**Author's response to reviews**

**Title:** Using diffusion of innovation theory to understand the factors impacting patients’ acceptance and usage of consumer e-health innovations: a longitudinal case study in a primary care clinic

**Authors:**

Xiaojun Zhang (xjz787@uowmail.edu.au)
Ping Yu (Ping@uow.edu.au)
Ir Ton A. M. Spil (a.a.m.spil@utwente.nl)
Jun Yan (jyan@uow.edu.au)

**Version:** 6  **Date:** 16 December 2014

**Author's response to reviews:** see over
This paper investigates facilitators and barriers for patients’ acceptance and ongoing usage of consumer e-health services. Using Rogers’ innovation diffusion theory as the theoretical lens, this study examines the patients’ perception towards a consumer e-health innovation – an e-appointment scheduling service, in a primary care clinic in Australia. Data was collected from in-depth, semi-structured interviews and computer log records. The findings of the study provide support for healthcare organizations to consider the general public’s preference before implementing a specific consumer e-health solution. This is vital for the success of consumer e-health innovations.
Ethics statement

Please include the full name of the ethics committee that approved the study in the 'Methods' section of the manuscript.

Answer: On page 13, line 312: This study was sponsored by the University Research Committee (URC) Internal Industry Linkage Grant Scheme.

Abstract

Please provide more information and context for the study in 'Background' section of the abstract.

Answer: On page 2, line 42 – 49: Consumer e-Health is a potential solution to the problems of accessibility, quality and costs of delivering public healthcare services to patients. Although consumer e-Health has proliferated in recent years, it remains unclear if patients are willing and capable to accept and use this new and rapidly developing technology. Therefore, the aim of this research is to study the factors influencing patients’ acceptance and usage of consumer e-health innovations.

Response to comments

<table>
<thead>
<tr>
<th>Review Comment #1:</th>
<th>Response to Reviewer:</th>
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<tr>
<td>1. <em>I am happy with the revision.</em></td>
<td>Thanks for your comments.</td>
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Response to Reviewer: Josianne Marsan

MINOR ESSENTIAL REVISIONS

2.1

*I think your paper would be more conceptually rigorous if you clearly*  

Thanks for your comments.  

In order to conceptually distinguish between adoption and usage, the following section was
distinguish between adoption and usage. In fact, adoption and usage do not represent the same behavior according to Information Systems researchers (Karahanna et al. 1999). IT adoption is considered a prerequisite for IT usage; IT adoption is defined as the initial usage (new behavior) of an IT innovation at the individual level, and IT usage is defined as the subsequent continued usage of an IT innovation at the individual level (Karahanna et al. 1999).


The computer log data was used to investigate patients’ ongoing usage of the online appointment system. The data results confirm the view of Karahanna. The following section was added.

− Page 5, Line 126-132. The definition and concept of IT adoption and IT continued usage have been provided. “According to Karahanna et al. (1999), adoption and continued usage of an IT innovation represent different behavioral intention [20]. The IT adoption is the initial usage (new behavior) of an IT innovation at the individual level, whereas IT usage is the subsequent continued usage of an IT innovation after adoption at the individual level [20]. Consequently, factors determining user’s acceptance of an IT innovation differ from those affecting user’s attitude toward continued usage of the IT innovation [20]. Therefore, it is important to distinguish these two concepts and investigate factors impacting on each of them.”

− Page 30, line 677-679, Karahanna’s study results was used to further distinguish between usage and adopt. “Karahanna et al. (1999) also indicate that trialability appears to be a less important factor in determining an individual’s decision to continuously use an IT innovation after individuals adopt the innovation [20]. ”

− Page 30, line 680-684, the influence of innovation attributes to the individual’s adoption and usage was summarized as following: “In general, the interview results suggest that a high level of relative advantages and low level of complexity are the encouraging factors for the patient to adopt this e-appointment innovation.
However, the computer log data shows that the e-appointment service is still in the initial knowledge stage of the innovation-decision process, and only the ‘innovators’ in the patient population adopt and continuously used this innovation by the time of the field study.”

<table>
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<tr>
<th>2.2</th>
<th>In the section entitled “Perceived advantages of the e-appointment service”, you mention the ability to print out the appointment results, but you still don’t provide a sub-section presenting evidence of this advantage.</th>
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<tr>
<td>2.3</td>
<td>Your paper still says nothing about the procedure for log data analysis. You explain how interviews were analyzed, but you don’t explain how log data was analyzed (see your Data analysis section).</td>
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Thanks for your comments.

- The major advantages of online appointment include after-hour appointment service and less waiting time. The ability to print out the appointment results was not a perceived advantage. Therefore, it has been removed from the section ‘perceived advantages of e-appointment service’. (Page 22, line 502-503)

Thanks for your comments. The description of computer log data analysis was added.

- Page 17, line 374-385, the analysis of computer log data was presented. “In order to investigate patients’ continued usage of e-appointment service, qualitative thematic analysis with coding via Microsoft Excel was used to analysis the computer log data. The analysis results were categorized and coded based on Roger’s innovation-decision model and the topic guide. For example, one patient registered as an online appointment user but never used this service during the whole study period, this patient was coded as ‘logged into the web site but never used’. In case a patient used online appointment service, as well as the phone-call/walk-in appointment service, more than once, then this patient was coded as ‘used both online and phone-call services’. In total, the online appointment users were categorized into
four groups, include (1) logged into the web site but never used, (2) tried once but never used again, (3) used both online and phone-call services, and (4) only used online appointment system”.

<table>
<thead>
<tr>
<th>2.4</th>
<th>You cite Esther et al. (2011) [44], but it does not appear in your list of references.</th>
<th>Thanks for your comments.</th>
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<tr>
<td></td>
<td>Page 13, line 320, - 322 the reference index number has been rectified. The correct citation was changed as ‘The time of the survey was decided based on the research group’s experience with other e-Health system implementation studies, which was also confirmed by Munyisia et al (2011). [45].’</td>
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**DISCRETIONARY REVISIONS**

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<th>2.5</th>
<th>You say: “This study was built based on the previous qualitative interview findings [22]. To increase the scientific value and generalizability of the study, Rogers’ innovation diffusion theory was used as a theoretical lens to analyze the impact of these factors to the patients’ attitudes toward the acceptance or reject of this service.” (Lines 136-140) I think you should add: “Furthermore, a new data set extracted from computer log adds a longitudinal view to this study.”</th>
<th>Thanks for your comments.</th>
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<td>Page 6, Line 145-146, your suggestion was added.</td>
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<th>2.6</th>
<th>I suggest that you split your section “The e-appointment scheduling service and</th>
<th>Thanks for your comments.</th>
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<td></td>
<td>The section has been spitted into two different sections.</td>
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The diffusion of innovation theory” into two different sections: “The e-appointment scheduling service as an IT innovation” and “Theoretical basis”.

| diffusion of innovation theory” into two different sections: “The e-appointment scheduling service as an IT innovation” and “Theoretical basis”. |  |