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REVIEWER'S REPORT

Manuscript No.: **IJAR-53290** Date: 14-08-2025

Title: Contribution of Artificial Intelligence in the Optimization of Energy Consumption in Modern Networks

Recommendation:

Accept as it is ....YES...................

Accept after minor revision.................

Accept after major revision ....

Do not accept (*Reasons below*) ....

Rating	Excel.	Good	Fair	Poor
Originality			✓	
Techn. Quality			✓	
Clarity		✓		
Significance			✓	

Reviewer Name: Mr Bilal Mir

Reviewer's Comment for Publication.

General Overview

This paper addresses a critical and timely issue—the optimization of energy consumption in the context of modern digital infrastructures and smart buildings—through the application of artificial intelligence techniques. It combines empirical evaluation with practical deployment considerations, making it relevant to researchers, energy system engineers, and smart city planners. The focus on AI-based forecasting within smart grids, supported by IoT sensor data, aligns well with ongoing global efforts toward sustainable energy management.

Abstract Evaluation

The abstract is well-structured and effectively summarizes the study's motivation, methodology, experimental setup, and key results. It clearly presents the comparison between LSTM, MLP, and a seasonal ARIMA baseline, providing quantitative improvements in forecasting accuracy and operational outcomes. The inclusion of metrics such as RMSE and percentage gains in energy savings strengthens the scientific rigor and allows for direct benchmarking. The discussion of robustness against data loss, abrupt load changes, and operational disturbances demonstrates an awareness of real-world challenges.

Introduction Evaluation

The introduction situates the research within the broader context of digital transformation, rising energy demands, and the operational complexity of modern networks. The reference to smart buildings' share of urban energy consumption provides a strong justification for the study's relevance. The text clearly identifies the gap in quantifying the practical benefits of AI-based sequence models over traditional statistical baselines in campus-scale environments. The linkage between forecasting improvements and tangible operational savings is an important framing for applied research.

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Scientific and Technical Relevance

The study is notable for its methodological design, incorporating both traditional statistical models (ARIMA) and modern deep learning approaches (MLP, LSTM). The choice of a campus-scale testbed inspired by actual infrastructure adds practical value, while the detailed reporting of performance metrics ensures scientific transparency. The connection between improved forecasting and measurable reductions in energy losses and gains in efficiency bridges the gap between theoretical modeling and applied energy management.

Overall Assessment

The work is well-positioned within the literature on smart grid optimization and AI-driven demand forecasting. Its combination of empirical accuracy improvements, operational simulations, and consideration of real-world constraints makes it both technically sound and practically relevant. The findings have potential applicability not only to academic campuses but also to broader municipal and industrial energy management contexts.