

Delay Analysis in Construction Project a Case Study-Alkut Olympic Stadium

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Abstract: *Now days the planned duration is one of the main criteria when judging whether a construction project is a failure or not. Additionally, construction designing is claimed to achieve success if the project completes inside the planned duration; or if it identifies a problem well prior to, thereby alerting the project management team to resolve the problem before it causes any impact on the completion date. This analysis of the Olympic sports stadium in Alkut delay factors investigated. Participant observation was adopted an approach has advised that from the descriptive principles of anthropology? The last Olympic game stadium construction until completion prior professional conduct as a senior design engineer major human-relations factors were discovered and known that the management and development had an impact on performance of the designing. Success factors related to say and. It is argued that this project a shadow culture exists among participants, an embedded interactive supervisor perspective angle just clear that was found. Designing method and its effectiveness planning this shadow culture within the team and immediately the quality of relationships between the stakeholders associated with human difference management serves to modify. The analysis concludes by questioning the parable amongst project participants that construction coming up with could be a mechanistic method that has got to be conducted entirely by the look team.*

Keywords: Delay analysis, construction project, case study, Alkut Olympic stadium

1. Introduction

In recent years, Iraqi economy has improved largely, following the growth of oil sector, infrastructure development and the urbanization are booming. And yielding with them, the burden (importance) of the development trade within the economic system has been increasing. However, the development project is many problems arising during implementation; there is a delay at all. On the date of completion or far side so much when on the far side in a contract, the parties are in agreement laid out for the delivery of the project informed date because delays might be outlined. An important critique of the Iraqi housing industry is facing increasing delay in the project delivery rate. It comes finishing time is power, but results from a variety of sources and method development many variables are subject to unpredictable factors.

These sources accessible performance teams, resources, environmental conditions, parties and embody the involvement of relations written agreement. However, it is rarely the time required between a project has been completed that is happening. Owner, construction delays revenue, productivity, reliance on existing facilities, the lack of loss of rentable facilities etc. refers to. For contractors, construction delays top prices, long work length, high labor costs, materials and redoubled instrumentation refers to prices etc. Upon completion of the construction of the nominal time or work time agreement between the parties and power points.

1.1. Delay Analysis

Delay is generally acknowledged as the most common, costly, complex and risky problem encountered in construction. comes due to the dominant importance of your time for each the Owner (in terms of performance) and also

the Contractor (in terms of money), it's the supply of frequent disputes and claims resulting in lawsuits. to regulate this case, a contract is developed to spot potential delay things beforehand and to outline and fix obligations to preclude such controversies. a considerable variety of General Condition's clauses address this subject in a method or another. Beneath some circumstances, a Contractor is also entitled to say delay damages if he finishes later than is an Owner-accepted early completion schedule however continues to be sooner than the official contract completion date. This might occur if the Contractor establishes an immediate cause-and-effect relationship between Owner's breach of a written agreement obligation and also the delay. Additionally, the Contractor has the burden of creating its multiplied prices as a result of the delay.

1.2. Types of delays

Delays operations are divided in following four groups:

- Some of Non-excusable delays
- Some of Excusable non-compensable delays
- Some of Excusable compensable delays
- Some of Concurrent delays

1.3. Causes of delays

There are two kinds of causes for delays in construction projects: external and internal reasons. Internal causes delay causes, which include four parties involved in the project come from. These parties include the owners, designers, contractors and consultants. Other delays, which do not come from these four parties, for example, material supplier, are based on extraneous reasons from the Government or whether the followings are some of the possible delay of the construction industry is facing nowadays that cause:

- Possessive decision-making mechanism.
- Highly bureaucratic organization.
- Insufficient data collection and survey before design.

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- Site's topography is changed after design.
- Lack of coordination at design phase.
- Inadequate review.
- Improper inspection approach.
- Different attitude between the consultant and contractors.
- Financial difficulties.
- Inexperienced personnel.
- Insufficient number of staffs.
- Deficiency in project coordination.
- Often changing Sub-Contractors Company
- Inadequate, and old equipment.
- Lack of high-technology equipment.
- Harvest time.

Spend some time to find sub-contractors company who is appropriate for each Task.

1.4. Scope of study

This study focuses on a literature review of previous studies of research, published and unpublished papers, books dealing with the subject of delay analysis in construction projects or subjects close to this title as well as field data include reports issued by the competent authorities for projects in Iraq, in particular the project of demolition and rebuilding of Alkut Olympic Stadium with a capacity of 20,000 spectators. The study identified the main reasons for the delay of this project as well as the effect of this delay and methods to minimize the impact of this delay and avoid delays for similar projects in the future.

1.5. Objectives

The major aim of this research to identifying the major issues of delay, effect of delay and method of minimizing delay in project of demolition old stadium of Alkut and constructing new stadium in Waist state in Iraq and to giving responsibility amongst the project groups for delays like this and for achieve this aims, objectives have been identified as following:

- To find the general issues of construction delays according to literature survey.
- To use the MSP in planning and scheduling activates in Alkut stadium project to minimize delay.
- To observe the main issue of construction delay in construction of Alkut stadium project in Waist state in Iraq.
- To allocate responsibility amongst the projects parties of construction delay.
- To identify the methods of minimizing constructions delay in the Alkut stadium project.

2. Literature Survey

Wail Menesi (2007) due to the inherent risks and increasing complexity of modern construction projects, cost overruns and a delay in the General in the industry have become facts. Researchers and practitioners sharing responsibility between the parties involved delay and delay the formulation of the project have used a number of techniques. Windows has acknowledged delay analysis despite its benefits, construction delays in the most reliable techniques for analyzing one of the windows in the analysis vary depending on window size can produce results, it does not consider

acceleration, owner and contractor does not consider period and arrange activities were caused by changes in the logical relationships many effects of basic updates , And resource allocation and consequently much delay does not consider the impact of progress events.

Qais Kadhim Jahanger (2013)The reasons for the delay in construction projects in downtown Baghdad's identity, and a field survey a questionnaire through the most important construction project delay reasons contained in 10 groups identified 58 of this research aimed to specify reasons. Field survey project three participants (owner, contractor and consultant) was represented by 78 engineers involved.

SONGÜL DAYI (2010) mentioned in her study that dwells on the importance of construction schedules in achieving the aim of producing good quality construction work within the specified duration. Building construction within a period specified in the quality objective of the importance of achieving production dwells mentioned in his study. Constant monitoring interactive relationship program and contractor demand concerning delay is a complicated process. Here both time money, owner and contractor, and for this reason the construction schedule delay must be analyzed and corrective measures should be taken in a timely manner, simple and basic approach.

Mohamed Marzouk and Tarek El-Rasas (2013) are found the Construction delays are common problems in civil engineering projects in Egypt. Often leading to controversy and litigation project life-time during these problems. Therefore, this study and analysis of the reasons for the delay in construction is required to. The research gained from the construction delay literature presents a list. The interview was obtained through expert feedback. Later, a survey questionnaire was prepared.

Ghulam Abbas Niazai and Kassim Gidado (2012) mentioned that Construction delay in Afghanistan is explained through literature review and field survey. . Extensive literature reviews through 83 identified the causes of delay, factor in nine groups combined. Customers including contractors and 15 20 25 consultants responded to three major stakeholders, questionnaire forms. Respondents from delay is highly contributes to 12months at the reported contract.

3. Research Methodology

Methodology of study

3.1 Problem Statement

Is there a delay in the project Alkut Olympic Stadium? **What** are the reasons for this delay? **What** are the effect of that delay? **Who's** responsible? **How** can minimize delay in Alkut stadium project?

3.2 Delay in Iraq construction project

A lot of construction projects in the world and Iraq in particular are suffering from the problem of delay in the implementation of construction projects it could be argued that a bit of a project, if not rarely find project didn't suffer from the problem of delay and it was done by the same time period estimated for that project sometimes the implementation of some projects stops for periods longer or shorter after reaching a certain percentage of completion There are many reasons for the delay in construction projects, including interior and exterior of the diverse reasons It also has a negative and adverse effects on the feasibility of projects also affect negatively on all parties to contribute to the project, as well as negative consequences for society as a whole Because it will lead to increased cost extra costs to accelerate the completion of work or increase construction costs As well as delay penalties on the cause of the delay with the possibility of an increase in the prices of materials or machinery and manpower to changing circumstances Also reduce the domestic and foreign investment opportunities and migration of capital while reducing the supposed services provided by the projects of the whole community Therefore, it is necessary to determine the role of each of the parties the project and its role in the process of the delay in the completion of projects Also know the factors that lead to delays in the completion of construction projects in Iraq Identify the main and secondary ones and the impact of each of these factors to complete the project on time and cost allocations and the best measure of quality of delivery With the development of ways to reduce the delay in the project and try to avoid the delay in future projects with a list of actions to implement the high quality and value of projects Especially project demolition and construction of ALKUT Olympic Stadium and find out the reasons that led to such a large delay in completing the project that serves the slice and a wide task of Iraqi society, which is the youth segment where deviation arrived in completing the project to 36.5% up to 15 \ 3 \ 2015 and the project stalled since history because of the lack of financial allocations by the Iraqi government and the party Responsible for the project, which start embarking on 12 \ 2 \ 2011, which was supposed to accomplish in 750 work any that mean on 22 \ 11 \ 2013, but until the day of 15 \ 3 \ 2015 and the completion rate is 63.5%, according to the report of the Resident Engineer.

3.3 Collection of Project Data

In the Alkut stadium project, initially all the relevant data has been collected like a stadium Drawings, Specifications, types of resources, quantities, planned schedule, photographs, etc. Alkut project is demolition and removal and the establishment of Alkut Olympic stadium capacity of 20,000 spectators on a total area of 73000 square meters.

3.4 Preparation of Schedule Using MSP Software

With the help of MSP schedule that will be prepare for the project according to the information collected from the organization. Before preparing the schedule initially different activities are identified with the help of data given by the organization and resources required for the project by rate analysis. It has been found that in all there are around 250 activities required for this sport facilities. With the help

of relevant data from the ministry of youth and sport of Iraq for the project. The using MSP i.e. by linking all the activities and after linking all the activities, with the help of different linking options, total duration of the project was found i.e. 750 days. After using MSP, the new duration will be find then comparing between the planning and actual duration.

3.5 Assigning of Resources

After completing the schedule work the next step is to assign resources with the help of MSP and as assigning of resources is done actual cost of project can be known. And hence along with days come to know the cost of the project after assigning of resources. So after this assignment project feasibility can be known that if the project is actually within budget and time. So it's not just important to get the schedule for the project but also budget of the project should be known in order to know the feasibility of the project.

3.6 Setting of baseline

As the baseline is set for the project, progress for the project could be summarized by comparing it with actual schedule i.e. planned schedule is compared with actual schedule with the help of milestone and by setting baseline to the project. Baseline is to show that how that project is differing from its planned to actual scenario, and hence one can get their project scenario, if the project is achieving its milestone or not

3.7 Tracking a schedule with MS Project

After saving a baseline for the project, tracking progress is all about data gathering: tasks completed, hours worked, and costs incurred. So with the help of tracking project status can be found out as now baseline is set for the project tracking of the project can be done in different ways. e.g. Per cent complete (% Complete)

- Percentage of work complete (% Work Complete)
- Actual duration
- Remaining duration
- Actual start
- Actual finish
- Actual work
- Remaining work
- Actual work by time period

The complete process of tracking a schedule involves setting a baseline, updating schedule status and comparing the updates to the baseline or previous updates. For brevity, this paper assumes that the reader is familiar with MSP user interface as well as its basic functionality and deals mainly with general steps that an experienced construction scheduler would understand or expect Therefore starting with the schedule set up, we will cover setting a baseline, updating the schedule and comparing the update to the baseline without detailed step by step instructions.

3.8 Comparing Schedules

It is realized that the schedule argument as well as the planned progress and changes to the difference between real progress will be important. Planned change amendment

arguments and schedule durations are to schedule and they status date back to status date to the right will be calculated to take place in the future. The variance due to other data date display to the left side will in the past. Variance in performance from individual arguments must be modified and the changes are planned.

3.8.1. Identifying Variances

To identify variances in performance, Start Variance and Finish Variance columns can be used. In addition, trace displays and custom styles in a single view baseline information to schedule updates can make the Strip. MSP is a Gantt Chart Wizard (Figure 30) that these scenes easily allows users to create and quickly while using this trace Wizard will overwrite any existing custom formatting should be aware that.

3.8.2. Identifying Revisions

MSP has a Compare Project Versions utility to review differences between two similar MSP schedules. Compare Project Versions utility only compares tasks and resources and resource assignment does not compare. This utility is a comparison report which looks like a project creates a schedule. Color coding and signal processing tasks and provide information about this report displays, although it claims that Digger, schedulers or make sure that the changes have been using to understand especially for extremely difficult.

Project name: Demolition and removal and the establishment of Alkut Olympic stadium capacity of 20,000 spectators on a total area of 73000 square meters.

Implementation of spectators filled the two types:

- Spectators terraced capacity of 13200 Spectators.
- Cabin Terraced capacity of 6785 spectators.

Completion of yard football field covered with natural grass and the establishment ran track covered with AL tartan.

Manufactured and erection of steel structure carry of the cover of spectators terraced and cabin.

Suppling and erection transformer of electricity with capacity of 1250 kva and electrical generator with capacity of 1259 kva.

build up two services buildings:

- Outside of field boundaries contain station for pumping and storage for drink water and also for purpose of irrigation and firefighting, this building contain security room and reception.
- The second building contain Locker rooms, Warm-up halls, sports hall and its parts, Mosque, sound control rooms, press rooms, kitchen, Cafeteria, etc.....

Suppling and installation Electronic screen (6*4 square meters) 2 screens.

Executing parking for 2 and 4 wheels (5 parks).

Suppling and installation lighting columns in different types.

Construct entrance gates (2) to enter the field and another (2) main gates and a grid of roads inside the boundaries of the stadium.

Constructing pipeline grid for different purpose.

Suppling the system of firefighting and alarm.

Suppling and installation of seats fixing in the spectator's positions (750 seats) in VIP area and VVIP (65) also fixed seats (600) and at least the ordinary seats (13200 seats).

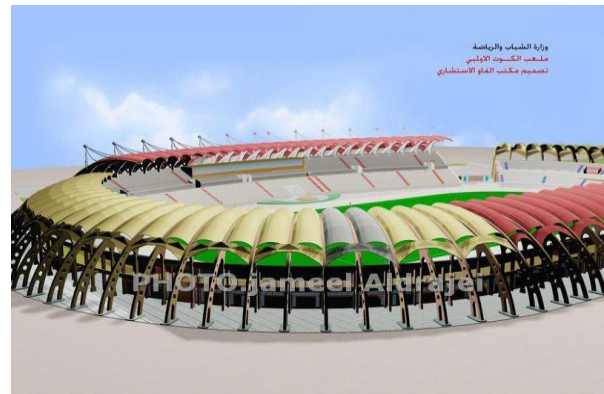


Figure 3.1: Alkut stadium

4. Result Analysis

4.1. Additional periods

- 1) It has been granted an additional period of 135 days.
- 2) It has been granted an additional period of 10 days.
- 3) It has been granted an additional period of 120 days.

4.2. Additional works

It has been added to work under an order parts no.1 with amount 1,668,025,000 in 12\3\2012. It has been added to work under an order parts no.2 with amount 18,378,729,000 IQD in 1\6\2014 it ordered the parts were sent to the Cabinet by the Ministry of Federal Planning in 30\6\2014 and It is not approved until now. The condition of the construction until 15/3/2015 is according the plan submitted by the contractor who executing the project and ratified by the ministry of youth and sports (client) that the work should be completed at 22/11/2013 but the actual percent of done work is 63.5% in 15/3/2015 so the deviation in the plan is 36.5% until the 15/3/2015.

4.3. The problems and obstacles

The project faced a number of the problems and obstacles during the beginning of its implementation has affected relatively fast delivery required to implement business These are the most important problems that have caused delays

- 1) change the design of the foundation from raft foundation to deep foundation (piles) Based on soil investigations report that stipulated the actual bearing capacity of the soil is not (10 kg/cm) but it is (4.5 kg/cm) that be taken in the primary design.
- 2) A weakness in the integration of the integrated design vision of the project Which impact on the integration of technical and architectural specifications for certain paragraphs of the project An example of such an agreement with the province of Waist to connect the discharge of heavy water network with the carrier to be implemented by the province of Waist line and passing

next to the project site as well as with rain water draining note that the stadium project was built on the basis of the existence of drainage networks design but in fact the lack of such networks near the stadium addition to the error by adopting the design discharge of sewage and rain water draining one network as opposed to instructions of the Ministry of Health, Environment and Water Resources.

- 3) The absence of the designed because of the end of the decade, including the Ministry of Youth and Sports, which has affected negatively on the technical solution to the problems facing the design and work through the stages of implementation.
- 4) Not resolve the issue of the iron structure that holds terrace the stadium cover and make change in the initial design and make new design has more strength than old one
- 5) Canceled some of main activates to decrease the cost of project.

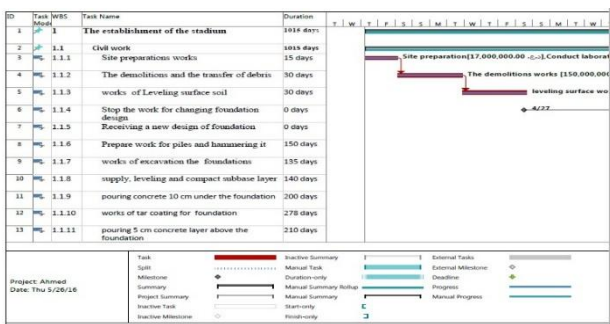


Figure 4.1: Stadium project analysis

TASK COST OVERVIEW

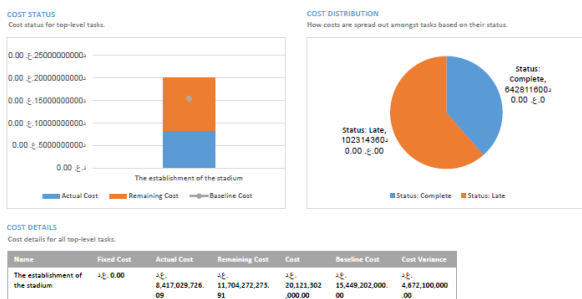


Figure 4.2: Task cost overview



Figure 4.4: Resource cost summary report

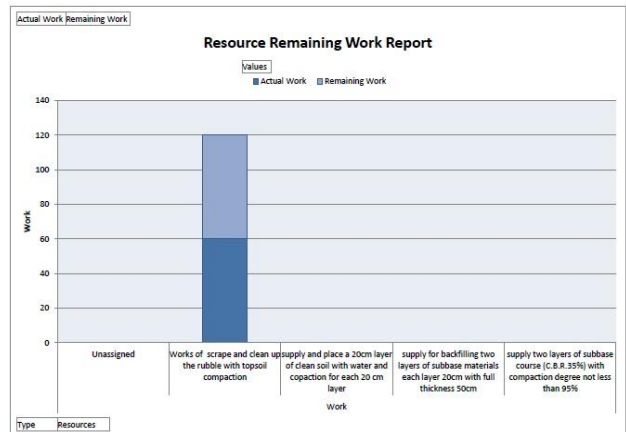


Figure 4.5: Resource remaining work report



Figure 4.6: Cash flow

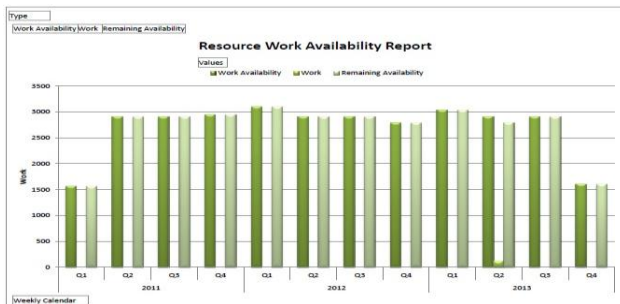


Figure 4.3: Resource work availability report



Figure 4.7: Cost overview

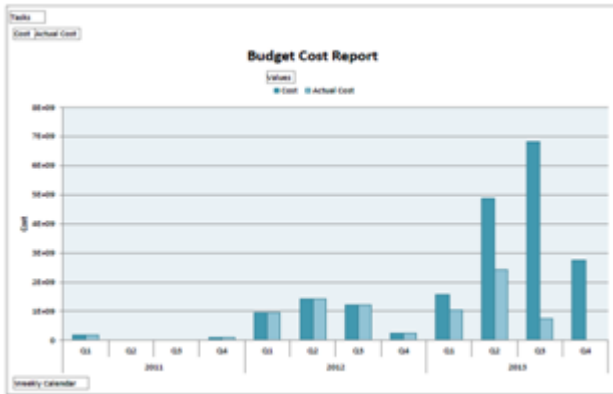


Figure 4.8: Budget cost report

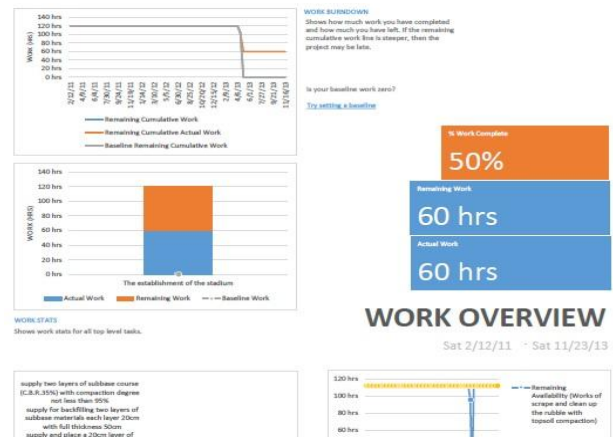


Figure 4.9: Work overview

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5. Conclusion

The aim of this analysis was to analyze the factors that influence the success of construction coming up with of Alkut Olympic sports stadium and delay analysis case study. Overview technology coming up with the last complete challenges related to manufacturing and even to understand the method of construction was adopted from the East. Before you install with Preconstruction well planning and procarance special constructions immediately before the commencement of part to progress with coming to be very useful. SRM helped come up with throughout the preconstruction that major problem preconstruction stage a project team was formed and the project completion was maintained the same team. Most were very committed top management of the contractor and method targeted in coming up with. Coaching for project personnel is coming alongside the law their full support was given to increase. Engineers were trained to become the Manager and who's coming with that it is supported by the entire project team is able to achieve success can be a way to educate.

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