Reviewer's report

**Title:** Measuring factors affecting implementation of health innovations: A systematic review of structural, organizational, provider, patient, and innovation level measures

**Version:** 4  **Date:** 28 June 2012

**Reviewer:** Heather Colquhoun

**Reviewer's report:**

I appreciated the opportunity to review this interesting and valuable work. I think the paper has excellent merit and if the authors are able to address the major compulsory revisions outlined below, the paper has good potential for publication.

**Major Compulsory Revisions**

1. **Background:** The background section had several places where the purpose of the SR is stated but the objective of investigating criterion validity was not indicated. The criterion validity analysis seemed to be introduced in the results section. There are several places in the background in which the issue of causal pathways was discussed so perhaps this could be inserted in those areas. I wondered if there are actually three objectives: 1) Combine existing theory-based frameworks to develop a comprehensive framework in which to organize important groupings of constructs (factors), search for measures that will measure constructs within these factors, and establish whether or not the constructs have been shown to be predictive (within the studies obtained). Consider outlining these activities in the section just before “A multi-level framework guiding IS research”. As it is now, there is too much activity related to how you developed your five-factor framework in the background section and the exact nature of how this proposed framework fits into your study objectives is uncertain. You do seem to be proposing a new framework here, not just utilizing an existing one. I really liked that this work was two-fold. It provides a framework on which to understand important factors and it provides information on measuring constructs within those factors. It makes more sense to highlight this framework as part of the study objectives.

2. **Methods:** In general, there were many concepts in your results that should have been stated in the methods (how measures were excluded, how coding discrepancies were resolved, identifying the criteria and definitions of each of the five factors, the process of coding for criterion validity). You seemed to have a process of excluding studies, followed by a process of excluding measures. I think outlining how you excluded for both of these activities are part of the methods. In general, the results section really seemed to begin at “Our search found 52 measures” - 3.5 pages into the results.

3. More information was needed as to what variables were extracted from the
articles and how certain coding was achieved. Did you use the construct name reported in the articles or did you have a prior listing of constructs that you slotted the measures (or items) into? Did a measure only need to have one item related to a construct to be included?

4. Results: As indicated above under the methods, there seemed to be a lot of method oriented information in the results section.

5. Literature Search Results (first paragraph): The paper indicated that you excluded based on education but then also used education as one of your descriptions (paragraph before ‘Factors Assessed in Measures” and in paragraph preceding ‘Conclusions’. This requires some clarification. Did you include education as related to health?

6. You indicated that most of the measures were in a health care setting, which was true, but this was only 73%. So 27% were not in a health care setting. Can you address why so many were found outside of health care given your search strategy?

7. Limitations: There does not seem to be a paragraph on limitations. You touch on a few limitations in the conclusion but having them all presented in one place as limitations would be useful.

Minor Essential Revisions

1. Abstract: The issue of a need for ‘standardized constructs’ was raised in the abstract but this issue was not necessarily fully addressed by the study (proposed framework and systematic review [SR]). The framework does provide a standardized list of factors in which multiple constructs will fall but it remains a high level list and doesn’t necessarily provide a comprehensive list of constructs or even a set of sub-categories that might be used to standardize constructs. I think it is worth indicating (perhaps the conclusion or even when the five-factor framework is proposed) that this work progresses our goal towards more standardized constructs by suggesting a structure on which we can start to standardize constructs.

2. Abstract and Background (first paragraph): Can you add a reference from another country, in addition to the US figures? Obviously, issues of implementation extend beyond the US, so revising these sentences to reflect that would be useful and ensure an international context and appeal. The same applies to the last sentence of the first paragraph in the background – you could potentially just remove the “in the US where it is most needed”.

3. Background (last paragraph): I was not sold on the term ‘impact theory’ but I cannot come up with a viable alternative. Do you have a reference for the term ‘impact theory’? That might help as opposed to introducing what seems like a new term into our theory lexicon.

4. You indicated including only self-report measures. A rationale for this choice is warranted. Could there be useful organization measures that are not self-report?

5. You searched for both the use of a measure and the development of a measure. I can see the importance of searching for both but I was not certain as
to how newly developed measures would be integrated into your analysis, particularly for the criterion validity objective. Newly developed instruments might still be in the process of initial development and we would not expect to have predictive work done on them just yet. Is this a limitation of your analysis?

6. Methods (first few paragraphs): The spelling of CINAHL needs to be corrected in two places. (CINHAL to CINAHL)

7. I am not sure that your chosen databases would have allowed you to find all organization or structural related measures. Consider introducing this as a limitation in the conclusion.

8. Results (first paragraph): Your reliability was high for what seems like some un-straightforward variables. Can you clarify in the paper that the reliability was calculated based on everything you extracted?

9. Results (first paragraph): Some clarification was needed for “provided insufficient information for review”. What types of things were lacking such that the measure was excluded for this?

10. The last paragraph before conclusions seems a bit out of place. I wonder if it should have been placed just before the section on criterion validity.

11. Conclusion (first paragraph): You switched to using ‘characteristics’ instead of ‘constructs’. I suggest keeping the language at constructs. You used the term characteristics earlier in the paper (abstract and background) but once you switch to constructs, I would keep with that term. You also indicated in this paragraph that you examined five constructs but I’m not sure you did. Rather, you investigated constructs found within five factors. It would be useful to stay with five factors, constructs within each factor, constructs representing these 5 factors, etc

12. The background made the case for more theory-based measurement approaches and you used a theory-guided framework to structure your SR but this was not reconsidered in light of the findings in the conclusion. Commenting on the value of using the framework would make a strong case for why theory-based approaches are needed.

13. It would be useful in the conclusion to return to the French et al review to comment on how many of your organization measures were included in that review.

14. Table 1: This is a great table. My only comment is that the search article section was not clear. It took me some time to see that it was the manuscript reference number. Consider adding this clarity to the column. Also, I was not certain why some of the source articles from the first column were not also in the list of search articles. I was under the impression that the source articles would have still been in the review.

Discretionary Revisions

None
Level of interest: An article of importance in its field

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests.