College Students' Value Structure of Choosing and Using Mobile Health/Wellness Applications: Preliminary Findings

Wonchan Choi[1] and Besiki Stvilia[1]
[1] School of Library and Information Studies, Florida State University

Abstract
This work-in-progress poster reports on the preliminary findings regarding college students' value structure of how to choose and utilize mobile health/wellness applications. We have conducted surveys and follow-up interviews with college students who have been using mobile health/wellness applications. In this poster, we analyzed the survey data from sixteen participants and the interview data from five participants (three females and two males). The analysis showed that the most important purposes of using mobile health/wellness applications for college students were recording and managing personal health information/records and keeping up with their fitness plans. For selection criteria, easy to navigate, easy to use, quality of content, customizability, and ratings from other users seemed to play the most important role in college students' choices of certain mobile applications among alternatives.
Keywords: mobile applications, apps, quality, wellness, health
Citation: Choi, W., & Stvilia, B. (2014). College Students' Value Structure of Choosing and Using Mobile Health/Wellness Applications: Preliminary Findings. In *iConference 2014 Proceedings* (p. 1028–1031). doi:10.9776/14360

Contact: wc10d@my.fsu.edu, bstvilia@fsu.edu

1 Introduction

Mobile devices have been gaining popularity among people. For instance, 56% of American adults who are 18 years old or older own a smartphone as of May 2013; particularly, 79% of younger adults ages 18 – 24 years old have a smartphone (Smith, 2013). Accordingly, mobile applications on their smartphones have become useful channels of tailored health/wellness information distribution as well as tools for monitoring, recording, quantifying, and managing the user's health/wellness activities. 19% of smartphone owners used health-related mobile application(s) as of September 2012 (Fox & Duggan, 2012).

Mobile application stores (e.g., iTunes, GooglePlay) list hundreds of thousands of mobile applications. However, it is not always clear whether those applications are grounded in credible sources, such as medical and kinesiology research. In addition, there is little research examining consumers' value structures of how to search and select certain mobile applications among alternatives. More research is needed to better understand mechanisms of how consumers perceive the usefulness and quality of mobile health/wellness applications. Ultimately, identifying the structure of consumer decision-making in selecting a health/wellness application would inform the design of mobile health and wellness applications and ranking algorithms for search engines and online stores and align them better with the consumer's perception of usefulness and quality.

2 Related Research

Although there is little research on the use of information sources that may influence consumer decision-making when selecting mobile applications, there is prior research on quality, credibility, and consumer opinion/sentiment analysis. *Quality* is generally defined as "fitness for use." The quality of information products and services can be evaluated either directly through a systematic evaluation and use or indirectly by using different cues and heuristics (Stvilia, Mon, & Yi, 2009; Sundar, Knobloch-Westerwick, & Hastall, 2007; Wilson, 1983; Winker et al., 2000).

For mobile applications, the small keypads, displays, and limited processing power of mobile devices pose new usability challenges to the designers. Venkatesh, Ramesh, and Massey (2003) found that Web usability guidelines in general might not be directly applicable to mobile Web. Also, Kjeldskov and Stage (2004) showed that usability issues regarding mobile systems can be derived from users using mobile devices in motion and hence experiencing a higher physical and cognitive workload than the users of stationary devices.

The software quality literature can guide this research as well. ISO (2011) defines software quality as a concept which comprises the following characteristics or criteria: functional suitability, reliability, performance efficiency, operability, security, compatibility, maintainability, and portability. In reality, however, most of the mobile application users do not have access or an ability to evaluate the source code of the application. Thus, they cannot help evaluating these criteria either through the use of the application or indirectly by using quality markers and social metadata such as other user's evaluations and quality incident reports. The literature provides several typologies of software quality incidents and quality problems (e.g., Fenton & Pfleeger, 1991; Fenton & Neil, 1999).

More research, however, is needed to examine what consumer expectations of and priorities for mobile health/wellness application quality and quality cues are. Moreover, it is necessary to develop an integrated model(s) and knowledge base for the indirect evaluation of mobile health/wellness applications by consumers.

3 Research Questions

This study addresses the set of research questions below:

- RQ1: What kinds of mobile health/wellness applications do student use?
- RQ2: What are the purposes and features of those mobile applications?
- RQ3: How do students search for mobile health/wellness applications?
- RQ4: What are the metadata, social cues, and strategies that students use to select a mobile health/wellness application among the alternatives?

4 Methods

4.1 Instruments

The information quality (IQ) criteria developed by Stvilia et al. (2009), the typology of software quality (SQ) proposed by Fenton and Pfleeger (1991), and a review of the related literature guided the construction of a survey instrument and interview protocol. The initial version of the instrument was pilot tested with eight doctoral students in July 2012 and revised based on their comments.

4.2 Data

A purposive sampling approach was used to recruit appropriate subjects for the research (i.e., college students using mobile health/wellness applications). Participants were recruited through the Facebook page of the University's student fitness and wellness center. Each participant completed a survey and a follow-up interview in one-on-one, face-to-face meetings. The data collection is still underway. As of September 15th 2013, sixteen participants have been recruited. This poster presents a preliminary analysis of survey data of all sixteen participants and related interview data from randomly selected five participants (three females and two males).

5 Preliminary Findings

62.5% of the participants (10 out 16) were female students. For ethnicity, the majority of the participants were White Caucasians (13 out of 16; 81.3%), two were Hispanic or Latino (12.5%), and one defined himself

as multiracial (6.3%). In terms of education level (status), 75% (12 out 16) were undergraduates, 12.5% (3 out of 16) were graduate students, and one was pursuing a non-degree certificate in the college.

The most frequently mentioned mobile applications by the participants were *MyFitnessPal* and *Lose It!* (6 out of 16). Other applications mentioned by more than one person included: *Nike+ Running*, *Runtastic Pro*, *C25K Free*, *MapMyRun*, and *Fitbit*.

87.5% of participants indicated that they use mobile heatlh/wellness applications to record and manage personal health information/data/records. 81.3% used these applications for keeping up with a fitness plan, and 43.8% (7 out of 16) used them for designing a fitness plan.

Regarding RQ3, which is asking about how students search for mobile wellness/health applications, several participants mentioned in the follow-up interviews that they learned about the applications from health/wellness-related articles on the Web or magazines; other participants said that they directly went to application stores (e.g., iTunes or GooglePlay) and searched for applications by using terms representing the functionalities they were looking for, such as calorie counter, nutrition facts, and running:

> "I read about it in a magazine …. it wasn't an advertisement per se. Just saying, ideas of good to use to check your calorie" (p04).

> "I think I searched something similar to nutrition facts in the app store, and this was one of them that showed up" (p05).

Criteria	Mean	SD
Easy to navigate	6.63	0.62
Easy to use	6.44	0.89
Provides high quality content	6.31	0.87
Allows personalization	6.19	0.83
Has high ratings from users	6.13	0.89
Free (No charge)	6.00	1.26
Includes little ads	5.81	1.47
Ranked high by a search engines or mobile apps stores	5.50	1.32
Looks professionally designed	5.31	1.54
Is linked to by a site you think is believable	5.31	0.89
Provides additional health/wellness information and tips	5.00	1.32
Recommended by friend(s)	4.88	1.67
Have a good experience with the related website	4.81	1.11
Represents/produced by an organization you respect	4.69	1.14
Recommended by social media	4.56	1.26
Includes a clear privacy policy	4.50	1.55
Recommended by a newspaper/magazine	4.44	1.36
Recommended by a doctor	4.38	1.63
Includes sources, author credentials, and affiliations for content	4.00	1.32
Has a third party quality approval/review seal	3.94	1.00
Is advertised on the radio or TV	3.81	1.60
Displays an award it has won	3.69	1.20
Represents/produced by a non-profit organization	3.38	1.36

Table 1: College Students' Perceptions on Criteria for Choosing Mobile Health/Wellness Applications

6 Discussion and Future Research

While it is premature to draw any generalizable conclusions with the small sample size (N = 16), this research provides some implications on college students' use of mobile health/wellness applications and their value structure of how to choose the applications. Based on the IQ criteria (Stvilia et al., 2009), the participants' application choices tended to rely on usefulness (ease of use, utility, objectivity). Particularly, ease of use and utility appeared to have a significant impact on their perceptions of application quality; as mentioned above, Easy to navigate and Easy to use were the top 2 (i.e., most important) criteria, which are directly related to one of the IQ criteria, ease of use.

In addition, multi-purpose applications (e.g., *MyFitnessPal* and *Lose It!*) were more popular (i.e., more frequently used) than single-purpose applications (e.g., *Runtastic Pro*, *C25K Free*, etc.); this aspect is related to the IQ criterion, utility. Many participants seemed to enjoy various functionalities in a single application, such as monitoring various types of exercises (e.g., running, weight lifting, cycling, etc.), keeping track of personal health/wellness-related information/records (e.g., weight, height, caloric intake/loss, calorie information of foods, etc.), setting goal calories for the day, and calculating calories to be burned to meet the goal.

The immediate future research plans include collection of additional data and the construction of the model of mobile health and wellness application selection and user by consumers.

7 References

Fenton, N. E., & Neil, M. (1999). Software metrics: Successes, failures and new directions. *Journal of Systems and Software, 47*(2), 149-157.

Fenton, N. E., & Pfleeger, S. L. (1991). *Software metrics* (Vol. 1). Chapman & Hall London.

Fox, S., & Duggan, M. (2012). *Mobile Health 2012*. Washington, DC: Pew Internet & American Life Project.

ISO. (2011). Systems and software engineering: Systems and software quality requirements and evaluation (SQuaRE) Retrieved September 15, 2013, from http://www.iso.org/iso/home/store/catalogue_ics/catalogue_detail_ics.htm?csnumber=35733

Kjeldskov, J., & Stage, J. (2004). New techniques for usability evaluation of mobile systems. *International Journal of Human-Computer Studies, 60*(5), 599-620.

Smith, A. (2013). *Smartphone ownership: 2013 update*. Washington, DC: Pew Internet & American Life Project.

Stvilia, B., Mon, L., & Yi, Y. J. (2009). A model for online consumer health information quality. *Journal of the American Society for Information Science and Technology, 60*, 1781-1791.

Sundar, S. S., Knobloch-Westerwick, S., & Hastall, M. R. (2007). News cues: Information scent and cognitive heuristics. *Journal of the American Society for Information Science and Technology, 58*(3), 366-378.

Venkatesh, V., Ramesh, V., & Massey, A. P. (2003). Understanding usability in mobile commerce. *Communications of the ACM, 46*(12), 53-56.

Wilson, P. (1983). *Second-hand knowledge: An inquiry into cognitive authority*. Westport, CT: Creenwood Press.

Winker, M., Flanagin, A., Chi-Lum, B., White, J., Andrews, K., Kennett, R. L., Musacchio, R. (2000). Guidelines for medical and health information sites on the Internet. *Journal of the American Medical Association, 283*(12), 1600-1606.

8 Table of Tables