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## REVIEWER'S REPORT

**Manuscript No.: IJAR-59719**

**Title: Digital Transformation of Petroleum Retail Operations: A Framework for Enhancing Operational Efficiency and Sustainability in Saudi Arabia.**

**Recommendation:**
Accept

| Rating | Excel. | Good | Fair | Poor |
|---|---|---|---|---|
| Originality | Yes | | | |
| Techn. Quality | | Yes | | |
| Clarity | Yes | | | |
| Significance | | Yes | | |

**Reviewer's ID: JPR- 015**

## *Detailed Reviewer's Report*

**Reviewer's Comment for Publication.**

Acceptance Comment are mentioned below suitable for the paper titled "**Digital Transformation of Petroleum Retail Operations: A Framework for Enhancing Operational Efficiency and Sustainability in Saudi Arabia"**

**Reviewer Comments: Accept**

**Reviewer Comments –**

### 1. Introduction

The manuscript addresses the growing importance of digital transformation in petroleum retail operations, with particular emphasis on operational efficiency and sustainability in Saudi Arabia. It highlights the challenges associated with fluctuating fuel demand, asset management, transactional data, and environmental responsibilities. The study establishes the relevance of integrating digital technologies into fuel station operations to improve service reliability and resource utilisation. The focus on the Saudi petroleum retail sector provides valuable regional and industrial significance. Overall, the introduction presents a clear research direction with strong practical relevance.

### 2. Literature Review

The manuscript integrates relevant research on fuel station automation, connected inventory management, logistics optimisation, customer-facing digital services, and energy management. It provides a useful understanding of how digital technologies can influence operational and environmental performance in petroleum retailing. The distinction between evidence from service stations and insights derived from broader oil and gas research adds methodological clarity. The review also highlights the importance of interoperability, data governance, and workforce capabilities in successful digital transformation. Overall, the literature provides a meaningful foundation for developing an integrated operational framework.

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### 3. Solution Approach

The proposed operating framework presents a systematic approach to integrating connected forecourt assets, enterprise systems, and data-driven decision processes. It considers multiple operational dimensions, including inventory reconciliation, logistics coordination, customer services, energy management, and environmental monitoring. The inclusion of measurable service outcomes and environmental safeguards strengthens the practical orientation of the framework. The illustrative station-level assessment provides a structured mechanism for combining operational, financial, and environmental indicators. The proposed staged implementation and evaluation approach further enhances its applicability across petroleum retail networks.

### 4. Results and Discussion

The findings emphasise that isolated technology adoption is insufficient to achieve sustainable operational improvements in petroleum retailing. The study identifies accurate measurement, interoperable data, workforce capability, and operational redesign as essential factors for successful digital transformation. The illustrative station-level assessment demonstrates how operational efficiency, financial performance, and environmental indicators can be evaluated together. The distinction between scenario-based assumptions and empirically observed outcomes adds credibility to the discussion. These insights provide valuable guidance for developing measurable and scalable digital transformation strategies in Saudi petroleum retail operations.

### 5. Conclusion

The manuscript offers a relevant contribution to the understanding of digital transformation in petroleum retail operations. The proposed framework provides an integrated perspective on improving operational efficiency, service quality, and environmental sustainability through connected technologies and governed decision-making. Its emphasis on phased implementation and systematic performance evaluation enhances its practical value. The identification of future empirical research requirements also provides a useful direction for validating the framework across different network scales. Overall, the manuscript is well-focused, industry-relevant, and suitable for acceptance.