

## **Identification of the Major Project Management Issues in Oil and Gas Industry in Malaysia**

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### **Abstract**

*This research attempts to study the major project management issues in the oil and gas industry. The data for the study was drawn from the intensive interviews of ten respondents from oil and gas companies in Malaysia. The study contributes to the body of knowledge in three main ways. The first finding of this study indicates that by allocating sufficient resources, the project could be completed on schedule. The second finding of this study suggests that quality works can be achieved from approving every step of the management process made by the companies' superiors and customers. The third finding illustrates, that the project will be able to generate profits to the company, provided the process in the oil and gas company are completed in a planned time frame, within the budget, and with optimal utilization of resources, specified to the project's management processes of oil and gas industry. To add to this, communication among team members and clients' customer satisfaction should be further explored beside the project management's traditional factors (cost, schedule and quality). Future research could be performed on a larger number of samples covering a much wider range of respondents with different levels of experiences. Multi facet findings can be expected out of the participation of several more different oil and gas companies in the data collection process.*

**Key words:** Project management, Project, Management process

### **1.0 Introduction**

#### **1.1 Background of the Study**

The review clarifies the importance of proper monitoring of a project and its application to ensure project success. In fact, the main issues of project management, i.e. the cost, time and quality, have become the main cause in measuring the success of project management over the years. Time and cost are the choices for the measuring, while quality is a perception of people attitudes and beliefs, which often changes over the development life-cycle of a project. This paper does not only show the importance of project management issues in the oil and gas company, but also reveals the reactions of customers after the completion of the projects. Efficient project execution is a key business objective in many domains of business and similarly in oil and gas industry. Businesses expect much from employees. It was expected the employees possess a combination of attributes that will benefit the company and consequently contributes to the success of their businesses. Business success often translates into profit. Nonetheless, what is more important is not only generating cash flows and contacts for the business, but also the ability of the employee to create and maintain positive working relationships with group members and clients. Effective teamwork is one of the fundamental elements of project management pertinent to the oil and gas companies. The attributes of teamwork consists of a combination of technical, knowledge and generic skills.

Skills such as problem solving, communication, collaboration, interpersonal, social and time management are actively being targeted by employers as essential requirements for employability, especially in team environments. Employers consistently reiterate collaboration and teamwork as critical skills, which are quite essential in the work environments. This research investigates the issue of Project Management in oil and gas industry. It attempts to study how these issues affect the progress of the project. The aim of this study is to identify the effect of project management in oil and gas projects. The interview questions employed in this study were targeted to extract salient relevant information from respondents. To achieve this target, the experiences of the team members in managing the projects as well as handling the customers were taken into consideration.

## **1.2 Statement of the Problem**

Many projects are over scheduled, over budgeted, and failed to meet the satisfaction of the customers due to the low quality of final product. This brought about the need for good interaction and effective communication with customers to be sorted for. In an oil and gas industry, the main objective of the project is to complete the scope of work within budget in a certain time frame, in order to gain customers' satisfaction. To achieve this objective, it is important to develop a good plan before commencing a project. This plan should include all the work tasks, associated costs, and estimates of the entire period necessary to complete the project. The lack of such a plan would result in the failure to accomplish the full project scope within budget if at all on schedule. In the oil and gas industry, as in other industries, good project planning, positive interaction and communication between team members and with the customers are essential to prevent any unforeseen contingencies. Regular scheduled meetings or progress reports, effective communications via telephone, or e-mail are just few examples of communication channels to be employed for effective communication in the company. Customer satisfaction means involving and treating customers as partners in the successful completion of projects, through active participation during the project. Furthermore, by maintaining communication with customers, the project manager demonstrates to customers that s/he is genuinely concerned about the expectations of the customers.

## **1.3 Research Objectives**

The objectives of the study are:-

1. To ensure that every project finishes on schedule.
2. To ensure that final product is of good quality
3. To ensure that final product will satisfy customers.
4. To ensure that the project generates profit for the company.

## **1.5 Significance of the Study**

The study would provide a clear view of the benefit of implementing project management in oil and gas industry. The process in oil and gas project is primarily within the time frame of each part of the processes. Here the time for each process is initially fixed. For instance, if one part of the processes is out of schedule, it will negatively affect the rest of the processes. This implied that by managing time properly, a project can ultimately be completed within budget. The study shows the importance of good quality product, the correctness of interpretation on data, and the ability to maximize the drilling results in oil and gas company. The challenge to properly manage a project in oil and gas industry is very high. This challenge can be overcome by completing the project scope on schedule, and within customers' need through the good relationship among parties. It is anticipated that the findings of this study will provide more understanding towards the services or the operations of the oil and gas industry.

## **2.0 Literature Review**

There are several definitions of project management. According to Oisen (1971), project management is the application of a collection of tools and techniques to direct the use of diverse resources toward the accomplishment of a unique, complex, one-time task within time, cost and quality constraints. Each task requires a particular mix of these tools and techniques structured to fit the task environment and life cycle of the task (Oisen, 1971). The British Standard for project management BS6079 (1996) defined project management as the planning, monitoring and control of all aspects of a project and the motivation of all those involved in it to achieve the project objectives on time and to the specified cost, quality and performance. Reiss (1993) posits that a project is a human activity that achieves a clear objective against a time scale, and to achieve this while pointing out that a simple description is not possible, suggests project management is a combination of management and planning and the management of change. Lock (1994) argues that project management has evolved in order to plan, co-ordinate and control the complex and diverse activities of modern industrial and commercial projects. Burke (1993) considers project management as a specified management technique, to plan and control projects under a strong single point of responsibility".

There are three (3) factors that are used to describe project management in oil and gas industry. These include schedule, quality and cost influence (Table 1). The first project management factors in oil and gas industry is schedule. As indicated, project success is assessed on the triple measure set of cost, time and performance.

**Table 1: Project Management Issues**

<b>Elements</b>	<b>Finding / Information</b>	<b>Author</b>
Schedule Issue	<p>Triple measure set of cost, time and performance.                      A project was considered successful if it was completed within its budget, scheduled, and designed to                      Slow project execution may cause a delay in delivering of final product to customer                      Cost, schedule control and plant operability are regarded as important measures of capital project success initiates client satisfaction.</p>	<p>Kloppenborg &amp; Opfer (2002)                       Belout &amp; Gauvreau, (2004),</p>
Quality Issue	<p>Incorporate cost, time and quality in management of processes in the primary objectives.                      The triple measures (cost, time and quality) set of hard outcomes ignore the importance of satisfaction of the client employee development and satisfaction.                      Quality as “the satisfaction of users needs”.</p>	<p>Oilsen (1971)                       Hackman, (1987).</p>
Cost Issue	<p>Cost, time and quality as success criteria but not exclusive. A millennium project, for example must meet on-time objective to problems.                       Short term measures in project development used earned value method indicated the project is off track due the project is less than actual cost.                      Costs are used as a control measure progress is not necessary same project success.</p>	<p>Turner, (1993), Morris &amp; Hough, (1987), Wateridge, (1998), deWit, (1988), McCoy (1987), Pinto &amp; Slevin (1988), Saarimen (1990) &amp; Ballantine (1996) William (1995)                       De WIT (1988)</p>
Teamwork Issue	<p>Effective teamwork identified as elements of high-performing business.                       Teamwork implies that individuals work in a cooperative environment in the interests of a common goal by sharing knowledge.                       The essential elements of a teamwork is its focus towards common goal and clear purpose                      Team members wanting to achieve goals should be flexible in adapting cooperative working environment.                      The team has synergy, by sharing a common goal or vision the team can accomplish what individuals cannot do alone.                       The major difference between successful teamwork and unsuccessful teamwork is largely based upon team members sharing common goals and working together to achieve them. A cooperative team environment is reliant on each team member individual goal achievements and ambitions correlating with aims of the teams.</p>	<p>Kets De Vries (1999)                       Hayes, (1995)                       Parker, 1990; Fisher et al., 1997; Johnson &amp; Johnson, 1995, 1999                       Johnson &amp; Johnson, (1999).</p>
Benchmark Issue	<p>The primary driver behind any benchmarking initiative including that of project management is improvement.                      Measurements are taken to identify performance failures which can be improved to increase efficiency and effectiveness as part of a continuous improvements process.                      The productivity, quality improvements, client focus, flat management structure, efficient and effective communication, and increased employee morale are the selling points of team-oriented business. The effectiveness is a measurement of how a project is progressing in terms of cost, time and quality.</p>	<p>Hayes (1995)</p>

A project is considered successful if it is completed within its budget estimate, within its initial scheduled time frame, and when performed as designed. The third project management factor in oil and gas industry is cost. Many authors agree that cost, time and quality should be used as success criteria, but not exclusively. Cost is used as a control. It measures progress, which is not the same as success (de Witt 1988). The other management factor in oil and gas industry is teamwork. Successful teamwork with its great influence on business success is not uncommon. However, the relationship between social interdependence theory and teamwork for the success of the project, and its effects on business success is a relatively new concept. Many organizations rely on successful teamwork to achieve goals and to meet the needs of clients. The last management factor in oil and gas industry is bench marking. The primary driver behind any benchmarking initiative is improvement.

In the nutshell, this study focuses on the factors on which project management issues arise in the oil and gas industry. Efficient project execution is a key project objective, but project management research gives little direction about how project factors influence the project outcomes: cost, schedule and quality. Different results of project team factors were found to drive up project cost, schedule and quality. One major implication of the findings is that project managers need to clearly focus and prioritize the goals of each project so that they can adopt the appropriate bundle of project team practices for the success of the projects.

### **3.0 Research Design and Methodology**

This study employs a qualitative research method approach. Themes, patterns and phenomena that emerged from the intensive interviews were captured as suggested by organizational researchers (Cavana et al., 2001; Creswell, 2008). The research design is the blueprint to address a problem statement (Cooper & Schindler, 2006). The research questions were translated based on four (4) different sections. Each section focuses on the interview question which addresses the particular research question(s). In the first section, all the questions focused on the scheduling of the project. The second section took consideration on the quality of final product. The third section includes questions related to customer satisfaction. The fourth section utilizes questions covering the design of the profitability of the company.

The sample of the study was selected from the respondents with working experience in SDP Company involving in oil and gas industry. The pilot testing was conducted by interviewing two respondents. The purpose of pilot test was to identify and rectify the weakness existed in the designed interview questions. Also, the pilot test was to obtain overall overview in the actual data collection or interview sessions. The researcher chose structured interview through face-to-face on a one-on-one interview session. All interviews were audio-taped using a cassette recorder. Interviews were then transcribed and coded for analyses as proposed by Miles and Huberman (1998). The research process; sampling, interview questions, data collection and method of analysis are explained in the following sections.

#### **3.1 Sampling**

Sampling is very important as it represents the section of the population that needs to be investigated (Bryman, 2004). Henry (1990) stated that sample provides a higher overall accuracy than a census or population. In this study, the data was collected systematically from 10 respondents from a variety of position and with different responsibility in SDP. For systematic sampling, the random selection could be triggered by some mechanism (Bradley, 1999). The sample was derived from the study's respondents from oil and gas companies. This includes the processing manager, production manager, senior geophysicist, team leaders, senior geophysicist project leader, geophysicist project leader, and production geophysicist. Respondents were having working experiences ranging between 3 years to 20 years. The variety of positions and years of experiences were considered very important and relevant. This is because they show the considerable extent to which respondents comprehend the understanding of the problem that relates to project management.

#### **3.2 Purpose of Selecting Qualitative Study**

The purpose of selecting qualitative study is to derive the relationship and theory at the end of the study (Cavana et al., 2001; Creswell, 2008). One of the ways a study is performed qualitatively is to observe some patterns and phenomena as important information could be drawn in the form of themes and patterns (Miles & Huberman, 1998; Creswell, 2008). In this study, interview is the primary data collection technique employed. Healey (1991) raises the point that the interviewer has more control over who answer the questions compared to questionnaire, which may be passed from one person to another. The other aspect is that an interview is a purposeful discussion between two or more people (Kahn & Cannell 1957). The face-to-face interview was selected to enable the researcher obtain a more detailed results. Other researchers report that participants prefer to be interviewed rather than fill in questionnaires (North et al., 1983, cited in Healey, 1991). Obtaining good results depend on how the interviewer professionally handles the interview session.

### 3.3 Design of Interview Question

Based on the Table 2, 4 categories of questions were prepared for the interview. For the Section A, the questions comprise of 3 questions. These questions were constructed with the purpose of gathering information related to “schedule”. The responses from the pilot test show that interviewees understood well the need to achieve workable project schedule. The overall overview of project production was also determined from the pilot tests.

**Table 2:** Layout of Interviewed

Section	Questions category	No of Questions
A	Project Finish on Schedule	3 (5)
B	Quality of Final Product	3 (5)
C	Customer Satisfaction	3 (5)
D	Company Profit	3 (5)

#### ( ) No of Questions during Pilot Test

For the Section B, the questions focus on the quality of the final product. From this section, information on the respondents’ honest opinion of their work experiences was gathered. This information may be with minor mistakes regardless of whether projects were finished on schedule or within the budget. Section C focuses more on the degree of customer satisfaction throughout the project based on the product quality. This section also shows the importance of maintaining good interaction and communication with customers. Besides that, it also shows the new technologies or methodologies of processing needed for improvement in the quality of products. Section D has three questions. The first question is more directed towards the profitability of the company. The second question seeks to understand the factors to consider in selecting projects. The basis of project selection was the difficulty in monitoring the project. This ensures that projects can be completed within scheduled time frame, yielding good quality products, and which would satisfy customers. The third question is to find out as to whether having a good leader alone is sufficient for the company to operate profitably.

### 3.4 Method of Analysis

The recorded data containing all the information was transcribed and coded as described by Huberman and Miles (1998) and Creswell (2008). Hence patterns and themes were expected to emerge from this analysis.

### 3.5 Data Collection

#### 3.5.1 Type of Data Collected

This study employed qualitative technique so as to explore and to get the wider data information. According to King (2004), this qualitative study can be referred to as research interviews. Healey and Rawlinson (1994) posit that the main reason for the potential superiority of qualitative approaches for obtaining information is the flexible and responsive interaction which is possible between interviewer and respondents. Thus, it allows meaning to be extracted, topics to be covered from a variety of angles and questions made clear to respondents.

#### 3.5.2 Conducting Structured Interview

Structured interview with face-to-face and on one-to-one bases provides the researcher with the ability and resilience to extract detailed information from respondents. In this study, structured interviews with open-ended of questions were employed. Interviews were conducted after office hours. This is done in order not to disrupt staff working schedule. Each interview lasted between 30 minutes to 60 minutes. All interviews were audio-recorded. All respondents were assured of their confidentiality and their voluntariness to engage in the interview.

#### 3.5.3 Record of Data Collected

The interview data were stored in audio format in cassettes. This is done in order to control bias and to produce reliable data for analysis. As held by Healey and Rawlinson (1994), a researcher must substantiate the use of a recorder rather than simply requesting permission. The data was transcribed and edited to ensure consistency across respondents, identify omission, reduces errors, improves legibility and clarifies unclear and inappropriate responses. Edited data were then put into a table form, to ensure effective analysis of the data. This table captures clear information about the pattern and themes of the data.

### 3.6 Pilot Study

#### 3.6.1 Conducting Pilot Test

The pilot study was conducted prior to main data-gathering phase to detect weaknesses in the design of the interview questions. It also enabled the researcher to obtain some assessment of the questions’ validity.

Bell’s (2005) paper advised that ”however pressed for time you are, do your best to give the questionnaire a trial run; as without a trial run, you have no way of knowing your questionnaire will succeed”. In this study, the project pilot study was tested on two respondents. To start with, the interview questions for the pilot study were divided into four different sets of sections. The first section focused on the schedule which comprised of six different sets of questions. The second section was related to the issue of quality of final product and with five sets of questions. The third section concentrated on customer satisfaction with five sets of different questions. The last section is divided into cost, company profit comprised of five questions.

**3.6.2 Outcome of the Pilot Test**

Fink, (2003b) mentions that to ensure the respondents have no problems understanding or answering questions and to have respondents follow all instructions correctly, there is the need to check each completed piloted interviewed answers. From the result of the pilot test, clearer picture of the research questions were achieved. A more focus on the related issues on project management was identified. The questions were refined to make them clearer and easier to understand. The results of the pilot study indicated that there was a need to further fine-tune the questions. The fine-tuning process ensured all questions are related to the project management issues. After the fine-tuning of the questions, there was improvement in the questions such that the questions in the sections were now less confusing. After the pilot study only three of the questions on all four sections were selected focusing on the issues: cost, schedule and quality. Hence, these questions address the related activities or issues in oil and gas industry.

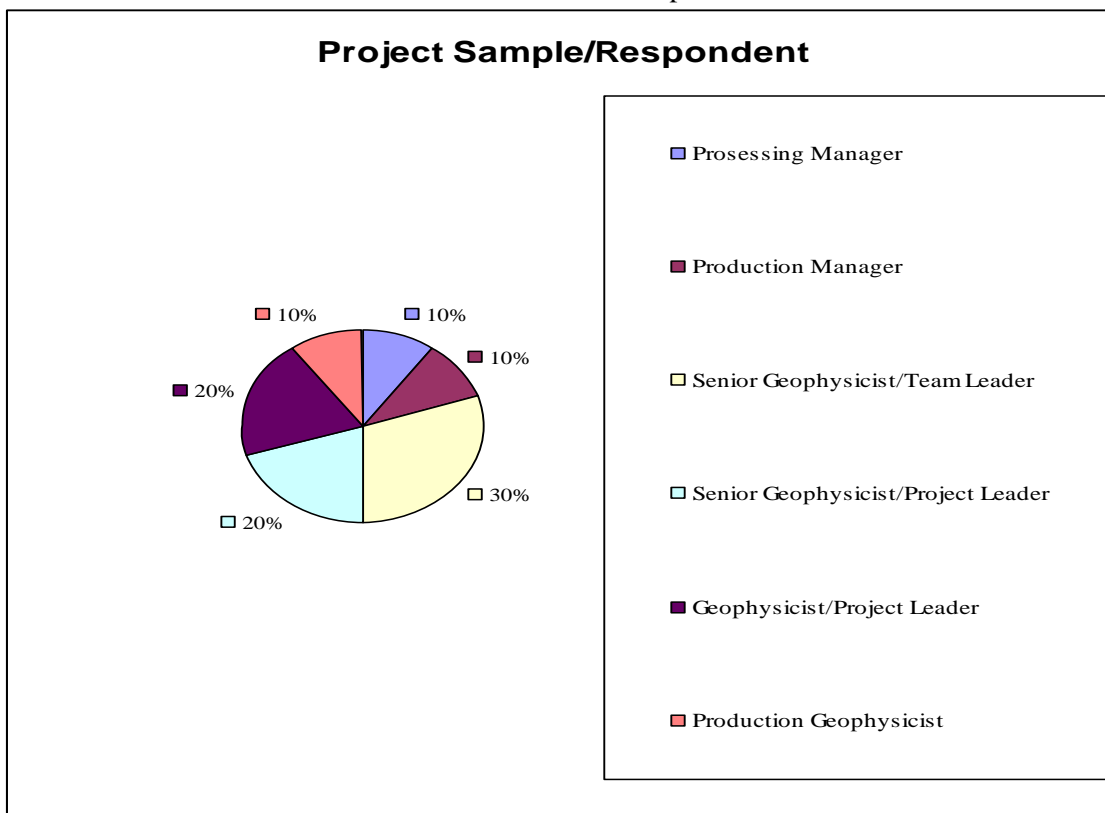
**4.0 Data Analysis and Discussion of the Findings**

This section discusses the data analysis of the results and discussion of the finding covering; the respondent profile, analysis of data directed towards answering the research questions, and discussion of the findings. Consequently this section describes details of the results after analysis of the data, primarily the main findings related to schedule, cost and quality in oil and gas industry.

**4.1 Respondent Profile**

The respondents’ profiles were gauged at different levels of working experiences. Table 3 indicates the variation of these respondents. From this table, respondents vary according to the percentage of the position over the total number of respondents interviewed. Thus, 10% of the total respondents interviewed were processing managers, 10% of total respondents interviewed were production managers, 20% of the respondents interviewed were senior geophysicists team leaders, 30% of respondents interviewed were senior geophysicists project leaders, and balance 10% of respondents interviewed were production geophysicists.

**Table 3: Variation of Respondents**



**Research Objective 1: To ensure every project finishes on schedule.**

The first research objective is achieved as indicated in Table 4 where the finding of research objective 1 was drawn from transcribing the interviews expressed in terms of themes. The result from this table indicates that sufficient resources could determine the early completion of projects. Group Leader had to make sure all team members showed good teamwork in performing assigned tasks. On top of that the project must be regularly monitored to ensure the project is always on track. This could be done by sending weekly status report to the customers, among others.

**Table 4:** Findings of Research Objective 1

Factor Description	Themes
Project completed as schedule	By allocating sufficient resource on the project. All the team members have to show the good teamwork of performance. Regular project monitoring on the project as to keep on track such as by sending the weekly status report to customers.

**Research Objective 2: To ensure the final product is of good quality.**

The second research objective achieved is indicated in Table 5. The findings of research objective 2 were drawn from the transcribed interviews expressed in terms of themes. The result from this table indicated that the final product had to be in good quality. In order to improve the final product, verification and approval from superior and customers were required and every step of processing should be checked thoroughly. Both had to be done at the same time. There should be constant discussion among team members in order to improve the processes in the oil and gas industry.

**Table 5:** Findings of Research Question 2

Factor Description	Themes
Produced final product with good quality	Check thoroughly on every step of processing and at the same time have the approval from supervisor and customers. Always have a discussion among team members

**Research Question 3: To ensure final products successfully satisfy customers.**

The third research objective is provided in Table 6. The main finding of research objective 3 was drawn from the transcribed interviews expressed in terms of themes. There are several ways for customers to be satisfied with the final products. One of the ways is that the final products have to be checked carefully and approved by the customers before delivered to the destination. The earliest step of process of the project is to check the final products in accordance with the Quality Control (Qc) plan. The other way to satisfy the customer with the final products is by delivering the final products as per the statement of the contract. This kind of arrangement had to be fully agreed upon by customers.

**Table 6:** Findings of Research Objective 3

Factor Description	Themes
Final products satisfy customers	Final products were checked carefully and approved by customers before delivered Early steps of processing were checked according to Qc plan. Product delivered as per stated in project contract and fully agreed by customers

**Research Objective 4: To ensure the final products satisfy customers.**

The fourth research objective achieved is shown in Table 7. The finding of objective 4 was drawn from the transcribed interviews expressed in terms of themes. The finding illustrates that the project should be able to generate profits for the company by ensuring that the project was completed on time and within the specified budget. Optimal utilization of resources specified to the project, with new methodology or approach in processing SDP, was another way for the project to generate profits for the company. In addition, introducing new approach or methodology as add-on process on the project is also another way to ensure that the project was profitable for the company. This approach is expected to incur an extra cost to the project.

**Table 7:** Findings of Research Objective 4

Factor Description	Themes
Project generates profit for the Company	By ensuring that the project is completed on time and within the specified budget. Optimal utilization of resources for the project. By introducing new approach or methodology as a add-on process on the project.

**Other Findings**

Other findings on the project management issues in oil and gas industry are indicated in Table 8.

**Table 8:** List of Other Findings

Factor Description	Themes	Influence
Project completed as per schedule	Allocating sufficient resources (Frequency =60%) Showing good teamwork performance (Frequency =50%)	High Moderate
Work schedule activities meeting project objective	Follow the Qc plan provided (Frequency =60%) Highlight critical activities into priorities (Frequency = 50%)	High Moderate
Production schedule affected by pilot test	Meet the objective and setting as the benchmark for production (Frequency = 60%) Mistakes can be avoided and problems can be detected earlier (Frequency = 30%)	High Moderate
Produce final products with good quality	Check every step of processing thoroughly and at the same time obtain the approval from supervisor and customers (Frequency =80%) Discussion among team members to improve and compare with previous processing (Frequency = 30%)	High Moderate
Control mistakes in work group	Avoid repetitive mistakes and learn from experience (Frequency = 60%)	High
Important factors for producing project Quality	Follow the standard procedure of Qc plan (Frequency = 40%) Good commitment and cooperation among team members (Frequency = 60%) Checked the data following the standard procedure of Qc plan (Frequency = 50%)	Moderate High Moderate
Final products satisfy customers	Final product were checked and approved by customers Before delivered (Frequency = 60%) The early steps of processing were verified according to Qc plan (Frequency = 40%)	High Moderate
The importance of good Communication & interaction with customers	To avoid misunderstanding and miscommunication and meet the customers requirements (Frequency = 60%) It makes sure all delivered and received information are correct and agreed by both parties (Frequency = 40%)	High Moderate
New technology will help the customers satisfaction	New technology will help customers increase efficiency and productivity and therefore will reduce project turnaround (Frequency = 70%) Producing better result of product after using the new methodology or approach of processing ( Frequency 55%)	High Moderate
Project generates profit for the company	Complete the project on time and within the specified budget (Frequency = 70%) Optimal utilization of resources for the project (Frequency =40%)	High Moderate
Being selective among projects	Being selective for easy handling of the project with good dataset and realistic time frame (Frequency = 60%) Being selective is important to make sure that the project is completed on time (Frequency = 40%)	High Moderate
Good leader for company profitability	Being selective among the projects may not be a good idea as it will show bad image to the company (Frequency =20%) Good leader creates cohesiveness with good team members (Frequency = 70%) Good leader is needed as a guide and a problem solver to the team members (Frequency = 30%)	Low High Moderate



It shows the frequency of the respondents stated in percentage of the total interviewed respondents. In total, there are twelve (12) other findings of project management in oil and gas industry.

1. The project to be completed as per schedule was achieved by the following ways: Firstly, there should be sufficient resources as indicated by 60% of total interviewed respondents. Secondly, the need of good teamwork indicated by the 50% frequency of the interviewed respondents.

2. Work schedule for activities that meet project objectives was achieved by the following ways: Firstly, by following the Quality Control (Qc) plan as indicated by the 60% frequency of the total interviewed respondents. Secondly, by highlighting critical activities into priorities as indicated by the 50% frequency of the total interviewed respondents.

Note : The frequencies are based on 10 samples

≥ 60% - High level of Influence

30% ≤ ≤ 59% - Moderate level of Influence

25% ≤ - Low level of Influence

3. The project's production schedule affected by the results of pilot test conducted earlier was achieved by the following ways: Firstly, by meeting the company objectives and setting as the production benchmark as indicated by 60% of the total interviewed respondents. Secondly, mistakes can be avoided by detecting them earlier as indicated by 30% frequency of the total interviewed respondents.

4. Good quality final products were achieved by the following ways: Firstly, by checking every step of processing thoroughly and at the same time obtaining the approval from supervisor and customers. This is indicated by the 80% frequency of the total interviewed respondents. Secondly, by having discussion among team members about improving and comparing previous processing. This is indicated by 30% frequency of the total interviewed respondents.

5. The need to control mistakes in work group was discovered by the following ways: Firstly, by avoiding repetitive mistakes and learn from previous experiences as indicated by 60% of total interviewed respondents. Secondly, follow the standard procedure of Qc plan as indicated by the 40% of the total interviewed respondents.

6. The important factors for producing project quality were found by the following ways: Firstly, by having good commitment and cooperation among team members as indicated by 60% of total interviewed respondents. Secondly, by checking the data in accordance with the standard procedure of Qc plan as indicated by 50% of the total interviewed respondents.

7. The final products should satisfy customers. This was achieved by the following ways: Firstly, the final product was checked and approved by the customers as indicated by 60% of total interviewed respondents. Secondly, early step of processing has to be verified according to Qc plan as indicated by 40% of the total interviewed respondents.

8. The importance of good communication and interaction with customers was proven by the following ways: Firstly, by avoiding misunderstanding and miscommunication and meeting customer requirements as indicated by 60% of total interviewed respondents. Secondly, by making sure that all information delivered and received are correct and agreed by both parties, project representatives and the customers, as indicated by 50% of the total interviewed respondents.

9. New technology will help the customer satisfaction. This was achieved by the following ways: Firstly, new technology will help to increase efficiency and productivity and therefore reduce project turnaround. It is indicated by 90% of the total interviewed respondents. Secondly, better results can be produced after using the new methodology or approach of processing as indicated by 70% of the total interviewed respondents.

10. Project can generate profit for the company. This was achieved by the following ways: Firstly, by completing the project on time and within the specified budget as indicated by 70% of total interviewed respondents. Secondly, by optimal utilization of project resources as indicated by 40% of the interviewed respondents.

11. To be selective among the projects was achieved by the following ways: Firstly, by selecting project that is easy to handle with good database and realistic time frame for completion, as indicated by 60% of total interviewed respondents. Secondly, it is important to be selective on projects to ascertain the project could be completed by the allocated time frame, as indicated by 40% of the total interviewed respondents.

12. The presence of a good leader in the company could enhance profitability. This was proven by the following ways: Firstly, a good leader can create cohesiveness with good team members as indicated by 70% of total interviewed respondents. Secondly, a good leader is needed to act as a guide and a problem solver to the team, as indicated by 40% of the total interviewed respondents.

## **Discussion on the Data Analysis**

The data analysis revealed several main findings. The first main finding highlighted that the project was completed on time or on schedule. The members of the project performed the work as a team. In order to ascertain that resources allocated for the project were sufficient, regular project monitoring was conducted. This is to ensure that the project completion time was always on track with the availability of resources.

The second main finding was about delivering quality final products. In order to make it possible, team members has to check thoroughly every step of the process in the oil industry. The supervisor has to give the first approval, and then followed by the customers. On top of this, there should be continuous discussion among team members in order to improve the quality of products.

The third main finding relates to customer satisfaction. It shows that before a final product is delivered, it should be thoroughly checked and approved by customers. The need to get early verification of processing should be according to project Quality Control (Qc) plan.

The fourth main finding relates to profit. The finding indicates that it is very important to complete the project on time, within the specified budget and within the optimal utilization of resources in order to gain imminent profit. These main findings are acceptable in answering the research questions of the study related to project management issue. The discussion on the main findings is deliberated further to answer the 4 research questions in the following sections.

In addition to the main findings, there were other findings that emerged from the analyses of the transcribed interviews. The following are other findings on the management issues in oil and gas industry:

1. The project should be completed as per schedule, and this objective can be achieved via the following ways:  
Sufficient resources should be available

Requirement of a good teamwork

2. Work schedule for activities should meet project objectives. This was achieved by: Workable Quality Control (Qc) plan

Highlighting the critical activities into priorities

Have discussion with team members

3. Project production schedule affected by the results of the pilot test conducted earlier was achieved by the following ways:

Meet the objective of the company and setting as the benchmark for production  
Avoid mistakes by detecting them earlier

4. To produce final products with good quality was achieve by the following ways:

Check every step of processing thoroughly and at the same time obtain the approval from supervisor and customers.

Have discussion among team members about how to improve the final products and compare it with previous processing

5. The need to control mistakes in work group was achieved by the following ways:

Avoid repetitive mistakes and learn from previous experiences

Follow the standard procedure of Qc plan

Have discussion and solve existing problems together with project leader and team members

6. The important factors for producing project quality was discovered by the following ways:

Have good commitment and cooperation among team members

Check the data according to the standard procedure of Qc plan

Work closely with the customers through constant discussions or meetings

7. The final product should satisfy the customers was achieved by the following ways:

The final product was checked and approved by the customers

Early step of processing has to be verified according to Qc plan

Products have to be delivered as stated in the project contract and must be fully agreed by customers

8. The importance of good communication and interaction with customers was achieved by the following ways:

Avoid misunderstanding and miscommunication with customers

Meet customer requirements

Make sure all delivered and received information are correct and agreed by both parties, project representatives and the customers

Necessity to confirm work example during project close out

9. New technology will help to increase customer satisfaction. This was proven by the following ways:

New technology will help to increase efficiency and productivity and therefore reduce project turnaround.

Better results can be produced after using the new processing methodology or approach.

Utilize new technology such as power computer of SDP in the oil and gas industry.

10. Project can generate profit for the company was achieved by the following ways: Complete the project on time and within the specified budget.

Optimal utilization of the resources for the project

Introduce new approach or methodology as an add-on process for the project

11. To be selective among the projects was achieved by the following ways:

Select the project that is easy to handle with good database and realistic time frame for completion

It is important to be selective in choosing a project to make sure that the project could be completed within designated time frame

12. The presence of a good leader in the company could enhance profitability. This was achieved by the following ways:

Good leader can create cohesiveness together with good team members

Good leader is needed as a guide and problem solver to the team

In a nutshell, the study provides significant results to address project management issues in oil and gas industry in Malaysia. This is in tandem with the details of outcomes to resolve the project management problems by successfully carrying out the project scope within the time frame. The crucial part of these issues are to resolve them without sacrificing final product quality and the satisfaction of the customers. Good and effective communication is deemed vital in improving and increasing the awareness between team members and customers in adhering to Qc plan of a project.

### **Conclusions**

This section provides the main findings which answered the research objectives, and further research. From the findings of this study, there are three important elements which address the project management issues in oil and gas industry, i.e. cost, schedule and quality. This suggests that both the organization and customers should be highly satisfied with the conduct of the project or the business in terms of the duration taken to complete the project, not exceeding the cost allocated for the project and complying with the quality standard included in the planned Qc. Thus, a company operating in oil and gas industry can be successful whether the project is completed on time or ahead of time, has sufficient resources available to complete the project, and achieves good quality final product according to standard set by the Qc and approved by the customers. Customer satisfaction increases if the quality of products are good and within expectation, and if it is completed within the specified time frame. Effective communication is also deemed important in ensuring successful implementation of the project in oil and gas companies. Lack of communication has been noted to be the main reason for the failure of many projects. Effective communication is needed so as to reduce non-productive efforts, avoid duplication and help eliminate mistakes.

It also helps to manage uncertainty through brain storming, and may lead to earlier identification of problems. It also allows the generation of ideas that lead to better solutions. Effective communication among group members can also enhance the performance of a team-work, increase motivation and participation. Finally, with effective communication, more relevant objectives can be achieved within the allocated time frame and with the available resources. In a project organization, the presence of a good leader with good characters is not sufficient to ensure that the project can be completed on schedule. There must be good cooperation between team members, in which each individual relies on each other to achieve the goals of the team. Team members should care for one another, encourage good quality works, show empathy, and regulate emotions that can directly bring impact on the success of the team.

Harris and Harris (1996) asserts that the successful teams have a high level of maintenance and must incorporate essential "invisible" skills such as caring for one another, showing warm feelings, friendliness and offer team members support when needed. In this study, it is also revealed that the need for good leaders with good communication skills during interaction with team members and the customers is crucial in handling and clarifying project management issues. This is important as it can uplift the degree of awareness to customer satisfaction throughout the implementation of the project. The research also shows that the importance of allocating sufficient resources, following the Qc plan provided by the project, and project monitoring are other key elements that can be relied on to detect as to whether a project is completed on schedule or otherwise. To maintain the quality of final products, this study shows there is the need to have thorough verification on every step of processing and the approval from project supervisor and customers. Likewise, it is also important to have an open line of communication among team members. The other important finding for a project to be successful is to provide customer satisfaction.

This satisfaction does not solely depend on the successful delivery of good quality products, but also relates to the ethical behavior in dealing with all group members. For instance, commitment to deliver goods on time must be fulfilled. Project team should constantly be in contact with customers. Project completion is required to be identified during the close down of the project as mentioned by Kerzner (2010). Thus, problems do exist and the use of resources as inputs to future projects can be made efficiently and effectively.

### **Directions for Future Studies**

Future studies can be performed on a larger scale, by engaging more respondents from the oil and gas companies in Malaysia. Thus, by engaging wider and bigger variant of samples, more findings are expected to emerge. It is also suggested that before embarking on an interview session, one should take into consideration the several existing problems beyond the project management issues. This comprises of issues such as dealing with difficult respondents or respondents who have a lot of information to share beyond the existing topic of discussion. Due to this, the researcher should anticipate some considerable increase in the length of time during the interview process. Also, interviewer should adhere to choosing the right place to conduct the interview session. Right place to arrange for interview is important as it will provide comfort to the respondents. Last but not least, the customers ought to be further explored on other management issues rather than concentrated on the cost, schedule and quality.

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## **APPENDIX:**

### **Interview Question**

The method of analysis are separated based on four sets of different research questions.

#### **Section A : "To ensure every project is finished on time as per schedule"**

- a. How do you ensure your project can be completed as scheduled?
- b. How you do plan your work schedule activities to meet project objectives?
- c. What is the condition of the pilot test that will affect the project production schedule?

#### **Section B : "To ensure the final product are produced with good quality"**

- a. How do you ensure your final products are produced in good quality?
- b. Describe what you do to control mistakes in your work group?
- c. What is the important factor for team members to ensure a project quality is achieved?

#### **Section C : " To ensure the final products successfully satisfy customers"**

- a. How do you ensure your final products will satisfy the customers?
- b. Why good communication with customers is important?
- c. How will new technologies increase customer satisfaction?

#### **Section D : "To ensure the project generates net profit for the company"**

- a. How do you ensure the project will generate profit for the company?
- b. Do you think being selective in choosing project can enhance the company profitability?
- c. Do you think having a good leader alone is sufficient for the company to operate profitability?