Journal of Social Issues & Humanities, Volume 2, Issue 7, July 2014
ISSN 2345-2633

Evaluate and Prioritize Risks of Outsourcing Projects in the Section of Implementation of Networks and Branches of Esfahan Province Gas Company

Ali Hasan Zadeh, Seyed Akbar Nilipour Tabatabaei, Ahmad Reza Shekarchizadeh

Abstract— One of the organizations that are outsourcing issues and the risks it faces, gas companies on gas service to its customers, the company is nearly all their projects done through outsourcing. Likewise, the institutional environment and the gas company is currently deciding and complex situations and synthesize information to achieve optimal decisions is extremely difficult, so another rule of thumb, the best speculation, not work on scientific analysis and should be careful decision. Considering the difficulties and shortcomings in the decision-making about the placement of the gas company contractors, the company's outsourcing of risk assessment and decision making based on risk analysis seems necessary. The aim of this study provides a useful framework for assessing and analyzing risks conditions of uncertainty gas companies are outsourcing projects. In order to study the gas companies in the province to assist risk identification methods, risks involved in outsourcing projects to identify and gas companies and potential Failure Modes and algorithm analysis (FMEA), based on the degree of risk preference (RPN) of the intensity, incidence and risk of discovery, quantify and prioritize the factors identified and were the corrective actions to control and mitigate risks presented. In this study, using interviews, surveys and meetings FMEA teams of experts were selected units. Based on the results obtained from poor quality channels filling factor is more important in outsourcing projects, low cost factors and estimates of construction and installation of gas stations and no criteria established for the preparation of plans for a high level of outsourcing for project implementation and the need to impose management controls higher. The application of these results an effective step in reducing the risk of gas delivery projects in the province and gas companies use to identify and prioritize risks to the majority of the projects. It also helps to set priorities to reduce risk and increasing the percentage of successful projects from other applications of this research.

Index Terms— Outsourcing, Risk, Prioritizing, Esfahan Gas Company, FMEA, RPN.

1 Introduction

NO doubt, the growth, development, interaction and adaptation of technology to the global travel industry, in every moment looking for new tools to be effective. Improvement and excellence will not be achieved without the risk of purposeful movement in the world of fast and unstable, which requires increased skills and competitive strength of individuals and the organization. The important point is how to accurately measure new knowledge and insight based on risk management, while identifying and controlling risks, the risks from the threat turned into opportunities to improve the organization. Therefore a clear need for new approaches to assess and manage risk will be felt. In many organizations, outsourcing and divestiture activities with the goals of the project is to focus on core competencies, downsizing, the best practice is followed and cost control and transparency. Since the implementation of the outsourcing plan of the organization's activities for a certain period at a certain price (which is included in the outsourcing contract); a supplier and service provider transfers to outside organizations, a project is considered. Outsourcing refers to the delegation of authority and decision-making activities are repetitive and periodic internal company contractors outside in the form of a contract or memorandum of understanding.

What this means is that not only are delegated activities; but often the factors of production (labor, equipment, supplies, technology and other related assets) and decision authority (responsibility and right to make decisions about certain elements of the outsourced activity) associated with the divested. (Greaver, 1999)1 Despite the many advantages of outsourcing projects, but some of them also fails. The most important reasons for outsourcing project failures, lack of application of management techniques and procedures and risk assessment. (Amani 2004) Half of all outsourcing contracts due to the failure of the company to manage their risks by analyzing inappropriate. (Hall, 2003)International outsourcing is a 50% failure rate the organization of the nature of the risks in its international business decisions do not matter for of all the reasons for the failure of outsourcing, outsourcing is a lack of analysis of the decision (Meisler, 2004) 3. This aspect of outsourcing decisions recently taken into consideration, the elements of risk in the decision-making process is outsourcing) Bhattacharya et al, 2003) 4. In developed economies, the importance of risk management in achieving organizational goals is well-known achievements will be properly used.

While most developing countries have achieved this recognition is despite significant losses as a result of the lack of risk

- *Islamic Azad University, Najaf Abad Branch, Department of Management, Najaf Abad, Iran.*
- *Assistant Professor, Industrial Engineering Department, Malek Ashtar University of Technology, Esfahan, Iran.*
- *Assistant Professor Management Department, University of Najaf Abad, Iran.*

management systems on the property, assets, facilities and manpower into the community considerable efforts to maximize the benefits and minimize the damage and losses and financing opportunities for its compensation is not performed.
The fact is more or less the same true in Iran. Devoted a separate part of the international standard PMBOK risk management as one of the 12 districts of the knowledge areas of project management and resource management in a row, range and quality of the project shows the importance of this standard for project management. (Shahmyry, Riahi, 2010).

Risk management is the systematic process of identifying, analyzing and responding to project risk in order to maximize the results of positive events and minimizing the probability and consequences of adverse effects on project objectives. Project risk is an uncertain event or situation may be imminent in the case of a negative or positive impact on project objectives is effective (Gharachorloo, 2005). One of the organizations that are outsourcing issues and the risks it faces, gas companies on gas service to its customers, in order to study the gas company Esfahan method of risk identification, risks involved in outsourcing projects to identify and gas companies and potential failure modes and algorithm analysis (FMEA) is to quantify and prioritize risks.
The model used in this study is as follows:

1-Detection and identification of risk groups
2-Identify and define potential risks
3-Ability to detect the likelihood and severity of each risk
4-Calculate the risk priority number (RPN) for each risk
5-Risk analysis on RPN Asls
6-Development activities to reduce the risk of high RPN
7-Reassessment of risks by using a longer cycle FMEA

In this regard, the criteria and standards required and the risk groups are determined.
Several studies evaluating the design and performance evaluation parameters have been determined. The performance evaluation is discussed in relation to the indicators, the relevance of the indicators of organizational goals, alignment with organizational strategies, and reliability over time, enabling fast and accurate feedback. Garvyn his studies in 1993, has provided detailed performance indicators. In this study suggested five criteria are: quality, cost, delivery, service and flexibility. Quality performance indicators which include reliability, durability, and reliability of service, correspondence features, looks and quality are received. Cost includes initial cost, cost of operation and maintenance costs. Delivery time:
Indicators such as accuracy, adequacy, reliability, availability, speed, data access, quality, ease of ordering, the flexibility of ordering flexibility and ease of return shipping in the place.
Customer' services include support, technical support, and problem solving. Flexibility:
Flexibility in product flexibility and volume flexibility is included in the process.
In this study, the factors to be considered in risk groups and then check the list of specific areas of interest and potential risks FMEA techniques will be presented. This is a type of applied research work; the method is based on information collected during the survey and the so-sectional nature of the data based on the quantitative - qualitative and descriptive, comparative and semi-experimental. Data collection method in this thesis is the theoretical study of the type library (documents) in the field of applied research. Data collection for this thesis is the library reading books, papers, documents and to study, field interviews, questionnaires, observation and gas company database available at Esfahan. Given that most of this research is focused on the Isfahan Gas Company and the population of this study, is among managers and supervisors and personnel associated with the operation of the company. The research approach to the issue of risk and risk management is based on guidelines FMEA. Accordingly, in addition to explaining the basic definitions and concepts of risk management to the role and its position in the risk assessment process is discussed, then tried to combine and integrate basic concepts and indices of effective risk management process based on criteria FMEA models and model values for the deployment and evaluation of the risk management process have been achieved finally an approach for monitoring and evaluating its results are presented.
The objectives of this study can be summarized as follows:
1 - Provide a comprehensive framework for planning and risk management in Gas projects.
2 - Provide a way to prevent delay in gas supply projects.
3 - Provide a means to prevent an increase in the cost of gas supply projects.
4 Providing solutions for increasing safety in gas supply projects.
Gas Companies of the majority Esfahan their projects through a deal with the contractor to step enforce and planning to outsource the entire project is on the agenda. In order to properly use this approach to improve implementation of projects, proper risk assessment before outsourcing in the organization is essential. This paper aims to provide a suitable classification of risks and risk factors in outsourcing projects; the company has seen some solutions for the prevention, elimination or reduction of risky pay for this purpose, the FMEA techniques to identify and analyze risk factors and prioritize them by importance.
FMEA is a systematic tool based on teamwork that define, identify, assess, prevent, eliminate or control the circumstances, causes and effects of potential errors in a system, process, project or service to be handled and product or service before they reach the final customer. (Rezaei & Seyedi & Nurrie, 2005) This method of analysis for detecting error conditions and analyze the impact of the scenarios on the reliability of the system is the causes and effects of the crisis caused by the detected error necessary measures will be prioritized according to the severity of the impact. (Tapia et al., 2011) The main objective of failure modes and effects analysis, discover and prioritize these cases to evaluate the degree of risk preference (RPN) is the product of the three concepts of probability of failure, the failure intensity and the ability to detect failure (Segismundo & Augusto & Miguel, 2008) These three factors

are estimated by experts based on a scale of 1 to 10. The index is a measure of the degree of risk priority of failure risks, to rank failures and prioritize the measures used. The background suggests, more research has been done in the field of outsourced IT projects and risks related to outsourcing in the gas industry and the use of FMEA in this area of research has been done. Also, in most studies, only the identified risks in this area have few of them have been identified risk analysis and risk factors reviewed have this aspect of the study is unique. Another aspect of this research is to identify factors that were considered important and provide corrective measures to reduce the risk level is low.

2 Materials and Methods

Research methods for applied research work, the nature of the data, quantitative - qualitative and descriptive study of the issue - it is about mining. Identification of risk factors associated with the literature review and interviews and meetings with experts in this field has been done FMEA teams both theoretical and practical aspects that should be considered.

The structure determination techniques to assess and prioritize risk factors and prioritize based FMEA RPN number are done. To collect and record the deterioration factors, the incidence and likelihood of meeting FMEA teams were formed using the Delphi method to survey. It is noteworthy to gather expert opinions, FMEA is a technique that requires a team of qualified experts who have a deep understanding of the subject studied and select the desired number of qualified experts, they depend on the characteristics of the study using this method does not depend on the number of samples. The most important criteria for selecting the experts in this study, having adequate knowledge about risk assessment techniques using FMEA and outsourcing companies have been evaluated. Participants in the research were corporate executives and experts of the implementation and operation of projects, the study population will consist of the units. Given that the number of members of the FMEA is usually considered to be 4 to 6 servings and of course, up to the limits defined in the FMEA depends on the number, ten experts and project managers now have enough knowledge about the risks of their projects and outsourcing, according to the supervisor of the project were selected for data collection. In general, the gas company operating in Esfahan, this study is as follows;

1 review of literature and previous studies related

2 identify and define risk groups for application of FMEA techniques in identifying outsourcing and identify the most important risks in outsourcing projects, reviewing the literature expressions as well as interviews and formation of expert teams FMEA and the method of brainstorming.

3 Extraction of the general categories of causes and risk factors associated with states of the form teams FMEA and rating measures the probability of occurrence, the severity and likelihood of using the Delphi method. And calculated as the mean opinion scores for the index

4 Calculate the risk priority score (RPN) is obtained by multiplying the scores for the three aforementioned criteria and prioritize risk factors

5 provide corrective measures to reduce the risks associated with interviews and surveys of experts.

Having identified eight major processes of project implementation and network of branches, parts identification process and subsequent errors, the main causes of errors, the effects of errors and controls identified were in the study, 151 cases of risk in the project were to identify and analyze were analyzed. Then assign points to three criteria: occurrence, severity and likelihood of using the Delphi method. The following tables are based on SAE-J-1739 standard were extracted.

TABLE 1
Table of the Factors Likely Causes of Failure

Rating	Risk rate	Probability of risk
10	More than 1 in 3	The risk is almost inevitable
9	1 of 3	Very much
8	1 of 8	High
7	1 of 20	Repeated threats
6	1 of 80	Average
5	1 in 400	Less than Average
4	1 in 2000	Case dangers
3	1 in 15,000	Low
2	1 in 15 million	Risks comparatively rare
1	Less than 15000000	Unlikely - the risk is unlikely

TABLE 2
Table of States Factor Failure

Description	severity of the effect	Rating
Every failure leads to customer dissatisfaction or a worker.	Dangerous	10
Failure or non-compliance with the state law	Serious	9
Fail, causing the device to fail and it is unusable.	Very much	8

Dissatisfied customers will be highly appreciable.	High	7
Failure, the cause is a bad product or its subsidiaries.	Average	6
Customer dissatisfaction operating systems or products will be a significant impact.	Low	5
With little change in the product or process can be prevailed upon failure	Very low	4
Failure causes inconvenience to the customer, but the process or product he can prevail	Minor	3
Failure may not be visible to the customer.	Very minor	2
Failure of the client to fail and have no effect on the product or process	No	1

TABLE 3
TABLE OF RISK FACTORS DETECTED FAILURE MODES

Rating	Ability to detect	Discovered by chance Risk Control Option
10	Absolutely no	There is no control or if there is not able to detect potential danger.
9	Very minimal	There is very little likelihood that the current controls and risk tracking revealed
8	Negligible	There is little likelihood that the tracking and control of the risk of revealed.
7	Very low	There is very little likelihood that the current controls and risk tracking revealed.
6	Low	There is little likelihood that the tracking and control of the risk of revealed.
5	Average	In half of the cases it is probable that the existing risk control and tracking can be revealed.
4	relatively high	There is a relatively high probability of detection and risk controls revealed.
3	High	There is a strong likelihood that the current controls and risk tracking revealed.
2	Very much	There is a risk that the controls are very likely to be tracked and detected.
1	Almost certain	Almost certainly present a potential risk tracking and control is evident.

The product of three factors, the risk priority numbers are obtained. In order to analyze and propose necessary actions resulting risks were classified into 5 levels and risks number 151, the highest priority number is 576 and the lowest priority number is 9.

The following calculations in SPSS Tables risk levels as follows:

TABLE 4
TABLE TO DETERMINE THE LEVEL OF RISK, AND ACTIONS

Actions	risk percent	Rating	level of risk
Very urgent need for action, and formed a crisis committee to the fast action.	1.8	462.61 to Top	Very High
Requires immediate action must be taken by senior management with clear projection	2.7	349.21 to 462.60	High
Require the attention of senior management and control plans and procedures must be properly prepared	10.3	235.81 to 349.20	Middle
Managed by written procedures and guidelines control	20.5	122.41 to 235.80	Low
Work is controlled by routine methods	64.7	1 and 122.40	Very low

The classification is based on the coefficients in Table 4 and the risks resulting from risk factors are classified and to prioritize corrective measures recommended to reduce risks causes higher levels of risk factors for the investigation and the actions are prioritized. So with that obtained RPN ranking of the risk levels are very high, high, medium, low and very low in Tables 5, 6, 7 and 8 are presented.

TABLE 5
RANKING OF THE VERY HIGH RISK

Proposed actions	RPN	Risk factors	Priority	No
In terms of individual items to flood in and commitment to the implementation of the Treaty in force	576	Low quality channels fueled by gas companies	1	1

TABLE 6
RANKING OF RISKS WITH HIGH LEVEL

Proposed actions	RPN	Risk factors	Priority	No

Actual update the fabrication and installation costs stations in contract estimates. - Price adjustment payments to contractors	360	The estimated cost of construction and installation of low station	2	1
GIS Implementation	360	Lack of criteria for measuring proven procurement plans	3	2

TABLE 7
RANKING RISK WITH MODERATE LEVEL

Proposed actions	RPN	Risk factors	Priority	No
Governor's supervision on the implementation of the provisions of commission meetings and effective communication between departments and follow up drilling to achieve a result	343	Lack of coordination between the agencies Exporter of drilling permits and deal of issue of taste	3	1
Governor's supervision on the implementation of the provisions of commission meetings and effective communication between departments and follow up drilling to achieve a result	343	The lack of drilling permits issued abide by previous agreements and drilling Commission Meeting Minutes	4	2
Performance standards for gas line IGS-C-PL-100	343	There are obstacles on the path to implementation of the gas network	5	3
Providing guidelines for implementation and integration of drawing maps by all departments as well as the implementation of GIS	240	There is a bug in the map units of other organs	6	4

In addition, in order to eliminate or reduce any risk found in Table 7 offer is also noteworthy.

- Establishment of urban management and planning and control organizations run the facility.

TABLE 8
RANKING RISK WITH LOW-LEVEL

Proposed actions	RPN	Risk factors	Priority	No
Lack of proper quality evaluation contractors	224	Pipe Insulation Contractors financial inability to	7	1
Communication and coordination between departments and to provide guidelines on the implementation of an integrated facility and a written	216	Lack of facilities in one direction or the other organs revealed	8	2
- Communication and coordination between departments in the implementation of an integrated facility and providing instructions and complied -By Program for long-term urban development and implementation of projects.	180	Unclear future municipal projects	9	3
Considering all paths network performance	168	Failure to complete the projects in a timely manner Design Engineering	10	4
Culture and explaining the importance of all phases of project	168	Rush in drilling operations	11	5
- Evaluate the quality and effectiveness of contractors providing expertise in technical posts such as Pipe Bending - Training courses for supervisors and contractor forces like the Pipe Bending	168	Lack of skilled personnel for Operation Pipe Bending	12	6
- Effective quality evaluation contractors to provide technical expertise in posts such as bar bolt failure - Training courses for supervisors and contractor personnel as the bolted bar	168	Lack of expertise of the tape winding	13	7
Culture and build something constructive interaction between the Employer and the Contractor	168	Non-compliance with obligations regarding the construction and installation contractors to timely stations	14	8
- Communication and coordination between departments in the implementation of an integrated facility and providing instructions and complied - Planning and tracking to regulating the timely restoration of the	147	Managing disagreements and municipalities to repair trenches	15	9

trench before the expiry of the previous contract				
Correct qualitative evaluation of contractors	147	Financial inability to timely manufacture and installation contractors in the Stations	16	10
Correct qualitative evaluation of contractors	147	Masonry Contractors in ensuring the quality of financial inability Parts stations and the station	17	11
- Effective quality evaluation contractors to provide technical expertise in posts such as welders polyethylene - Training courses for supervisors and contractor personnel, such as welding of polyethylene - Introductory courses NIGC standards for supervisors and the contractor's failure to comply with standards.	144	Non-compliance with the standards in cutting, Askrap, cleaning and welding of polyethylene fittings	18	12
- Effective quality evaluation contractors to provide technical expertise in posts like the sketch Vector - Training courses for supervisors and contractor forces like the sketch Vector	144	Lack of awareness and accurate sketch vector	19	13
Explaining the importance of all phases of the project including clearing and cleaning in and around the channel	144	Lack of adequate supervision during pouring dirt riddle	20	14
Engineering Unit in coordination with the unit applicant in situations of Design	126	Lack of coordination with the unit applicant in situations of Design Engineering	22	15

3 DISCUSSION

As described above, previous research in the domain of information technology outsourcing risk and gas industry in the areas examined in this study, i.e., little work has been done
And in cases expressed only the risks in this field and few of them take the risk analysis and risk factors identified were reviewed. The FMEA technique has been used in the service sector outsourcing and little research has been done. In this regard, the research conducted by Bhattacharya et al, the two main categories of risks opportunity employer and provider of services are fragmented. This paper presents a basic framework for risk identification outsourcing of information systems in e-business firms with proposed (Bhattacharya et al., 2003). In another article, Currie categories the risk of in five categories of risk, delivery, integration, operations management, trade relations between the two parties, and changes in the classification they provide a framework for the assessment is based on knowledge management (Currie, 2003). Bahli & Rivard using the theory of contract costs
and using risk-stratified into three groups Ebert et overall risk of the contract, employer's risks and risk provisioning provided by risk factors using partial least-squares method has been evaluated (Bahli & Rivard, 2005). Osei-Bryson & Ngwenyama age and risks for both employer and provider review in a way that benefits both the employer and the supplier is considered. In this study, a mathematical model to analyze the proposed IS outsourcing risks and factors lie down bargaining as the main risks have been identified (Osei-Bryson & Ngwenyama, 2006). Aundhe and Mathew declared risks can be categorized into three groups on the risks associated with the project, risks and risks related to macroeconomic relationships have been categorized and then use the inductive method based on theory, Grand risk analysis and establish relationships between them have (Aundhe and Mathew, 2009). Chou and Chou described the three phases of information systems outsourcing life cycle and risks associated with them, employers' perspectives and risks in three broad categories of risk prior to contract risks and risk of the contract after the contract provide. Also, issues such as the success of IT outsourcing projects, quality assessment methods, and techniques of project management are reviewed. (Chou and Chou, 2009) Lacity & Khan & Willcocks studied risks from the point of view of the employer and an academic perspective presented and applied to outsource IT projects. Those into three categories of risk, contract risk, employer and provider split (Lacity & Khan & Willcocks, 2009).
Nakatsu & Iacovou to identify the most important risk factors in the development of software outsourcing projects; inside and outside the country and the employer pay. They fall into three general categories of risk, risk factors that are shared within and outside the country,
Risks which are outside of the country are of great and unique risks which are outside the country, divide (Nakatsu & Iacovou, 2009). Abdullah & Verner presented a framework for analyzing the risks of IT outsourcing. This framework is based on the opinions of their customers' and for this purpose a study of nine cases of failed outsourcing projects the main areas for critical risks identified in the project and risk factors were then related to each field.
The main areas of risk are: complexity, contract, financial, legal, organizational environment, planning and control, project scope and requirements, team and customer risk and complexity of the work to be presented in all cases studied (Abdullah & Verner, 2012). But in this study to enhance the success rate of outsourcing in the gas company FMEA method for evaluating and related risk analysis has been used in the service sector, while this technique is used in the equipment. Compared with previous studies, these study shows, the risk identifica-

tion using literature and expert opinion, provide risk segmentation, provide a framework for assessing risk and prioritizing risk factors in the company, while previous research has been done all these things together and each of these sections of the cases presented above.

The current approach paper, the major advantage is that the primary focus of the study with regard to quality, costs and risks that have the greatest impact on the success of outsourcing projects, the focus and avoids wasting resources and reducing the likelihood of success of this approach in the corporation. The framework proposed in this study can be a good understanding of the obstacles to the successful implementation of outsourcing projects Gas Company, barriers and priorities and strategies for facing them show. However, given the lack of specialized and integrated into the FMEA in Isfahan Gas Company and personal opinions on the results of a study for future research and technique of FMEA team in the company, AHP and fuzzy TOPSIS methods to prevent individuals' opinions using fuzzy logic

And a matrix of pairwise comparisons and to produce comprehensive and the results of the data collection and long time periods recommended for several different time periods.

Also, further research would be risks, reason and critical success factors in organizations studied through qualitative methods such as fault tree analysis and modulation techniques used in this study are derived and other relevant organizations were also studied.

TABLE 9
THE OUTSOURCING OF RISK SCENARIOS GAS PROJECTS

RPN-NORM	RPN	Process Name	Number of Process
1000	5227	Review the implementation plan, coordinate and obtain the necessary permits	1
141	736	Routing network performance	2
354	1849	Drilling Operations	3
723	3777	Tubing Operations	4
288	1504	Construction and installation of gas pressure reduction stations	5
76	399	Network quality tests	6
103	539	Network Mapping and implemented administrative lines	7
155	811	Loop and Gas Operations	8

The results presented in Table (9) review processes for implementation, coordination and obtaining the necessary permits and drilling pipe laying operations and construction and installation of gas pressure reduction stations are the highest risk factors, the projects are now in operation at higher risk. This study can serve as a tool to measure risk and helping to make decisions about the company's plans for future outsourcing helpful. However, given the lack of specialized and integrated into the FMEA in Isfahan Gas Company and personal opinions on the results, for future research, the technique of FMEA team and a team of the company,

AHP and fuzzy TOPSIS methods to prevent individuals' opinions using fuzzy logic and a matrix of pairwise comparisons and to create a comprehensive collection of information on research results in long periods several different time period is recommended. Also, further research would be risks, reasons and critical success factors in organizations studied through qualitative methods such as fault tree analysis and modulation techniques used in this study are derived and other relevant organizations were also studied. In this regard, according to the general guidelines, the following corrective actions proposed to improve outsourcing the company projects recommended:

* Planning for comprehensive and outsourcing projects now

* Use of managers and consultants with experience, expertise and knowledge in the field of outsourcing

*Evaluate and select contractors based on performance and the expertise, experience and *Financial ability continuous monitoring and control of performance by contractors.

* Establish a comprehensive computerized system between companies and contractors to follow and supervising communication and coordination between departments in high-performing facilities and provide unified and codified guidelines.

*Training courses for supervisors and contractor personnel, particularly introductory courses run standard gas grid

*Culture and creating something constructive engagement between employers and contractors

*Explaining the importance of all phases of the project to the supervisors and the contractor

Notably, this study was conducted with the support of the provincial gas companies and their authors should consider the management support and respect and members of the Committee expressed their thanks and appreciation of the park now.

REFERENCES

[1] Abdullah, L.M., & Varner, J.M. (2012). Analysis and application of an outsoursing risk framework. The Journal of systems and Software.
[2] Amani, P., & Amani, M. (2004). General framework for risk assessment of outsourcing projects IT. International Conference on Project Management.
[3] Aundhe, M.D., & Mathew, S.K. (2009). Risks in offshore IT outsourcing: A service provider percpective. European Management Journal, 27(6), 418-428.
[4] Bhattacharya, S., & Behara, R.S., & Gundersen, D.E. (2003). Business risk perspectives on information systems outsourcing. International Journal of Accounting Information Systems, 4(1), 75-94.

[5] Currie, Y.L. (2003). A knowledge-based risk assessment framework for evaluating web-enabled application outsourcing projects. International Journal of Project Management, 21(3), 207-217.
[6] Chou, D.C., & Chou, A.Y. (2009). Information systems outsourcing life cycle and risks analysis. Computer Standards & Interfaces, 31(5), 1036-1043. Greaver, M.F. (1999). Strategic Outsourcing-A Structured Approach to Outsourcing Decisions and Initiatives. AMA Publication , Inc(USA).
[7] Hall, M. (2003). Outsourcing deals fail half the time. Computerworld, 37(44), 10-21.
[8] Lacity, M.C., & Khan, S.A., & Willcocks, L.P. (2009). Areview of IT outsourcing : Insights for practice. Journal of Strategic Information Systems, 18(3), 130-146.
[9] Meisler, A. (2004). Think globally , act rationally. Workforce Management, 83(1), 40-45.
[10] Nakatsu, R.T., & Iacovou, C.L. (2009). A comparative study of important risk factors involved in offshore and domestic outsourcing of software development projects: A two- panel Delphi study. Information & Management, 46(1), 57-68.
[11] Osei-Bryson, K.M., & Ngwenyama, O.K. (2006). Managing risks in information systems outsourcing:An approach to analyzing outsourcing risks and structuring incentive contracts. European Journal of Operational Research, 174(1), 245-264Rezaei, K., & Seyedi, M., & Nurrie, B. (2005). Failure Modes And Effects Analiysis . Tehran: Atna Press.
[12] Segismundo, A., & Augusto, P., & Miguel, C. (2008). Failure modes and effects analiysis(FMEA) in the context of risk management in new product Development , A case study in an automotive company. International Jurnal of Quality & Reliability Management, 25(9) 899-912.
[13] Tapia, C., & Dies, J., & Pesudo, V., & Abala, J., & Ibarrab, A., & Arroyob, J.M. (2011). IFMIF accelerator: Database, FMEA, fault tree and RAM. Fusion Engineering and Design.