PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Technology adoption and implementation in organisations – comparative case studies of 12 English NHS Trusts
AUTHORS	Yiannis Kyratsis, Raheelah Ahmad and Alison Holmes

VERSION 1 - REVIEW

REVIEWER	Professor Glenn Robert Chair in Healthcare Quality & Innovation National Nursing Research Unit King's College London
REVIEW RETURNED	05/02/2012

THE STUDY	Please state over what period the logitudinal fieldwork was undertaken. p.21 would suggest 18 months but was that the case for all the technologies/Trusts? It seems there were two visits to each Trust? How long were these visits for and how much observation was undertaken (see below)? Can you make explicit how many staff were interviewed in relation to each technology/organisation (mean = x, ranging from y to z)? On average it looks like 3 interviewees - is that correct? The £150k 'awards' appear first in a footnote to table 1. Their origin and purpose need to be made much clearer (what were the conditions of the award if any etc) in the methods section where you describe the sample. Likely to be a key factor in decision-making processes within organisations and therefore this needs to be explained much more fully. 'IPC team structures' and various documentary sources were studied - yet these seem not to have influenced your findings? on page 23 you mention 'developing organisational structures etc' but how much variation was there in team structures you studied? how might this have influenced sources of knowledge and how it was applied? can you come back to this in your discussion? Similarly non-participant observation seems to have been a key part of the method and yet how this contributed to findings is not clear. How many hours of observation and how did it influence findings? The 'successful' adoption of the technologies is a key part of your analysis - 'success' needs defining clearly in your methods section. See point below re being clearer about who the 'decision makers' are; this could be addressed in methods section. I assume they are the DIPC in each organisation - is this correct? if so, fine but need to reflect on their relative importance and actual role in discussion - who else played key part in decision-making processes?

RESULTS & CONCLUSIONS	Please make clear - by citing relevant literature - that there are likely to be other organisational factors and processes (as well as extra-organisational factors) that shape how technologies are adopted, implemented and assimiliated (other than (1) different types of knowledge, (2) 'leadership style' and (3) 'professional background of key decision makers'). The 3 you have studied are important but are not only variables and it is likely to be the interactions and dynamics between these and other processes that influence adoption or not in different organisational contexts. Need fuller description of who are the 'decision makers' to whom you are referring (e.g. p.12, p. 18). See comment above. Leadership 'role' and leadership 'style' are different - which is it you are focusing on? (p. 19) Is it really both? How did you study each of them - link to methods. I think the paper needs a typology of the technologies adopted - did they have a particular set of characteristics? e.g. were simpler, less complex, technologies more likely to be adopted? such a typology could be integrated into table 3. p.24 you state that 'more work is needed to understand how organisational priorities shape the perspective of organisational leaders and other key decision makers'. But what about those elsewhere in organisations who have to implement and assimilate technologies into their established day-to-day routines? the end of the paper drifts back towards the (much studied) 'adoption' decision and away from the much less well studied later stages/processes of implementation and assimilation - need to acknowledge this I think.
GENERAL COMMENTS	Thank you for the opportunity to review this paper. The methods and perspectives you have used are very welcome and I felt there was much to commend the paper. However, I felt that given the range and depth of the data you have collected that the paper tried to cover almost too much ground and inevitably therefore can only give brief attention to some important variables (organisational/team structure, leadership role, leadership style, characteristics of technologies, financial resources etc). You will see from my comments above that many of these need further explanation and reflection in my view. One option may be to have a much tighter focus in this single paper and not attempt to cover quite so much (theoretical) ground. So, for example, if the findings and discussion are not going to directly draw on the documentary and observational elements of the fieldwork (and I couldn't see quite how they do at the moment) then it might be better to save the organisational/team structure and leadership roles/styles to a further paper. Less may be more in this case! I would suggest going back to your study aim as stated in paper and keeping as close as possible to this (although you could raise the other important processes/factors in the discussion). Some minor points: - unsure why you refer to 'innovative thinking across the NHS' on p.5? seems tangential and not the focus of this paper - at times it is a little unclear whether the way you are applying Damanpour & Schneider's 'how-to' knowledge relates to its original definition ('the information necessary to use an innovation properly')

	or 'how-to' implement an innovation. I assume its the former but occasionally it appears to drift into the latter and the two are different (to my mind at least) - p. 10 is there a typo: 'star-up' list?? - ref 13 (SDO report I co-authored) subsequently published as a journal article in Journal of Health Services Research & Policy (2011). I hope these comments are helpful.

REVIEWER	Ipek Gurol Urganci Lecturer in Health Services Research London School of Hygiene and Tropical Medicine United Kingdom I have no conflicts of interest to declare
REVIEW RETURNED	07/02/2012

THE STUDY	The study aims to understand the organisational decision making process in adopting new technologies, focusing on the types and sources of knowledge used in decisions. It is a well-executed, large scale qualitative study of 121 interviews from 12 health care organisations across the NHS. In my point of view, the most interesting contribution of the study was to demonstrate how type of trusts, professional backgrounds and leadership roles influence prioritization of innovation knowledge and therefore the adoption process. While the key messages were clear, I found the text difficult to follow. My comments, therefore, are mainly related to improving the presentation and accessibility of the study. - All terminology, in particular those related to the three phases of adoption, should be defined early on and used consistently. My personal preference would be using "initiation, adoption, implementation" as it is more commonly recognised in the literature. Similarly "knowledge" and "evidence" were frequently used interchangably. The study focuses on knowledge in the initiation stage, and the title / text should reflect that. - The authors should not assume that the reader is familiar with qualitative research methods (e.g. using terms such as "ground up", "star-up list") and clarify any technical language. - Results on how the timing of "how-to" knowledge influences the success of adoption are already presented well in the text with examples. Table 3 does not add any extra information, therefore could be omitted. However, the authors should include a short introductory paragraph describing the variety of the technologies discussed in the study. - Is there sufficient data to comment on whether / how the complexity of the technologies interact with type and timing of innovation knowledge used in adoption decisions? Would this interaction also influence success of implementation?

	- The main text is very long (over 4400 words). There are a number of repetitions in the text. The readability would greatly improve if the authors made the text more concise and to the point. Questions on outcome measures, description and appropriateness of statistical methods, and reporting of additional items from supplemental documents are not applicable for this study and have been marked as "NO".

VERSION 1 – AUTHOR RESPONSE

Reviewer 1 Professor Glenn Robert: Please state over what period the longitudinal fieldwork was undertaken. p.21 would suggest 18 months but was that the case for all the technologies/Trusts? It seems there were two visits to each Trust? How long were these visits for and how much observation was undertaken (see below)?

Response: More details regarding the duration of fieldwork have been provided in the methods section, including: number of visits per trust, purpose and duration of direct observation. (p.10)

Reviewer 1 Professor Glenn Robert: Can you make explicit how many staff were interviewed in relation to each technology/organisation (mean = x, ranging from y to z)? On average it looks like 3 interviewees - is that correct?

Response: The average number of interviews per trust has been included under methods; sub-section ‘data collection and participants’. (p.10)

Reviewer 1 Professor Glenn Robert: The £150k 'awards' appear first in a footnote to table 1. Their origin and purpose need to be made much clearer (what were the conditions of the award if any etc) in the methods section where you describe the sample. Likely to be a key factor in decision-making processes within organisations and therefore this needs to be explained much more fully.

Response: Details of the award have been included under methods; sub-section ‘sampling & settings’. (p.8)

Reviewer 1 Professor Glenn Robert: 'IPC team structures' and various documentary sources were studied - yet these seem not to have influenced your findings? on page 23 you mention 'developing organisational structures etc' but how much variation was there in team structures you studied? how might this have influenced sources of knowledge and how it was applied? can you come back to this in your discussion?

Response: Documentary sources not directly informing analysis for this paper have been removed. (p.9)

Reviewer 1 Professor Glenn Robert: Similarly non-participant observation seems to have been a key part of the method and yet how this contributed to findings is not clear. How many hours of observation and how did it influence findings?

Response: Details of duration and scope of observation have been added. (p.10)

Reviewer 1 Professor Glenn Robert: The 'successful' adoption of the technologies is a key part of your analysis - 'success' needs defining clearly in your methods section.

Response: Definitions of successful adoption and implementation have been included under methods.

(p.11)

Reviewer 1 Professor Glenn Robert: See point below re being clearer about who the 'decision makers' are; this could be addressed in methods section. I assume they are the DIPC in each organisation - is this correct? if so, fine but need to reflect on their relative importance and actual role in discussion - who else played key part in decision-making processes?

Response: The decision making process and information on who the decision makers were have been added in the main findings section. Table 1 already has information of DIPC's professional background; we have sign-posted the reader in the text now. Following the reviewer's suggestion, this will be explored in detail in another paper. (p.12)

Reviewer 1 Professor Glenn Robert: Please make clear - by citing relevant literature - that there are likely to be other organisational factors and processes (as well as extra-organisational factors) that shape how technologies are adopted, implemented and assimilated (other than (1) different types of knowledge, (2) 'leadership style' and (3) 'professional background of key decision makers'). The 3 you have studied are important but are not only variables and it is likely to be the interactions and dynamics between these and other processes that influence adoption or not in different organisational contexts.

Response: Broader factors influencing how technologies are adopted have been cited. Findings are discussed alongside findings from relevant literature. (p.24)

Reviewer 1 Professor Glenn Robert: Need fuller description of who are the 'decision makers' to whom you are referring (e.g. p.12, p. 18). See comment above.

Response: The decision making process and information on who the decision makers were have been included under main findings. Table 1 already has also information of DIPC's professional background; we have sign-posted the reader in the text now and cross-referenced in the text. (p.12)

Reviewer 1 Professor Glenn Robert: Leadership 'role' and leadership 'style' are different - which is it you are focusing on? (p. 19) Is it really both? How did you study each of them - link to methods.

Response: We focused on leadership style and the organisational role of leaders. Following the reviewer's suggestion this theme has been removed from the current article to clarify the theoretical focus of this current paper. (p.20-21)

Reviewer 1 Professor Glenn Robert: I think the paper needs a typology of the technologies adopted - did they have a particular set of characteristics? e.g. were simpler, less complex, technologies more likely to be adopted? such a typology could be integrated into table 3.

Response: Reflection on this important point has been included at the start of the section on main findings. A general typology of technologies considered in isolation from context did not provide insights to likelihood of adoption. We have therefore not integrated such a typology into Table 3. (p.12)

Reviewer 1 Professor Glenn Robert: p.24 you state that 'more work is needed to understand how organisational priorities shape the perspective of organisational leaders and other key decision makers'. But what about those elsewhere in organisations who have to implement and assimilate technologies into their established day-to-day routines? the end of the paper drifts back towards the (much studied) 'adoption' decision and away from the much less well studied later stages/processes of implementation and assimilation - need to acknowledge this I think.

Response: The text under discussion -sub-section ‘future research & unanswered questions’ has been amended to incorporate the reviewer’s important suggestion. (p.26)

Reviewer 1 Professor Glenn Robert: Thank you for the opportunity to review this paper. The methods and perspectives you have used are very welcome and I felt there was much to commend the paper. However, I felt that given the range and depth of the data you have collected that the paper tried to cover almost too much ground and inevitably therefore can only give brief attention to some important variables (organisational/team structure, leadership role, leadership style, characteristics of technologies, financial resources etc). You will see from my comments above that many of these need further explanation and reflection in my view.

Response: The manuscript has been thoroughly amended to address this general and valid comment. Theoretical topics such as team structure, leadership style and other structural elements that influenced the organisational technology adoption process are not discussed in depth within this article to enhance theoretical focus and clarity. Further explanation and reflection has been provided as suggested by the reviewer. (Throughout the revised manuscript)

Reviewer 1 Professor Glenn Robert: One option may be to have a much tighter focus in this single paper and not attempt to cover quite so much (theoretical) ground. So, for example, if the findings and discussion are not going to directly draw on the documentary and observational elements of the fieldwork (and I couldn't see quite how they do at the moment) then it might be better to save the organisational/team structure and leadership roles/styles to a further paper. Less may be more in this case! I would suggest going back to your study aim as stated in paper and keeping as close as possible to this (although you could raise the other important processes/factors in the discussion).

Response: As per reviewer’s comment, there is tighter focus on the revised manuscript. Specifically, issues of team structure, leadership style and other organisational and structural elements that influenced the organisational technology adoption process are not discussed in depth in this article. These will form the basis of another output. (Throughout the revised manuscript)

Reviewer 1 Professor Glenn Robert: unsure why you refer to 'innovative thinking across the NHS' on p.5? seems tangential and not the focus of this paper

Response: Text has been revised and ‘innovative thinking’ replaced by ‘innovation uptake’. References have been provided to validate this claim. (p.5)

Reviewer 1 Professor Glenn Robert: at times it is a little unclear whether the way you are applying Damanpour& Schneider's 'how-to' knowledge relates to its original definition ('the information necessary to use an innovation properly') or 'how-to' implement an innovation. I assume its the former but occasionally it appears to drift into the latter and the two are different (to my mind at least)

Response: In the summary table under ‘Key Messages’, point 2 has been amended to provide more clarity on this point. Text has been added in methods (‘Design & theoretical approach’) and discussion (‘Important differences in results with other studies’) to provide further clarification. (p.3, p.8, p.24)

Reviewer 1 Professor Glenn Robert: p. 10 is there a typo: 'star-up' list??

Response: There was a typo indeed. The correct is start-up. This has now been remove in any case as it is a technical term as suggested by Reviewer 2. (p.11)

Reviewer 1 Professor Glenn Robert: ref 13 (SDO report I co-authored) subsequently published as a

journal article in Journal of Health Services Research & Policy (2011).

Response: Reference 13: the SDO report has been replaced by the Journal article. (p.4, p.27)

Reviewer 2 Dr Ipek Gurol Urganci: In my point of view, the most interesting contribution of the study was to demonstrate how type of trusts, professional backgrounds and leadership roles influence prioritization of innovation knowledge and therefore the adoption process.

Response: The revised manuscript reflects a tighter focus on innovation knowledge, trust type and professional groups, excluding leadership style and organisational role of key leaders. This is in line with the reviewer's comment below to shorten the paper. (Throughout the revised manuscript)

Reviewer 2 Dr Ipek Gurol Urganci: All terminology, in particular those related to the three phases of adoption, should be defined early on and used consistently. My personal preference would be using "initiation, adoption, implementation" as it is more commonly recognised in the literature.

Response: The three phases defined as stages of the organisational technology adoption process have been added in parenthesis in the abstract under 'objectives'. Initiation, adoption decision and implementation have now been used consistently throughout the text. (p.2, p.22)

Reviewer 2 Dr Ipek Gurol Urganci: Similarly "knowledge" and "evidence" were frequently used interchangeably. The study focuses on knowledge in the initiation stage, and the title / text should reflect that.

Response: The title of the paper has been amended to reflect this point. Text has been added to provide definitional clarity of the terms knowledge and evidence as applied in the article in methods section. ('Design & theoretical approach'). Consistency of terminology has been checked for throughout the article. (p.8)

Reviewer 2 Dr Ipek Gurol Urganci: The authors should not assume that the reader is familiar with qualitative research methods (e.g. using terms such as "ground up", "star-up list") and clarify any technical language.

Response: We have now replaced qualitative technical language in the methods section. Apologies for adding extra confusion by introducing a typo here. (p.11)

Reviewer 2 Dr Ipek Gurol Urganci: Results on how the timing of "how-to" knowledge influences the success of adoption are already presented well in the text with examples. Table 3 does not add any extra information, therefore could be omitted. However, the authors should include a short introductory paragraph describing the variety of the technologies discussed in the study.

Response: We feel that Table 3 provides evidence of technologies directly linked to adoption decision and implementation outcomes. The detailed examples and quotes in the text then add tangible examples for the reader. The nature of technologies is described in detail elsewhere and have we have sign-posted the reader in the text now by citing the relevant source. We have therefore retained the table and revised the paper throughout to make it more concise and hence reduce word length. (p.12)

Reviewer 2 Dr Ipek Gurol Urganci: Is there sufficient data to comment on whether / how the complexity of the technologies interact with type and timing of innovation knowledge used in adoption decisions? Would this interaction also influence success of implementation?

Response: Reflection on this important point has been included at the start of the section on main findings. A general typology of technologies considered in isolation from context did not provide insights to likelihood of adoption. There are examples of same technologies in diverse trusts and at different stages of the processes that resulted in differential outcomes reported in Table 3. (p.12)

Reviewer 2 Dr Ipek Gurol Urganci: the main text is very long (over 4400 words). There are a number of repetitions in the text. The readability would greatly improve if the authors made the text more concise and to the point.

Response: The manuscript text has been thoroughly revised to improve readability and accuracy. The section on leadership style of DIPCs has been removed to provide a sharper focus. The word count is now: 3,960 compared with 4,435. (Throughout the revised manuscript)

VERSION 2 – REVIEW

REVIEWER	Professor Glenn Robert Chair in Healthcare Quality & Innovation National Nursing Research Unit King's College London United Kingdom
REVIEW RETURNED	05/03/2012

The reviewer completed the checklist but made no further comments.