Factors Affecting in Estimation of Durations and Costs for Oil Projects: A Systematic Literature Review

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Article Info Abstract Page Number: 3354-3367 In this study, the actual costs and actual durations were known through the **Publication Issue:** applications of artificial intelligence in oil projects in the Republic of Iraq, Vol. 71 No. 4 (2022) and the factors affecting cost management and time management (scheduling) in oil projects, especially in oil well drilling projects, are **Article History** evaluated. Article Received: 25 March 2022 Through the applications of artificial intelligence and keeping pace with the progress of modern technology through which the actual costs and Revised: 30 April 2022 Accepted: 15 June 2022 durations of oil projects are estimated, and a successful strategy for oil project companies is developed and developed to control the projects. Then Publication: 19 August 2022 used to support the results of this study, a comprehensive evaluation of 6 research articles published in Iraq in the field of the oil sector. The researcher, through field experiments, has known the factors affecting the cost and time in drilling projects for oil wells and how many of these factors are The main objective of the study was to conduct a systematic review of the literature in the field of oil projects, especially drilling oil wells in the Republic of Iraq, through a literature review, a total of 6 research papers were reviewed. Meets the criteria (research subject, country of research, publication year and research results) that dealt with the topic for a period of 12 years, which is between the years (2009 and 2020) and - or for the purpose of achieving the objectives of the studythe study explored solutions and ideas for estimating costs and durations in these projects. Keyword:Cost Management, Time Management, Oil Projects, A Systematic Literature Review

2. Introduction:

Institutions must be able to meet the needs of users in a complex market situation and business environment, and one of the most important needs and basics to satisfy them are competitive costs and faster delivery, as the current study dealt with one of the most important basic objectives of oil projects using time and cost management and artificial intelligence applications, as The oil projects in Iraq have become a critical issue for the country's economy, due to the increase in failure rates in most of these projects and the projects exceeding the planned costs and the time schedule for their completion. Accordingly, the main research problem was represented by an important question: How is the time and cost management and the use of artificial intelligence applications in oil projects according to what has been presented in the literature in the past thirteen years? In this context, the main objective of the study was to conduct a systematic review of the literature in the field of cost and duration management in projects, according to the recognized scientific contexts in the field of systematic review, through a literature review, a group of (6) research papers were reviewed. (the subject of the research, the country of the research, the year of publication and the results of the research), which dealt with the topic for 13 years, and it is between (2009 and 2021) and for the purpose of achieving the objectives of the study, a theoretical review was conducted, and the result shows that the management of costs and durations in oil projects still exists and is used and considered successful in helping oil companies in the private sector, government institutions and companies in the public sector improve their competitiveness Reduce costs, increase customer satisfaction, increase productivity and raise employee morale.

2.1 Research Aim:

Conduct a systematic review of the literature in the field of time and cost management in oil projects and especially in oil well drilling, according to the recognized scientific contexts in the field of systematic review, through a literature review that has dealt with the topic for 12 years between 2009 and 2020.

2.2. Research Importance:

It is expected that this study will be in addition to the scientific literature related to project management and quality, especially Arabic literature, especially since the literature still calls for more studies on the use of global methodologies for project management in general and oil projects in particular in the field of well drilling, which indicates the need for more studies. Exploratory on improving time and cost management in oil projects, and therefore, the importance of the study comes from that it will work to conduct a systematic review of the literature to improve these projects and knowledge of similar and previous studies during the past twenty years. This review will provide a comprehensive and integrated view into different environments, from different perspectives,

2.3 Systematic review in the framework of the current study:

The process of building a theoretical framework for research and presenting studies related to the research topic is one of the most important steps in scientific research, as the literature review is the important basis in building the idea of the research topic, identifying the knowledge gap in the literature and choosing measurement methods. In addition, the literature review contributes to enabling the researcher to identify the edges of the sciences in the research topic, and to get an idea of the latest findings. What is known about the topic, in this context, the researcher tends to provide details of the studies considered when reviewing the literature without providing any explanation for the criteria that were used to identify and include those studies in the review, and the reasons for describing and discussing specific studies without others. Sometimes some studies are not included in the literature review,

because the researcher was not aware of them, or the researcher was aware of them but did not include them for unknown reasons, and since the process of identifying studies and including them in the literature is not clear, it is not possible to explain the meaning The results of the review, due to the lack of clarity in the issue of accreditation and exclusion of studies in the review process, from here the studies began to adopt what is known as the systematic review of the literature Which aims to provide and support evidence-based practice by finding and collecting research evidence that addresses a particular topic or research question and combining it in a clear and transparent manner. Reviews are systematic if they are based on a clearly formulated question, identify relevant studies, assess their quality, and summarize evidence using clear methodology It is the clear and systematic approach that distinguishes systematic reviews from traditional reviews and commentaries (Khan, 2003). In the context of defining systematic review, there are many definitions that address this topic. It is a special type of literature review that confers additional advantages, that is, it is a review of a clearly formulated question that uses clear methodological methods to critically identify, select, and evaluate relevant research and to collect and analyze data from the studies that have been included. in the review. With a focus on reducing bias in findings about the literature and findings from literature review, a systematic review process is defined as a search process in which literature relevant to a specific question is identified and grouped together using explicit methods including reporting of inclusion criteria. Exclusion, search methods and details (Oxman, 1994). Within the framework of the current study, the adoption of artificial intelligence systems and the achievement of strategic control in time management and cost management in oil projects in the literature.

Stage one: identification of literature for inclusion

An important step before conducting a systematic review is to clarify the topic or issue under investigation, which will make a good systematic review a clear focal point and focus on the evidence related to this focal point (Bhika, 2017). The researcher may wish to form a research team or seek the assistance of colleagues or consultants to guide the literature review process. If the systematic review is completed by an individual researcher, this issue involves the risk that some important elements may not be subject to any review, which may lead to bias. Working as a research team helps overcome these limitations. Before starting the systematic review, an initial scoping exercise must be conducted to obtain an initial overview of the current state of the research topic. This exercise is useful even for experts in their field of expertise to frame a systematic review. This exercise could include a broad literature search to evaluate appropriate search strategies (eg appropriate databases/sources, durations, search terms/keywords, language constraints) and to obtain an overview of the literature body. The next important step is to decide on a inclusion and exclusion criteria, As the researcher does not wish to incorporate any random bit of information into a systematic review, it will therefore be important to consider the steps that will be taken to locate relevant studies (databases), as a common approach is to identify the literature for inclusion through logical searches within Established search indicators such as Iraqi scientific journals, and these databases allow for studies to be searched by pre-defined keywords (Martineau, 2017) Before taking this step the researcher must carefully decide the search strategy including

selection of a set of keywords, database and inclusion/exclusion of papers from other disciplines as well as inclusion/exclusion of papers/proceedings of conference, books, book chapters, reports and other gray literature. A 'right' or 'wrong' way to make these decisions but to ensure consistency researchers can follow research strategies for similar reviews (Briner, 2012). Based on the aforementioned theoretical framework for this step of the systematic review, this stage included a set of basic steps that were adopted in the current study, as follows:

1. Scoping:

This step consisted in identifying the main databases, their sources, time periods, terms and keywords used in the search for literature related to artificial intelligence, time and cost management in oil projects. With regard to this study, the first step was to search and reconnaissance on the databases, and the rules most related to the topics of time management, cost management, oil projects, artificial intelligence were selected. It includes a wide range of scientific research from various fields and specializations, and this helps the researcher to access the largest number of research related to the subject of the study.

2. Inclusion and exclusion criteria:

After the basic databases that will be searched have been identified, the inclusion and exclusion criteria that will be adopted in the inclusion of research within the literature must be determined or not. With regard to the language of the research, the studies were limited to Arabic and English, and the researcher did not find studies in the English language. The reason for this is that the researcher conducted an exploratory research process on the Internet about studies related to time and cost management and artificial intelligence in oil projects. It was found that there is little in these studies, so studies were limited to Arabic. Another very important inclusion and exclusion criteria are keywords for searching in databases. The basic term for the research was chosen, represented by: (time management in oil drilling projects), but when conducting the research using this term, the results were very few, but with the adoption of the term (time management), most studies that specialized in time management in construction projects in general appeared. The same applies to the term (cost management in oil well drilling projects) with few results, as well as for the term artificial intelligence, and also for the term oil projects. Therefore, the focus in the research was on research dealing with time management, cost management and oil projects. As for the terms excluded from searching in databases, it is the term (Artificial intelligence), as it often appears for all topics related to construction projects involving artificial intelligence, whether oil or non-oil, so all research that dealt with the topic was excluded. Artificial intelligence, the primary reasons for excluding this terminology are:

a. Extensive research in the field of artificial intelligence in general.

With regard to the time period of the studies that will be included in the review, the published studies will be within the time period

confined between 2009 and 2021 for a period of 13 years and the reason for choosing this time period is that the research that was used in time and cost management and the applications of artificial intelligence in oil projects projects that appeared in search engines after 2008, especially that the implementation of oil projects in Iraq began to require competition to reach The best, and this is what studies indicated. Therefore, the focus was placed on this period of time. The publications that will be included in the database search are:

- a. Research published in Iraqi scientific journals
- b. Research published in Iraqi local conferences

It is worth noting that some writers and researchers call this stage the "planning stage" (Andreini, 2017).

The second stage: data extraction and analysis

It is the second stage of the systematic review, as after identifying a group of studies, data must be extracted from these studies, and no study should be excluded, because the researcher believes that the quality of the study is low or that there are methodological defects or other, and this would lead to to audit bias. (Briner, 2012) The data extraction process can be carried out by one or more researchers acting as reviewers and examining the literature obtained through the search process, and examining studies to ensure their suitability for inclusion in the review. Usually, reviewers check the title, summary and keywords for each study, but in some Sometimes it may become necessary to refer to the full text of the publication to determine the appropriateness of the publication for inclusion in the review.

(Hoon, 2013). The question of analysis and synthesis is a vital issue for any systematic review in which the available evidence is analyzed and synthesized, and depends on the number of studies to be included in the review, the type of research method used by the individual studies, the quality of the evidence and the analytical or conceptual technology chosen, and for systematic reviews that include a small number. Of the studies that are not suitable for any analysis, the researcher can consider preparing tables for the overview criteria, such as the research question in the study, the context of the analysis, the method(s) used and the sampling method, as well as the main results. (Crisan, 2019). The main purpose of the synthesis is to integrate the results that came from different studies for the purpose of answering the research question, and the synthesis is supposed to be adequately integrated, and not to be just a process of collecting individual studies (Gough, 2012). Here it is necessary to note an issue, which is that the process of systematic review of the literature has already begun, that is, the first step was planning, while this step is operational. Within the framework of the current study, studies were collected from the identified databases (Iraqi scientific journals) with the Google Scholar search engine, and (518) studies were collected. The researcher then removed the duplicates and removed the irrelevant studies. These studies were examined very carefully, after which the researcher excluded the unrelated studies, which numbered approximately (237) studies, as they were not suitable for the current study in terms of content. In the stage of checking the suitability of the research for inclusion in the

theoretical review, (167) were excluded, so that the remaining number of studies that are suitable for review were (80) studies. In the last audit, it was found that there were (16) duplicate studies that were excluded so that the net number of studies that will intervene in the systematic review of the topic of time management, cost management and the use of artificial intelligence in oil projects (12) studies, and in the framework of the data extraction and analysis stage, the researcher verified the title and abstract, but often the study text was scrutinized to determine the study's suitability for inclusion in the systematic review of the research literature. At the end of data extraction, (6) studies were approved in our current study Because it was directly related to the subject of the study, and the information was extracted from it accurately so that we could analyze it afterwards.





Figure (4:1) stages of data extraction for the current study

Source: Prepared by the researcher based on the source (Moher, 2009)

According to the figure (4:1), there are 6 papers reviewed in total, all papers were published in 13 years (2009-2021). The author as well as the research site was scattered in the Republic of Iraq.

Most of the researchers noted those six papers with the appropriate papers to be reviewed and the significant improvement in the organization as well as increased customer satisfaction. Of course, the author also includes several literature reviews as input on the obstacles and success of modern systems in managing time and cost in oil projects.



Figure (4:2) shows the number of research papers published during the years (2009-2021)

Figure (4:2) Number of research papers published in each year

Where it appeared in (2009), (2011), (2017), (2018), (2019) and (2020) the number of published research studies by (1) one research study and the rest of the years no research study appeared.

Table (4:1): Studies that	were extracted	through	a systematic	review	of the	literature
with some of their details						

number	Researcher and year of research	research aims	the state	Results
1	Omar Safwat) (Hassan, 2018	The research aims at the possibility of the cost management tools represented in target costing and value engineering on construction projects through the application of an acceleration technique . for project phases	Iraq	The use of cost management in government units has become a prerequisite in accordance with modern trends in preserving state resources and monitoring .performance
2	(Ebtisam Mohammed Ali,2011)	Develop a time scheduling model including time ,trade-off cost analysis Reconciliation of resources and cash flow management during the planning phase and project control during the construction phase	Iraq	The scheduling model has the ability to get the optimal solution during the planning stage to perform time and cost trade-off analysis, resource and cash flow . reconciliation
3	Mervat Razak) 2009 ,Wali Al-Taie)	Spreading the culture of cost planning and management and making .appropriate decisions According to modern methods among the . relevant parties	Iraq	An appropriate scientific plan for cost management and planning has been proposed in a format that facilitates the process of follow-up and control of the construction cost for all details The project Structural in order to timely a address weaknesses in . manner
4	Samaha Moayed + Mahmoud Muhammad Mahdi Saleh 2017)	Finding a correlation between each dimension of time management and its impact on the completion of the project and knowing its causes in preparation for the appropriate mechanisms and time management and its impact	Iraq	Most researchers ignore the importance of time management, especially with the daily schedule, scheduling daily activities , and the lack of credibility and realism in . preparing project schedules This leads to the failure to complete projects within the

		on the completion of the project within the specified .time and not wasting time		planned time and speed required .to complete it
5	(Abdul Moneim Kazem Hammadi + Bashir Faisal Muhammad 2018)	more realistic approach to optimizing the time and cost of completing projects in an ambiguous .environment	Iraq	Develop a new approach to address the problem of fuzziness in construction projects through the application of the concept of MATLAB fuzzy logic in the program and using the method of - If) condition and result rules then rules within the tools of . fuzzy logic
6	(Healing Hassan Blasim + Ali Hamza Hassan 2020)	Measuring the extent to which the requirements of green manufacturing have been achieved in the project, and the impact of their availability on the .success of the project	Iraq	There is an interest on the part of the project management in finding suitable alternatives to the raw materials used in the completion of the project that have the least environmental . impact

The third stage: presenting the results (the main themes)

The essence of a systematic review entails summarizing, evaluating, and integrating the results of the overall research strategy using a clear logical structure. Research findings must be presented in an unbiased, structured, clear and direct manner. If the main purpose of the systematic review is to evaluate the evidence for a new or existing theory, it may be useful to organize the research results accordingly. Tables are an economic and clear way to summarize and convey the main results. The characteristics of the included studies can be described in detail in Table (2:1). (**Prinstein, 2003**). There are many ways to present the results of a systematic review of the literature. If the studies on which the review is based mainly use qualitative data, the researcher can prepare a qualitative analysis, with no need to provide statistical results except for some traditional descriptive statistics to summarize basic information such as the number of publications on a topic over time. Time (Linnenluecke, 2013), and within the framework of the current study, the results of the analysis of relevant studies were presented in the form of a table that included the research objective and results as a table (4:1).

1. Reducing the defect

2. Reducing Duration

- 3. Cost Reduction
- 4. Productivity improvement
- 5. Increase profits
- 6. Increase financial savings
- 7. Increase customer satisfaction
- 8. Increasing the oil stock capacity
- 9. Increase production speed
- 10. Reducing breakdown time

These themes included seven key factors, out of a total of 518 studies reviewed. The results were also presented for the purpose of giving an idea of the most important of the systematic review of the causes of the failure of oil projects. At this stage, some clarifications will be presented for each factor of the causes of the failure of oil projects, as follows:

2.3.1 The first factor: the planning function

The first factor: the planning function This factor is considered one of the most influential factors in the failure of oil projects, as the studies referred to indicated that this factor comes first in the factors of failure of oil projects, with a number of (93) studies and a percentage of (83%) of the total studies that It was reviewed, which was (111) studies. Project planning is a key factor in the failure of the project, and although planning does not guarantee the success of the project, a flaw in planning may guarantee failure. Planning is the stage through which specific details and timetables are set and solutions are developed for the project, in as many details as possible, with the necessary steps to meet the project's goals and put into practice **(Khaireldin, 2012,121).**

2.3.2The second factor: organizational factors

By reviewing the literature on the causes of the failure of oil projects, this factor came to the second place among the causes of the failure of oil projects, and a study of the total number of studies reviewed (48%) indicated the importance of this factor, because it is one of the failure factors. It includes conflict, organization culture and project organizational structure. The third factor: the shortage of resources This factor comes in the third place with regard to the factors of failure of oil projects, as studies have confirmed (32%) that this factor has a significant impact on the failure of oil projects. The success of projects depends on the effective use of resources, and the most common and most common challenge in the project management process is the insufficient resources allocated to the project, so organizations face the challenge of ensuring the maximum benefit from these available resources (Bhika, 2017, 41), and resources are the various means by which It is used to achieve an end or satisfy a need, and it can also be understood as a set of elements available to meet a need or implement a project, (214, Elbanna, 2016).

2.3.3 The third factor: the shortage of resources

For the third factor: the shortage of resources This factor comes in the third place with regard to the factors of failure of information technology projects, as (36) studies, at a rate of (32%), confirmed that this factor had a significant impact on the failure of information technology projects. The success of projects depends on the effective use of resources, and the most common and most common challenge in the project management process is the insufficient resources allocated to the project, so organizations face the challenge of ensuring the maximum benefit from these available resources (Bhika, 2017, 41). Resources are the various means that are used to achieve a goal or meet a need. They can also be understood as a set of elements available to meet a need or implement a project, and any shortage of these resources may lead to stopping and not completing the project. (Elbanna, 2016, 2014).

2.3.4 Fourth Factor: Lack of Management Experience:

The deficiency factor in management expertise came in the fourth place in the causes of failure of information technology projects, and this factor was referred to in studies from a group that was reviewed, and this constitutes (31%) of the total number of studies. Project failures and mismanagement are directly related to the performance of a manager. The project is in the project management itself. The role of project management is the basis for the success of the project, and at the same time, project failures may be due to poor project management, which is a major factor in the failure of oil projects.), (Koru, 2008, &Emam86).

2.3.5 Fifth Factor: Lack of Organizational Support:

This factor ranked fifth in the failure factors of oil projects, as it was mentioned in many of the reviewed studies. Several variables fall under the name of lack of organizational support, such as lack of senior management support and senior management's lack of commitment to the project. The failure of oil projects arises from a lack of administrative support, especially when the management is not clear about the objectives of the project. Projects can quickly descend into failure if tasks and activities are not clearly defined and allocated and not received by senior management. Support from senior management is related to the extent to which they understand the project's need for project-related tools and materials, while providing support to the project team to avoid failure, (Dwivedi, et al. 2013, 77).

2.3.6The Sixth Factor: Inaccurate estimation of the project:

The lack of precise definition of the project requirements leads to a significant imbalance in its work, which leads to the slowdown or failure of the project, and this is what was found after reviewing the literature, as this factor was mentioned in studies from the total number of studies reviewed and by 30% this factor relates to failure as a direct result of the definition It is not sufficient to estimate the requirements of the project, which results in many problems during its life cycle, and the father of studies has cited a lot in this factor because it is one of the main factors causing the failure of projects. (El Emam & Koru, 2008, 88)

2.3.7The seventh factor: the complexity of the project

The complexity factor clearly affects the success of the project, as the more complex the project, the greater its failure rate in the future, and this was shown in the literature review, as this factor ranked seventh in the factors of failure of oil projects. After this was shown in the studies reviewed by 23%. Complexity is another factor that contributes to the high failure rate in oil projects, as it has for many years been the critical dimension of many projects. The complexity of oil projects is usually associated with a high level of uncertainty involved in these projects. (**Baccarini, 1996, 202**)

Conclusions And Recommendations

First: the conclusions

After conducting a systematic review, we came out with a set of conclusions regarding the causes of the failure of oil projects

The information, which is as follows:

1. The results of the systematic review of the literature showed that the assessment of cost management, time management and the lack of development in the technology of artificial intelligence applications was the first cause of failure in oil projects, and three sub-factors were included under this factor: unclear goals, defects in the plan and inaccurate scheduling. This is a clear indication of the role of poor planning in the failure of projects, as the defect in the plan in terms of resources and personnel set goals that are inaccurate in their realistic and unclear for the project, as well as the defect in the scheduling can negatively affect the completion of the project and may lead to its complete failure.

2. The results of the systematic review of the literature confirmed that the organizing factors were the second reason for the failure of oil projects, and four sub-factors came under this factor, namely the culture of the organization, the organizational structure of the project, conflict and other factors, and this confirms the impact of the organizing factors in the completion of the project, as the culture that supports the project It could be a reason for not completing the project, especially in the event of different cultures and knowledge backgrounds and conflict of ideas between the project team members. It causes conflict within the project and the organizational structure. Not supporting the project may lead to a defect in its implementation, causing its failure. With regard to the organizational structure, it is no less important than the rest of the other organizational factors, because it is responsible for organizing individuals and groups and how to coordinate tasks in the project. Therefore, any defect in the structure could lead to conflict and conflict in responsibilities, powers and decision-making, and this may lead to finding Problems that may hinder the success of the project and achieving its desired goals.

3. The lack of all-important resources in the implementation of oil projects is one of the reasons for the failure of oil projects when systematically reviewing the literature, as four

sub-factors branched out from this factor, namely, informational, material, human and financial resources. The resources are one of the foundations that ensure the continuity of the project and the achievement of the desired goals, while the shortage of project resources may cause the project to stop its implementation and this may lead to its failure.

Recommendations:

There are two main recommendations on which the current study focuses. The first is to conduct more studies on the failure of information technology projects, especially in government sectors and various state institutions, in order to attract the attention of senior management in these institutions to this vital issue and to avoid the causes of failure and avoid them in the future. The second recommendation relates to the aspect Academic and using the method of systematic review of the literature, as this method is very difficult. The second recommendation can be implemented through, especially in the literature of Arab business administration, its use is still limited, and the topic of systematic review of literature is included in the scientific research curricula for graduate studies.

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