necessary. To ensure the validity of the study, teachers and advisors, as well as key experts of Khorasan Razavi Gas Company's comments are used. Cronbach's alpha was used to assess the reliability of the questionnaire. In this study, Cronbach's alpha values for a total of 20 employees of Mashhad parts and repair services and parts of the state as sample was calculated by SPSS software. The amount of 93%, indicates the validity of the questionnaire is relatively good. After collecting the data from the total population, Cronbach's alpha coefficient for the questionnaire was calculated and its amount is 91%. So we can say that this study is of good reliability. The Cronbach's alpha coefficients was calculated for each variable in the model and the results of that showed acceptable values.

### 2.3. Demographic data:

Demographic data of the official staff of the rescue operation and maintenance areas (data related to education, job experience, job category, the nature of the job and the workplace), which is obtained through the questionnaire are described as follow.

#### a.Level of Education:

In this study, the respondents are intended in 5 categories associated with the level of education include those with the low literate, Diploma, Advanced Diploma, Bachelor's, and Master's degree or higher. The respondents were 113 members, 1 person (approximately 0.9%) of the low literate, 26 persons (approximately 23%) Diploma, 29 persons (approximately 25.7%) of Advanced Diploma degree, 48 persons (approximately 42.5%) BA degree and 9 persons (approximately 8%) are of the master's degree or higher.

#### b.Experience:

In this study, the statistical population members are considered in 3 categories for the experience (0 to 10 years, 10 to 20 years, and 20 to 30 years). In the distribution of the number of members of the population

to experience the highest frequency of respondents are between 20 and 30 years and then between 10 to 20 years.

**c. level of jobs**

In this study, to determine the levels of the jobs of respondents, questionnaire respondents considered 2 levels: employees and supervisors. From the population of 113 members, 69 persons of them (about 61.1 percent) were employees and 44 members (about to 38.9 percent) were the supervisors And the frequency of respondents rank in employees is far greater than the number of supervisors.

**d.Nature of jobs :**

The nature of jobs the respondents were divided into two categories, namely, rescue and repair jobs. Most of the respondents are engaged in repair and fewer of the respondents are of the rescue unit.

**e.Workplace:**

For questions related to the work in this research, two categories of personnel in city of Mashhad and staff areas in the state are determined.

**2.4.Specific data**

The distribution of the respondents' opinions about each of the dimensions of this model is:

**Table 1. Statistical parameters of the conceptual model of the separation Questions**

Variables	Questions	N	Mean	Std. Deviation
Risk	Q1	113	2.93	1.041
	Q2	113	2.64	0.945
	Q3	113	2.59	1.041
Supply flexibility	Q4	113	2.91	1.074
	Q5	113	3.07	0.913
	Q6	113	2.98	1
	Q7	113	3.07	1.024
Quality Performance	Q8	113	2.76	1.046
	Q9	113	2.77	1.009
	Q10	113	2.9	1
	Q11	113	3.12	1.001
Supervision (inspection)	Q12	113	2.64	0.856
	Q13	113	3.19	0.981
	Q14	113	2.77	0.954
Cost	Q15	113	3.48	1.061
	Q16	113	3.61	0.968
<b>Total</b>		113	2.965	0.669

**Table 2. Statistical parameters of the conceptual model based on variables**

Variables	N	Mean	Std. Deviation
Risk	113	2.7198	0.79752
Supply flexibility	113	3.0088	0.7676
Quality Performance	113	2.8894	0.80244
Supervision (inspection)	113	2.8673	0.77733
Cost	113	3.5442	0.89532
Total	113	2.965	0.669

## 2.5. Data Analysis Method

To analyze data collected from questionnaires statistical software such as SPSS and Excel were used. In order to measure the reliability, Cronbach's alpha was calculated and was used for testing the hypothesis of a chi-square and Pearson's correlation coefficient test. In this study, a model was designed to assess the factors affecting the effectiveness of outsourcing and research hypotheses were formulated on this basis that these assumptions using a variety of statistical tests including Pearson's correlation coefficient and chi-square test were analyzed that all research hypotheses were approved. Helping the Friedman test, ranking of variables in order to determine the most important variable.

## 3. Results

### 3.1. Inferential analysis of data

In this research to test the hypotheses, the error or the alpha is considered 05/0 that for the statisticians, the value is acceptable.

### 3.2. Correlation between five components:

Correlation test results indicate significant correlation between the five components of the "risk", "services", "performance", "supervision" and "cost". (Unparametric Pearson's correlation coefficient was used here). As it can be seen, in the significant level of 0/01 there is also a significant correlation between the five factors.

Note: output statistical software provides statistics called the minimum level of significance (Sig) that values close to zero would reject the null hypothesis and the default values close to 1 lead to accept null hypothesis. So we can reject the null hypothesis.

**Correlations**

		Risk	Supply flexibility	Quality Performance	Supervision (inspection)	Cost
Risk	Pearson Correlation	1.000	.624**	.694**	.588**	.407**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	113.000	113	113	113	113
Supply flexibility	Pearson Correlation	.624**	1.000	.750**	.652**	.504**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	113	113.000	113	113	113
Quality Performance	Pearson Correlation	.694**	.750**	1.000	.747**	.504**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	113	113	113.000	113	113
Supervision (inspection)	Pearson Correlation	.588**	.652**	.747**	1.000	.500**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	113	113	113	113.000	113
Cost	Pearson Correlation	.407**	.504**	.504**	.500**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	113	113	113	113	113.000

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**3.3.Data analysis using the chi-square test :**

**3.3.1.The first hypothesis testing**

Null hypothesis (H0): outsourcing activities of rescue and repair operation units cannot improve risk in Khorasan Razavi Gas Company.

Opposite hypothesis (H1): outsourcing activities of rescue and repair operation units improve risk in Khorasan Razavi Gas Company.

$$\left\{ \begin{array}{l} H_0: \chi^2=0 \\ H_1: \chi^2>0 \end{array} \right.$$

**Table 3. Results of first hypothesis testing**

	Risk
Chi-Square	68.195a
Freedom Degree	12
Asymp. Sig.	.000

According to Table 3, the obtained P-Value is equal to 0.000. This value was less than 0.05, so the risk have a significant and positive effect on the effectiveness of outsourcing and as a result, H0 hypothesis is rejected and H1 hypothesis is accepted.

**3.3.2.The second hypothesis testing**

Null hypothesis (H0): outsourcing activities of rescue and repair operation units cannot improve services in Khorasan Razavi Gas Company.

Opposite hypothesis (H1): outsourcing activities of rescue and repair operation units improve services in Khorasan Razavi Gas Company.

$$\left\{ \begin{array}{l} H_0: \chi^2=0 \\ H_1: \chi^2>0 \end{array} \right.$$

**Table 4. Results of first hypothesis testing**

	Supply flexibility
Chi-Square	67.531a
Freedom Degree	15
Asymp. Sig.	.000

According to Table 4, the obtained P-Value is equal to 0.000. This value was less than 0.05, so the services have a significant and positive effect on the effectiveness of outsourcing and as a result, H0 hypothesis is rejected and H1 hypothesis is accepted.

**3.3.3.The third hypothesis testing**

Null hypothesis (H0): outsourcing activities of rescue and repair operation units cannot improve performance quality in Khorasan Razavi Gas Company.

Opposite hypothesis (H1): outsourcing activities of rescue and repair operation units improve performance quality in Khorasan Razavi Gas Company.

$$\left\{ \begin{array}{l} H_0: \chi^2=0 \\ H_1: \chi^2>0 \end{array} \right.$$

**Table 5. The results of the third hypothesis testing**

	performance quality
Chi-Square	64.416a
Freedom Degree	15
Asymp. Sig.	.000

According to Table 5, the obtained P-Value is equal to 0.000. This value was less than 0.05, so the performance quality have a significant and positive effect on the effectiveness of outsourcing and as a result, H0 hypothesis is rejected and H1 hypothesis is accepted.

**3.3.4. The fourth hypothesis testing**

Null hypothesis (H0): outsourcing activities of rescue and repair operation units cannot improve supervision quality in Khorasan Razavi Gas Company.

Opposite hypothesis (H1): outsourcing activities of rescue and repair operation units improve supervision quality in Khorasan Razavi Gas Company.

$$\left\{ \begin{array}{l} H0: \chi^2=0 \\ H1: \chi^2>0 \end{array} \right.$$

**Table 6. The results of the third hypothesis testing**

	Supervision (inspection)
Chi-Square	55.319a
Freedom Degree	11
Asymp. Sig.	.000

According to Table 6, the obtained P-Value is equal to 0.000. This value was less than 0.05, so the performance quality have a significant and positive effect on the effectiveness of outsourcing and as a result, H0 hypothesis is rejected and H1 hypothesis is accepted.

**3.3.5. The fifth hypothesis testing**

Null hypothesis (H0): outsourcing activities of rescue and repair operation units cannot improve cost quality in Khorasan Razavi Gas Company.

Opposite hypothesis (H1): outsourcing activities of rescue and repair operation units improve cost quality in Khorasan Razavi Gas Company.

$$\left\{ \begin{array}{l} H0: \chi^2=0 \\ H1: \chi^2>0 \end{array} \right.$$

**Table 7. The results of the third hypothesis testing**

	Cost
Chi-Square	66.442a
Freedom Degree	8
Asymp. Sig.	.000



According to Table 7, the obtained P-Value is equal to 0.000. This value was less than 0.05, so the performance quality have a significant and positive effect on the effectiveness of outsourcing and as a result, H0 hypothesis is rejected and H1 hypothesis is accepted.

#### 4.DISCUSSION

##### 4.1.Ranking the variables related to the effectiveness of outsourcing

In order to rank the variables related to the effectiveness of outsourcing based on research, we use Friedman test:

**Table 8. Friedman test**

N	113.000
Chi-Square	96.155
Freedom Degree	4.000
Asymp. Sig.	.000

According to Table 8, the Friedman test, P-Value is less than the 5% significance level, we reject the assumption of equal rank, and at least two ratings are different variables. Ranking the variables according to this test is listed in Table 9:

**Table 9 - ranking variables**

Rank	Component
1	Risk
2	performance quality
3	Supervision (inspection)
4	Supply flexibility
5	Cost

As it can be seen in Table 9, the risk factor is the highest importance and the cost is the lowest degree of importance and suggest that risk factors have the greatest impact on the effectiveness of outsourcing.

##### 4.2.The proposed method based on the findings of the research strategy

To provide solutions to enhance the effectiveness of outsourcing of rescue and repair services of gas company, with the presence of experts, the brainstorming sessions were held and outputs of the meetings were targeted with the fish bone.

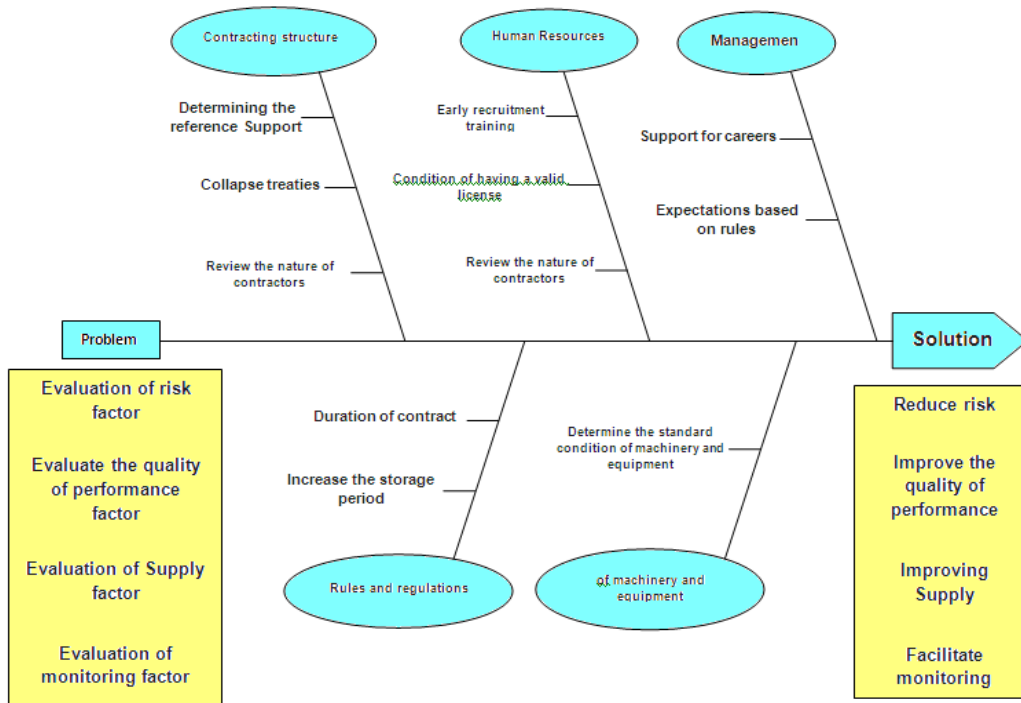


Figure 2. Diagram of cause and effect derived from brainstorming sessions

4.3. Analysis the results of hypothesis testing

The results of the parametric Pearson correlation coefficient indicate a positive and significant correlation between the five components of the "risk", "services", "performance", "supervision" and "cost" in the significant level 01/0 .

Statistical software output provides statistics called the level of significance (Sig) that values close to zero would reject the null hypothesis and the default values close to 1 would accept the null hypothesis. Therefore, we can reject the null hypothesis. Furthermore, by performing statistical hypothesis testing, every 5 hypothesis was confirmed. General summary of the results of the research hypotheses are presented in Table 10:

Table 10. the results of hypothesis tests summarizes

Results	Hypotheses
Research hypothesis confirmation	Hypothesis 1: Outsourcing causes improving in cost
Research hypothesis confirmation	Hypothesis 2: Outsourcing causes improving in risk
Research hypothesis confirmation	Hypothesis 3: Outsourcing causes improving in quality performance
Research hypothesis confirmation	Hypothesis 2: Outsourcing causes improving in supply flexibility
Research hypothesis confirmation	Hypothesis 2: Outsourcing causes improving in Supervision (inspection)

## 5.CONCLUSIONS

### 5.1. Practical recommendations based on the findings of research

To provide solutions to enhance the effectiveness of outsourcing of rescue and repair services of Gas Company, with the presence of experts, the brainstorming sessions were held and outputs of the meetings were targeted with the fish bone. Proposals and solutions are the result of brainstorming sessions.

#### 5.1.1.Recommendations based on risk factors:

- Aggregation and assigning treaties of gas activities in a zone or area to a contractor with a good grade in order to prevent interference tasks and responsibilities.
- Removing problem of the lack of reference supporting of rescue and repair contracts that would avoid the legal responsibilities of the Contractor and subsequently, burden responsibilities transferred to the client.
- Accuracy and supervision the contractor's application as a client representative to have skills and knowledge of the construction contract, so that in the case of incidents, act plenipotentiary representative of the contractor's responsibility.
- In case of accidents arising from the implementation of the Convention, the necessary support from supervisors, is done by managers working in rescue and repairs.

#### 5.1.2.Recommendations based on operating flexibility (Supply)

- With set of the standard requirement for equipment and vehicles used by the contractor, it can be helpful for employers to provide their services.
- Require the contractor to hold a specialized training course and take valid certificate for personnel employed in the contract or use of force training to increase accuracy and reduce the amount of errors and rework.

#### 5.1.3.Recommendations based on the performance

- Increasing the maintenance of the contract so as to comply with quality and higher standards contractor ensures the accuracy and integrity related activities and projects for more years.
- Ranking contractor forces and determine the career path for them to increase motivation.
- Duration of the contract, the contractor has a greater sense of belonging to the company and has sufficient incentive to increase efficiency.

#### 5.1.4.Recommendations based on the the inspection (supervision)

- It is better to accept the type of rescue and repair contractors in terms of the nature of the facility or service, to be reviewed and revised.
- It is recommended that for the transfer of activities and contract recruitment, to be done in two stages. In the first step, the technical evaluation of the contractor's is done and after obtaining the necessary score, attended into the bid.

### Acknowledgments

This study was done by scientific and financial support of the Khorasan Razavi Gas Company and we appreciate them.

## 6.RESOURCES

1. Lajevardy, Seyedjalyl; Bolhari, A., (2010), continuing the process of identifying candidates for outsourcing model based on the BSC and outsourcing strategy matrix, *Public Administration*, 11(5), p.143-158.
2. Hilletoft, Per, Hilmola, Olli-Pekka, Hilmola ,(2010), Role of logistics outsourcing on supply chain strategy and management Survey findings from Northern Europe , *Strategic Outsourcing: An International Journal*,3(1), p. 46-61.
3. Ashrafzadeh, F. (2004), a comprehensive model for outsourcing services, *Tadbir magazine*, No. 147, p. 41-44.
4. Khodaverdi, R., Bojnordi, E., (2009), strategic outsourcing, benefits, challenges, Faculty of Management and Accounting, Allameh Tabatabai University.
5. Khajavi, M., (2010), Introduction to the outsourcing organization in the today's world, the Democracy newspaper, August eighteenth.
6. Johnson, Richard K., and koury. Batajarya (2002), statistics, principles and methods Translator: Fattah Michaely, Arkan publications, 2(1).