Reviewer’s report

Title: Using a Theory-Driven Creative Process to Design a Peri-Urban On-Site Sanitation Quality Improvement Intervention

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Reviewer: Juliet Willetts

Reviewer's report:

The paper "Using a theory-driven creative process to design a peri-urban sanitation intervention" presents a recent application of behaviour-centred design to urban sanitation. It makes a valuable contribution to the urban sanitation literature bringing a behaviour change perspective that is very much-needed.

In general the paper provides interesting and useful contributions, however as a scientific paper, it lacks a clear research methodology per se. That is, the purpose of the paper appears mainly to report on and share the experience of using a theory-driven approach, and this results in a tendency towards a descriptive rather than analytical paper. Equally, the discussion and conclusion point forward to the future when the design approach 'will' be evaluated (which seems inappropriate, rather than focusing on drawing directly on the material presented in this paper itself). One of the reasons that it may have been difficult to formulate a robust conclusion was potentially the lack of a clear methodology and analytical framework within which to examine the application of the chosen 'theory-driven' design approach.

That said, there is useful information provided on the design approach taken, and the approach is situated by the authors in the context of existing research and theory in various ways in the paper, and for these reasons I would suggest that the paper is publishable and can represent a valuable contribution. However, significant revision and strengthening of the methodology, the analysis and the conclusions is considered essential before publication, which may require some re-structuring and re-framing of the paper. Other essential changes are to ensure appropriate coverage of existing urban sanitation demand-related literature, reviewing and amending a number of instances of unclear or potentially inappropriate referencing, and to ensure that all terminology used in the paper is clearly explained to the reader. An important addition that would add value to the paper would be to provide greater insight on the scale of the initiative (in terms of numbers of households/landlords/tenants, numbers of researchers etc.) and the costs of the intervention. A final additional optional change would be a potentially strengthened focus reflecting on the combining of different skill-sets to develop the intervention and the implications for upskilling practitioners (not just researchers) to undertake this kind of approach.
More detailed comments are provided below:

Abstract:

- The abstract (and later, the paper) assumes that the reader is familiar with BCD rather than explaining what BCD is in one sentence, which would be helpful.

- The abstract concludes that "evaluation of this theory-driven intervention will advance behavioural science by determining how effective each of the behaviour techniques and the overall delivery mechanism were…", which seems an inappropriate conclusion given that such an evaluation is in the future, and this paper does not provide insight into the effectiveness of the approach. It is likely the product of dividing a single project (developing and designing an approach, and then evaluating it) into separate academic papers. Indeed this paper has sufficient content to warrant a single paper, however the framing must be around its unique contribution, not around a future evaluation of the approach. Or, an alternative would be to combine this paper with material from such an evaluation.

- 'variety of processes' is vague

- Assumes reader knows what 'Bauleni secret' is- suggest to either omit the specific name of the intervention, or explain it

- The results appear descriptive in nature rather than analytical - a point arising from the absence of a clear methodology/framework to analyse the experience

Introduction:

- Provide a reference for statement made in line 75-76, and re-word the subsequent sentence in 76-78 which is not clear in expression

- Reference #6 is from 2015- are there any more recent references that support this point (given it is claiming lack of rigorous evidence it should ideally be a very recent reference)

- Line 84- should this be 'by' improving available supply (not 'while' improving available supply)?

- Line 84-86 suggests that RCTs are the only way that impact can be assessed, which is not the case, since other methodologies can also be employed (and have been)
This para (80-84) seems to assume that sanitation marketing is the only 'demand creation' approach that has been used in peri-urban settings, whereas in general, sanitation marketing has mostly been employed in rural settings, and in urban settings, a variety of approaches have been attempted. Some possible references to review include (noting that some are grey literature):

- Peal, A., Evans, B., Voorden, C. 2010 "Hygiene and sanitation software: and overview of approaches"


- 2016 McGranahan, G., Miltin, D. Learning from Sustained Success: How Community-Driven Initiatives to Improve Urban Sanitation Can Meet the Challenges


- WSP 2014 Improving On-site Sanitation and Connections to Sewers in Southeast Asia - Insight from Indonesia and Vietnam Indonesia Country Report


Line 89- clarifies that the intervention is 'to be evaluated' in the future, and as such, that this paper does not include that evaluation.

Use of a theoretically-driven intervention design process

Important to take care with referencing- Reference 10 is used at the end of a long sentence which starts with a focus on peri-urban sanitation, however that reference is a
general one focused on theories of behaviour, and at the moment the inference is that that source discusses urban sanitation

- Paragraph ending at line 108 feels like it needs a concluding 'so what' statement to round it out

- Line 125-126- very little information is provided on 'theory-driven' approaches, particularly since it is the main subject of this paper and the chosen approach. More is needed to clarify what is meant and how it is differentiated from 'theory-based'.

- Line 128 refers to 'theory-based'- is this a typo and it is meant to be 'theory-driven'? Seems anomalous particularly since later parts of the paragraph refer to 'theory-driven'.

Behaviour-Centered Design Overview

- The opening description of BCD feels like it should be referenced to a source (lines 143-147)

- Lines 155-158- do the sources provide the examples that are provided in brackets here about sanitation? Again, the referencing isn't quite clear, and if they don't may be appropriate to list the examples separately rather than infer that these source address sanitation

Assess and Build Steps

- A review of literature is referred to in Line 169, however little detail is provided on the nature of this review- what methods were used, what keywords etc. Overall, where is the 'methodology' section of this overall paper?

- References 35,36 and 37 are all referring to rural, not urban, sanitation. Above have already provided some further sources that focus on urban/peri-urban sanitation, and suggest that a more thorough literature review may be warranted.

- Line 182-202- presents a significant amount of material (findings of formative research) that is referenced to another publication which is 'in preparation'- just checking that this is appropriate, or is this 'novel' material that is being presented in this paper itself, and therefore should be part of 'Results' in this paper.
Methods

- The methods referred to are a description of the process that was undertaken to do the design, rather than the research methods applied to develop and write this paper. The paper structure needs some potential re-thinking in terms of what the main contribution is, and how to best present that within a robust framework.

- In addition, the description of what occurred lacks methodological detail that would normal be expected (eg line 205- how many local government leaders, how many 'experts'). There is no information about the number of landlords/tenants, the scale of the intervention

- Line 236-237- notes that certain communication methods were excluded as they couldn't be evaluated using a randomised design. Whilst this can be justified from certain perspectives in terms of ensuring an intervention can be evaluated, it should also be justified from the perspective that such methods were not deemed to be valuable, as otherwise we are suggesting that a particular research design is more important than discovering which types of interventions work.

Results

Behaviour-specific and intervention delivery mechanism theories of change

- The results section, following the same style as the introduction and methods, is descriptive in nature, with only a few links to relevant literature to situate particular points. The absence of a clear methodology to structure the paper weakens this section. It does provide interesting description, and these comments should not be taken to mean that some of the content is not valuable, it is just that it is not presented through a relevant analytical framework.

- Some parts of what was done remain unclear- who are 'monitors' and similarly who are 'facilitators'? And were either of these roles paid or incentivised? (Lines 287 and 289) And lines 300-303 are unclear- what is 'improved cleaning rota'?

- Line 299 mentions "hopefully' led to an increasing number of discussions- which seems speculative.

- Line 313- it is unclear as to what an 'emo-demo' or an 'exo-demo' are - terminology needs to be explained to the reader.
Lines 318- English expression is unclear- consider how to re-word this sentence - 'costs a landlord...' is tricky to follow

Line 320-321- there seems to be a reliance on supporting landlord interests in greater rental income- it would be good to critique this strategy carefully from an ethical perspective, in terms of whether development actors should be supporting landlords to increase their rent. No easy answers but worth considering and noting such dilemmas.

Line 327- not sure what 'use of a visible, durable symbol of the cleaning system' is referring to?

Line 329- handyman - was this someone in the community who already had such a role, or was he paid through this project?

Line 331-334- are the merry-go-rounds applicable to the landlords or the tenants or both?

Design process
- Line 339- what does 'reverts' mean? Line 345-346- again, emo and exo-demos language not explained
- Material presented on the learning from the experience (such as final paras- line 363-373) is very useful. In general, greater critical reflection on the design process of this nature would increase the value of the overall paper and reduce the 'descriptive' nature of the paper.
- It is helpful to know the timeframe for the intervention (375-381) however many other details which would be very useful to understand that have been omitted- size of the research team and overall project in terms of inputs, costs of the interventions and the overall research project. If such approaches are to be used and replicated then these are important details to share.

Discussion
- The initial reflections (lines 383-405) are helpful, however perhaps they could be more strongly contextualised into other relevant literature, given that this is the discussion section.
A large portion of the discussion is simply focused on describing the future evaluation that will be undertaken, which is perhaps not the most appropriate content for a discussion for this paper, which ideally needs to be reflecting on the experience of the design process itself and what can be learnt from this for the future. Returning to my earlier point, a clear analytical framework to analyse the design process would likely help illuminate aspects that are worth discussing and analysing as part of the discussion.

The paragraph on reflections on working together across researchers and a creative agency are helpful insights (Line 427-434). So at least one dimension of analysis of the design process could be a focus on how different groups with different expertise and background interacted and worked together to develop a shared approach.

Conclusion

As per earlier comment on the abstract, the conclusion feels like it needs work. It starts to make jumps ahead in evaluating effectiveness (using new material, which isn't appropriate in an conclusion- eg line 448-449) and makes assertions such as 'the intervention was developed in an efficient manner' (line 452) (efficient compared to what?)

It would be interesting for the paper to provide comment on what skills are needed to employ theory-driven design approaches- clearly the project described in this paper was run by researchers- do we imagine in the future that practitioners rather than researchers would be developing such approaches, and if so, what does that mean in terms of development of the relevant skills to do so. This is just an idea for authors to consider, since it's beyond the current scope of the paper.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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Not relevant to this manuscript

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