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

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Potential competing interests: No potential competing interests to declare.

- This paper presents an in-depth review of the opportunities, trends, and challenges related to the integration of the Internet of Things (IoT) in smart grids. The paper highlights the many possibilities offered by IoT technologies to optimize the operation of smart grids and improve energy efficiency. It reviews the main technological advances in this field and identifies the main challenges to be addressed, particularly in terms of security, reliability, and interoperability. The survey also proposes possible solutions to overcome these obstacles and enable a wider adoption of IoT in smart grids. Ultimately, this work offers a comprehensive and detailed perspective on the possibilities offered by IoT to transform the smart grids of the future. Although the presented notions are interesting, the manuscript has some issues that may undermine its quality, among which I can mention:

1 The abstract needs more work, and it is not well-structured; there is no beneficial information about the main work and its results.

2 The keywords are not very well chosen.

3 The novelty. The authors do not clearly give the novelty of this paper.

4 The introduction of this survey presents significant gaps, including the total absence of positioning in relation to previous research on the integration of IoT in smart grids. Without any reference to previous studies and publications in this field, it is difficult for the reader to situate this work in the existing academic context.

5 A review and discussion of the main surveys and related articles would nevertheless highlight the original contributions of this analysis, as well as clearly identify the gaps in current knowledge that it attempts to address. In addition, the introduction would benefit from including more contextual elements on the strategic importance and major challenges of smart grids, in order to better justify the interest and relevance of this in-depth review on the role of IoT in this field.

6 The sections are well-structured up to section 3, which presents different real-world IoT applications. However, it then goes directly to "Recent Trends in IoT" without having an intermediate section title that would link the real-world applications to the recent trends.

7 An additional section title would therefore be necessary to ensure a better transition and a logical progression in the survey content. For example, a title like "3.9. Summary of Real-World IoT Applications" could be added before discussing the recent trends in IoT.

8 Imbalance in the depth of coverage of topics:

- Some sections, like "Real-World Applications of IoT," are very detailed with many subsections, while other sections, like "Combination of IoT and Smart Grid," seem more cursory.
- A better balance in the level of detail given to each aspect could allow for a more in-depth and homogeneous analysis of the topic.

9 Potential lack of critical discussion:

- The survey seems to focus mainly on presenting the opportunities, trends, and applications of IoT in smart grids.
- A more critical analysis of the challenges, limitations, and points of debate around these technologies could enrich the content.

10 Updating references and data:

- Given that the survey was conducted in 2021, some information and data may have become obsolete by 2024.
- An update of the most recent references and data would be desirable to reflect the latest developments in the field.

11 A close proofread is still required for all the sections that make up the paper.

Dear Editor-in-Chief,

The manuscript on "Internet of Things in Smart Grid: A Comprehensive Review of Opportunities, Trends, and Challenges" has several significant issues that need to be addressed before it can be considered for publication.

The topic is timely and will be of interest to the readers of the journal. However, the manuscript lacks any meaningful review or discussion of the existing literature and prior work in this area. Additionally, the depth of analysis is also unbalanced, with some sections being overly detailed while others are rather superficial.

In its current form, I cannot recommend this manuscript for publication. However, with substantial revisions to incorporate a thorough review of the relevant literature, improve the writing quality, and ensure a balanced, critical analysis of the topic, the manuscript could potentially become a valuable contribution.

Yours faithfully