

جامعة ميدأوشن

كلية الإدارة

إدارة المشاريع



أثر الحوكمة على تنفيذ المشاريع في قطاع البتروكيماويات
في المملكة العربية السعودية

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العام الدراسي:

2024

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**The Impact of Governance on Project Execution in the Petrochemical Sector in the Kingdom of
Saudi Arabia**

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Year: 2024

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Introduction:

Petrochemicals form an essential arm of the Saudi Arabian economy, and their contribution accounts for a sizable fraction of the non-oil GDP in the nation (Jadwa investment 2017). It forms a critical arm for undertaking some countrywide economic diversification efforts to reduce oil export dependency. It further experiences challenges associated with project execution delays, overruns of costs, and quality aspects (Akhtar 2020). These challenges end up having sizeable impacts on the outcome of projects undertaken, thus stagnating growth and development in the respective sector. This research paper, therefore, fills in the need to understand the role governance plays in different dimensions of project execution within Saudi Arabia's petrochemical sector.

Research Problem:

In line with the petrochemical project governance, the Kingdom of Saudi Arabia has an advantage in terms of the successful execution of these projects (Jawad & Ledwith, 2022). Nevertheless, it is a common thing for project governance practices to be poorly understood and the extent of their impact on project execution success in the current context area. This study intend to fill this data deficiency by looking into link of governance with projects in terms of time, cost and quality. Through discovering the principal mechanisms and methods of project management and then presenting recommendations for development, the research will expand expertise in project governance and, therefore, contribute to minimize the project process inefficiencies in the sector of petrochemical industry in Saudi Arabia.

Importance and Objectives of the Research:

This study is crucial as it seeks to add new knowledge to the critical importance of governance in the projects execution within the petrochemical sector in Saudi Arabia. The result of the study will give an understanding of the current state of project governance in that sector and how it affects project outcomes. The following objectives will be met through the research:

- Examine the current state of project governance practices in the Saudi petrochemical sector.

- To identify the fundamental governance mechanisms that influence project execution success.
- To assess the impact of specific governance practices on project performance (schedule, cost, quality).
- To develop recommendations for improving project governance practices to enhance execution efficiency and effectiveness in the Saudi petrochemical sector.
- To contribute to the broader body of knowledge on project management and governance in the context of the Saudi Arabian economy.

Research Hypotheses:

The following hypotheses will be tested in this research:

- H1: The Saudi petrochemical sector has a strong positive association between project governance and project execution success
- H2: In the Saudi petrochemical sector, centralized project governance structures benefit project execution efficiency and effectiveness.
- H3: In the Saudi petrochemical sector, digitalization significantly affects project governance practices and execution success.

Literature Review:

The petrochemicals industry is important to the diversification of the Saudi Arabian economy and breaking the sole dependency on oil export revenue. This sector contributes over 43% of the country's gross domestic product (GDP) (Shan 2024). Setbacks have characterized project execution in this sector, in form on delays, cost overruns, and quality defects.

Project Governance and its Constituent Elements

Alrowais (2022) states that project governance may be seen as a set of systems, processes and structures designed to support the successful execution and completion of projects. These methodologies, tools, techniques, and practices that are used for the initiation, planning, execution, monitoring, control, and closure of projects harmoniously. Nonetheless, in order for the project governance to be efficient, it is influenced by various components that among others include decision-making and project controls. Decisions are choices among alternative activities, while project controls are measures to ensure that project activities conform to the plan, budget, and schedule (Aljohani, 2021).

Project governance frameworks

The structures are centralized, decentralized and matrix. The centralized structure's decision-making power is held at the top level and involves coordination, which is hierarchical, as per Albassam (2019). Decentralized structures distribute the level of decision-making authority across various levels, hence enabling more adaptability and faster pace in decision-making. The matrix organization embodies features of both centralized and decentralized structure. It is based on a hybrid model as it equates integrative control and the governance framework used defines delegation of control (Jawad & Ledwith, 2022). The effectiveness of project governance, and each structure has advantages and limitations. Centrally organized systems provide an excellent decision-making process; however, due to the nature of the communication, the system cannot maintain flexibility, which may, in turn, result in delays and overrun costs. In contrast, decentralized structures might be of higher agility and flexibility, though the interests of decision-makers at different levels threaten the decision-making. The matrix tries to combine both and is suitable for complex and large-scale projects as those in the petrochemical sector.

Digitalization and Project Governance

The new millennium is the millennium of digitalization, and project governance, including that in the petrochemical sector, is not an exception to this rule. In general, modern digital tools and technologies support many governance practices, giving real-time data at all collection, analysis, and decision-making opportune moments (Alrowais, 2022). Even more so, it increases communication and collaboration between the project stakeholders for sharing information, thus resulting in improved execution and efficiency of projects.

The sources used in this literature review consistently show the difficulties in which projects are executed in the Saudi petrochemical sector. They also identify several components of governance that would be included as part of governance, including the potential impact. However, they vary about what the sources focus on. In contrast, Alidrisi et al. (2019) and Alrowais (2022) focus on measures of performance, and Aljohani (2021) still zeroes in on this focus relative to process safety management. Even so, their focus is drawn on how project governance is essential in solving problems manifested by the execution of a project, assuring that good project results are forthcoming. These sources are

subject-specific and may not have comprehensive knowledge of the source of the topic at hand, which is part of the gaps this research would like to fill in through a more specific analysis of project governance and their overall impact on project execution within the petrochemical sector in Saudi Arabia.

Research Methodology:

This research will employ a mixed-methods approach, incorporating both qualitative and quantitative methods (Yardley & Bishop, 2017). The survey will gather quantitative data from project managers, team members and stakeholders in the petrochemical projects of Saudi Arabia. The survey questionnaire will be developed using the study objectives and hypotheses and tested before distribution to guarantee its validity and reliability. Purposive and convenience sampling techniques in targeting individuals who have experience in petrochemical project management will be applied in the selection of the sample for the survey. The data obtained will be subjected to quantitative analysis via statistical methods including correlation analysis and regression analysis to verify the research hypotheses.

Besides the survey, detail interviews will be done with key informants such as the project management office representatives, government officials, and petrochemical industry experts. Quantitative data will be supplemented with data derived from secondary sources, including industry reports, company websites, and academic literature. With thematic analysis, the qualitative data will be analyzed identifying patterns and recurrent themes. Quantitative and qualitative data analysis will be triangulated to strengthen the validity and reliability of the research findings (Moon, 2019).

Research Limits:

The study will narrow itself down to the petrochemical industry in Saudi Arabia and will center on how project governance is being practiced in relation to the execution of projects. The data to be gathered through the survey and interview responses shall be self-reported and may contain much bias, hence the possible generalization of the findings. Secondary data sources also have limitations concerning their relevance and accuracy. In addition, it will be based on convenience sampling; thus, the sample will only provide adequate evidence to show some of the attitudes in a population. This may affect the generalization of the findings. The model further does not indicate an excellent notion as it

is not going to embrace all other elements, which might influence the result of the project, such as the levels of project management skills and dynamics in technology.

The General Perception of the Research Structure:

The structure includes five major segments: the introduction, literature review, research methodology, findings, and recommendations. The introduction section will provide an overview relating to the research topic. The literature review will concentrate on several applicable studies from a critical point of view. The research methodology will present how data was collected and analyzed. The following section presents the data analysis findings, showing practical recommendations for improving project governance practices in the petrochemical sector in Saudi Arabia.

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