Review of: "Improved cosine similarity measures for q-Rung orthopair fuzzy sets"

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Potential competing interests: No potential competing interests to declare.

Manuscript Title: IMPROVED COSINE SIMILARITY MEASURES FOR q-RUNG ORTHOPAIR FUZZY SETS

My Comments are:

This study offers cosine similarity measures for a balanced assessment of similarity by simultaneously capturing both the direction and magnitude like aspects of q-ROFSs. Following points should considered in order to improve the quality of the article.

1. In introduction portion, at line 10, author must add Fermatean fuzzy set also because it is an extension of fuzzy set inline with IFS and PFS and is more powerful, as in case of Fermatean fuzzy set, we have,

$$\mu^3 + v^3 \leq 1$$

and there is a great amount of work based on Fermatean fuzzy set in decision making. For reference, take a look at ((a)→ https://doi.org/10.1007/s12652-022-03725-z)

2. In introduction, line 15, please elaborate [3,9,12,4]. It is not good to cite articles in this way. Author should write at least a single sentence to explain what has been done in [3], [9], [12] and [14].

3. Same is the case with line 3 on page 2 in the introduction. Author need to explain each of these cited articles [4, 6-8, 13, 15, 19] by expressing what has been done in these articles.

4. In introduction, line 7-9, author should provide examples/statements on how or why traditional cosine similarity measures fall short like author has provide some statements on limitations of IFs and PFs.

5. Introduction, line 15, author can also add Fermatean fuzzy set, as there is a great amount of work based on Fermatean fuzzy set in decision making.

6. Introduction line 29, (Same as comment 5).

7. In Section 2, before Definition 1, why the condition

$$\sum_{j=1}^{n} W_j = 1$$

is imposed on the weight vector, what is the logic and geometrical interpretation of this condition ?

8. Page 3, line 3 (Same as comment 5).

9. Section 3, line 2-4. As requested before, the author should support this statement by providing some example showing that traditional measure falls short.

10. It will be good if the author can support Definition 7 and Definition 10 with the help of examples like Example 1 on page 4.

11. In Section 4 (Conclusion), author should add limitations of the presented work if there is/are any, and some possible directions where the presented work can be extended in future. Author can consider the combined extensions of fuzzy set with soft set. For example, Intuitionistic fuzzy soft set, Pythagorean fuzzy soft set, Fermatean fuzzy soft set, and even q-rung orthopair fuzzy soft sets. I mean can the presented idea be extended to these extensions in order to facilitate parametrization in fuzzy data?