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Pre-launch evaluation checklist for online health-promoting communities

Joakim Ekberg [a,*], Elin A. Gursky [b], Toomas Timpka [a,c]

[a] Department of Medical and Health Sciences, Linköping University, SE-581 83 Linköping, Sweden
[b] Analytic Services Inc., Arlington, VA, USA
[c] Centre for Public Health Sciences, Linköping, Sweden

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ABSTRACT

Background: Despite the apparent potential of online health-promoting communities (OHPC), there is limited guidance available for developers on the basic design features that contribute to successful applications. The aim of this study was to develop a checklist for a pre-launch evaluation of OHPCs incorporating the perspectives of both the user and the health services communities.
Methods: The study was based on an action research design. Constructs previously applied to evaluate information system success were used as the basis for checklist development. The constructs were adapted for the OHPC context and formatively evaluated in a case study project. Evaluation data were collected from participatory observations and analyzed using qualitative methods.
Results: The initial OHPC checklist included the constructs information quality, service quality, and subjective norms. The contextual adaptation of the information quality construct resulted in items for content area, trust, and format; the adaptation of the service quality construct in items for staff competence, prompt service and empathy; and the adaptation of the subject norms construct in items for social facilitation, interconnectivity and communication. The formative evaluation demonstrated the critical need to balance the autonomy of the online community with the professional control of health services quality expressed in the information and service quality constructs.
Conclusions: A pre-launch OHPC evaluation checklist has been designed for use in practical development of health promotion web resources. Research on instruments for OHPC evaluations is warranted.

1. Background

As a result of the prevalent use of the Internet and social media, the community concept is no longer limited to physical locations [1]. An online community refers to a gathering of individuals in a virtual space that form a network and participate in long-term public discussions on common interests or experiences [2]. In contrast to traditional communities, online communities are not connected through a shared focus on physical tasks and activities [3]. Rather, emphasis is placed on cognitive tasks such as learning and planning, which are suitable for the virtual space [4]. Medical services have also embraced the opportunities and challenges of such virtual settings in the form of, e.g., Internet-mediated treatments [5,6], patient-governed clinical information websites [7] and support groups for disease self-management [8].

Prevention of specific diseases via web-based interventions has matured into a relatively well-documented intervention alternative. Unfortunately, few studies on web-based health promotion have been published [9,10], although across the prevention spectrum, health promotion may offer the greatest return on investment by sustaining quality of life and avoiding disease and injury.

The development of open source and easy-to-use content management systems (CMSs) makes it possible to start up an online community. CMSs are flexible enough to host information resources addressing a wide range of topics related to lifestyle and healthy living conditions without the need for specialized computer science competence. Despite the apparent potential of online health-promoting communities (OHPC), limited guidance is available for developers on the basic design features that contribute to successful applications. For instance, the success of health promotion interventions in virtual environments is contingent on the sustained use of intervention resources, although use alone does not guarantee the intervention's intended effect. The

Abbreviations: CCS, cascading style sheet; CMS, content management system; IS, information system; OHPC, online health-promoting community.

* Corresponding author.
E-mail addresses: joakim.ekberg@liu.se (J. Ekberg), elin.gursky@anser.org (E.A. Gursky), toomas.timpka@liu.se (T. Timpka).

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development of a health information system is usually informed by requirements derived from both primary end-users and health service managers [11,12]. If end-user requirements are given precedence in the design of an OHPC, it may stimulate use but fail to lead to beneficial health effects. Conversely, if requirements derived from the health service are given precedence; the online community may fail to attract the intended end-users [13].

An online community can flourish only when it is perceived useful and is embraced by a critical amount of users sustaining online activity. Consumer health informatics refers to the provision of health information resources to consumers via the Internet. It has been noted that, in reaching out to health consumers, the field should make use of health information resources ranging from static informational Web pages to patient forums and virtual reality environments. Additionally, consumers' information needs and usability concerns should be given specific consideration [14]. An individual's motivation to use an online community is contingent on his/her perception of the usefulness of the online community and its specific cultural, social and technical context. This interplay between information system (IS) design and success has been associated with at least five constructs: systems quality, information quality, service quality, user satisfaction and net benefit [15]. Moreover, it has been found that these constructs need to be highly contextualized to specified information resources in order to be useful [16]. Previous research on online communities has pointed to several constructs shown to be associated with their success, both in terms of use rate and net benefit [17]. Service quality has been shown to be particularly important for user satisfaction [18].

The aim of this study was to develop a checklist for pre-launch evaluations of OHPCs that covers the perspectives of both the user community and the health services sector. The purpose of such a pre-launch checklist is to utilize experiences from previous evaluations of ISs to identify potential problems in an OHPC under development. In the present case, the checklist was used to evaluate an OHPC before its introduction to end-users.

2. Methods

The study was based on an action research design. Action research involves the process of actively participating in an organization change situation while conducting research [19]. In the current study, development of a prototype OHPC evaluation checklist was initiated by researchers reviewing and analyzing the literature on IS success. The resultant checklist was applied as a formative evaluation in a case study implementation of an OHPC, where the researchers participated both as agents in the development process and as observers of the same process. Data from this process were collected and analyzed using qualitative methods.

2.1. Case study setting

The case study county (total population 420,000) is situated in the south east of Sweden. To counteract the growing incidence of obesity among young adults, the county recognized the need for health policy and health promotion initiatives specific to this age group [20]. Consequently, both public health practitioners and researchers embarked on a public health intervention initiative aimed at adolescents and obesity. A needs analysis was performed using data from focus group interviews with adolescents, which was moderated by a researcher and a local public health representative. A requirements analysis performed by an interdisciplinary expert team consisting of two computer scientists, an interaction designer, a cognitive scientist, and a sample of young adults. A prototype OHPC was then drafted using the website content management system Joomla! (http://www.joomla.org). The resulting OHPC design was demonstrated and discussed in meetings and through telephone conferences with representatives from regional public health services, public health researchers and senior public health officials. The OHPC design was subsequently modified as a result of this input.

2.2. Contextual adaption of OHPC evaluation checklist

Constructs used in evaluations of IS success served as the basis for the formation of a prototype OHPC evaluation checklist. The inclusion criteria for concepts in the checklist were that (1) they had been reported valid for evaluation of IS success (ISS), and (2) were available for application before the introduction of the OHPC to the end users. A meta-narrative review [21] was performed on the literature on evaluation methods for IS success. The meta-narrative review method was chosen because it is pluralistic rather than normative (i.e., it asks not 'what is the best approach to researching this topic?' but 'what can we learn from the range of different approaches?').

A web search on ISS research, a search of the PubMed database using the search terms 'information system success', and a seminal overview article of the IS success framework [15] were approaches used to identify a basic set of publication records (Fig. 1). The abstracts of these publications were assessed for relevance, and 14 publications were used in the final analysis of constructs [15–18,22–31]. From these publications, six instrument categories were identified: the DeLone and McLean model of ISS [15], the SERVQUAL instrument [22], Mirani and Lederer's instrument [24], adaptations of the Balanced Scorecard [25,26], instruments for measuring the individual impact of ISs [27], and the user satisfaction model [30]. Finally, constructs applicable to the pre-launch evaluation of OHPCs were selected from these instrument categories. The constructs were adapted to the OHPC context and combined into a preliminary checklist to be used in the formative evaluation. The justifications for each construct adaptation were recorded by the researchers.

2.3. Formative evaluation of test checklist

Formative evaluation data were collected from a process whereby the test checklist was applied to evaluate the case study OHPC. The OHPC, not yet introduced to its end-users, was assessed by the researchers using each construct in the checklist. The

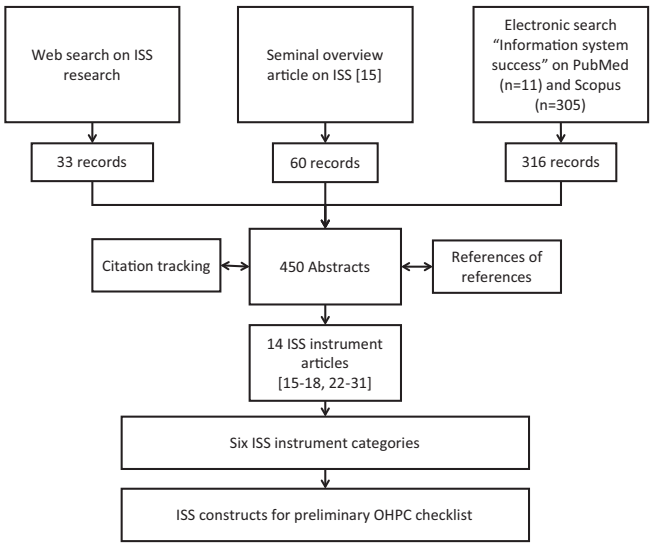

Fig. 1. Meta-narrative review on evaluation methods for IS success.