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Project management practices to improve operational efficiency within
the production lines of the Saudi Plastic Products Company (SAPPCO)

1. Chapter 1: Introduction

1.1. Research Background

Over the last few decades, the field of project management has evolved from being a basic administrative function to one of the most important strategic components used by many successful organizations. Today, projects are the way businesses operate; as such, Project Management provides an important tool that helps organizations increase their operational effectiveness by helping them achieve their organizational objectives within their industry (Kerzner, 2017)

As a result of the growing demand for plastics, all companies included in the Manufacturing Industry—especially in the plastics sector – need to apply new Management Tools within their organization that allow them to reduce costs while obtaining the highest level of Production Efficiency (Project Management Institute, 2021)

The plastic products sector is one of the significant segments within the manufacturing industry in the Kingdom of Saudi Arabia, serving both domestic and regional needs for a wide variety of plastic products (Ghaithan et al., 2021)

The Saudi Plastic Products Company (SAPPCO) is a major manufacturer of plastic products in Saudi Arabia, with production

.facilities in key industrial cities located in Riyadh and Dammam

By implementing Project Management methodologies into the SAPPCO production lines, the company expects to see significant improvements with regards to overall operational success in the areas of 1) rigorous process planning; 2) mitigating and managing risk; 3) ensuring high-quality production; and 4) strategically allocating and utilizing organizational resources (Heagney, 2016).

The continued body of research demonstrates that organizations which utilize structured methodologies achieve a high level of Productivity and Quality as well as a Reduction in both Waste and Overhead Costs (Meredith & Mantel, 2017).

In this context, this research study will examine how the use of project management practices can enhance the Productivity of the SAPPCO production line.

1.2. Research Problem

The Saudi plastic manufacturing sector continues to experience an overall lack of standardization, leading to inefficient production lines and inconsistent finished product quality (Ghaithan et al., 2021; Abdulghaffar & Baatiyah, 2018), despite the industry rapidly growing over the last decade or so. To effectively deal with these challenges, it is critical to use consistent philosophies and approaches grounded in systematic, evidence-based management frameworks developed using established scientific principles (Kerzner, 2017; Project Management Institute, 2021), as opposed to relying on random problem-solving attempts for guidance.

1.2.1. Theoretical Gaps

Although there is an extensive amount of literature on project management (PM) applicable to other industrial sectors (including construction (Larson & Gray, 2021), information technology (Schwalbe, 2019), defense (Kendrick, 2015) , there is a relative dearth of scholarly research focusing on the development of systematic adaptations of PM practices for use within continuous production environments, especially within the Saudi plastic industry. While most existing theoretical models related to PM have been developed to be applicable to temporary projects (e.g., those having a clearly defined start and end date) (Project Management Institute, 2021; Meredith & Shafer, 2020), continuous production operations are inherently repetitious and on-going in nature

Additionally, there is also no coherent conceptual framework that links discrete PM domains (e.g. detailed upfront planning, risk management, resource allocation) with continuous production operational output measures for the Saudi plastic sector. This lack of established connection between these theories and their application to continuous production environments limits researchers' ability to determine the causal mechanisms whereby PM methodologies result in significant improvements in operational performance (Chow et al., 2021), as well as under what contextual conditions.

1.2.2. Practical Gaps

SAPPCO (Saudi Plastic Products Company) has identified four significant operational :bottlenecks that directly impact their ability to achieve optimal levels of efficiency

planning deficiencies – a lack of time-oriented, integrated operational schedules for (1) many of the production lines has created difficulties in ensuring on-time delivery and excessive amounts of overhead costs (Kuzmych et al., 2024; Ongbali et al., 2023). (2) a reactive risk management approach – the inability to identify and create preventive plans for potential identified areas of risk has resulted in unexpected downtime due to equipment failures or interruptions in the supply chain (Allende et al., 2023; Kuzmych et al., 2024). (3) inconsistent and variable quality control procedures – the lack of consistent protocols for maintaining acceptable levels of quality has resulted in increased levels of production waste; this is significant for SAPPCO as the target industry has many stricter compliance requirements for meeting technical specifications (Nguyen & Nguyen, 2023; Marlianda & Rukmana, 2024). (4) improper allocation of resources – SAPPCO has imbalances in the alignment of its employees and the allocation of material, which creates bottlenecks in certain areas of production while some areas are significantly underutilized (Calderon Osco et al., 2023; Allende et al., 2023)

The intersection of this theoretical gap (i.e., a lack of sufficient applicable theoretical

frameworks for continuous production) and the existing operational bottlenecks at SAPPCO will require the implementation of a descriptive research study to fill the gap between existing theory and the practices of SAPPCO. To conclude, the primary research question is the following: what influence does the use of project management practices have on the optimization of production line efficiency at SAPPCO? The research will address the theoretical gap through the development of a unique conceptual model, while also addressing the above-mentioned operational bottlenecks.

Research Significance .1.3

This research is motivated by its focus on filling a gap in both the academic and practical spheres: the lack of strategic PM adaptation in continuously producing high-volume production environments, specifically within Saudi plastics manufacturing processes (Ghaithan et al., 2021). This multi-layered research study can be applied to both academic and practical aspects of the industrial environment

At the theoretical level .1.3.1

From a theoretical perspective, this research contributes to the existing PM literature by developing a multidimensional PM framework that bridges the gap between traditional PM categories—such as planning, risk management, and quality assurance (Kerzner, 2017; Project Management Institute, 2021) and PM outcomes within manufacturing environments.

Traditional PM literature typically considers these PM functions to be project-specific and sequential in nature (Meredith & Shafer, 2020), while the findings of this research integrate these functions into a single PM model capable of producing specific productivity metrics, such as minimizing production waste and improving delivery accuracy (Chow et al., 2021; Ongbali et al., 2023)

In addition, this research will address the existing construction-based bias that presently dominates PM literature within the region. Previous research has primarily focused on either service or infrastructure-based projects within Saudi Arabia (Larson & Gray, 2021; Schwalbe, 2019) and has failed to provide any research-based evidence for non-terminal project delivery systems, such as those associated with repetitive and high-volume production processes (Abdulghaffar & Baatiyah, 2018). This research shifts the focus of PM research from construction to the plastics industry and provides scholars with an empirical foundation to create theory that supports the unique characteristics of high-volume/repetitive production operations.

At the practical level .1.3.2

The practical application of this research will support SAPPCO and the greater industrial community via a range of strategic dimensions: Evidence-Based Diagnosing (vs. anecdotal): The findings provide SAPPCO with a well-structured evidence-based diagnostic tool that enables leadership to make a systematic diagnosis of current production practices (Ongbali et al., 2023). This systematic diagnostic tool will enable the distinction between systemic production strengths and operational vulnerabilities by using a clinical approach. Operational Bottleneck Mitigation: The research has advanced beyond theory by producing actionable solutions for the four major bottlenecks identified during the production cycle (Allende et al., 2023; Calderon Osco et al., 2023). These recommended refinements for each bottleneck are critical in enabling SAPPCO to maintain a competitive position in both the domestic and regional marketplace. Regional Scalability and Benchmarking: The methodologies developed within this study exhibit a high degree of external validity (Ghaithan et al., 2021). The findings will be used by manufacturers throughout the GCC as a blueprint for building their own competitiveness through sustainable means. Strategic Alignment with National Goals: This research will provide a functional contribution to Saudi Vision 2030 by providing a mechanism to increase industrial throughput and operations efficiency (Kingdom of Saudi Arabia, 2016). Furthermore, the implementation of this study will assist Saudi Arabia in achieving its national economic diversification objective and, therefore, increase the contribution of the non-oil sector to the national GDP. Sophisticated Decision Support System: This research will establish a scientific basis for management decisions that previously have been made on an ad hoc basis (Kuzmych et al., 2024), thereby allowing senior management to evaluate each initiative against a common set of evidence-based criteria. To further enhance the decisionmaking process, SAPPCO will develop a decision model that applies the findings of this research using operational definitions of detailed product lines and corresponding operational definitions of products against the improved production cycle measurement systems. The resulting database would provide robust empirical evidence that enables each product line and corresponding product to be systematically ranked based on improvement opportunity.

1.4. Research Questions

1.5. Research Objectives

1.6. Research Hypotheses

1.7. Research Model

1.8. Research Methodology

1.9. Scope of The Study

1.10. The Suggested Project Structure

2. Chapter 2: Literature Review

2.1. Introduction

Brief introduction for the chapter

2.2. The independent variable

2.3. The dependent variable

2.4. The relationship between the independent and the dependent variables

2.5. Conclusion

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