

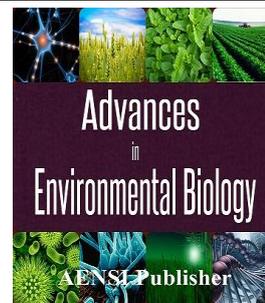


AENSI Journals

## Advances in Environmental Biology

ISSN-1995-0756 EISSN-1998-1066

Journal home page: <http://www.aensiweb.com/AEB/>



### Studying the Effect of Project Schedule and Control Role and Determining Their Most Important Tools on Oil Projects (The Case Study of EPD Projects in Southern Oil-Rich Areas Company)

<sup>1</sup>Amir Talebbeydokhti and <sup>2</sup>Mohammad Hassan Sedghi

<sup>1</sup>Department of Industrial Engineering, Najafabad Branch, Islamic Azad University, Isfahan, Iran

<sup>2</sup>Department of Management, Qeshm Branch, Islamic Azad University, Qeshm, Iran

#### ARTICLE INFO

##### Article history:

Received 12 October 2014

Received in revised form 26 December 2014

Accepted 1 January 2015

Available online 10 February 2015

##### Keywords:

Industrial Engineering, Project Schedule and Control and EPD Projects.

#### ABSTRACT

In this paper, the effect of project schedule and control role and their most important tools on EPD projects in southern oil-rich areas company was studied by using a questionnaire. The statistical population for this study included 132 individuals of managers, senior top experts, and directors of oil projects. At this questionnaire, the managers were asked to express the effect of project schedule and control role on their projects, and to mention the project schedule and control tools which they used in their projects. After collecting the questionnaires and analyzing their data, the results showed that the implementation of project schedule and control, presenting the appropriate methods, accurate analysis of project implementation process can largely help to develop and improve the oil projects, in such a manner that the projects were not using project schedule and control in the past and all the project analysis were carried out by project manager had a great loss in terms of time and financial sources and also among the control projects tools and techniques, Gantt Charts were vastly being used.

© 2015 AENSI Publisher All rights reserved.

**To Cite This Article:** Amir Talebbeydokhti and Mohammad Hassan Sedghi, Studying the Effect of Project Schedule and Control Role and Determining Their Most Important Tools on Oil Projects (The Case Study of EPD Projects in Southern Oil-Rich Areas Company). *Adv. Environ. Biol.*, 9(2), 158-162, 2015

#### INTRODUCTION

Nowadays, many of the industries have realized the necessity an importance of cooperation with industrial engineers for the sake of planning and coordinating the activities, and in regard of positive results obtained from this approach, the importance of industrial engineering in advancement of any types of industries are increasing day by day. However, it can unfortunately be observed that there is mostly no accurate understanding about the industrial engineering field and the relations which it can create with the other industries as well. In between, different definitions were presented for industrial engineering, among which the most credible one has been provided by Institute of Industrial Engineering (IIE): "based on this definition, industrial engineering includes designing, improving and establishing compound systems consisting of humans, materials, information, instruments and power. By achieving knowledge and special skills in mathematics, physics and social sciences along with analysis methods and engineered designing, the industrial engineering tries to determine, estimate and evaluate the results and outputs of such systems".

As mentioned before, project schedule and control is one of the most important tasks of an industrial engineer. Since the aforementioned terms are general concepts and the required efficiency cannot be reached without having any specific definition about each one, having specific definitions about each one of these concepts is of huge and inevitable importance for every industries. In general, scheduling in industries is the sequence and parallelism determination process which is necessary for the implementation of a project along with consideration of required time and cost for executing each activity and prescribed quality for that activity [1] [4]. By looking precisely in the above definition, it can be found out that this definition is quite general and not limited to any of the industries.

Project control is also a process to keep the project on its track in order to reach an economically justified balance between three factors of cost, time and quality, which employs its own special tools and techniques to

**Corresponding Author:** Amir Talebbeydokhti, Department of Industrial Engineering, Najafabad Branch, Islamic Azad University, Isfahan, Iran  
E-mail: [f\\_shab2007@yahoo.com](mailto:f_shab2007@yahoo.com)

achieve this goal. In fact, project control is precise and complete execution of regulated plan to attain prescribed objectives of the project. In between, an industrial engineer will control the project by determining the actual existing situation of the project and comparing it with predicted plan, and finally by considering the necessary corrective actions.

The southern oil-rich areas company is of project-based organizations, in which a project begins by starting to dig or drill any single well, therefore, with assuming this strategy that the best efficiency will be achieved by reaching the final result with the lowest possible cost and time, and having this condition needs an accurate and efficient timing schedule, the effect of project schedule and control of which the industrial engineering positions on top was studied, so the more importance and necessity of the project team and project control implementation to be proved.

This paper will be continued as follows: literature review in which an introduction with drilling operation procedure in oil and gas wells has been presented. In the following, the importance and the past and present executing manner of project schedule and control in the southern oil-rich areas company has been described. Afterward, the research methodology has been given and finally, conclusions will be presented.

#### *Literature:*

For the purpose of oil or gas extracting from oil and natural gas fields, wells have to be drilled. Therefore, well drilling may be carried out by using drilling machine or drilling rig which is a relatively giant complex. The location for drilling rig placement is made of cement and with a base foundation which has enough strength for placement of rig and installment of equipments such as generators engines, mud pumps, mud tanks, cement tanks, drilling pipes and etc. Instruments and equipments are carrying by supplier ships to the desired point. Usually, personnel transference is being done by helicopters and passenger ships. Also, providing and transporting fuel, water and basic supplies which are of essential supporting tasks for drilling operations is being carried out in the same way.

#### *The importance of Project Schedule and Control in the southern oil-rich areas company in the past:*

In the past, due to organizational dimensions and structure and the lack of knowledge about the industrial engineering practical potentials and thus about the importance of project schedule and control, and also regarding the fact that the most important outcome from the project was being considered to be the well deliverance, most of the company managers had an operational perspective in their minds and hence the project schedule and control was less concerned, and it was usually reduced to presentation of a Gantt Chart to the employer. Until a few years ago, there was still no planning to accomplish the objectives, therefore, absolutely no comparison was being carried out between the predicted plan and the actual current situation and subsequently, no analysis was being done about the time and cost. This should be mentioned that the time and financial estimations which were being done were responding and satisfying only for projects with small sizes and limited activities. Further, due to the company development, execution of EPD projects and training of efficient project managers who in addition to having an operational perspective are capable and mastered the concepts of project management, schedule and control, the position and role of project schedule and control was clearly sensed, therefore, huge changes were applied, of which the most important ones are going to be explained in the following [2] [3].

#### *How Important Is the Project Schedule and Control in the Southern Oil-Rich Areas Company Currently:*

In recent years, a vast growth has occurred in project schedule and control sector in the oil projects, such that the following cases are implementing nowadays in the oil projects:

- Identification and segregation of project costs and development of project cash flow plan, in such a manner that the scheduling is being carried out before the project implementation phase and the control is being done during this phase on the subjected activities.
- Determination of project volumes including the number of wells and holes, the length of drillings, the type of drilling rigs and the number of rigs on the basis of contract.
- Determination of the three-and four-level project schedule
- Determination of the project's Work Breakdown Structure (WBS) and Cost Breakdown Structure (CBS).
- Estimating the needed goods and materials for the project separately based on each well and each hole, along with all the goods, materials, technical services and also the human force of the project.
- Calculating the physical weighted percentages separately for each hole and well, along with all the goods, materials, technical services and also the human force of the project.
- Preparation of whole project physical progress, along with the progress graphs and charts for goods, materials and technical services of drilling.
- Preparation of progress charts for each hole, and finally for each well and comparing it with the predetermined schedule.
- Preparation of periodic reports including the types of weekly, monthly, and etc.

According to the results which are obtained from the prepared and implemented plan as above, the main task of project control in this stage was to collect information about the execution manner of the drilling operation plan including most important parameters and indices such as drilling length, drilling time, time consumed for each hole and finally for each well, the speed of drill rotation, drill weight, drilling mud weight and etc.

The reflection of issues and problems related to drilling operation supply, and finally, the analysis of information and presentation of reports to employers, managing director and project managers were the other part of project team tasks [2] [3].

Regarding the sensitivity of this kind of projects and the necessity to reach a better project control, a technical meeting was being held after finishing each hole with presence of all the members of project main team including project manager, operation manager, engineering director, goods and material manager, technical services manager, logistic support manager and the head of project schedule and control. In these meetings, the actual times for each hole were being presented and compared with the predetermined times by the head of project schedule and control, and also some issues about progresses and changes in project plan were being discussed. In the end, the outcomes were issued by project manager to all the members of project team as learnable lessons from the project for further well drillings [5].

#### *Research Method:*

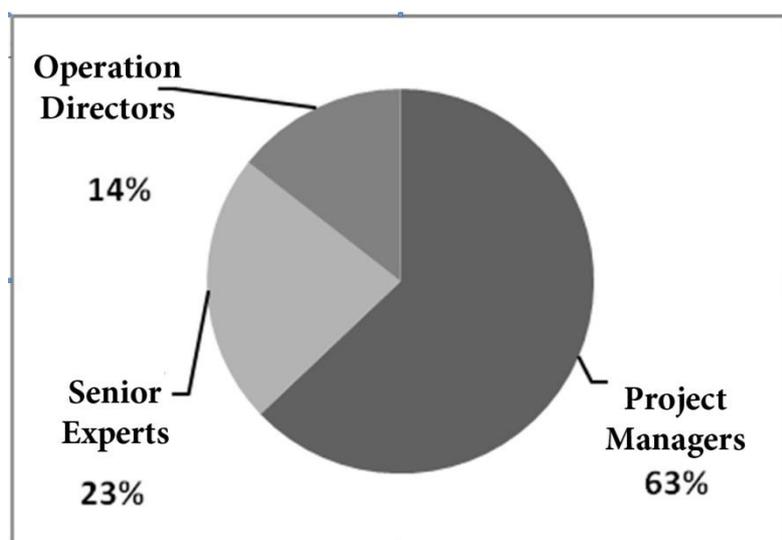
To achieve the results from this research by using the experiences of managers in oil projects, a questionnaire which was prepared for this purpose was employed. In this study, 150 questionnaires were prepared and distributed among 132 individuals engaged with these kinds of projects, including managers, senior experts and operational directors of current projects in the southern oil-rich areas company, and it was asked from them to express the following cases:

- 1) A list of effective and important factors in project successfulness [to demonstrate the efficacy of project schedule and control]
- 2) Methods, methodologies, tools and techniques of project scheduling and controlling which are being used in their projects [to determine the most important tools for project scheduling and controlling]
- 3) Criteria of responders [to describe the best tools and techniques for project scheduling and controlling]
- 4) The effect of project schedule and control on execution of currently drilling projects [responses were based on 5-rank likert measures: very weak, weak, mediate, good, very well]

#### *Data Analysis:*

##### *Statistical Population:*

In this research, 75 project manager, 35 senior experts and 22 operational directors of current projects of the southern oil-rich areas company were totally used as statistical population.



**Fig. 1:** Statistical Population.

To achieve this purpose, the responders were asked to mention a list of effective and important factors in project successfulness. After collecting and analyzing the obtained data, 6 of 37 factors were proved to be the most important ones in project successfulness from the viewpoint of responders, which are shown in the following table:

**Table 1:** Important factors in the success of oil projects..

Rank No.	The Most Important Factors in Project Successfulness	Frequency
1	Having Specialist and Efficient Personnel	37
2	Economic and Political Crises	27
3	Precise Scheduling and Controlling the Project Execution Process	22
4	Having Enough Resources	17
5	Managerial Skills	15
6	Timely Opening of Funding by Employer	14

As it can be seen in above table, the most effective and important factor in project successfulness is about human forces, and this follows by economic crises as the second one and then the project scheduling and controlling as the third one.

Additionally, it was also asked from the responders to mention the methods, methodologies, tools and techniques which they have used in their projects in order to project scheduling and controlling. After collecting and analyzing the data, 13 titles had the most frequencies among the mentioned 17 titles, which are presented in the following table:

**Table 2:** Project planning and control techniques.

Rank No.	Methods, Methodologies, Tools and Techniques of Project Scheduling and Controlling, Which Are Being Used by Project Managers	Frequency
1	Preparing Gantt Chart for the Project	24
2	Analytical and Comparative Reporting about Actual Realized Progress in Respect of Predicted Schedule	18
3	Preparing WBS	17
4	Project Documents Assignment	14
5	Preparing CBS	11
6	Preparing Methods, Regulations and Quality Plan for the Project	10
7	Performance Reports	9
8	Brainstorming Meetings	8
9	Preparing the Project Critical Path Method	7
10	Cost-Benefit Analysis (CBA)	5
11	Defining and Assigning the Roles	4
12	Graphical Evaluation and Review Technique (GERT)	3
13	Program Evaluation and Review Technique (PERT)	2

Also, the responders criteria for determining the most important methods, methodologies, tools and techniques of project scheduling and controlling have suggested other characteristics such as simplicity and multi-purpose usefulness of them and their implementation manner during the project process, realistic timing along with appropriate allocation of required funds and resources and timely warnings about the progression level or about the project delay.

Finally, it was asked from the responders to express the efficacy of project schedule and control role on the current oil projects, thereby, the obtained results from 132 individuals are as below:

**Table 3:** Planning and control of projects in oil projects.

The Efficacy of Project Schedule and Control Role on the Current Oil Projects Execution				
Very Weak	Weak	Mediate	Good	Very Well
16	30	38	43	5

### Conclusions:

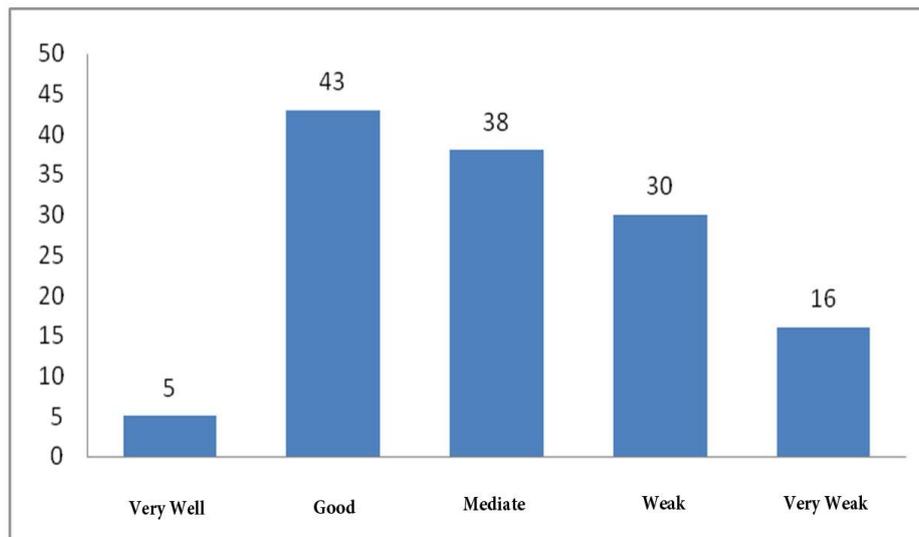
This research was carried out to study the effect of project schedule and control role and position (of which the industrial engineering is placed on top) in the past and present on the project of southern oil-rich areas company. Also, the most important tools for these projects were investigated and determined.

Data collection was done by using questionnaires, experiences of a number of ongoing projects, internet searching and interviewing with experienced individuals. So, 150 questionnaires were prepared and distributed among 132 individuals including managers, senior experts and operational directors of oil projects.

The result of this research showed that:

- ✓ Proper and timely presence of project schedule and control, and presentation of appropriate procedures and warnings about progression level or delays of the project along with precise analyzing and controlling the stages of project execution have a great impact on the project process, in such a manner that in the past, the projects which didn't use project scheduling and controlling have had a great loss in terms of time and financial sources.
- ✓ Among 37 mentioned factors, precise scheduling and controlling the project execution process was chosen by the responders as the third important factor in project successfulness.
- ✓ Among 17 mentioned titles for methods, methodologies and tools for project scheduling and controlling, Gantt chart was used as the most important tool because of its simplicity and usefulness.

✓ In the end, the effect of project schedule and control role on the current projects was evaluated by responders to be good.



**Fig. 2:** Effect of the planning and project control.

#### REFERENCES

- [1] Haji-Sheer-Muhammad, Ali, 2001. Managing and Controlling Project, Jahad-e-Daneshgahi's Publications of Isfahan's industrial unit.
- [2] EPD Project Contracts.
- [3] Project Schedule.
- [4] Project Management Standard, PMBOK, 2008. Fourth edition.
- [5] Brainstorming Meetings with the Project Agents.