

Challenges of Risk Management and Insurance in Iran Construction Industry

Morteza Sayareh, Mojtaba Mohamadnejadi Moodi

Abstract: With regard to construction sector and insurance sector relationship, effective risk management is believed to have a significant effect on insurance coverage development as well as construction sector's competitive advantage through improved operation quality. In this research therefore, we set out to conduct a survey among construction sector and respective insurance companies' management and experts. Our aim evolved around the idea that this sample could delineate the literature on this subject regarding the key and critical issues existing between them. To analyze the data we used one sample student t test. The results indicate that, most important impediment to effective risk management in this sector is managers' lack of appropriate understanding in both sectors concerning risk management and its applications. Results also indicate that uncertainty accumulation in absence of effective risk management lead to cost increase both in construction projects and in insurance fees. Furthermore, lack of specialized knowledge on both side from each other, lack of standard insurance procedures, result in miscommunication between the two sectors. Suggestion is proposed based on result and literature review. This is the first research, to our knowledge, studying risk management implementation in Iranian construction sector.

Keywords: Risk Management, Insurance, Construction Industry, **JEL Classification:** G22, G31, L74.

I. INTRODUCTION

The construction industry is changing in Iran. This Industry has been changing for approximately 250 percent larger from 1991 to 2011 (See Figure 1). These changes, evolutions in the employment pattern, the use of specialist contractors, competition in the market, selecting based on price and the enterprises need to create profits are undeniable. These developments present the need of the construction industry to make companies familiar with risk and knowledge management clearly. Iran construction industry has made a significant progress from infrastructure projects such as railways, highways, bridges, dams to large urban structures such as Milad tower, high towers in the past two decades, so that active private and semi-public companies have tended toward international and regional markets in this field. One of the main challenges in this field is designing, planning and the implementation of complex projects relevant to the projects that determine the risk associated with doing them.

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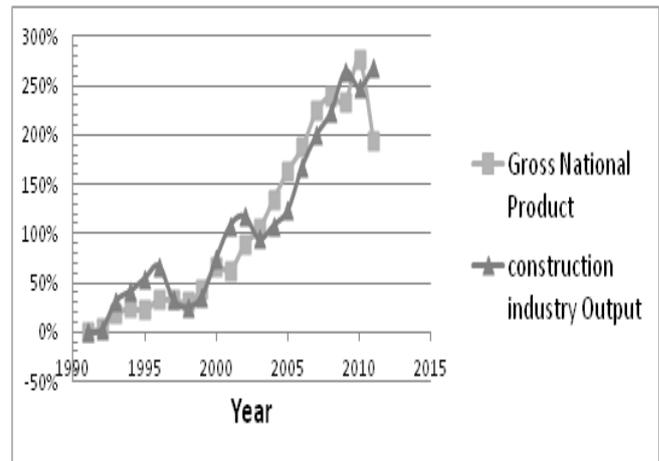


Figure 1: Growth rate of GNP and capital formation in construction industry compared to 1991

The chief active companies in the field of construction in Iran have generally been created in the past two decades and suffer from various problems related to the establishment of organized and complex systems in comparison with the older and larger foreign firms. Generally, these companies were previously state-owned collections that are now formed into government contractors. On other hand, the social and economic changes in the past two decades, such as the implementation of principle (44), popularity of the stock exchange in capital and economic exchanges and financing the companies, the higher reliance of the country on domestic productive and executive resources in effect of the developments in the political relations (sanctions) and other conditions caused basic changes in the conditions where these companies were active in the last two decades.

Meanwhile, the risk management which lied with the government while keeping the government in doing the projects is now mostly shouldered by the contractor companies and the insurance companies as the risk management experts (Patel, 2007) has confronted constructional problems with traditional construction of the companies in the contracting area.

Risk management is not a new concept. Mechanisms of risk management are extensive and detailed in the management literature. Liu et al., (2003) state: risk management and creating awareness about uncertainties and the estimation of the risk profile related to them and the controllable risk managements, and the reduction of the risk consequences are uncontrollable.

Yeganeh and Kazemi (2007) also pointed out that the effective management of risk should desirably be carried out in five phases: 1. Identification of risk sources, 2. measuring the amount of risk,

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3. assessment of the risk related to the company, 4. assessment of the company's ability to use risk management tools, and 5. selecting the appropriate risk management tools. The problems related to the efficient management of risks in the construction sector generally involve a deficiency in the interaction of the three parts of the trade and/or the ineffectiveness of risk management of the contractor cannot perform a proper risk management process and do not use the risk management in all phases of the contracting, designing, project planning, adequate resources preparation, execution, delivery, checking and reviewing of the project and only suffice a few steps (Liu et al, 2007). Contractor companies of construction projects generally according to Chapman and Ward (2003) transfer the project through three-ways of risk:

- By transferring risk to the insurance companies
- By transferring the parts which contain high work risks to the other contractor companies.
- By changing the contract terms.

Meanwhile, the insurance companies are trying to improve the risk transmission through manipulating some of the work requirements via reducing the risk. In this paper, we will try to study the basic problems of risk and insurance management in the construction sector in Iran.

II. LITERATURE REVIEW

Generally, during the third and fourth development of consulting and contracting companies that have been qualified, show a significant increase in the number and composition that represents an increase in the administrative capacity and capability of the country.

Comparing Rial capacity made in supply-side (qualified contractors) with the demand for the implementation of construction projects (governmental sector) shows that Rial capacity made by the qualified contractors is not suitable for proper implementation of construction projects and won't create the necessary competitiveness context with the purpose of increasing the quality of projects implementation, lowering project costs, improving standards and entering international markets (Panahi & Mousavi, 2010).

The allocation system and the implementation of construction projects in Iran is generally in a way that the executives usually offer their ideas and needs to the consultants, and the consultants design these in the form of implementation plan and project, and the contractors carry out these responsibilities (which are generally entrusted by the state). Government agencies that finance such projects are responsible for monitoring the performance of construction contractors.

Despite the expansion of the private sector, most of the projects belong to the public sector or controlled by them. The control of the public sector over the capital flow and tariffs in this sector causes a short time glance at the management of such projects Liu et al., (2007). Therefore, the defined and specified projects by the government in the construction sector - due to administrative problems - do not pay special attention to risk management.

On other hand, the entrance of the domestic contractors into international markets contractors and also the exit of

foreign contractors and their replacement with local contractors in the construction sector creates a special need to improve the risk management mechanisms and the quality of the projects. This situation can be either considered as an opportunity for local contractors' ability and also a threat in doing the projects with an international quality and standards and the partnership of the local insurance companies in insuring construction plans taken by local contractors. Hence, local contractors should make an attempt ambitiously to manage the risks and enhance the quality of project implementation in this sector.

In this regard, the contractors are expected to use modern methods of construction project management to meet the international standards that the foreign companies were supplying it.

The increasing expectations from local contractors are required to make them use the standards and methods of risk management in construction projects.

Lubitz et al., (2006) argue that construction companies are required to apply a dynamic approach to deal with the existing risks during the work processes. Some of these risks include occupational safety, quality, delaying in contract payments, inappropriate estimations and unreasonable contraction terms.

Difficulties of Risk Management: After the implementation of development programs after the revolution and the boom in construction and contracting companies, this industry has progressed along with the advances in the management of construction projects. Project management in administrative affairs of this sector, is widely used through the techniques which are usually in accordance with the cultural structure of the society. But, risk management still has not found his special place. According to 23rd article of the budget planning law, all the construction contractors are required to contract all the contractions of this sector according to the articles mentioned in the 21st article of the contraction terms. According to this regulation, the contractor is responsible for all the things that are in any way involved with the project. This also includes third parties in the workshop. And, the employer is quit of this responsibility. The law requires contractors to insure buildings and facilities subject to the convention against the unexpected events. The employer can also demand any damage caused by the insured (Ghadimi, 1999). Ghadimi (1999) also writes: a large part of the projects that have been implemented in recent years or are in progress do not have insurance coverage whereas it is the strict order of PBO to provide insurance coverage for the existing project. Ghadimi (1999) states different reasons for the reluctance of employers, regulatory agencies and contractors for administering full insurance coverage. These reasons mainly include the negative attitude toward insurance, low awareness, poor law enforcement system and the disproportionateness of insurance rates with the insurance coverage and inadequateness of received losses from the insurance company to compensate the losses.



III. CONCEPTUAL MODEL AND HYPOTHESES DEVELOPMENT

The first problem, the knowledge of construction, according to Luis et al., (2007), suffers mostly from lack and the accumulation of knowledge. According to Yeganeh and Kazemi (2007), those who are familiar with company's objectives and strategies and also risk management mechanisms should be responsible for risk management in the company.

In other words, knowledge and familiarity with risk management is the first step in the mechanism of risk management. However, the risk management has been used less in building and contraction sector. As a result, there is little familiarity with it in this section in Iran. This lack of knowledge in this field leads to the reluctance of construction firms to employ a risk management mechanism in this section. In so far as if contractors use insurance it is only for considering the standards and the necessary regulations of the insurance in this section.

The second problem is related to attitude according to Liu et al., (2007). Generally, contractors don't have a realistic approach attributing to construction risk, which can be caused by centralized economic system. In general, in our country, clients and suppliers of economic sources are the construction projects of government that uses the public revenues to pay for public construction projects. The government owns the project and is responsible for its losses and benefits. In such systems, risk management and loss prevention are not priorities. In addition, the cost of the insurance in the contract of budget is not considered as the cost of funds paid to the contractor or is not regarded as complete coverage. Therefore, there is no specific motivation for the contractor to transfer his risk to the insurance, because the government pays for all the losses.

The third problem, the binding legal regulations and requirements for insurance in the construction sector in 2007 only includes the insurance of construction workers which is not implemented practically according to Keyhan newspaper on October 28th. According to the approvals of planning and budget department, employer or contractor is responsible for some of the tasks that with report of Ghadimi (1999) that there are some problems in the implementation and coordination of supervisory bodies and their powers.

Seyyed Javad Zamani, the spokesman of social commission of Islamic parliament said: last year, the government presented a bill to the parliament for the insurance of construction workers. Expert meetings were conducted in this regard. As a result, there was some confusion in some parts of the bill for insurance payments. Therefore, we assigned the bill to the ministry of welfare so that the items presented were clearly and comprehensively investigated. Where the bill fated and what is the final outcome? "the bill of construction workers' insurance was approved in the seventh parliament and the government legally should implement it" of the construction workers insurance bill passed in the House was the seventh state to legally implement it" that is not implemented yet (Aghayi, 2009).

According to Luis et al., (2007), such problems that arise in China, can be due to the ambiguity in the design of law

and lack of integration of responsible authorities of pursuing the implementation of law. This can be understood with regard to this subject that country's insurance laws and laws related to contraction and assessment of contract terms in Iran has grown significantly over the years and they have the necessary coverage and completeness but depletion in implementation that is observed significantly can be understood.

The fourth problem is related to the inappropriate supply of insurance. According to Luis et al., (2007), the inappropriate supply of insurance in the construction sector in developing countries is due to two factors: First, the lack of institutionalization of risk management in construction companies and the disuse of new mechanisms of corporate risk management (R. K. Rashidi, 2010) in this section causes an increase in an uncertainty in administrations and planning and thus the insurance companies are not able to offer affordable insurance services for construction companies. In other words, uncertainty or high risk in projects makes the insurance companies to increase insurance costs or to make the franchise higher. In turn, this leads to high administrative costs of construction projects and a reduction in the employers' and contractors' incentive in using this insurance.

Second, higher complete insurance costs of construction projects, increases administrative costs to that are not desirable for the employer. Since most employers in Iran are government agencies, primarily implementation of insurance laws in this section in such a way that is customary in developed countries prevents the implementation of all projects through increasing the total cost. Therefore, implementation of all the insurance services in this sector is impossible in the absence implementation of innovative risk management mechanisms. The problems related to the quality and safety and delays in payments of Iranian construction companies and generally developing countries force the implementation of risk management mechanisms. Otherwise, the performance and quality problems of construction projects will continue and contractors will be identified as companies that provide higher benefit and lower quality than their competitors in the international arena. In the case of presenting this sector of Iranian industry in the competitive global arena, it may cause major hazards.

IV. RESEARCH METHODOLOGY

This study is operational, in terms of the objective and is a descriptive survey in terms of the methods of data collection, in which the main problems of the insurance in the construction industry in Iran are addressed. A descriptive study, as the name implies, is a research that seeks to describe different events and issues concretely, exactly and orderly (Shourini, 1995) rather than expressing a set of conditions, characteristics or traits of people in the population based on the measurement of the sample (Alreck & Settle, 1995). And, Nezam Shahidi translates "survey" from Alreck and Settle in this way: A research method in which information needs,



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Population and samples are selected and are regularly questioned, then the results are analyzed and are extended to the population, and reported for information needs (ibid., p 625).

The spatial domain of this research was three provinces of Tehran, Fars, and North Khorasan. And, due to the purpose of the study, population used in this study, specialists and the experienced and the engaged employees in the construction industry who are familiar with the workshop management and the management of infrastructure construction projects in this area (in three roads, building, and construction companies), and also some of these active insurance brokers have been colleagues with these companies in insurance. The selected sample companies – three companies – are randomly selected from among the contractors of infrastructure companies. The whole sample of the research comprises the expert staff, the directors of these companies and the brokers of the cooperating insurance representatives about 318 people. The Cochran formula was used to calculate the number of samples. The total study population was composed of 318 patients, the coefficient of error was 5%, the percentage of success was 50% and accuracy of the estimation is equal to 8%. Consequently, we have:

Equation (1)

$$n = \frac{NZ(\alpha/2)^2 P(1-P)}{\sum(N-1) \varepsilon^2 + Z\left(\frac{\alpha}{2}\right)^2 P(P-1)} = \frac{318 \times (1.96)^2 \times (0.25)}{317 \times (0.08)^2 + (1.96)^2 \times 0.25} = 102$$

n: Number of samples

N: Number of sample population

α : Coefficient of error

P: Percentage of success

ε : The accuracy of estimation

Thus, according to Equation (1), the sample population was 102. The research questionnaires were also distributed randomly due to the sample size.

In this study, questionnaires, interviews and observation were used to collect data. Also, a field and a library study with note taking instruments as a means of data collection were used. For assessing the challenges of risk management and insurance in the construction industry standard questionnaire of Liu et al., (2007) was used. This questionnaire has been used by Liu et al., (2007) in some abroad studies (See Appendix for the questionnaire).

Given the wide scope of the study under investigation and limited research facilities, 200 questionnaires were sent by hand, mail, and the fax to practitioners and experts in this field. The sent questionnaires were completed by manufactory construction managers, project managers, the engineers, insurance brokers, and consultants and 173 of them were returned. Five questionnaires were excluded from the calculation cycle and finally 168 questionnaires were analyzed. General profile of respondents is presented in Table 1. Sex, education, work experience, age, and organizational degree.

Table 1: Profile of respondents

75.60%	127	Construction & contraction	percentage	number	
4.76%	8	academic	81.54%	127	Male
19.64%	33	Insurance	18.46%	31	female
100%	168	Total		168	Total
1.78%	3	Project manager	12.29%	21	1 to 5 years
9.52%	16	Workshop manager	45.83%	77	6 to 10 years
4.76%	8	Contractor	22.24%	37	11 to 15 years
47.02%	79	Engineer	17.26%	29	16 to 20 years
13.69%	23	Insurance broker	2.38%	4	More than 20 years
23.21%	39	others			
100%	168			168	total

In this study, to increase the reliability and validity of the questionnaire content the following tools are used:

- Study and investigation of questionnaires and questions that have been used in the similar studies.

- Studying numerous articles and books, related to the subject of study, related models, and all related issues.

- Consultation with relevant experts and professors, and get their advice.

V. DATA ANALYSIS

Perception: 60.58% of the respondents believe that the attitude of contractors toward risk management is very important for its development in this sector. On other hand, 16.8% of respondents emphasized the importance of the availability of knowledge and required expertise of the risk management and 47.31 percent believe that the costs of risk management have been involved in its development and 31.22 percent have also emphasized the availability and quality of risk management.

According to the results, we can see that the most important factor in the development of risk management in the construction sector is the cultural factor. And, this point is consistent with the findings of Liu et al., (2007). Most of the contractors in this sector, in the case of low loss, are not highly motivated and interested to use the risk management and are risk-takers. Also, the emphasis on risk management costs shows that there isn't a positive attitude toward it. Underestimating the skills needed for the risk management puts more emphasis on this.



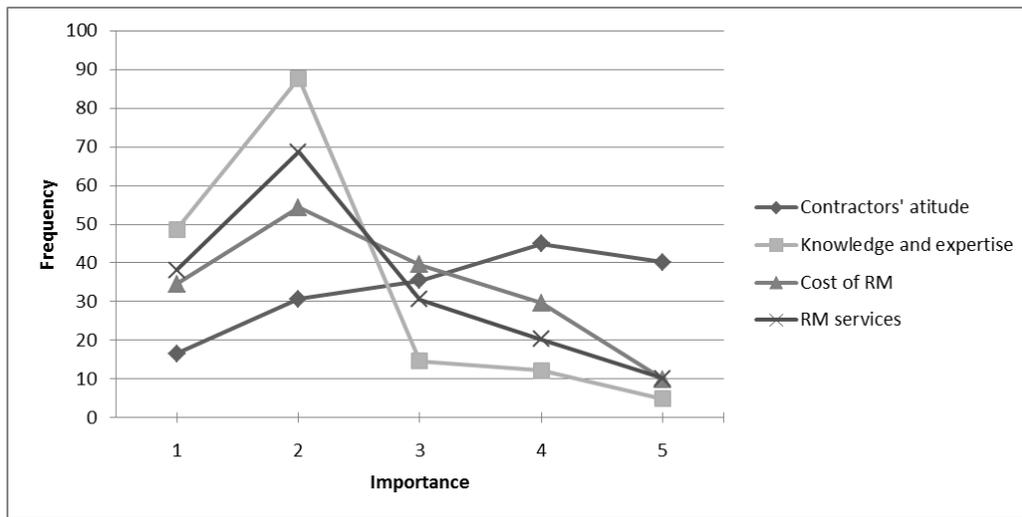


Figure 2: Factors affecting the development of risk management in the construction sector in Iran

Sharma and Swain (2011) believe that managers of construction sector have a short-sighted view toward risk and do not realize the unmanaged risks can impact their whole business in an unpleasant way. These findings from India and the findings of Liu et al., (2007) from China, with the present findings indicates that the problem of inappropriate attitudes toward risk management in construction projects in developing countries in Asia is a common issue. According to Liu et al., (2007), the problems related to culture and attitudes are hard to change and their inherent resistance against changes, make them one of the main obstacles to the development of risk management in this sector.

Science: 50% of respondents see risk control as the most important challenge in the deployment of risk management. In general, most of the respondents believe that assurance of the loss return is the most important factor for the contractors in evaluating the performance of risk management, with regard to this issue that insurance is often not compulsory, and generally the government is on the side of the contract. Also, respondents believe that the cost of insurance, insurance companies' service quality and gaps

and anomalies present in the system, rules and regulations are the main challenges in the development of the insurance in this sector. Also, changes in attitudes of contractors, and knowledge and financial resources necessary for insurance are mentioned as the most important factors affecting growth in this sector.

More than 70 percent of the respondents believe that the most important motivating factors for the contracting companies in using insurance, is the benefits of contractor. This is consistent with the percent of insurance used. Most contractors often use the insurances that as one of the managers of construction sites writes, cover losses that has a high probability and the cost of their occurrence is high or the cost of insurance is low and in the case of its occurrence it's loss is significant. On average, contractors prefer to use these insurances: (35%) contractors all risk insurance, (79%) installation all risk insurance (5%) third party (23%) employer's liability insurance (5%), public liability insurance, (13 %) professional liability insurance (35%), shipping insurance (5%), machinery breakdown insurance, and 64% compensation insurance for personal accidents.

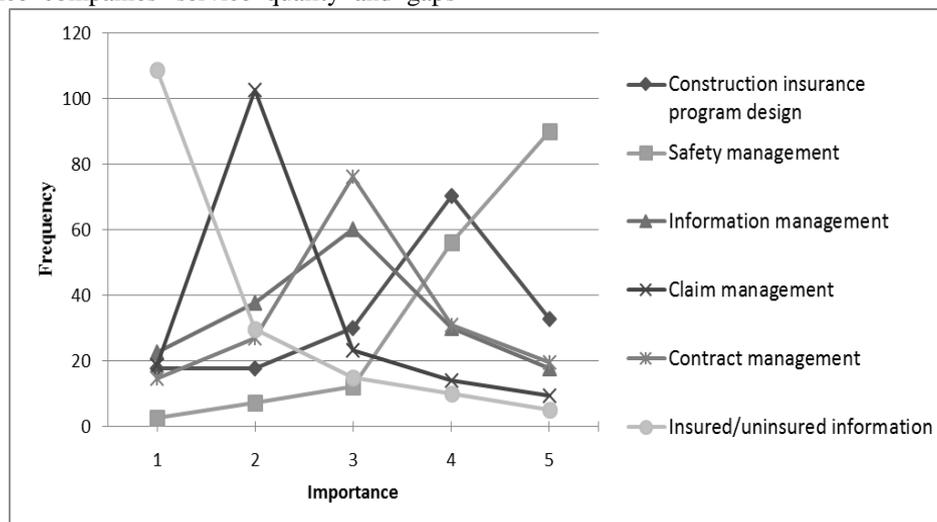


Figure 3: The role of Knowledge or experience in risk management of construction companies



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Overall, respondents in this section believe that the most important factor, with 87 percent emphasis on its importance is safety management that can effectively manage construction risks. This could mean that the participants in the construction sector don't have a positive attitude toward risk management and they believe just observing safety compliance in this regard is enough. And the least important significance belongs to the information of insured and uninsured and claim management. Overall, and with the information above it can be said that the construction sector in countries such as China, India and Iran needs a change in its cultural attitudes towards risk management through education. However, the safety factor was found to be considerable but there isn't a well understanding of the nature of risk management and its long-term impact on business of construction companies on behalf of the respondents. Of course, this does not mean that all non-conscious construction companies in this field belong to the whole atmosphere and the results of this section.

In practice: 80 percent of respondents believe that there is a gap in laws and regulations related to insurance, which prevents its efficient use in the construction industry. This means that insurance regulation should be designed in a way that creates compulsion for contractors in the specific circumstances of a particular type of insurance. These compulsions should be aligned with project conditions. Knowing that 57 percent of respondents believe the insurance companies are not familiar with the history and types of construction projects, we can say that insurance companies, should design different types of insurances to suit the project requirements and legislators should obligate the different types of the insurances in the contract terms. Also, contract terms to reduce risk, is one of the points emphasized in the research of Hassanzadeh and Kazemi (2004) is. This gets double value due to the fact that 65% of respondents stated that job contracts must include specific terms of insurance.

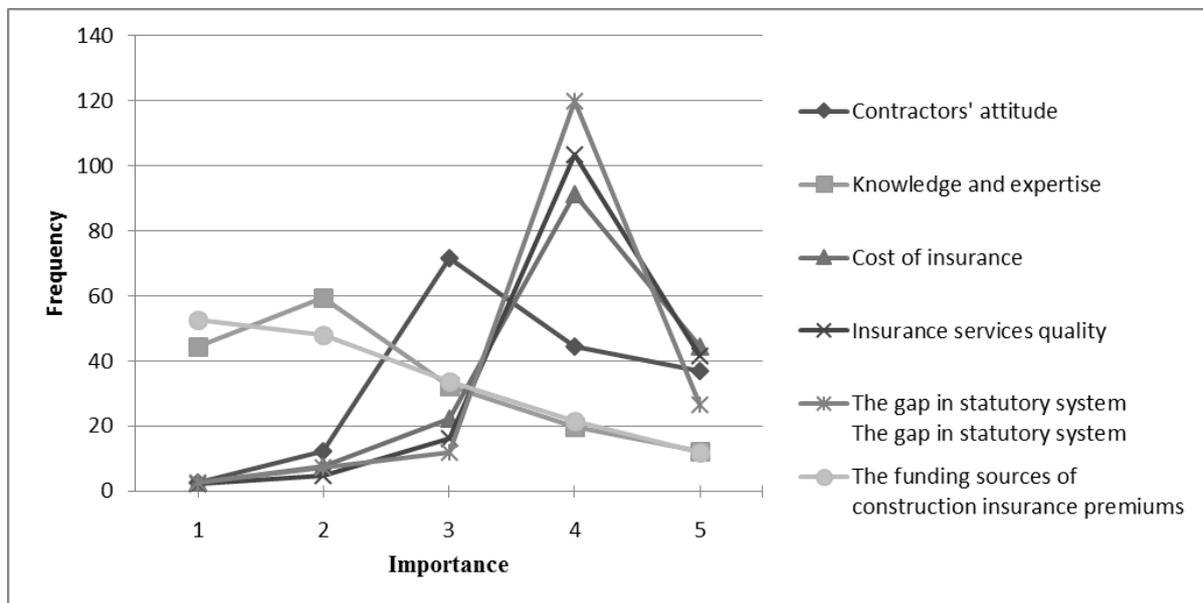


Figure 4: Effective factors on the development of insurance of the construction industry in Iran

External conditions for contractors: 93% of respondents believe that contractors are not able to afford insurance expenses by themselves. Also, 66% of respondents believe that insurers in the case of observing the risk management should give them discount by the contractor. Also, 87 percent of respondents believe that insurance companies provide risk management services to contractors by getting more payments. 70% of respondents believe that risk management can efficiently protect the interests of the contractors. However, respondents don't believe that contractors need management for the on time delivery of projects (80%). These findings and the fact that 63% percent of respondents believe that active insurance companies in this sector are not qualified to work with construction companies, suggest that insurance companies need to study more in specialized fields of activities of contractors and help by offering various and suitable packages and with standardizing the processes of insurance and paying the losses in construction projects in the area about the risk management and using comprehensive insurance coverage. 69% and 53% percent of respondents believe that the

processes of receiving insurance claims, is not standard and because of complexity of the sentences in contract most of contractors are being forced to get counseling.

VI. SUMMARY AND CONCLUSIONS

Despite the progress of Iran in the insurance industry and the expansion in coverage and the variety of the insurance services in the past two decades, it can be observed that the lack of professional experience of human resources in insurance sector in Iran, hinders the achievement of this industry to its objectives, which are the comprehensive and complete insurance coverage at all the branches. Presenting specialized insurance services along with insurance risk management consulting services to the contractors and consultants of the construction industry in Iran can contribute to the enhancement of the quality of the work in this branch.

Liu et al., (2007) suggests the use of organization for similar problems in the construction sector in China (R. K. Liu et al., 2007). Regarding that this problem is not only related to the contraction part and insurance, governmental and educational organizations are also involved in solving this problem, working through teamwork seems reasonable. Different dimensions of this research can also be subjects of future researches for researchers interested in insurance trends, the role of insurance in risk management of construction projects and investigating legal processes from legislation to implementation.

"Successful risk management in accomplishing a project is one of the best methods of modern management practices in construction projects" (Sharma & Swain, 2011). The more a construction company is experienced, bigger and successful, the more efficient and better risk management mechanisms are (Kululanga & Kuotcha, 2010).

Lack of an internal investigation conducted in the field of risk management mechanisms in construction companies and the increasing stress of the foreign researches on its importance in short and long-term in the success of construction companies show that much work must be done in this field and this would be an interesting subject for academic investigations in the future. Also, according to the results of this research and the research conducted by Liu et al., (2007), the insurance companies can play a major role.

Designing and evaluating the risk management practices regarding that insurance is the special industry of risk (Patel, 2007) can be more effective on behalf of the insurance companies and researchers in Iran who enter into new domestic and foreign markets in the construction sector. Culture in the context of applying risk management in this sector could be considered by insurance and management researchers in the future researches. Researchers can also help in categorizing and designing specialized insurance packages for any part of construction activities in Iran in future researches to better understand the insurance. In addition, investigating and designing of risk management mechanisms, risk management culture and legal mechanisms and standards in implementing the insurance and collecting the debts for construction companies in different fields and different insurance packages like the researches conducted by Kululanga & Kuotcha, (2010) or Sharma and Swain, (2011) can be considered by researchers interested in this field. However, it should be noted that the sample's relatively smallness in contrast to the whole population and also not covering all branches of the construction industry and the problems related to the prejudgment about the collected data using a questionnaire to assess the reality are of the limitations of this study. These limitations relatively limit the generalizability of research findings as well as the comparability of conditions in different parts of the construction industry. In future studies, researchers can consider these items in designing their own studies.

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Appendix. The questionnaire of risk management and construction insurance

You are invited to participate in this survey of the construction industry in Iran. It will provide a picture of trends, developments, issues, concerns and opportunities in construction insurance in Iran. The research is seeking the opinions of clients, contractors, sub-contractors, insurers, brokers and researchers. The survey will investigate the key issues and challenges facing risk management, as well as the major barriers to risk management and construction insurance in Iran's construction industry.

- Your experience related to construction/insurance industry
() 0-5 years () 6-10 years () 11-15 years () 16-20 years () 20 years
- Years in market of your company
() 0-5 years () 6-10 years () 11-15 years () 16-20 years () 20 years
- Current number of employees (for contractors/sub-contractors)
() 1-50 () 51-100 () 101-1,000 () 1,001-5,000 () 5,001-10,000 () 10; 000
- Number of overseas countries currently served (for contractors/sub-contractors)
() 0 () 1-3 () 4-10 () 10
- Qualification of contractors/sub-contractors
() The first-class () The second-class () The third-class () The fourth-class
() Other, please specify
- Types of companies



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() State-owned company () Private company () Foreign company () Joint Venture company

() Other, please specify

Part 2: Research questions

1. To what extent can the following factors influence the development of risk management in Iran's construction industry? (Please give a weight with 1 for the least important to 5 for the most important)

() 1 () 2 () 3 () 4 () 5 The attitude of contractors

() 1 () 2 () 3 () 4 () 5 The availability of knowledge and expertise of risk management

() 1 () 2 () 3 () 4 () 5 The cost of risk management

() 1 () 2 () 3 () 4 () 5 The availability and quality of risk management services

Other, please specify

2. What is the most difficult part in risk management implementation in Iran's construction industry? (Tick one)

() Risk identification

() Risk analysis

() Risk control

Other, please specify

3. What do you think is the most important factor in evaluation of risk management performance practically?

4. To what extent can the following factors influence the development of construction insurance in Iran's construction industry? (Please give a weight with 1 for the least important to 5 for the most important)

() 1 () 2 () 3 () 4 () 5 The attitude of contractors

() 1 () 2 () 3 () 4 () 5 The availability of knowledge and expertise

() 1 () 2 () 3 () 4 () 5 Premiums

() 1 () 2 () 3 () 4 () 5 The quality of insurance companies' services

() 1 () 2 () 3 () 4 () 5 The gap in statutory system

() 1 () 2 () 3 () 4 () 5 The funding sources of construction insurance premiums

Other, please specify

5. What is the most important drive to purchase construction insurance? (Tick one)

() Clients' requirement

() Contractors' own interests (e.g. cost control, risk transferring, etc.)

() Construction standard contract' requirement

() Legal requirement

() Bank's requirement

() Other, please specify

Question 6 is designed for clients/contractors/sub-contractors:

6. Which of the following insurance policies have your projects used?

() Contractors' all risks (CAR)

() Erection all risks (EAR)

() Third party (TP)

() Employer's liability policy (EL)

() Public liability (PL)

() Liability for ten years/latent defects insurance (LD)

() Professional liability/indemnity insurance (PI)

() Marine insurance

() Machinery breakdown (MB)

() Personal accident policy/workers' compensation insurance (WC)

() Other, please specify

7. To what extent can the following knowledge or experience help to manage construction risks effectively? (Please give a weight with 1 for the least important to 5 for the most important)

() 1 () 2 () 3 () 4 () 5 Construction insurance program design (e.g. underwriting process)

() 1 () 2 () 3 () 4 () 5 Safety management

() 1 () 2 () 3 () 4 () 5 Information management (experience, loss cost, etc.)

() 1 () 2 () 3 () 4 () 5 Claim management

() 1 () 2 () 3 () 4 () 5 Contract management

() 1 () 2 () 3 () 4 () 5 Insured/uninsured information

Other, please specify

8. What is the general attitude towards construction risks in Iran? Why?

() Contractors/sub-contractors carry a certain risk and include a price for it in their tenders.

Why?

() Clients carry as many risks as possible. Why?

() Other, please specify

9. Do you think there are any other better solutions than construction insurance to transfer or alleviate construction risks?

() No

() Yes. What are they?

For questions of 10 , 28, do you agree with the following arguments (see Table AI)?---- Do you agree with the following argument? SD DA NA AG SA DK

10. Contractors' proficiency in risk management plays an important role in project management activities

11. Chinese contractors need risk management knowledge and expertise in managing construction projects urgently

12. Risk management can effectively protect the contractors' interests

13. Risk management will be involved in considerable extra cost of management expense and time

14. Construction insurance can protect contractors' interest effectively

15. Most insurance companies, who do construction insurance business in Iran, understand the needs of contractors

16. Most insurance companies, who do construction insurance business in Iran, are qualified

17. It is difficult for Chinese contractors to design a construction insurance program

18. When contractors plan to purchase construction insurance program, they need third party's (e.g. agents, brokers, etc.) help to

provide information and knowledge

19. In Iran, insurance companies are familiar with the background of construction companies

20. In Iran, insurance companies are familiar with the background of construction projects

21. In Iran, contractors are familiar with the background of insurance companies in their area

22. Construction insurance against risk is expensive due to high premiums in Iran

(continued)

Do you agree with the following argument? SD DA NA AG SA DK

23. The services of claim from insurance companies in Iran are standard

24. Insurance claims are difficult and wordings are complicated, therefore contractors have to turn to an intermediary (e.g. agents, brokers, loss adjusters)

25. Contractors can retain the premium and manage the risks by themselves effectively

26. A contract of works in Iran should contain strict and clearly defined insurance terms

27. Insurance companies in Iran could not provide risk management service effectively even at extra charge

28. Underwriters should give contractors premium discount in consideration of construction companies' good risk management practice

Notes: SD ¼ strongly disagree; DA ¼ disagree; NA ¼ neutral; AG ¼ agree; SA ¼ strongly agree; DK ¼ do not know

Do you have any comments on this interview in general?