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## Critical success factors for projects in the petroleum industry

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### Abstract

The paper identifies the critical success factors for petroleum projects. Factors have been obtained from existing literature and tested in the petroleum industry. The paper identifies 58 success factors that have been categorised into 11 groups. These factors were tested and grouped based on their individual relative importance index. The paper highlights the importance of project risk management and requirements management in achieving project success in the petroleum industry. The study also highlights the importance of the soft aspects of risk management in achieving successful implementation of project risk management and scope management in requirements management implementation.

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### 1. Introduction

The petroleum industry is one of the biggest individual sectors and the driving force behind many other sectors such as transportation. The estimated size of this sector according to MarketLine<sup>1</sup> is \$3073.4 billion with a total volume

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of 46792.5 million barrels' equivalent; this is forecast to have a 4% increase by 2019.

The industry incorporates all the activities that have to do with exploration, extraction of crude and natural gas, refining, transportation and marketing of all petroleum products<sup>2</sup>. The industry is normally divided into three major sectors namely upstream, downstream and midstream<sup>2</sup>.

According to Chan & Chan<sup>3</sup>, project success is the end goal for every project. This has been a subject of debate by both researchers and industry<sup>4</sup>. The petroleum industry is a very lucrative and competitive environment with large multinational companies like British Petroleum (BP), Total, Chevron and Petronas. Such large corporations invest heavily in research and development and the results of this insight are strictly patented by the individual companies. This type of silent monopoly of the market makes it difficult for new market entrants such as developing nations that rely heavily on oil and gas. This makes it a necessity for them to undertake various joint venture agreements and contracts with such multinationals<sup>5</sup>. Undertaking such large projects in different parts of the world promotes the need of risk management as multinationals are exposed to working with people from different cultures, backgrounds and environments. This highlights the need for the identification of critical success factors for petroleum projects. The identification of these factors can lead the way for new entrants to join the market and deliver successful projects and for developing countries to increase their success rate in developing their own manpower to fully utilize the benefits without the need of the major players.

In the current petroleum industry, there is no formal definition of success nor the factors that can lead to success. However, there are generic factors that have been established for projects by different project management bodies such as the Association for Project Management and the Project Management Institute. Large multinational companies generally have their own way of doing things. Such procedures are generally only revealed when a disaster occurs and a public enquiry is undertaken (such as for the Deepwater Horizon accident<sup>6,7</sup>).

## 2. Background

### 2.1. Project management success and product success

It is important to understand and differentiate between “project success” and “project management success” as these two terms are different. According to de Wit<sup>8</sup>, project management success is measured against a project's performance based on its initial estimates of cost, time and quality, while project success is measured against the overall objectives of a project.

Having introduced a project hierarchy framework, Baccarini<sup>9</sup> provides a clear distinction between project management success and product success, explaining that project management success focuses upon project success with regards to the accomplishment of the iron triangle, while product success deals with a project's final deliverable. The application of this concept implies that the project lifecycle encompasses both the processes and the product of a project. The two components are linked by smaller components known as inputs, outputs, purposes and goals.

The model is similar to that of Lim and Mohammad<sup>10</sup>, which depicts the complete project life cycle and in each life cycle stage there are combinations of factors that contribute to the success of the project. The above frameworks are based on the stages of the project life cycle. As factors that will influence the outcome of a project depend on the stage the project is in, the separation of a project into stages is very important. A successful project is one that achieves both project management success and product success<sup>9</sup>, but both scenarios are sometimes difficult to achieve<sup>11</sup>. This is something that is achievable if all parties are fully involved in a project. However, a project can be a product success without being a project management success if its objectives, which are based on the iron triangle, are not achieved.

### 2.2. Success criteria and success factors

Another set of project management concepts that need to be differentiated are “success criteria” and “success factors”. Cooke-Davies<sup>12</sup> clearly defines success criteria as the measures by which the success or failure of a project will be judged, while success factors are inputs in a project that need to be managed as they strongly influence the success of a project. This view is also shared by researchers Lim and Mohammad<sup>10</sup> as they define the success criteria as the set of principles by which project success is or can be judged, while success factors are defined as the set of factors that influence the outcome of a project.

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