

Review of: "Internet of Things in Smart Grid: A Comprehensive Review of Opportunities, Trends, and Challenges"

El Sayed M. El-Kenawy¹

¹ Independent researcher

Potential competing interests: No potential competing interests to declare.

Dear Author(s),

I have carefully reviewed the manuscript titled "*Internet of Things in Smart Grid: A Comprehensive Review of Opportunities, Trends, and Challenges*." The paper offers an in-depth analysis of the application of Internet of Things (IoT) technologies in smart grids, and it provides a detailed exploration of the opportunities, challenges, and future trends associated with IoT adoption in this sector. This is a timely and important topic given the rapid development of smart grid technologies. I would like to commend your effort and provide the following feedback:

Content and Structure: The manuscript is well-organized and provides a comprehensive overview of the subject matter. The introduction effectively sets the stage by outlining the current state of IoT and smart grid integration. However, the discussion could benefit from more concrete examples of real-world IoT applications in smart grids to highlight the practical impacts and limitations. The conclusion is clear, but I suggest summarizing the key findings more succinctly and emphasizing the broader implications for policymakers and industry leaders.

Literature Review and Citations: The literature review is thorough, but there are several recent studies that are directly relevant to your research and should be cited. I recommend including the following papers to strengthen your discussion of IoT and smart grid technologies:

- <https://doi.org/10.1016/j.eswa.2023.122147>
- <https://doi.org/10.1007/s10586-023-04221-5>
- <https://doi.org/10.21608/JAIEP.2024.354003>
- <https://doi.org/10.54216/JAIM.060203>

Technical Clarifications and Suggestions: The technical analysis in the paper is sound, but additional detail regarding the implementation challenges of IoT-based systems in large-scale smart grids would enhance the manuscript. For example, more discussion on data security, interoperability, and the energy consumption of IoT devices in smart grids would provide a clearer picture of the hurdles that need to be addressed. Moreover, addressing the future role of machine learning and artificial intelligence in optimizing IoT-based smart grids could add valuable insight for researchers and industry professionals.

I hope these suggestions assist in refining your manuscript. The paper addresses a critical topic and, with these revisions, it has the potential to make a valuable contribution to the field of IoT applications in smart grids.

Best regards,