Reviewer’s report

Title: User needs elicitation via analytic hierarchy process (AHP). A case study on a CT scanner.

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Reviewer: John F P Bridges

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The application of the AHP method to the case study of purchasing a CT scanner – measured from multiple perspective – is an interesting one and on its face value, would be relevant to this journal. This said, there are five (5) serious flaws in the paper that make it unacceptable for immediate publication. Each of these can be views as compulsory revisions or as serious barriers to publication.

1. The authors mix notions of subjective needs to guide the development of future technologies (a separate, but increasingly important, literature) with the deliberative process behind the decision to purchase a CT. This causes much ambiguity within the paper, and at time serious inconsistencies.

2. AHP is an important and practical tool for the explication of decision making weights across criteria (and potentially subjective performance). Its main purpose is to facilitate the delivery of a decision. The authors use it primarily to study the importance weights. If this was the primary objective, then other research methods such as conjoint analysis (both compositional and decompositional), discrete choice experiment or best-worst scaling would have provided a more direct and theoretically grounded method to study what is essentially attribute importance.

3. AHP is normally used within a group decision making process. This normally requires that the group meet to compare and discuss their weights and implied decisions as a means to develop consensus around group weights and, more importantly, a group decision. The authors appear to have conducted five N=1 studies as a means to compare the results, but it is concerning that these individual results lack reliability and generalizability.

4. The authors have a great deal of discussion and present a lot of material (mainly methodological) that really is not linked to the core thesis of the paper. Furthermore, the authors have very shallow discussions of vital information (such as their discussion with other clinicians to examine the face validity of the results). I would have liked to have seen some details here, both in terms of the process of validation and the results (even if they were qualitative).

5. Many of the important contributions to the literature applying AHP to health care have been ignored by the authors. Here I am thinking of the important advance and applications of the method by James Dolan in the US and some work specifically applying the method to medical technologies by Maarten Ijzerman in the Netherlands. Furthermore, there is an emerging literature on the
application of conjoint analysis, discrete choice experiments and best-worst scaling to the study of needs, priorities and preferences as they relate to health care and medical technologies.

**Level of interest:** An article of limited interest

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

None.