Reviewer's report

Title: Uncovering middle managers' role in healthcare innovation implementation

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Reviewer: Larry Hearld

Reviewer's report:

The objective of this paper was to fill a gap in the health services literature by developing a theory regarding the role of middle managers in implementing innovations. Much like the authors, I believe that the role of middle managers has been underemphasized in the literature. Therefore, I appreciated the opportunity to review this manuscript and think it could potentially provide a very important contribution to the health services and implementation literature. To begin on a positive note, I thought the authors did a nice job of reviewing recent, relevant literature to emphasize this gap in the literature and put their work in context. I also thought the authors did a nice job of suggesting some directions for future research to build on their work as well as drawing out some of the implications for practitioners. The following comments outline some suggestions for making the authors' arguments even clearer. I hope the authors find these comments in the constructive spirit they are intended.

- Major Compulsory Revisions

The author must respond to these before a decision on publication can be reached. For example, additional necessary experiments or controls, statistical mistakes, errors in interpretation.

1. I found the four roles of middle managers to be difficult to distinguish from each other. In particular, I thought the first role (diffuse knowledge...through social networks), third role (mediating between strategy and the day-to-day activities), and fourth role (selling innovation implementation to frontline employees) were too similar in their description. For example, on p. 11, the manuscript refers to “Middle managers resid[ing] at the crux of tacit and explicit knowledge. They translate tacit knowledge regarding the priority that top managers have identified into explicit knowledge that frontline employees can use to implement innovations.” On p. 12, when talking about the mediating role of middle managers, the manuscript refers to “middle managers assum[ing] the ‘bilingual’ role of translating top managers’ strategy into frontline employees’ actions.” It was difficult to see much of a distinction in these two activities and without a clear distinction between these roles, one interpretation is simply that middle managers act as communication/translational conduits between top management and frontline employees. Given that these roles are at the heart of the theory, I think the manuscript would benefit considerably from a clearer distinction between these roles. One potential way to do this may be to integrate the material regarding the types of knowledge required by frontline employees.
(e.g., compilation, meta-cognition, declarative) into the discussion of these different roles to make it clearer that these roles are cultivating different types of knowledge among frontline employees, knowledge that may be used in different ways in the innovation implementation process. As it currently stands, these different types of knowledge are mentioned only briefly and seem almost independent of the different middle manager roles.

2. In a similar vein, it wasn’t clear how middle managers’ roles would contribute to the implementation climate (e.g., how would information synthesis contribute to this climate?). The language used suggests that the mechanism is generally similar or the same for all four roles (i.e., by contributing to a climate in which “innovation implementation is perceived as rewarded, supported, and expected in an organization.”) Is this the case? If the intent was to suggest different underlying mechanisms by which these roles contributed to the implementation climate, it wasn’t always clear if/how these mechanisms differed. For example, on p. 10, the manuscript states that “By diffusing knowledge about innovation implementation, middle managers imply that innovation implementation is an expected component of frontline employees’ roles.” This sounds similar to the discussion of how selling innovation implementation contributes to the implementation climate on p. 14: “Selling innovation implementation suggests that middle managers consider innovation implementation to be worthy of their own attention and, therefore, frontline employee’s attention.” I think part of my confusion may extend from the lack of distinction between the four roles noted in the previous comment. Of course, if the authors’ were suggesting a more general, common mechanism across all four roles, then my suggestion for more clarity in how they are different is moot. Nevertheless, given the important, mediating role of implementation climate between middle managers’ roles and implementation effectiveness, I think the manuscript would benefit from a clearer, more direct statement of whether the mechanism is similar or different across these four roles. An explicit definition of implementation climate may also help clarify how middle managers’ roles and activities would contribute to this climate.

3. P. 17: I didn’t follow the discussion about the theory of perceived organizational support, particularly the part about employees anthropomorphizing the organization and the example cited to support this process. The manuscript states that “…top managers may distribute incentives to middle managers whose teams effectively implement innovations. Instead of attributing the incentives to supportive IP&Ps, middle managers may attribute the incentives to top managers. As a result of this anthropomorphizing, employees may develop affective attachment to innovation implementation in organizations that offer IP&Ps because they believe that IP&Ps are a sign that their organization cares about the innovation.” How would employees develop this attachment to the IP&P, when, as the example suggests, the anthropomorphis process results in the employee attributing the incentive to the manager and not the IP&P. In other words, I think this example suggests that employees are less likely to attribute the incentive to an IP&P than they are to top managers. And does “employees” in this example refer to frontline employees or middle managers?
- Minor Essential Revisions

The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.

NONE.

- Discretionary Revisions

These are recommendations for improvement which the author can choose to ignore. For example clarifications, data that would be useful but not essential.

4. P. 8: In reviewing previous implementation research, several studies are cited that “acknowledge” or “indirectly suggest” the important role of middle managers. The manuscript notes that “neither of these papers empirically assessed middle managers’ role in healthcare innovation implementation” (end of first and second paragraphs). While such statements are believable, they also give the impression that this is the gap that their study is going to fill, even though the paper is not intended to be an empirical examination of the role of middle managers. The authors may want to reframe how their work differs from or extends the work of these other studies.

5. In several places in the latter part of the manuscript (i.e., after p. 5), the manuscript refers to “…regarding innovation implementation”. For example, the description of middle managers’ role 1 is “diffusing knowledge regarding innovation implementation to frontline employees through social networks.” Given that “innovation implementation” is defined as “the period during which organizational members become proficient in their use of a new practice”, shouldn’t these references be “…during innovation implementation”?

6. P. 11: I’m not sure I saw the need to invoke tacit and explicit knowledge, especially given the difficulty associated with transmitting tacit knowledge (Nonaka, 1994; Polanyi, 1966). For starters, I questioned whether this information is necessarily tacit. The example cited in this section (i.e., conference information) suggests that it could be either. Furthermore, as noted above, it also made this role seem similar to the other roles (e.g., knowledge diffusion). Nevertheless, if the authors think that the key middle manager role is their ability to make tacit information more explicit for frontline employees, I think the manuscript could benefit from a more complete development of this idea (e.g., the type of tacit information made explicit during implementation; how it is made explicit) and how it differs from the other roles.

7. Several sections related to the middle managers’ role conclude with a paragraph about research in other industries that may support the proposed role (e.g., “Researchers in industries other than healthcare have found…”, p. 11). I think this is important information that supports the manuscript’s theoretical propositions; however, these paragraphs often seem like afterthoughts and break up the flow of the authors’ arguments. I’m wondering if this material could be integrated into the preceding paragraphs to streamline and improve the
coherence of the manuscript.

8. P. 12: “For example, middle managers who oversaw HDC implementation developed patient registries and introduced new patient flow sheets to facilitate data collection for patient registries.” It wasn’t clear how this example illustrated how “middle managers translated top managers’ strategy…into tasks that resonate with the clinicians who implement innovations.”

9. P. 17: It may be helpful to remind readers of what IP&Ps are before talking about their influence on middle managers’ roles. I found myself flipping back through the paper to find out what these were, especially since it is an acronym. Also, are these IP&Ps specific to an innovation or more general to all organizational activities? The example you cite later on p. 17 (“For example, performance reviews about HDC-related performance (an IP&P) signaled to middle managers that good HDC-related performance was important to their health centers”) suggests that they can relate to general performance and not to any particular innovation implementation per se. Does it matter?

10. P. 17: Is the “affective attachment [that] causes employees to reciprocate the organization’s favorable treatment with greater effort toward meeting organizational goals such as innovation implementation” the same as “organizational commitment” referred to at the top of p. 17 and “managers’ commitment” on pp 19-21. If so, it may be helpful to make that connection more explicit in the concluding paragraph on p. 17. As I read the suggestions for future research on p. 19-20, I noticed that commitment played a central role in many of the suggestions but I didn’t recall commitment playing a prominent role in the theoretical relationships developed throughout the paper. If the same, I think making this connection more explicit would help tie the future research agenda more closely to the theory developed within the paper.

**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.