STUDY OF RISKS CAUSING CLAIMS THAT LEAD TO THE INCREASE OF PROJECT COST AND DURATION AND PROCEDURES THAT CAN BE FOLLOWED IN ORDER TO BE AVOIDED OR REDUCED TO LESS THAN WHAT CAN BE

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Abstract: *this research aims at conducting an analytical study of the risks that cause compensation claims as well as causing extension claims in construction projects and managing them in a manner that minimises or avoids those risks. In addition to using modern methods and techniques to predict the impact of these risks on the cost and duration of the project, Construction projects because they have a clear and significant impact on the increase in the cost and duration of these projects in addition to it is the main reason for the decline in the relationship between employers and contractors in the engineering and construction, not to mention that it weakens the opportunity of any Joint work between them in the future.*

For the purpose of achieving this goal was its information collection through two phases. The first study theory, which included a review of the literature and previous research and studies related to research, while represented the second phase of the study process, which also included two phases, "the first phase included a field survey of a group of experienced cadres engineering, project managers, academics and specialists in this field and to analyze them to identify the causative risk of compensation claims and the extension and its impact on construction projects, and how departments and possible actions to avoid or minimize those Risk, while the second phase involved the collection of the largest number of information and historical data for the projects implemented and completed in an earlier period and an analysis of this stage and take advantage of them in the first two-way identify the risks facing these projects and the impact of each on the cost and duration of these projects through classification And then compare their results with the results of the first stage.

Keywords: *risk management, risk response, achievement of project stages, risks analysis.*

АНАЛИЗ РИСКОВ, КОТОРЫЕ ПРИВОДЯТ К УВЕЛИЧЕНИЮ СТОИМОСТИ И СРОКА РЕАЛИЗАЦИИ ПРОЕКТА. ПРЕТЕНЗИИ. ВОЗМОЖНОСТИ ИЗБЕЖАТЬ И СНИЗИТЬ УРОВЕНЬ РИСКОВ

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Аннотация: *в данной работе приведены результаты аналитического исследования рисков, которые влекут за собой выдвижение претензий и требований о выплате компенсации, изучены возможности избежать и минимизировать риски, связанные с увеличением сроков реализации строительных проектов.*

Для определения причин образования претензий в строительных проектах были изучены литературные источники и предыдущие исследования в данной области. Также были опрошены группы специалистов в сфере строительства и экономики, инженеры с большим опытом работы и руководители проектов. Была собрана и проанализирована информация, отражающая положительный опыт в реализации строительных проектов, изучены данные о проектах, которые удалось завершить досрочно. На основании результатов проделанной работы можно сказать, что для успешного завершения строительного проекта, (во избежание риска увеличения срока реализации и увеличения стоимости) необходимо заранее

классифицировать возможные риски, провести их стоимостную оценку и на всем протяжении проекта проводить сравнительный анализ очередных показателей с предыдущими результатами.
Ключевые слова: *риск-менеджмент, анализ рисков, реализация проекта.*

Introduction

Preface: Speaking of the construction industry, it features a lot of risks involved, where most of the construction projects being risky property and uncertainty, and this is due to the complexity of the industry and the length of the project, and a large number of parties that have a connection with them. The risks in the projects a reality that cannot be neglected or ignored or cancelled, but must be managed properly so transported or distributed or transferred, and in any case, be required to avoid or minimise the impact of which caused losses to a minimum.

It is noted that the bulk of Claims arising from those risks contracting parties where those claims either extension or compensation or extension and compensation together, "causing an increase in the cost and duration of the project. Thus, the project manager and architect of cost exposure to the risk of completion of the project within the budget and the prescribed period. Understands Parties concerned that the claims be settled through follow-up and resolution takes time and effort, "significant", which may extend for many years after the contract ends, as well as one, cannot predict the final outcome of this settlement, although it represented in many cases, the additional losses to the party in He presented those claims, believing that they are offset some of the losses incurred by the former, and therefore claims, particularly those submitted by the Contractor has become "to be reckoned with in the construction projects. Therefore, it called for the need to know the risks that lead to get these claims and manage leads to a reduction or avoidance of these risks in addition to the use of modern methods and techniques to predict the impact of those risks on the cost and duration of the project, which help to control and reduce the impact of those claims in construction projects.

Research Objectives: In light of the previous hypothesis and build on what was the justification for the research it became possible to identify the main objectives of the search as follows:

1. Determine Causing the risk of claims for compensation and extension in construction projects.

2. To conduct an analytical study of the risks of causing compensation claims and extension in construction projects and manage leads to a reduction or avoidance of these risks.

3. Use of modern methods and techniques to predict the impact of those risks on the cost and duration of the project. (which help to control and reduce the impact of such claims in the construction projects as they have a clear and significant impact in increasing the cost and duration of these projects as well as they are the main reason for not achieving the goals of the project).

4. The development of engineering staff on the Management of construction projects who work for the government, businesses and contractors and also develop and make clear to the decision-makers with the government, companies and contractors in order to reduce losses and achieve the goals of the projects successfully.

1. Claims

1.1. Definition of Claim

There are many definitions of the claim, which appeared in several sources are as follows:

• Dictionary defines (OXFORD) claim that they claim the right to claim or right to something [14], [10], [8], [20].

Through the above researcher can claim to know that they claim to one of the parties to the contract by the other party to compensate for financial losses or time, or both together and that arise from the reasons may be contractual or other, and also because of the risks that occur in construction projects.

1.2. The foundation contractor claims under the contract for civil engineering work conditions

There are many materials in the contract for civil engineering work conditions are considered the foundation for the contractor claims and those claims can be classified into two categories, as follows:

Contractor claims relating to the decisions of the employer or his representative.

Contractor claims related to contractual legal matters beyond the control of the employer or contractor or represented [5].

1.3. The foundation contractor claims under Iraqi civil law

Includes Iraqi civil law, many of the materials are the basis for many of the contractor claims and against which can release the eligibility of the contractor in his claim and is in the following articles [6]: Article 146, paragraph (2), Article (867) of paragraph (2) , Article (873) of paragraph (1), Article (873) of paragraph (2), Article (874) of paragraph (1), Article 876, Article (877), Article (878), articles (879) of paragraph (1 0.2), Article (880) of paragraph (1), Article (885) of paragraph (1), Article (886) of paragraph (2), Article (887) of paragraph (4), (Article 889) of paragraph (1).

1.4. Basically, the employer claims under the contract for civil engineering works and under Iraqi civil law terms

There are many articles in the contract for civil engineering and civil law and the Iraqi conditions are considered the foundation for the employer claims through which an employer to deduct the amounts from the contractor benefits, which include the amounts disbursed by him for doing what the contractor must do and at his expense, [5], [6], [7].

1.5. Classification of Claims

It can be classified as claims of legal and contractual terms into four types [4], [8]:

1. Contractual claims
2. Common law claims
3. Quantitative merit claims
4. Claims ex gratia (charity claims)

Claims also are classified according to their demands (claimant) and often "have claimed the employer, contractor and also comes [11], [2]:

a. The employer claims [1], [11].
b. Contractor claims [2], [11].

The researcher found that the classification of claims on the basis of compensation claims, extension claims, compensation claims and extensions is the most validated.

1.6. The Factors Caused for Claims

Based "on what has been previously reported," and what has been viewed from other sources, the researcher suggests classification causing claims factors into three groups are the causative agents of compensation claims and the causative factors of the claims of the extension and the factors that cause compensation claims and extension as indicated.

2. Manage and analyse the risks in construction projects

2.1. Definition of the risk

There are many definitions of risk, and which appeared in numerous sources which are as follows:

Risk – is a potential and numerically measurable possibility of adverse situations and their consequences in the form of loss, damage, negative earnings, up to the bankruptcy and liquidation of the company due to its instability and uncertainty. At the heart of risk lie such two factors as the proximity and the uncertainty.

• event or circumstance which is expected when picking leads to a negative or positive effect on the objectives of the project [24], [22], [23].

2.2. Definition of Risk Management

There are many definitions of risk management and mentioned in many sources are as follows:

• are processes that contain a method to control the risks, whether these risks in the field of work, scheduling, cost, contract, in quality and include the following risk management: identifying preventive measures to avoid the risk or mitigate its impact, create contingency plans to deal with the risks when they occur, start with the work of the maximum possible to reduce uncertainty (uncertainty) by collecting good information, and visibility among decision makers [4].

2.3 Stages of risk management in construction projects

2.3.1. Planning for Risk Management

A process in which the report of risk management in a systematic and planned and implemented in a project where they are deciding how to handle the planning of the activities of the risks of the project management, and output key to this process is to develop a risk management plan, which is a document containing risk treatment procedures during the project life cycle and summed up those The procedures for identifying risks, and qualitative analysis "quantified", and plan to respond to those risks and controlling and monitoring (risk). [26], [18].

2.3.2. Risk Identification

It is the stage where the risks that affect the project with the recording characteristics include identifying where the risks that adversely affect the completion of the desired objectives of the project is selected, and then grouped into menus under each category a range of potential risks that are identified. Since the plan effective risk situation that may be a key sponsor to help supporters of the project (Stakeholders) in determining the risk.

2.3.3. Qualitative Risk Analysis

Are at this stage priorities for risk put through evaluation and blending likelihood of occurrence and impact for the purpose of conducting a further analysis or action, process of risk identification produces a long list of risks and classified in different ways and in any case is not reasonable to diagnose the risk to the same degree of importance not all risks are worth the same level of attention to it became necessary to define priority to those risks that have been identified as the worst habit is to identify risk and opportunity is better and this is the purpose of the process of qualitative analysis [25], [24], [9].

2.3.4. Risk Quantitative Analysis

This stage includes digital or quantitative analysis of the impact of known risks affecting. There are many techniques that are used for this purpose Among these techniques simulation Simulation)) using Monte analysis Carlo Monte-Carlo)), Bert (Pert), held interviews ((Interviewing, decision tree analysis (Decision Tree), the statistical guessing techniques and analysis of the expected value (Expected Value). and must be careful in the process of quantitative analysis because the use of good techniques for quantitative analysis with the wrong data is worse than the non-use of these techniques, and the quantitative analysis of the process may be a cost in some cases is more than the cost of the risk effect of itself [23].

2.3.5. Risk Response Strategies

This stage includes the development of options and procedures to enhance the opportunities and minimise the threats against the objectives of the project, having made the process of risk identification and assessment of all the techniques. Used to address those risks and deal with them within one or more of the four main groups [27], [16], [12], [15], [13].

Risk Acceptance
Risk Mitigation
Risk Transference
Risk Avoidance Strategy
5- Contingency Plan

2.3.6. Monitor and control risk

It is the process by which track for (risks identified the effect, and the remaining risk after treatment, and the new risks that arise during the implementation of the project) and monitor the planned response and assess their effectiveness and to develop new plans in case of being ineffective plans.

3. Field survey of research

3.1. The research sample election

It was emphasized in the election of the members of the sample questionnaire to be of outstanding engineers and competent and with good employees in government institutions and consulting engineering offices and engineers working in construction companies experience the process, and on the university professors who have long experience in this field. Where the researcher distributed (60) questionnaire and directly in order to be able to deliver the objectives of the questionnaire and to clarify what is the mysterious him elected to the respondents. Was recovered (52) form only, when previews analysis excluded four of them due to lack of answers is complete, and it became a number of final questionnaires that were adopted when analysing the results of the questionnaire (48).

4. Mathematical and statistical methods used in scheduling and analyse the data and draw conclusions

A - **Measurement of Central Tendency**

The researcher this measure being a typical value in the representation of a data set, where the researcher used the more common averages which are the arithmetic mean ($\bar{X}$: Mean) which is defined as the value that if given to each individual in the group (a set of values) of the total new vocabulary is equal to the sum of the values of values Originally variables. Also, known as the sum of the values of Views divided by the number is calculated as follows [3]:

$$Mean\ (\bar{X}) = \sum_{i=1}^{h} x_i \times f_i / n \qquad (1)$$

Whereas:

($\bar{X}$): Arithmetic mean
(x_i): Class centre
(f_i): The number of iterations for each class
(n): Sample size or total duplicates of the classes
(I): Sequence of classes
(h): Number of classes

B - **Measures of spread**

Sufficient concentration measurements to describe a set of data is not considered a full description was equally some samples in the arithmetic mean in spite of the distribution of data about the status of a difference (degree data smoothing) the middle arithmetic represents a data centre but does not indicate the extent of wrap or scattering data on this medium, but this is not essential the existence of another measure with the central benchmarks for measuring the degree of homogeneity or dispersion within this data. Therefore, the purpose of the adoption of this type of metrics is to determine the nature of the distribution of previews questionnaire to reflect how they differ and spread from the middle and if scatter meter great indicates that the heterogeneity between previews values, and it will scale dispersion young when the differences are a few previews values. The researcher has a standard deviation as a

measure of the dispersion reflecting deviations previews for the middle arithmetic values (X) is calculated as follows:

$$Standard\ Deviation\ (S) = \sqrt{\sum_{i=1}^{h} \frac{(x_I - X)^2 \times f_i}{(n-1)}} \qquad (2)$$

C - **Procedures scheduling and analyse data and draw conclusions**

It has analysed the results that have been obtained from the questionnaire according to the sequence of the process of his interlocutor, as follows:

1 - The first and second axis will be duplicated ratios calculated on the basis of information and answers to members of the research sample and then displayed in the forms as follows:

$P\ \% = (f_i/n) \times 100\ \ (3)$

Where: P %: The proportion of repetition of class

2 - The third axis and on the assessment of the likelihood of causing risk to get compensation claims and the extension and assess the severity of the impact of those risks on the cost and duration of the project will be scheduling and analysing the results as follows:

• The evaluation of the probability of each risk of causing risk of compensation claims by applying the equation rate calculation (1) in accordance with the answers on the research sample and then apply the equation (2) has been the standard deviation calculation.

• The evaluation of the severity of the impact of each risk of causing risk of compensation claims on the cost of applying the rate calculation equation (1) in accordance with the answers to the research sample and then applying the equation (2) has been the standard deviation calculation.

• was calculated relative importance of each risk of causing risk of compensation claims as well as claims for causing extension according to the "potential to earn as set out.

$$The\ relative\ importance\ of\ risk\ according\ to\ the\ "potential\ to\ earn\% = \frac{Average\ probability\ evaluation\ to\ get\ risk}{Total\ rates\ probability\ of\ getting\ each\ risk} \times 100\ \% \qquad (4)$$

• was calculated relative importance of each risk of causing risk of compensation claims according to the "impact on the cost of the project and the risks that cause claims extension according to the" impact on the duration of the project:

$$The\ relative\ importance\ of\ risk\ according\ to\ the\ "impact\ on\ the\ cost\ of\ the\ project\% = \frac{Average\ evaluation\ impact\ of\ risk}{Total\ rates\ impact\ assessment\ of\ each\ risk} \times 100\ \% \qquad (5)$$

• qualitative assessment was calculated for each of the risks of causing compensation claims and risks causing claims extension risk, and in accordance with the probability matrix-effect shown in Figure (1.13), or according to the following equation [24], [19]:

Qualitative assessment of risk =

$$Average\ probability\ evaluation\ to\ get\ risk \times Average\ evaluation\ impact\ of\ risk \qquad (6)$$

• The account the relative importance of the risk of causing compensation claims and risks causing claims for the extension according to the "qualitative assessment as set out.

$$The\ relative\ importance\ of\ risk\ according\ to\ the\ qualitative\ assessment = \frac{Rate\ qualitative\ assessment\ to\ get\ risk}{Total\ qualitative\ assessment\ rates\ for\ each\ risk} \times 100\ \%\ \ (7)$$

3. For the fourth axis and on procedures that can be taken to avoid or minimize the risk of causing compensation claims and the extension has been scheduling and analysing the results as follows:

• The evaluation of the effectiveness of each procedure of calculating the rate to avoid or minimize the risk of causing all the risks of claims and the extension of the application of the equation (1) and so on according to answers the research sample.

5. Analysing the results of the field survey

5.1. The first axis: the axis data and general information

1. Name of the department or company name: Shown in Figure 1 percentages of the sample individuals y ministries and departments in which the respondents worked.

2. Functional class: It included the functional class for members of the sample into four categories in the proportions set out in Figure 2

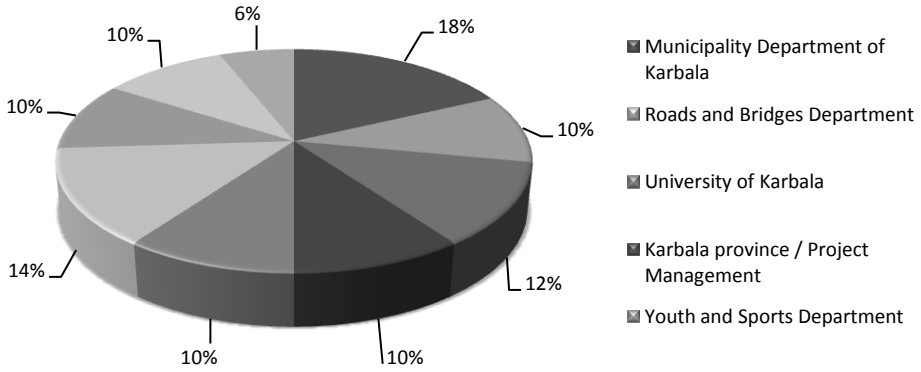

Fig. 1. Department where the research

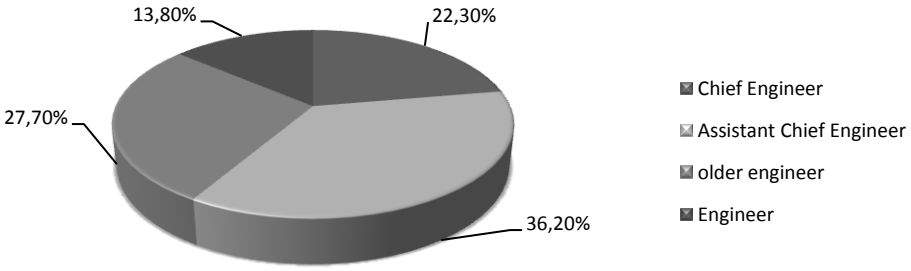

Fig. 2. Functional class of the sample research

3. Type projects carried out by the research sample: Indicates the shape 3 that most of the respondents had worked in the implementation of projects the road and bridges came by (46%).

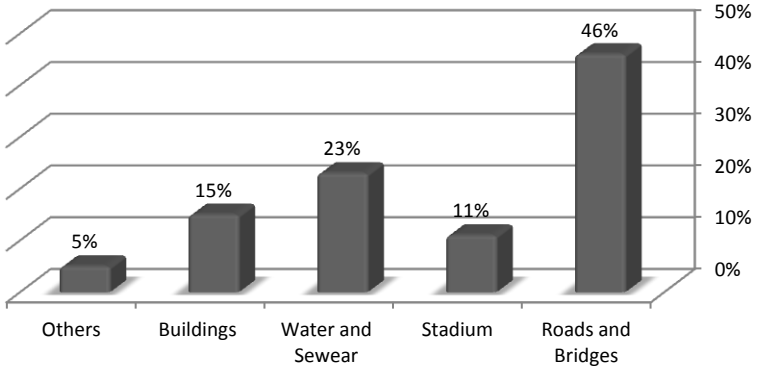

Fig. 3. Type of projects implemented by the research sample

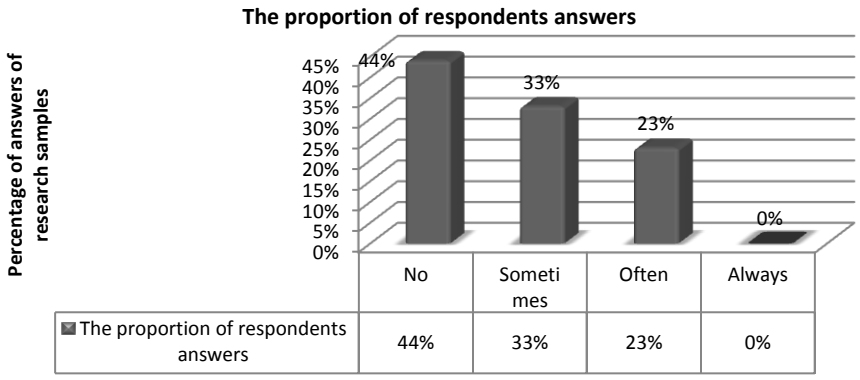

Fig. 4. The proportion of respondents' answers about the existence of a management system or plan to deal with risks of claims

5.2. The second axis: Axis Risk Management

The objective of this axis is to know the extent of the application causing the risk of claims in project management methodology and the extent of the need for these projects to the presence of systems, plans, and experts to manage such risks and learn about the methods used in the evaluation and assessment of these risks has been used as a researcher in this axis the number of scales and digital standards Interview her for the purpose of facilitating the process of calculations and data analysis.

1. To find out whether there is a management system or plan to deal with greenhouse risks of claims most of the answers to members of the research sample to a lack or absence of a management system or plan to deal with those risks indicated came by (77%), as it is shown in Figure 4.

2. To find out the methods used to predict the risk-causing claims Answers research sample has made it clear that the use of historical information from previous projects is the way in which it mainly as it shows a clear with note through the Figures 5 and 6 there was a lack of specialists in the use of experts and previous scientific studies to predict these risks.

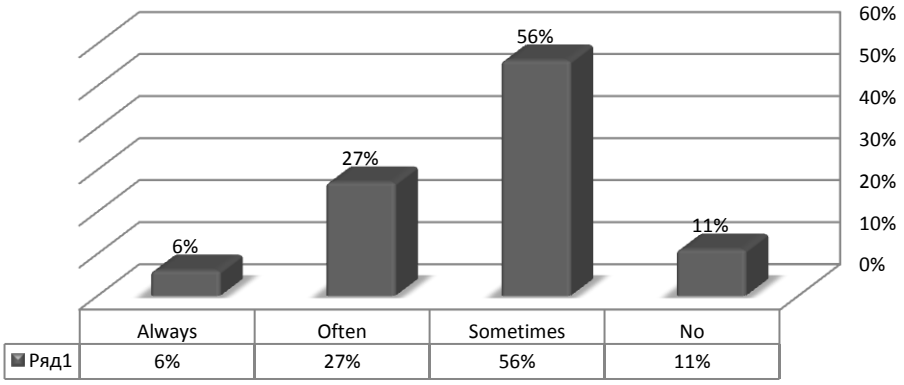

Fig. 5. The percentage of respondents' answers about causing risk of claims by using specialized experts

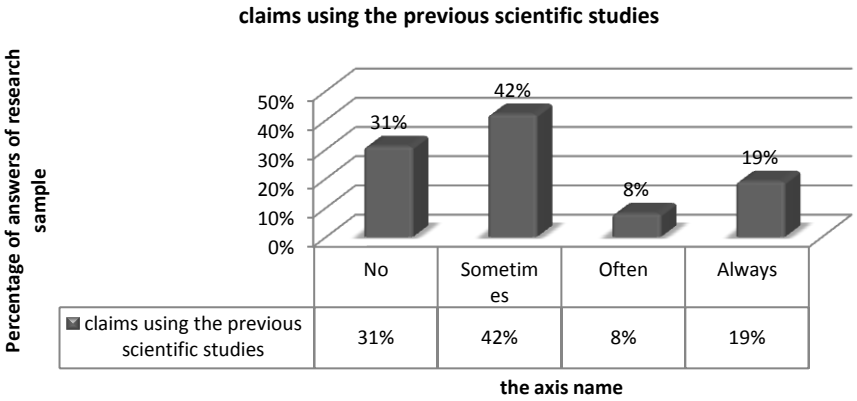

Fig. 6. The proportion of respondent's answers about causing risk of claims using the previous scientific studies

5.3. The third axis: Identify and analyse the risks of causing claims

Ensure that the third axis in the first question and the second evaluation of the probability of getting both the risk of causing the risk of compensation claims and assess the impact of those risks on the cost of projects, through the use of five scales (very low ", low, medium, high, very high") and table 1 with standard weights.

Table 1. Norms and standards for assessing the likelihood and impact of risks causing claims in construction projects

No	The scale	The standard measure of the probability	The standard measure of the impact
1	Very Low	0.1	0.05
2	Low	0.3	0.1
3	Medium	0.5	0.2
4	High	0.7	0.4
5	Very High	0.9	0.8

Through what has been obtained from the results of the evaluation of the likelihood and impact of risks that cause compensation claims will be calculated qualitative assessment for each of those risks through the equation (6) and then evaluated and depending on the matrix (probability - impact) the risk that give a qualitative assessment of each risk depending on the probability and global influence and shown in Figure 7.

5.4. The fourth axis: Axis procedures

This axis aims to find out the best action might be taken in order to avoid causing risk of compensation claims and the extension or reduce them to the lowest level in which the impact of those risks less as possible on the cost and duration of the project, where the requesting researcher evaluate those procedures under Scale (very effective "effectively, efficiently somewhat, ineffective) has made clear the table 2 standard that scales.

Table 2. Shows the standards and criteria procedures avoid or minimize the risk of causing claims in construction projects

No	The scale of the procedure	Standard measure the procedure
1	Ineffective	1
2	Efficiently Somewhat	2
3	Effective	3
4	Very Effective	4

The researcher excludes the value less than (2.5) because of efficiently somewhat and (because the Arithmetic Mean of the evaluation criterion is equal to (2.5).

Shows the relative importance of effective measures to minimise or avoid the risks that cause compensation claims and extensions in construction projects that can be followed in construction projects.

6. Use matrix in qualitative risk assessment

The qualitative assessment gives a clear picture of the impact of each risk because it depends on the integration of a global assessment of the probability and impact, it has been used by the researcher in the process of qualitative analysis of the risks.

Table 3. Matrix (probability - impact) or qualitative risk assessment

A certain measure of risk danger					
possibility	**Degree of risk (risk factor) = P*I**				
0.9	0.045	0.09	0.18	0.36	0.72
0.7	0.035	0.07	0.14	0.28	0.56
0.5	0.025	0.05	0.10	0.20	0.40
0.3	0.015	0.03	0.06	0.12	0.24
0.1	0.005	0.01	0.02	0.04	0.08
	0.05	0.10	0.20	0.40	0.80
	The impact on one of the goals (such as cost, time or achievement scale)				

Table 4. Assess the probability and impact of the qualitative assessment of the risk of causing extension claims and compensation claims in construction projects and their relative importance according to the "qualitative evaluate rate

No	**Claim code**	**Risks causing Extension Claims (Risk factor title)**	**Average evaluation of the probability**	**Average evaluation of the impact**	**Qualitative assessment rate**
1	RE 1	The risk of non-payments to companies and contractors	0.812	0.679	0.551
	RC1	The risk of non-payments to companies and contractors	0.837	0.142	0.118
2	RE 2	The risk of delayed dues Contractor Exchange	0.545	0.641	0.349
	RC2	The risk of delayed dues Contractor Exchange	0.487	0.106	0.051
3	RE 3	The risk of guessing quantities bill of quantities, causing additional work within a more than 20%	0.725	0.311	0.225
	RC3	The risk of guessing quantities bill of quantities, causing additional work within a more than 20%	0.745	0.506	0.376
4	RE 4	The risk of changes in designs	0.387	0.318	0.123
	RC4	The risk of changes in designs	0.445	0.2	0.089
5	RE 5	Risk of change in the specifications and the quality of the materials used and installed in the contract documents	0.287	0.301	0.086
	RC5	Risk of change in the specifications and the quality of the materials used and installed in the contract documents	0.350	0.122	0.042
6	RE 6	The risk of new paragraphs developed the necessary	0.412	0.307	0.126
	RC6	The risk of new paragraphs developed the necessary	0.629	0.127	0.079
7	RE 7	Paragraphs risk developed by the desire of the employer to make modifications in Business	0.416	0.162	0.067
	RC7	Paragraphs risk developed by the desire of the employer to make modifications in Business	0.479	0.116	0.055
8	RE 8	Risk implementation engineer orders to conduct additional tests are not included in the contract is not the responsibility of conducting the contractor located	0.258	0.155	0.039
	RC8	Risk implementation engineer orders to conduct additional tests are not included in the contract is not the responsibility of conducting the contractor located	0.275	0.112	0.030
9	RE 9	Failure to obtain approvals or allow to do some necessary work in a timely manner.	0.287	0.155	0.044
10	RE 10	disagreement or difficulty with the municipal authorities and city councils or other political entities.	0.395	0.278	0.113
11	RE 11	Problems resulting from internal factors such as terrorism, crime rate, vandalism, revolutions.	0.429	0.308	0.132
12	RE 12	The existence of obstacles to work in the place of execution.	0.416	0.260	0.108
13	RE 13	The presence of traces or evidence that the archaeological area.	0.279	0.188	0.052
14	RE 14	The risk of the employer delayed the delivery of location	0.383	0.298	0.114
15	RE 15	The risk of delayed due to difficult weather conditions	0.291	0.165	0.048
16	RE 16	Risks of delays in laboratory tests	0.279	0.183	0.051
17	RE 17	The risk of employers delay in providing materials that responsibility provided it is located under the contract	0.341	0.280	0.095

18	RE 18	The risk of employers delay in issuing decisions and approvals, including delayed engineer employer to conduct the necessary tests and approval of the maps and models provided by the contractor	0.404	0.282	0.114
19	RC 19	The risk of increased fuel prices and the prices of construction materials, taxes and charges	0.291	0.085	0.024
20	RC 20	The risk of an employer to imprison the letter of guarantee and insurance	0.154	0.082	0.012
21	RC 21	The risk of a shortage or an error on drawings and specifications	0.479	0.139	0.066
22	RC 22	Decrease in the quantities table	0.375	0.143	0.053
23	RC 23	The risk of a temporary stop for reasons dating back to the employer or any entity legally authorised "	0.558	0.114	0.063
		Total	7.346	5.271	2.437

Table 5. Matrix for probability and impact of the qualitative assessment of the risks that cause compensation and extension claims in construction projects

possibility	A certain measure of risk danger				
0.9					
0.7		RC1	RE3	RE1,RC5	
0.5		RC8,RC13		RE2	
0.3		RE7,RC2,RC7, RC9,RC11,RC12	RE4,RE6,RE10,RE11, RE12,RE14,RE17, RE18,RC6		
0.1	RC3,RC4	RE8,RE9,RE13, RE16,RC10	RE5,RE15		
	0.05	0.10	0.20	0.40	0.80
	The impact				

7. Risk Theory in the evaluation of risk in the construction projects use (Risk rose)

Qualitative risk analysis allows to detect and identify the possible types of project risks. identifies and describes the causes of and factors affecting the level of this type of risk. In addition, it is necessary to describe and give a financial assessment of all the possible consequences of a hypothetical implementation of the identified risks and propose measures to minimise and/or compensate for these effects by calculating the evaluation of these activities. Methods of expert estimates include a set of logical and mathematical-statistical methods and procedures related to the activities of the expert processing necessary for analysis and decision-making information. Central "figure" expert procedure is himself an expert - a specialist, using his abilities (knowledge, skill, experience, intuition, etc.) to find the most effective solutions. The main methods of expert assessments used for risk analysis can be identified:

- Questionnaires
- Rose and spiral risks

rose risks and risks of a spiral. In order to compare the results of the expert of the construction projects risk assessments on different aspects, or to visualise the comparative evaluation of several projects, using the method of "rose" or "star" of risks. Like several other expert methods, this allows you to compare different risk factors.

After analysing the available information about the project, the experts fill in questionnaires in which put risk assessment for each factor, usually on a scale. Thus, as a rule, it is believed that the higher the score, the higher the risk of the draft. Next, the data presented in the form of a rose, or a star [21]. Then the competent experts determine the most significant risk factors for risk in construction projects evaluation. Here it should be pointed out that for the following estimation the selected risk factors should be reduced to their relative values. It is impossible to work with absolute values of the factors, as they describe various features of a building [28]. Knowing the actual and terminal values of a factor it is fairly easy to reduce it to the relative value, dividing the former by the latter. The calculations results are presented in table 3.

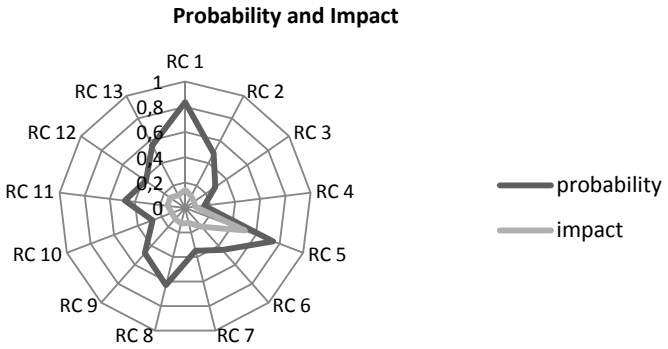

Fig. 7. Probability and Impact of the qualitative Assessment of the risks that cause compensation claims construction projects

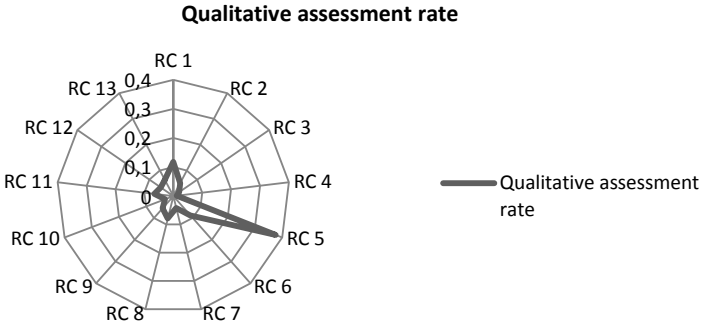

Fig. 8. The qualitative assessment of the risks that cause compensation claims in construction projects

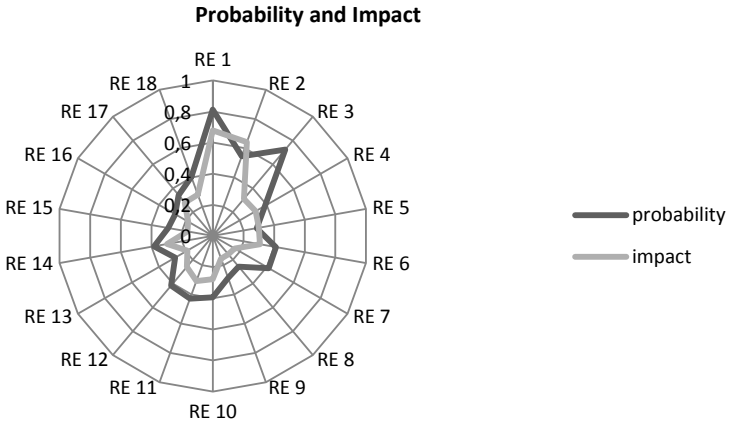

Fig. 9. Probability and Impact of the qualitative Assessment of the risk of causing extension claims in Construction projects

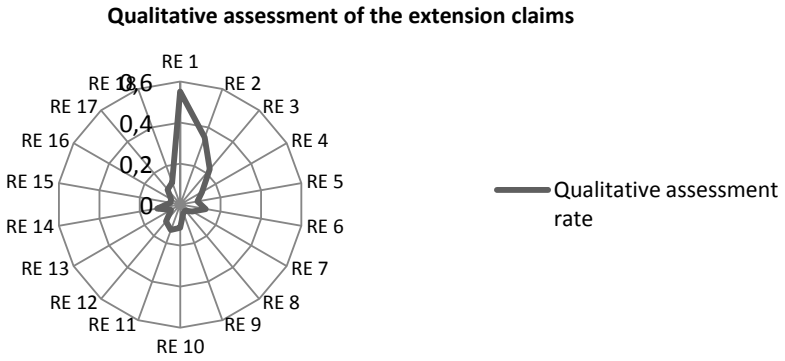

Fig. 10. The qualitative assessment of the risk of causing extension claims in construction projects

Conclusions

The conclusions reached by the researcher through the theoretical and practical study and through the work of research has reached many conclusions can be summarised by the following points:

1. The lack of a specific and uniform system or context for the preservation and organisation of data and information relating to claims and their results in most of the departments and companies visited.

2. The qualitative assessment process using the probability-impact technique gives a "clear" view of the impact of hazards, depending on the factors of probability and the impact of such hazards, as well as the important notification and priority, which helps in the process of treatment and decision-making.

3. Through the field survey, we noticed that there are (13) risks causing compensation claims and (18) the risk of extension claims.

4. The most important risk in construction projects is the risk of non-payments to companies and contractors of dues of contractors and companies.

5. The existence of a relationship between risk and that the occurrence of certain risks to be a cause of other risks and example of this drop in crude oil prices, which shows the importance of monitoring and control of risk as mitigate some of the risks leads to relieving other risks in the same procedure.

6. It turned out that the risk response is to put contractual conditions is the preferred measure to respond to the risk, followed by risk acceptance and risk transfer procedure followed by other actions

7. The results showed that the most common risk factors for compensation claims were "in terms of qualitative evaluation of construction projects in general, the risk of non-payments to companies and contractors, the risk of delayed dues Contractor Exchange, the risk of errors in the quantities of the quantities table, the risk of the necessary new paragraphs, the risk of changes in designs and the risk of the new paragraphs due to the employer's desire to make adjustments In business.

Recommendations

1. The researcher recommends the importance of attention to the documentation process in the construction projects, especially "related to the claims and take advantage of the large capacity of the computer in this process, and by the attention to the existence of a schedule of daily work.

2. The researcher recommends the need to be accurate in estimating quantities of the bill of quantities as well as in the preparation of the documents of the contract through the transfer of work to the specialised and accurate consulting offices with long experience.

3. The drop in oil prices and the global market requires thinking on Iraq to embrace the vision of a unified strategy to diversify its economic base and to build a solid economic and industrial base, and disengagement on a near-total dependence on oil revenues.

4. The oil-producing countries in general live oil crisis, experiencing their budget deficit is clear and large they must move to diversify its foreign investments, and should not remain solely with consumerism.

5. The need to develop a management culture extend beyond the projects through the use of modern technology in all construction projects facilities.

6. Rehabilitation and development of engineering staff in the field of analysis and risk management through education and certification courses for engineers for the purpose of application and make use of them in the construction projects.

7. The development of contractual formulas between the employer and the companies with respect to analysis and risk management ensures the rights of all parties with the work programs to manage these risks.

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