



Cost Overrun in Construction Projects in Iraq: A Review

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Abstract: Construction projects in Iraq, as in many developing countries, suffer from a diverse risk that affect the final cost of projects. Most disputes between the employer and the contractor occur because of this risk. A survey on published literature in international and Iraqi scientific journals dealing with the subject of cost deviation in Iraqi construction projects has been done. It was found that the five most important reasons for cost deviation in Iraqi construction projects are; poor project management, poor cost control, poor site management, additional work, poor planning approaches and delay in paying the amounts to the contractor. There is no agreement among Iraqi researchers on the degree of importance or sequence of reasons for the cost overrun in the projects. About (89%) from the researchers used the method of expert questionnaire in obtaining these reasons and accordingly to rank them. Despite the enough number of researches in this field, Iraqi construction projects still suffer from deviation in costs. The researcher recommends to conducting research based on documents of completed projects and not on questionnaires so that the real data may contribute to helping project management avoid disputes due to cost deviation.

Keywords- Cost, Iraqi projects, Cost deviation, Cost control



1. Introduction

The construction industry sector in Iraq is one of the most important sectors that stimulate employment, offer jobs and contribute to the revitalization of the economic movement in the country (Boadu et al., 2020). Iraqi construction projects suffer from various problems that affect the success of these projects and fail to achieve their goals. Cost overruns in the project is one of the most important factors pointed out by researchers in various countries of the world, including Iraq, which causes the failure of the project objectives (A M Faten Albtoush, R A Bahamid and Lucia, 2019; Morad, 2023).

The cost overrun may lead to the abandonment or suspension of the project, this disrupting its schedule and leading to a decline in economic activity in the construction industry (Forbes and Riso, 2024). Cost overrun affect the contractor's reputation, reduce his chances of obtaining new contracts, and may significantly affect his profits and may cause him to go bankrupt (Aero, 2020). The most common definition of project cost overrun is the excess of the final cost over the contracted cost. Also, cost overrun may be defined as “cost escalation”, “cost increase”, or “budget overrun” (Ahiaga-Dagbui and Smith, 2014). Investigating the causes for the cost overrun of the project has been one of the top priorities of researchers to contributing to improving the performance of project management (Abdelalim et al., 2025). Most researchers believe that paying attention to cost management as part of project management contributes significantly to reducing the increase in cost above the contractual cost (EcoSys, 2022). There are many factors that cause cost overrun in projects from various parties, such as the employer, contractor, consultant, or external reasons (Asiedu and Adaku, 2020).

In this research, all pinpointed causes of cost overrun by the researchers will be reviewed, classified, and compared with each other. Also, the used methodologies used in these researches will be outlined. This review study is the first (based on the researchers knowledge) that deals with cost deviation issue and to put the full view in front of the Iraqi researcher in the future to improve cost management.



2. Methods

A systematic review of the previous literature was conducted that dealt with cost deviation in Iraqi construction projects from 2016 to 2024. Keywords such as "cost overrun", "cost variance", "cost escalation", "budget overrun", "cost management", "cost estimation" and "cost risk" was used to search on the Internet, Google Scholar, Iraqi academic journals, and Iraqi Virtual Library. These search terms align with standard terminology used in global construction cost overrun research (Abdelalim et al., 2025). Only 23 studies were found addressing this issue in government projects. Four studies were excluded because they did not directly address cost overrun.

Literature review has been done to list and extract the factors causing the cost overrun in Iraqi construction projects. The most important causes were pinpointed and the methods used in these researches were examined.

3. Literature review

After reviewing the Iraqi studies that focused on project cost deviation, it was found that the factors that contributed to the failure to complete projects within the contractual cost are listed in Table 1.

Table 1. Causes of cost overrun as cited by Iraqi researchers

NO.	Factors	Work done by
1.	Design errors	(Hadi, 2018; J. Hassan et al., 2020; Jihad, 2016; M. Al-Zwainy and Amer, 2016; Mahde and A. Jasim, 2021; Rezaei and Jalal, 2018)
2.	Design changes	(Ali et al., 2019; Hadi, 2018; J. Hassan et al., 2020; Jihad, 2016; Mahde and A. Jasim, 2021; S. Mohammed and Hasan, 2024)
3.	Gap between design and tendering	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Faeq and Khaleel, 2023; Mahde and A. Jasim, 2021; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024)
4.	Poor project management / poor cost control	(Abbas and Burhan, 2022; Al-Agele and Al-Hassan, 2016; Alani and Mahmoud, 2023; Ali et al., 2020, 2019; Hadi, 2020; J. Hassan et al., 2020; Jihad, 2016; M. Al-Zwainy and Amer, 2016; Mahde and A. Jasim, 2021; S. Mohammed



		and Hasan, 2024; S. A. Mohammed and Hasan, 2024; Rezaei and Jalal, 2018; Saeed, 2018)
5.	Poor planning approaches	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Ali et al., 2020, 2019; Faeq and Khaleel, 2023; Hadi, 2020; Jihad, 2016; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024; Rezaei and Jalal, 2018)
6.	Poor site management	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Al-Agele and Al-Hassan, 2016; Alani and Mahmoud, 2023; Ali et al., 2020, 2019; Faeq and Khaleel, 2023; J. Hassan et al., 2020; Jihad, 2016; Mahde and A. Jasim, 2021; S. A. Mohammed and Hasan, 2024; Rezaei and Jalal, 2018; Saeed, 2018)
7.	Breakdowns of construction plant equipment	(Ali et al., 2020, 2019; Mahde and A. Jasim, 2021; S. A. Mohammed and Hasan, 2024)
8.	No planning for materials supply	(Ali et al., 2020, 2019; Faeq and Khaleel, 2023)
9.	Contract awarded to the lowest bidder	(Abed and Rashid, 2023; Al-Agele and Al-Hassan, 2016; Ali et al., 2020; Faeq and Khaleel, 2023; Hadi, 2020; S. A. Mohammed and Hasan, 2024)
10.	Incompetent subcontractor	(Abed and Rashid, 2023; Al-Agele and Al-Hassan, 2016; Hadi, 2020; S. A. Mohammed and Hasan, 2024; Rezaei and Jalal, 2018)
11.	Inappropriate procurement	(Ali et al., 2020; Faeq and Khaleel, 2023; Hadi, 2020; J. Hassan et al., 2020; M. Al-Zwainy and Amer, 2016; Mahde and A. Jasim, 2021; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024)
12.	Inappropriate government policies	(Abed and Rashid, 2023; Al-Agele and Al-Hassan, 2016; Ali et al., 2020; Faeq and Khaleel, 2023; Hadi, 2020; Jihad, 2016; M. Al-Zwainy and Amer, 2016; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024)
13.	Fluctuation in prices of raw materials	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Alani and Mahmoud, 2023; Jihad, 2016; Mahde and A. Jasim, 2021; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024)
14.	Unstable cost of manufactured product	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Alani and Mahmoud, 2023; S. A. Mohammed and Hasan, 2024)



15.	Inaccurate cost estimates	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Al-Agele and Al-Hassan, 2016; Alani and Mahmoud, 2023; Ali et al., 2020; Hadi, 2018, 2020; J. Hassan et al., 2020; Jihad, 2016; Mahde and A. Jasim, 2021; S. A. Mohammed and Hasan, 2024; Saeed, 2018)
16.	Increase in labor cost	(Abed and Rashid, 2023; Alani and Mahmoud, 2023; Ali et al., 2020; S. A. Mohammed and Hasan, 2024)
17.	Changing currency rates	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Ali et al., 2020; J. Hassan et al., 2020; M. Al-Zwainy and Amer, 2016)
18.	Plant and equipment shortage	(Abed and Rashid, 2023; Ali et al., 2020, 2019; J. Hassan et al., 2020; Jihad, 2016; M. Al-Zwainy and Amer, 2016; Mahde and A. Jasim, 2021; S. A. Mohammed and Hasan, 2024)
19.	Labor productivity	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Ali et al., 2020, 2019; Jihad, 2016; M. Al-Zwainy and Amer, 2016; S. Mohammed and Hasan, 2024; Rezaei and Jalal, 2018; Saeed, 2018)
20.	Shortage of workforce	(Ali et al., 2020, 2019; J. Hassan et al., 2020; Jihad, 2016; Mahde and A. Jasim, 2021; S. A. Mohammed and Hasan, 2024)
21.	Lack of skilled labor	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Ali et al., 2020, 2019; Jihad, 2016; Mahde and A. Jasim, 2021; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024; Rezaei and Jalal, 2018)
22.	Local materials quality	(Abed and Rashid, 2023; Ali et al., 2020; Jihad, 2016; Rezaei and Jalal, 2018)
23.	Material shortage	(Abed and Rashid, 2023; Jihad, 2016; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024)
24.	Delays in work approval	(Alani and Mahmoud, 2023; Ali et al., 2020; Faeq and Khaleel, 2023; Mahde and A. Jasim, 2021; S. A. Mohammed and Hasan, 2024)
25.	Mistakes during construction	(Ali et al., 2020; Faeq and Khaleel, 2023; Jihad, 2016; S. A. Mohammed and Hasan, 2024)
26.	Acceleration required by the client	(M. Al-Zwainy and Amer, 2016; S. A. Mohammed and Hasan, 2024)



27.	Additional work	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Alani and Mahmoud, 2023; Ali et al., 2020; Faeq and Khaleel, 2023; Hadi, 2018; J. Hassan et al., 2020; Jihad, 2016; M. Al-Zwainy and Amer, 2016; Mahde and A. Jasim, 2021; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024; Saeed, 2018)
28.	Delay of drawings and site instructions	(Abed and Rashid, 2023; Alani and Mahmoud, 2023; Faeq and Khaleel, 2023; Jihad, 2016; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024)
29.	Delays in inspection and testing of work	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Ali et al., 2020, 2019; Faeq and Khaleel, 2023; J. Hassan et al., 2020; Jihad, 2016; Mahde and A. Jasim, 2021; S. A. Mohammed and Hasan, 2024)
30.	Delay in paying the amounts to the contractor	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Al-Agele and Al-Hassan, 2016; Alani and Mahmoud, 2023; Ali et al., 2020, 2019; Hadi, 2018, 2020; Jihad, 2016; Saeed, 2018)
31.	Client's financial problem	(Al-Agele and Al-Hassan, 2016; Ali et al., 2019; Faeq and Khaleel, 2023; Hadi, 2018; J. Hassan et al., 2020; Jihad, 2016)
32.	Contractor's financial difficulties	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Faeq and Khaleel, 2023; J. Hassan et al., 2020; Jihad, 2016; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024; Saeed, 2018)
33.	Delay in starting work on the project	(Alani and Mahmoud, 2023; Faeq and Khaleel, 2023)
34.	Unforeseen site conditions	(Alani and Mahmoud, 2023; J. Hassan et al., 2020; Jihad, 2016; Mahde and A. Jasim, 2021)
35.	Poor performance of the contractor	(Al-Agele and Al-Hassan, 2016; Ali et al., 2019; Hadi, 2020; Jihad, 2016; M. Al-Zwainy and Amer, 2016; Rezaei and Jalal, 2018)
36.	Poor documentations	(Abbas and Burhan, 2022; Al-Agele and Al-Hassan, 2016; Ali et al., 2020; Faeq and Khaleel, 2023; Jihad, 2016)
37.	Weak coordination between parties	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Alani and Mahmoud, 2023; Ali et al., 2020; Faeq and Khaleel, 2023; Hadi, 2018; Jihad, 2016; Rezaei and Jalal, 2018)



38.	Poor communication	(Abbas and Burhan, 2022; Abed and Rashid, 2023; Ali et al., 2020, 2019; Faeq and Khaleel, 2023; Jihad, 2016; Rezaei and Jalal, 2018)
39.	Project complexity	(Al-Agele and Al-Hassan, 2016; Hadi, 2020; Jihad, 2016; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024)
40.	Unexpected weather conditions	(Abed and Rashid, 2023; Alani and Mahmoud, 2023; Ali et al., 2020; J. Hassan et al., 2020; Jihad, 2016; S. Mohammed and Hasan, 2024)
41.	Construction accidents	(Abed and Rashid, 2023; Ali et al., 2020; Jihad, 2016; Mahde and A. Jasim, 2021; Saeed, 2018)

Iraqi researchers adopted literature review and questionnaire to identify and study the causes of project cost deviations except (Hadi, 2018) and (Al-Agele and Al-Hassan, 2016) studies that added quantitative data to the questionnaire method.

4. Results and Discussion

The systematic review identified 41 distinct factors contributing to cost overruns in Iraqi construction projects (Table 1), with 17 studies providing empirical evidence for these factors. The analysis demonstrates significant patterns in factor identification while highlighting critical methodological and contextual challenges within Iraqi construction research.

Poor project management and poor cost control emerged as the most frequently cited factors, identified by 14 studies, representing the highest consensus among Iraqi researchers. This finding is strongly supported by (Abbas and Burhan, 2022), who identified "weakness in keeping up with the use of modern concepts, methods, and technologies" and "delay in receiving the amounts due for work done from the owner" as the most influential factors affecting cost control. Following closely, poor site management and additional work were mentioned by 13 studies each, while poor planning approaches and delays in paying amounts to contractors were cited by 10 studies respectively. Contract-related factors showed substantial research attention, with "contract awarded to the lowest bidder" cited by six studies (Abed and Rashid, 2023; Al-Agele and Al-Hassan, 2016; Ali et al., 2020; Faeq and Khaleel, 2023; Hadi, 2020; S. A. Mohammed and Hasan, 2024). Similarly, incompetent



subcontractors were identified by five studies (Abed and Rashid, 2023; Al-Agele and Al-Hassan, 2016; Hadi, 2020; S. A. Mohammed and Hasan, 2024; Rezaei and Jalal, 2018), indicating systemic procurement challenges within the Iraqi construction industry.

Procurement-related issues demonstrated widespread concern, with inappropriate procurement practices mentioned by eight studies (Ali et al., 2020; Faeq and Khaleel, 2023; Hadi, 2020; J. Hassan et al., 2020; M. Al-Zwainy and Amer, 2016; Mahde and A. Jasim, 2021; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024). Equipment-related factors also showed significant attention, with breakdowns of construction plant equipment cited by four studies (Ali et al., 2020, 2019; Mahde and A. Jasim, 2021; S. A. Mohammed and Hasan, 2024), and no planning for materials supply identified by three studies (Ali et al., 2020, 2019; Faeq and Khaleel, 2023).

Economic and financial factors revealed Iraq-specific challenges, with changing currency rates mentioned by five studies (Abbas and Burhan, 2022; Abed and Rashid, 2023; Ali et al., 2020; J. Hassan et al., 2020; M. Al-Zwainy and Amer, 2016), reflecting the country's economic instability. Unstable costs of manufactured products were identified by four studies (Abbas and Burhan, 2022; Abed and Rashid, 2023; Alani and Mahmoud, 2023; S. A. Mohammed and Hasan, 2024), while increased labor costs were cited by four studies (Abed and Rashid, 2023; Alani and Mahmoud, 2023; Ali et al., 2020; S. A. Mohammed and Hasan, 2024).

Administrative and regulatory delays emerged as persistent issues, with delays in work approval mentioned by five studies (Alani and Mahmoud, 2023; Ali et al., 2020; Faeq and Khaleel, 2023; Mahde and A. Jasim, 2021; S. A. Mohammed and Hasan, 2024). Client-imposed acceleration requirements were identified by two studies (M. Al-Zwainy and Amer, 2016; S. A. Mohammed and Hasan, 2024), while delays in starting work were cited by two studies (Alani and Mahmoud, 2023; Faeq and Khaleel, 2023).



Design-related factors showed varied prioritization across studies. While design changes, design errors, and gaps between design and tendering were mentioned by six studies (Abbas and Burhan, 2022; Abed and Rashid, 2023; Faeq and Khaleel, 2023; Mahde and A. Jasim, 2021; S. Mohammed and Hasan, 2024; S. A. Mohammed and Hasan, 2024), their ranking differed significantly. Design changes ranked first in studies by J. Hassan et al. (2020) and M. Al-Zwainy and Amer (2016), while appearing in lower positions in other research, indicating inconsistent prioritization among researchers.

A critical methodological finding from the broader literature review reveals that approximately 89% of the 19 reviewed researchers employed expert questionnaire methodologies to identify and rank cost overrun factors. Among the 17 studies cited in Table 1, only Al-Agele and Al-Hassan (2016) and Hadi (2018) supplemented their questionnaire approach with quantitative project data, highlighting a significant gap in empirical research methodologies. This methodological bias toward perception-based studies rather than document-based analysis may explain the lack of consensus among researchers regarding the relative importance of cost overrun factors.

The Iraqi construction context presents unique challenges that distinguish it from global construction markets. Security situations emerged as Iraq-specific factors, with Abbas and Burhan (2022) identifying "the security situation in the country" as one of the five most influential factors causing weakness in cost control. The 2014 financial crisis was identified as a pivotal event that significantly impacted the construction industry, making crisis management a critical concern for project success.

The review reveals several critical research gaps. Most notably, all studies focused exclusively on government projects, with no research examining cost overruns in private sector or investment projects. This represents a significant knowledge gap, particularly given that the Iraqi construction industry is expected to grow by 5% in real terms in 2024, supported by government allocation of



IQD211 trillion (\$162 billion) towards capital expenditure, with IQD40 trillion (\$30.8 billion) allocated to the energy sector and IQD17.3 trillion (\$13.3 billion) to education.

The findings have significant implications for Iraqi construction practice. The dominance of management-related factors suggests that investing in project management capabilities, modern technologies, and improved cost control systems could yield substantial improvements. The persistent payment delay issues indicate a need for financial system reforms and improved cash flow management mechanisms. The lack of consensus among researchers highlights the need for standardized cost overrun measurement frameworks and document-based research methodologies that examine actual project outcomes rather than relying solely on perception-based surveys, as evidenced by Iraq's troubled history with school construction projects where over a billion dollars were spent with few projects completed successfully.

5. Conclusions

Iraqi construction projects have had cost overruns due to a variety of factors and sources. These causes were not limited to specific stage or life of the project, but in all stages and life cycle of the project.

There is no agreement among Iraqi researchers on the degree of importance or sequence of reasons for the cost overrun in the projects. This (from our point of view) is due to the fact that they studied different and heterogeneous types of construction projects, or that the studies were conducted in different time periods and in various regions with their own special circumstances.

To avoid cost overrun, the project team must avoid errors and changes in design, well planning method and effective cost management, developing a feasible implementation program, modifying the contracting procedures and select a competent contractor, use skilled, trained and productive workers, and avoid making changes and additional work as much as possible. Additionally, implementing comprehensive project planning with accurate cost estimation techniques,



establishing real-time cost monitoring systems, and strengthening contract management with clear scope definition and change order procedures are essential. Enhanced communication among stakeholders, adoption of modern project management technologies, and comprehensive risk management throughout the project lifecycle can significantly reduce cost overruns. Finally, the employer must pay the contractor's amount on time to ensure that he continues working.

Knowing the sources of the causative factor for cost overruns contributes to supporting project management and helping it make appropriate decisions to reduce or avoid it.

All research dealt with the increase in the cost in government projects implemented by contractors and the researcher did not find a study related to private sector projects or the investment sector. This issue may be due to non-availability of data in the private sector.

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