Author’s response to reviews

Title: Critical Success Factors for the successful initiation of Lean in public hospitals in KwaZulu-Natal: A factor analysis and Structural Equation Modelling study

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Author’s response to reviews:

Please note that the following changes were made as indicated:

1. A Title page was included t the front of your manuscript file, containing the names, institutions and countries of all authors.
2. Declarations as per required sections were added.

Reviewer #1: I believe this article has wider implications than Lean and is useful for other management strategies. If the authors do follow-up research they may wish to consider other environmental factors such as political and power relationships with the hospitals.

The language is stilted in areas and could be simplified with the help of an English language editor.

I thank the Authors for their revisions.

Language addressed by critical reviewer/ internal editor.

Reviewer #3: The paper is interesting and provides some vital information on structural modelling of public health lean structures yet authors conclude appear not robust enough and not founded mòodel analysis that CSFs cannot be viewed in isolation, as they all have significance at
different dimensions of capability within the organisation, so such analysis required methodological analysis and deep exploration for more appropriate models suitability.

Major comment

The lean strategy has been well exploring elsewhere based on current literature, but poorly understood and applied in Africa including SA.

- Qualitative variables seem to have been given less attention and are worrisome based on self-administered, semi-structured questionnaire approach of data collection?

This has now been clarified and corrected. For the research objective to identify CSFs and for this manuscript, the questionnaire was structured.

Methodologically it is unscientific to state: During several iterations of EFA structures, some variables were dropped along the way... what are the criteria and if those variables were meaningless why recording and collating them from the onset?

This has now been corrected in the manuscript. EFA was carried out and where variable cross-loaded onto more than one factor, they were dropped since this caused discriminant validity problems. In addition, if variables loaded weakly onto a factor, they were not retained.

- Based on authors conclusion, an appropriate model and approach to data and set criteria should be defined to address the inadequacies due to CSFs CSFs cannot be viewed in isolation, as they all have significance at different dimensions of capability within the organisation

The description of the approach to address inadequacies in CSFs has been augmented. Andersen et al.’s model has also been described in the manuscript as an appropriate model, however the Lean SPRInT is the tool that is being developed from the CSFs to provide a more detailed data collection and analysis on shortfalls in terms of the CSFs. The description of the Lean SPRInT has been elaborated on in the manuscript.

Minor comments

- The English language should be greatly improved for coherence and flow to the readership.

Language addressed by critical reviewer/ internal editor.
Reviewer #4: Background

This section should be enhanced in terms of:

- literature review;
- definition and importance of the critical success factors (CSFs) in Lean initiation.

This has now been enhanced in the article. Additional literature review added. CSF has been defined, and important of CSF in Lean initiation has been described.

You cite and refer to an influential study involving a systematic review of 33 articles on PubMed, Web of Science and Business Resource Premier. There are further systematic reviews, recently published and concerning much more articles, also in relation, among others, to success factors. Please, explain the reason for this choice.

This specific systematic review used a realist review design, developed from realistic evaluation to suit their research questions. Realistic evaluation is grounded on the belief that interventions, such as Lean, are complex, and that the way they bring about change is influenced by their contexts such that an intervention in a context triggers a mechanism which generates an outcome (CIMO). This realist review therefore explains what happens when a particular context plays host to an intervention like Lean. The unique part of this realis review is the categorisation of the findings of the review into these four areas: context, intervention, mechanism and outcome. Further to this review, additional literature on CSFs/ enablers of Lean and another systematic review have been included in the article.

" ... Apart from the elaborate description of the challenges and success factors for Lean implementation, mainly in non-health organizations, in the reviewed literature, there was the death of studies in the healthcare sector ...". In the last years, there were different studies about lean in the healthcare sector, albeit there is still much to learn regarding some under-investigated or overlooked issues about this field. Please make it clearer. While, as a matter of fact, very few studies were concerned with the healthcare context in South Africa.

This has now been clarified. The authors were specifically referring to the healthcare context in South Africa. There is a dearth of studies on Lean CSFs in the healthcare sector in South Africa.
Results

In order to make this section clearer it would be more useful to "shift" table 8 "Critical Success Factors for Lean initiation in hospitals" from subsection "critical success identified in this study" to subsection "exploratory factor analysis and confirmatory factor analysis" (p. 13).

This has been done.