Characterizing Common Features of Recipe Management and Recommender Systems in Mobile Applications

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Abstract

Users' attitudes toward the usability of mobile applications ("apps") influence their wide adoption. This study characterizes common features of recipe management and recommender systems across platforms. Desirability is assessed using app download statistics. Among other features discussed, having a virtual recipe box and social networking function are found to be highly desirable.

Introduction

As the prevalence of obesity keeps rising, nutritional gatekeepers hold the key to reversing this global epidemic. These primary food buyers and meal preparers can affect short- and long-term changes to unhealthy eating patterns in households. Pervasive platforms such as smart phones and tablets can provide recipe and cooking software, such as recipe recommender systems, to help nutritional gatekeepers achieve healthier family dietary patterns.

Adoption of mobile apps is greatly influenced by users' attitudes of usability.[1] To our knowledge, no published study has characterized features of apps that manage and/or recommend recipes. Further, no study has assessed users' desire for such features as an indicator of usability. This study describes available mobile software for recipes and cooking and compares the software's features across apps and app platforms. Results from this study will inform the design of our future recipe recommender system.

Methods

Initially, 29 mobile apps matching the broadest definition of a recipe manager, a searchable database of recipes, were included. Apps developed for iOS (iPhone and iPad), Android, and Windows platforms were analyzed. The xyo.net website was the primary source of feature descriptions and download volumes of apps. Features were ascribed to the apps by the author (DW) using the descriptions provided by the apps' developers.

We characterized features of apps that met the inclusion criterion and with data published on xyo.net before August 31, 2014. Apps labelled as "new" on the website were excluded, as newly released apps have low download volumes naturally. The approximate number of downloads since release was collected for each app. An app appearing on multiple platforms was counted as a single app. Platform-specific download volumes were summed. Two-thirds of all apps were selected for further comparison, consisting of 10 apps with the highest cumulative download volumes and 10 apps with the lowest cumulative download volumes. A feature matrix containing descriptive statistics was constructed for the two groups. We regarded a feature to be discriminative if it had a count difference ≥ 3 between the two groups.

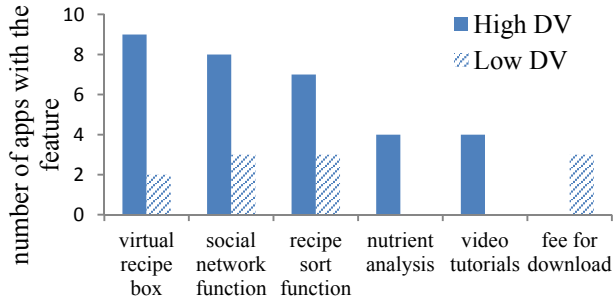

Figure 1. The discriminative features between the two groups of apps.

Results

The highest download volume group ("High DV") and the lowest download volume group ("Low DV") had 72 and 45 features, respectively. Figure 1 shows the six discriminative features. Common features found in the High DV group included a virtual recipe box, social networking function, recipe sort function, nutrient analysis of recipes, and video tutorials. Charging a fee for download was exclusively found in the Low DV group.

Discussion

We compared the features in most and least commonly downloaded recipe management and recommender systems as a design approach to overcome barriers to healthy eating. Our results suggest that free apps offering a large body of features are downloaded more often by users. Discriminative features of highly downloaded apps capture users' preferences or offer guidance and education as general themes. Future work should explore monthly download volumes and other popularity statistics for apps, such as user rankings, as indicators of usability.

Reference

1. Holden, R. J. & Karsh, B.-T. The technology acceptance model: its past and its future in health care. *J. Biomed. Inform.* 43, 159–72 (2010).