

## Analytical Study of the Causes of Abandoned Construction Projects

Abdullah Adil <sup>a\*</sup>, Tariq Abdulmajid <sup>a</sup>, Samiaah Mahdi <sup>b</sup>

<sup>a</sup> Department of Civil Engineering; University of Technology, Baghdad, Iraq.

<sup>b</sup> Department of Surveying; Middle Technical University, Diyala, Iraq.

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### Abstract

Construction industry is a vital field as it plays a significant role in the economic situation of the country. Many job opportunities will be created to develop and enhance the economy. However, not all projects can be finished on time or ahead of schedule, as the project may be delayed or even abandoned in worst cases at any stage of the project's cycle lifetime. Project abandonment is a serious problem which impedes the construction industry in many countries especially in Middle East. This paper is part of an ongoing research investigation to identify the most significant causes of project abandonments in Iraq. It presents a review of an existing literature on the causes of this problem. Consequently, the outcome of an extensive questionnaire survey of 40 crucial causes including 101 respondents is presented and discussed. Various statistical tools were used in the analysis of data such as descriptive statistics, Cronbach's alpha, and relative important index (RII) with the aid of SPSS and MS Excel. The result illustrates that the most significant and vital causes in Iraq were: Financial corruption, Assignment of work to companies that have no experience in that field, and Incompetent Contractor. The findings of this study will help future researchers looking for solutions for this problem in order to enhance the project success.

*Keywords:* Abandoned Projects; Project Abandonment; Construction Industry; Project Management.

## 1. Introduction

When a project is going well, but for some reasons has been stopped, it is termed as an abandoned project. Therefore, it is a waste of lands and funds [1]. Projects abandonment is believed to be one of the most critical problems obstructing the construction in Iraq. It represents the uncompleted project and it affects not only the consumers but also other project participants (e.g. Contractor, Consultant, Client) and the general public.

In Iraq, abandonment of construction projects is a serious issue and it still increasing with successive years; It needs more attention from the government to mitigate and solve the causes that may lead to this problem. The investigation outcome will increase the understanding of those factors. Hence, it will help avoid failed projects.

This paper introduces literature of the existing researches on abandoned construction projects and related issues, it presents the findings from a wide questionnaire survey involving 101 respondents on possible causes of projects abandonment in Iraq. This is followed by a discussion on the results of the survey and further works.

## 2. Literature Review

It is found from the literature reviews that there is a lack of research and investigation in the field of project abandonment. Carrero et al. (2009) [2] in Spain and Abdul-Rahman et al. (2015) [3] in Malaysia have equally observed that abandoned housing project in Malaysia can cause environmental and socio-economic effects. The socio-economic

\* Corresponding author: 42123@student.uotechnology.edu.iq

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effect which causes a decline in the area importance and loss of jobs. Whereas the environmental effect consists of; landscape modification, visual impact, corrosion, pollution, and loss of biodiversity.

According to Abdul-Rahman et al. (2013) [4], the causes of abandoned projects in Malaysia can be classified into economic, financial, legal factors, sell-system related factors, and unexpected risk factors. While Mac-Barango (2017) [5] stated that the economic collapse that hit Asian countries in the mid of 1980s is thought to be one of the main reasons for many projects abandonment. The collapse had a direct adverse effect on the prices of construction materials, property sector, and labour marketing [6]. On the other hand, the Iraqi economy has also affected by many crises. Since the occupation of Iraq in 2003 and the economy file is managed by wrong policies, which led to the deterioration of the economic situation in the country. Starting from the civil war in 2006 and passing through the financial crisis in 2008 and ending with ISIS fighting that exhaust all the country resources and make a budget deficit and causes oil prices fluctuation. The deterioration in oil prices has left Iraq short of incomes. The economic crisis has had a serious impact on the economy of Iraq with oil prices plummeting forcing the country to restrain the expenditure of the government [7]

The IMF (International Monetary Fund) announced in 2017 that the risks in Iraq are still very high. They are mainly due to the volatility of the security, political tensions and weak implementation of policies because Iraq is facing a double shock from the conflict with ISIS and the fall in oil prices. The IMF also declared that the decline in oil prices led to the decline of Iraq's international reserves from 54 billion dollars at the end of 2015 to 45 billion dollars at the end of 2016 and continue financial pressure, as the government deficit increased from 12% of GDP (gross domestic product) in 2015 to 14% In 2016, despite the continued control of public finances, due to weak oil prices and high humanitarian and security spending [8].

The causes of abandoned projects in other countries appear to be dissimilar. In Nigeria, the causes are corruption, improper estimation, inadequate planning, unavailability of skilled personnel, communication gap among personnel, poor risk management, misinterpretation work requirements, and poor quality control by governing organizations [1]. In the same country, Alao and Jagboro (2017) [22] has reached a decision that delayed payments, fund mismanagement, inadequate budgetary allocation, inadequacy of finance, inflation and bankruptcy of contractor were the most significant causes of abandoned projects. One common reason for abandoned projects is the unpredicted factors causing from the preliminary estimation of the cost of projects through the forecasting stage, the conflicts between the estimated and real construction costs make the project unworkable during the execution stage, such causes may oblige the developer to abandon the project [9].

The other causes of abandonment introduced by Adeleke (2005) [10] are the government inconsistent strategies that always led to a lack of accountability and corruption which affect the construction projects. He also added that unskilled contractors, unsuitable locations, shortage of building materials and lack or unavailability of services or infrastructural facilities are the most important causes of project abandonment.

Dahlan (2011) [11] specified some reasons for abandoned projects in Malaysia as follow: problems linked to clearing of the site, financial problems of developers, disagreements, conflicts and disputes between project investors. N.H.M. Dahlan (2011) [12] assured that inadequate legal provisions of customers interests protection can be one of the main causes for projects abandonment in Malaysia. He had compared the existing housing sell-systems "sell-then-build" and "build-then-sell"; the latter would be a superior system. He also cited two additional causes that result in housing abandoned projects: the absence of compulsory insurance enforced on developers throughout the application and the vague legal provisions governing rehabilitation systems that result in continuing misuse of power and authority of rehabilitating committee, which is harmful to the buyers.

In Ghana, a public project is called abandoned because of management and execution problems related to the project [13]. While in Thailand, it is common that the majority of the work is subcontracted to subcontractor while the main contractor manages a contract [14]. It was shown that delays in interim payments, financial difficulties faced by the owner, financial difficulties faced by the contractor, incompetent contractors or subcontractors, instability in politics were the most important factor which caused abandonment in construction residential projects.

The inadequate selecting of the main contractor or subcontractor causes problems during construction. Moreover, numerous unforeseen circumstances occur during the preliminary investment stage may lead to project abandonment. The other causes were: government policies, inappropriate location, misinterpretation of the requirement of the work and poor quality controlling by regulating organizations. A vital subcontractor will accomplish and deliverer the work undertaken within the given time and budget. Hence, it is important to control subcontractor performance more strictly. The improvement of the practice of subcontractor performance will avoid the existence of an abandoned construction project [14].

Hicks (2008) [15] has stated that abandonment is an eminent thought on construction projects in California. This is caused by the design of the project which is insufficient that the contractor makes substantial change orders and additional work, which eventually causes the project to become abandoned.

The financial crisis that happened in 2008 has led to the cancellation of spectacular construction projects in the booming metropolises of Dubai, Saudi Arabia, Moscow and Shanghai. The globalized world is truly proving to be a single entity, one in which the collapse of the market affects everyone. There is suddenly a lack of credit or demand for the newly constructed office, retail and residential spaces. Even China was increasingly feeling the effects of the financial crisis. Its exports had already dropped sharply, economic growth was declining and all forecasts for the enormous country pointed to a significant downturn [16].

The project abandonment gives an adversative impact on participants such as the developer, consultant, contractor, and customer. Ahmed et al. (2002) [17] indicated that the impact on these participants is in terms of adversative relationships, arbitration, mistrust, problems of cash-flow, litigation, and a feeling of worry towards each other. So, it is necessary to outline the real causes of the problem in order to avoid it or prevent its occurrence.

Hitherto, the causes of projects abandonment based on the studies by researchers from different countries such as Malaysia, Thailand, Nigeria, Ghana, Middle East countries, China, Spain, Russia, UK and USA has been discussed. The researcher has reached a point through the literature review that the abandonment problems not only occur in the third-world countries only, but it occurs in developed countries as well. It depends on the country stability, policies, the methods used in building and the availability of strict regulatory systems.

### 3. Research Methodology

In this paper, the methodology adopted was a combination of literature review, questionnaire survey and interviews with experts in order to find out the most important factors contributing to project abandonment in Iraq.

The first step in the research methodology was to collect data regarding the problem of project abandonment, this was through the ministry of construction and housing (MOCH) database and making an extensive literature review. It was noted that there is a lack of researches in this field. It was restricted sources such as conference papers, unpublished theses, and news articles. Furthermore, there is no relevant thesis discoursing this problem in Iraq.

The probable causes that have been reviewed will be used as a basis for a wide questionnaire survey as well as semi-structured interviews with project managers in order to benefit from their expertise to rank the most underlying factors regarding the project abandonment problem.

An overall 120 questionnaire forms were distributed by hand in Baghdad during the period of 5th January to 22nd February 2019. The survey relied on the public-sector Engineers that are involved in construction-based activities and affiliating MOCH.

It can be seen from Figure 1 the main steps of the current study methodology. The first step started with the review of existing literatures to determine the factors that lead to project abandonment. A questionnaire survey has been build, distributed, and collected. Then those factors have been analyzed in order to obtain the objective of this investigation.

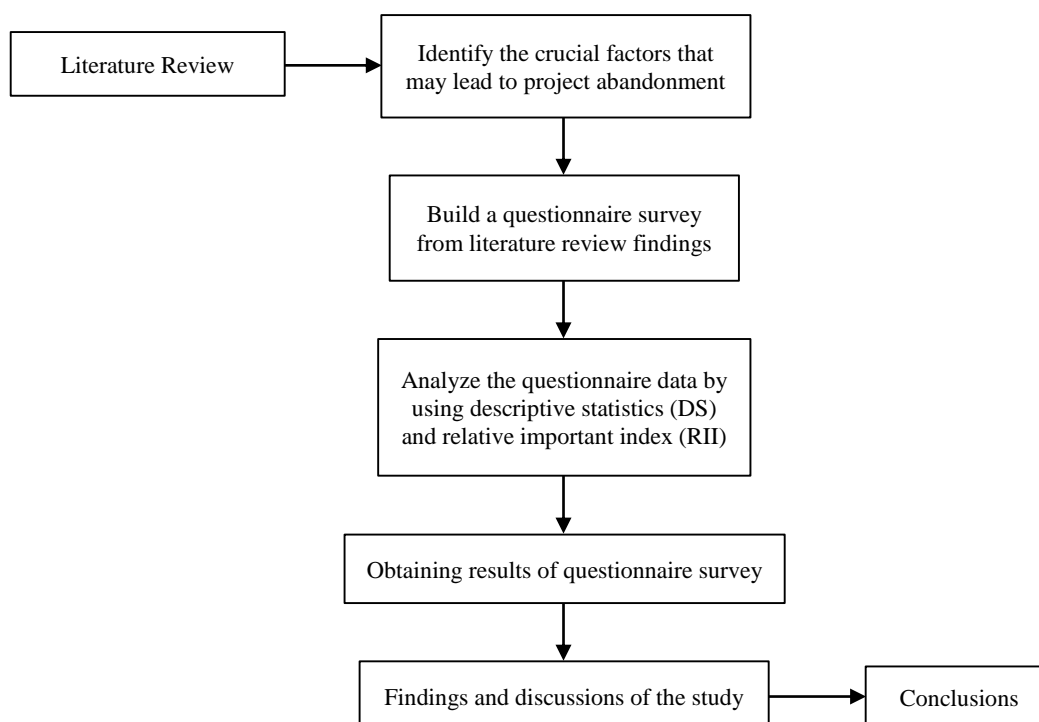


Figure 1. Research Methodology

### 3.1. Questionnaire Design

Based on a thorough review of the literature and four experts-judgment, 40 crucial factors were placed in the questionnaire survey. the respondents were requested to rank these causes on a five-point Likert scale, i.e. 5 for "Always", 4 for "Often", 3 for "Sometimes", 2 for "Seldom", and 1 for "Never". Analysis of the data was accomplished using SPSS (Statistical Package for the Social Sciences) Version 24.0 and Microsoft Excel to ensure the accuracy of the results.

## 4. Findings of the Questionnaire Survey

### 4.1. Response Rate

A total of 101 complete responses out of 120 were received, making the response rate of 84.16%, which gives an indication that the sample study has interest towards this subject.

General Respondent Demographics (GRD) of the respondents revealed that most of the respondents (76.2%) were holding the Bachelor's degree as shown in Figure 2. Figure 3 indicates that most of the respondents are Civil Engineers having a percentage of 75.2%. While Figure 4 shows that most of the respondents have an experience more than 20 (44.6%) which give the survey a meaningful contribution.

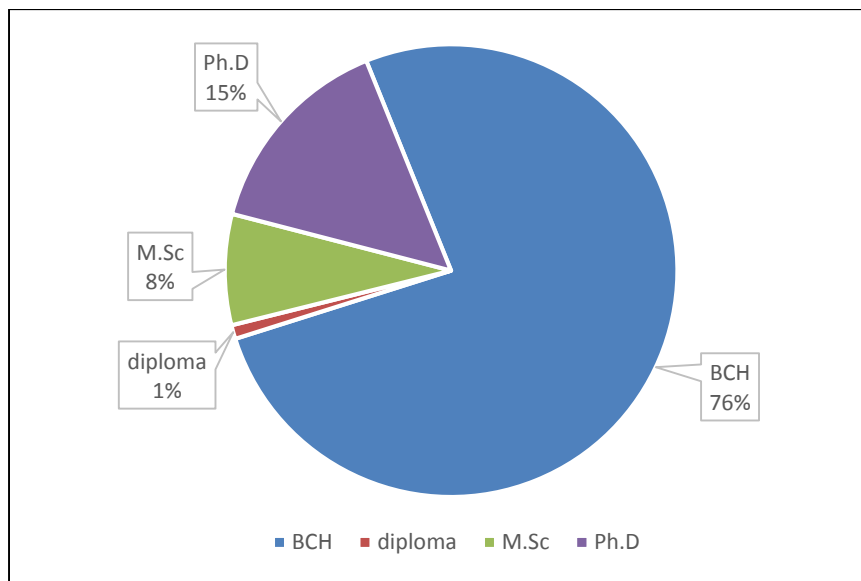


Figure 2. Academic Degree

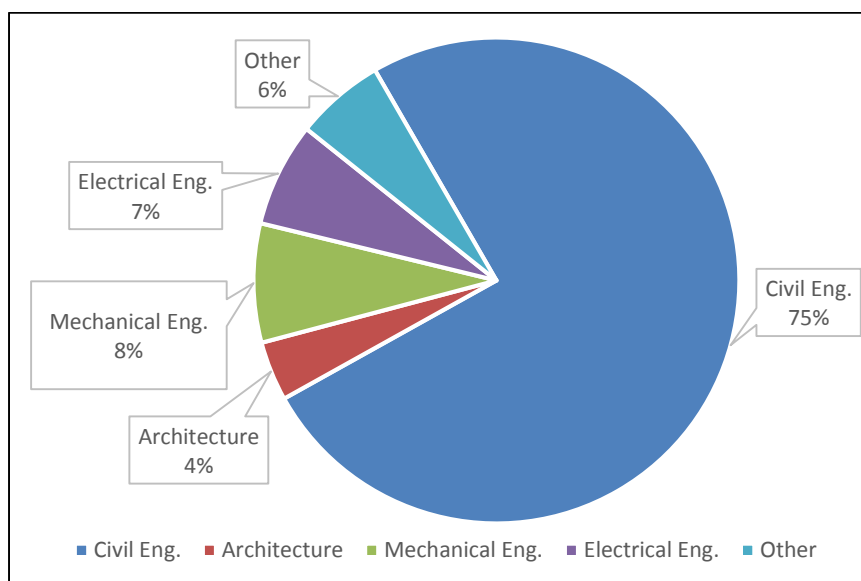


Figure 3. Specialization

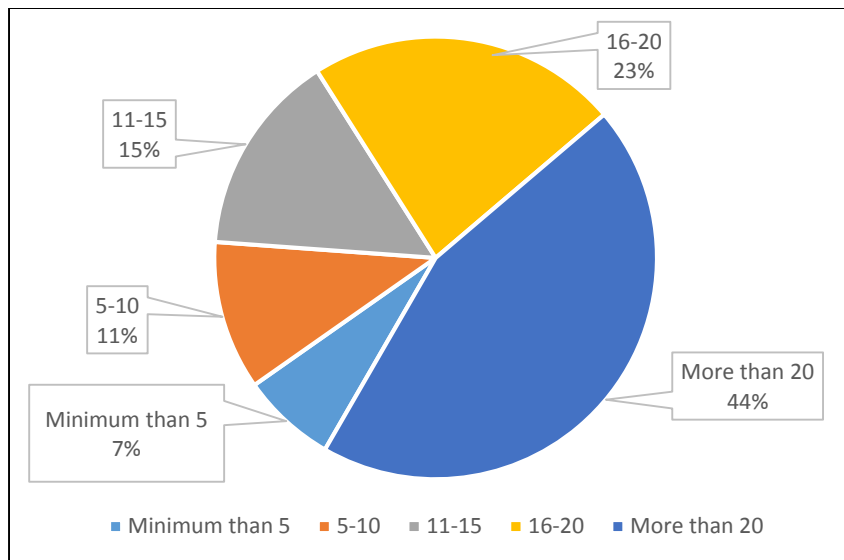


Figure 4. Years of experience

**4.2. Internal Consistency Reliability**

The reliability of the questionnaire was calculated using Cronbach alpha which is a test that can see if multiple-question Likert scale surveys are reliable. Cronbach alpha coefficient for the 40 causes affecting the project abandonment is 0.919. Since the coefficient is greater than 0.9, it is an indication of excellent internal consistency [18].

**4.3. Data Analyses**

Relative important index (RII) method was used to rank the causes affecting the project abandonment according to their importance. Many researchers such as Ubani [19]; Kazaz [20]; and Aibinu [21] used RII equation as:

$$RII = \sum \frac{W}{A} \times N \tag{1}$$

Where; W: weight assigned to each factor ranging from 1 to 5, A: highest weight= 5, N: total number of respondents= 101.

Relative important index scores for factors related to project management had Assignment of work to companies that have no experience in the construction field (RII = 0.798) and it was ranked first (Table 1).

**Table 1. Statistical results of Project Management related-factors**

Group Rank	Factors	RII	Total Rank
1	Assignment of work to companies that have no experience in the construction field	0.798	2
2	Incompetent Contractor	0.784	3
3	Administrative Corruption	0.766	6
4	Inaccurate Estimation for the project's time and cost.	0.685	13
5	Improper project scheduling and planning	0.681	15
6	Poor Contract Administration	0.671	18
7	Poor Risk Management	0.638	21
8	Inadequate project feasibility study	0.636	23
9	Poor Quality control and quality assurance by regulatory agencies	0.626	24
10	Un-qualified project Manager	0.606	27
11	Not-applying the General Conditions of contract for civil work	0.598	29
12	Un-experienced Consultant	0.578	30
13	Not-applying the designs submitted by the architect and structural designer	0.533	32
14	Execution of work before planning ends	0.463	38
<b>Average</b>		<b>0.647</b>	

It is very important to assign work to companies that have experience in the same field, has a good reputation, and has a large capital helping it to complete the assigned work during the same period. The incompetent contractor also can

affect the abandonment problem; It was ranked second with RII=0.784. The criteria for selecting a proper contractor must take account of past performance, relevant experience, plant and equipment.

For political-related factors; Corruption from some political parties with an (RII = 0.774) was ranked first (Table 2).

**Table 2. Statistical results of Political related-factors**

Group Rank	Factors	RII	Total Rank
1	Corruption from some political parties	0.774	4
2	Absence of legal liability	0.719	10
3	Bureaucracy within the project	0.695	12
4	Absence of a strict control system	0.685	14
5	Unpredictable obstacles interrupt the progress of the project	0.681	16
6	Coordination problems between local authorities and project developers	0.657	20
7	Conflicts and disputes among project developers	0.638	22
8	Difficulty in obtaining Security permissions	0.626	25
9	Authorization of new laws affecting the work process.	0.614	26
10	Absence of judgment in resolving engineering disputes	0.604	28
<b>Average</b>		<b>0.669</b>	

Political corruption is the use of powers by government officials or their network contacts for illegitimate private gain. Forms of corruption vary but include bribery, extortion, influence peddling, and embezzlement. However, the absence of legal liability is also a serious problem (RII=0.719). Experts linked the progress cycle to the effectiveness of the liability institutions and their role in Troubleshooting errors that may occur and work to identify the weakness and deviation and work to correct and correct them properly.

For factors related to financial management; Financial corruption with an (RII = 0.804) was ranked first (Table 3).

**Table 3. Statistical results of Financial Management related-factors**

Group Rank	Factors	RII	Total Rank
1	Financial corruption	0.804	1
2	Unexpected bad economic conditions	0.774	5
3	Financial problems encountered by the owner	0.741	7
4	Contractor loans are not paid regularly	0.725	8
4	Failure to finance the project	0.725	9
5	Financial mishandling by the contractor (contractor bankruptcy)	0.711	11
6	Inflation	0.677	17
7	Cash flow problems during the implementation process	0.669	19
8	The rising of raw materials costs such as cement and steel	0.521	33
<b>Average</b>		<b>0.705</b>	

In general, financial issues are the main problem impeding the completion of a project in Iraq. This is through financial corruption, rising of raw materials costs, and bad economic condition to the country, contractor, or owner.

For factors related to procurement management; Unexpected location difficulties with an (RII = 0.539) was ranked first (Table 4).

**Table 4. Statistical results of Procurement Management related-factors**

Group Rank	Factors	RII	Total Rank
1	Unexpected location difficulties	0.539	31
2	Lack of services and infrastructure facilities	0.515	34
3	Unskilled site workers	0.485	35
4	Unavailability of materials and equipment	0.471	37
<b>Average</b>		<b>0.503</b>	

This group has a relatively low average RII of 0.503. Thus, it has a low significance impact on project abandonment. While other related-factors; Fluctuation of Oil prices with an (RII = 0.473) was ranked first (Table 5).

**Table 5. Statistical results of other related-factors**

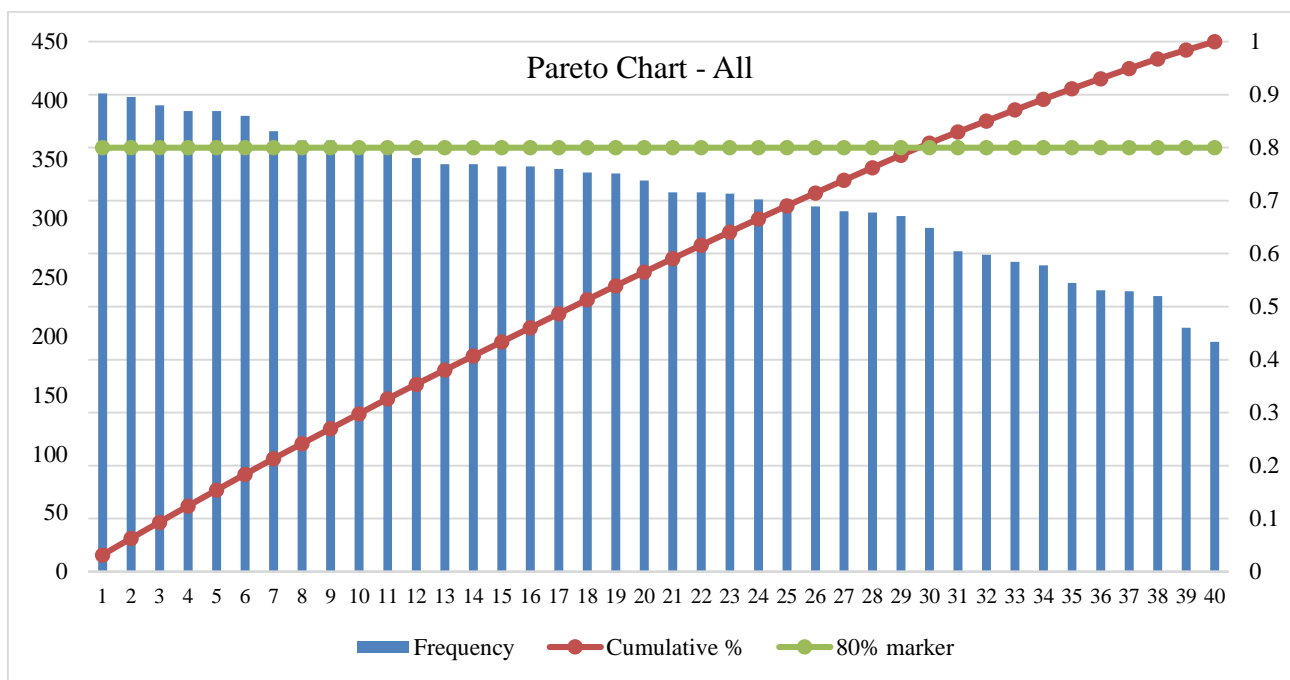
Group Rank	Factors	RII	Total Rank
1	The fluctuation of Oil prices	0.473	36
2	Natural disasters	0.41	39
3	The negative impact of the project on the environment or society	0.386	40
Average		<b>0.423</b>	

It is shown from the Table above that this group has low RII of 0.423. So, it almost has no influence on the abandonment.

**4.4. Pareto Chart**

Pareto chart is a tool that is used to identify the biggest issues regarding the project abandonment problem. Its rule states that 80% of the effects are coming from 20% of the causes. In Figure 4, the left vertical axis of Pareto chart counts the frequency weight of each factor. The bars are placed on the graph in rank order that is the bar at the left has the highest contribution. The right vertical axis has per cent demarcations. A cumulative line is used to add the percentages from each bar, starting at the left.

As a result, the survey yielded 29 factors out of 40 as it can be seen in Figure 5. It is obvious that those factors are performing 80% effectively. Accordingly, there are 11 factors that must be neglected because of their low effectiveness (less than 20%), namely: Un-experienced Consultant, Unexpected location difficulties, Not-applying the designs submitted by the architect and structural designer, The rising of raw materials costs such as cement and steel, Lack of services and infrastructure facilities, Unskilled site workers, Fluctuation of Oil prices, Unavailability of materials and equipment, Execution of work before planning ends, Natural disasters, Negative impact of the project toward the environment or society.



**Figure 5. Pareto chart**

**5. Conclusion**

This paper described the abandoned projects issue and the effective factors related to it. A total of 40 crucial factors were identified based on a comprehensive literature review and discussion with selected experts in this field. The causes identified are essentially focused on problems related to Project Management, Political related causes, Financial Management, Procurement Management, and other causes.

RII analysis was used to determine the relative ranking of the factors. These ranking enabled the researcher to compare the relative importance of the factors as perceived by 101 respondents. The ranking analysis revealed that 29 out of 40 causes are describing 80% of the total variance which means all the factors approximately have the same contribution. It was found that it is vital to investigate and provide more detailed research into project abandonment challenges in Iraq.

Finally, we can conclude the top 10 causes of project abandonment in Iraq, namely:

- Financial corruption,
- Assignment of work to companies that has no experience in that field,
- Incompetent Contractor,
- Corruption of some political parties,
- Unexpected bad economic conditions,
- Administrative Corruption,
- Financial difficulties faced by the owner,
- Failure to finance the project,
- Contractor loans are not paid regularly, and
- Absence of legal liability.

Thus, it is hoped that this paper provided a detailed explanation of the factors that contribute to the existence of project abandonment in Iraq and their effectiveness. In addition, this paper will provide some basis for more research in this field. For further studies, it would be curious to study on the implementation of BIM (Building Information Modelling) in the Iraqi construction industry in order to mitigate this problem. Also it is important to be more precise and study the effectiveness of these factors on residential, housing, and other construction industries in order to enhance the project success.

## 6. Conflicts of Interest

The authors declare no conflict of interest.

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