Evaluating Persuasive Systems Using the PSD Framework

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ABSTRACT

The Persuasive Systems Design (PSD) is a framework for developing and evaluating persuasive systems. Despite its extensive use as a guide for developing persuasive systems, its use as an evaluation tool for persuasive systems is yet to be exploited. In this paper, we review the PSD framework and use it to evaluate the persuasiveness of Netflix. We were able to identify at least one implementation of all the persuasive principles of the PSD framework.

Keywords

Persuasive systems; PSD; evaluation

1. INTRODUCTION

There is currently extensive research on the use of technology to change people's behavior and attitude without coercion, referred to as persuasive technology [1]. These research include the use of adaptive persuasive systems to increase the effects of persuasion, such as [2]. There is however limited research on how to evaluate these persuasive systems. This paper reviews an evaluation framework for persuasive systems; the Persuasive Systems Design (PSD) framework. This framework comprises of persuasive principles that could be used to develop and implement strategies that encourage personalization and adaptation to user preferences. We evaluated Netflix as a persuasive system using the PSD model.

2. PERSUASIVE SYSTEMS DESIGN (PSD) FRAMEWORK

The PSD framework is a framework for designing an evaluating persuasive systems [3]. It explains the content and functionalities expected in a persuasive system and how a system's design principles can be converted to software requirements and then implemented as features of the system. [3]. The PSD framework comprises of three phases which should be considered in designing and evaluating persuasive systems: 1) understanding key issues behind persuasive systems, 2) analyzing the persuasion context and 3) design of system features.

2.1 Understanding Key Issues Behind Persuasive Systems

This phase of the PSD model describes seven postulates that should be addressed in the design or evaluation of a persuasive system. These postulates are listed in table 1.

Table 1. Postulates of the PSD framework

Postulates	
1	Information technology is never neutral
2	People like their views about the world to be organized and consistent
3	Direct and indirect routes are key persuasion strategies
4	Persuasion is often incremental
5	Persuasion through persuasive systems should always be open
6	Persuasive systems should aim at un-obstructiveness
7	Persuasive systems should aim at being both useful and easy to use

2.2 Analyzing the Persuasion Context

According to the PSD framework, for a system to be persuasive, the persuasion process has to be analyzed in the use context; understanding the role of the persuader, the persuadee, what message is being communicated, the channel of communication and in what context the message is being used. In addition, persuasive systems should also analyze the user context. This includes analyzing the user's needs, interests, motivations, abilities, persistence to change and personality among others.

2.3 Design of System Features

This phase of the PSD model describes the design principles that should be considered when designing or evaluating persuasive systems. There are 28 principles categorized into four groups based on the task the principle is set to accomplish. The principles and their respective categories are described in table 2.

Table 2. Postulates of the PSD framework

Primary Task Support	Dialogue Support	Social Support	System Credibility Support
Reduction	Praise	Social learning	Trustworthiness
Tunneling	Rewards	Social comparison	Expertise
Tailoring	Reminders	Normative influence	Surface credibility
Personalization	Suggestion	Social facilitation	Real-world feel
Self-monitoring	Similarity	Cooperation	Authority
Simulation	Liking	Competition	Third-party endorsement
Rehearsal	Social role	Recognition	Verifiability

3. Netflix As A Persuasive System

Netflix is an acclaimed leading online television network that provides TV shows and movies to its clients for a fee with over 81 million viewers in over 190 countries [4]. We chose Netflix as our case study because of its popularity among users. Due to space

constraints, of the three phases of evaluating a persuasive system using the PSD framework (described in section 2), we only described our findings from the third phase, design of system features. Of the four categories in this phase, we studied the first two; primary task support and dialogue support categories. We present these findings in the following section.

3.1 Primary Task Support Category

Principles in this category support users in carrying out their primary tasks in a system. We were able to identify implementations of all seven principles in this category. Table 3 shows the result of our review of Netflix using the persuasive principles in this category.

Table 3. Analysis of Netflix using *Primary Task Support Principles*

Persuasive principles and their definition	Implementation in Netflix
Reduction Reducing a complex task into smaller ones	Users can register and login with their Facebook accounts instead of filling out a registration form
Tunneling Guiding a user through a process while persuading the user along the way	Option to rate a movie after watching with suggestions of what to watch next
Tailoring Adapt information to specific user groups **Personalization** Persuasive systems should offer personalized content to individuals	Users can tailor and personalize movie suggestions to suit their needs from their profile page. Hence Netflix adapts to fit users individual preferences and choices ensuring that users with different movie preferences do not receive the same movie suggestions
Self –monitoring Persuasive systems should enable users to monitor their performance or progress	Users can track what movies they have viewed previously, their viewing activity, ratings and reviews they have written in the past
Simulation Persuasive systems should allow users to see the link between cause and effect **Rehearsal** Persuasive systems should allow users to rehearse a target behavior	Netflix gives potential customers a one month free trial period where they get to use Netflix like paying users. They have the option of canceling this service without penalty before the one month period if they decide not to become paying members

3.2 Dialogue Support Category

The principles in this category support dialogue between users and the system which helps users achieve their goal or target behavior. Table 4 describes these principles and examples of their implementation in Netflix.

Table 4. Analysis of Netflix using *Dialogue Support Principles*

Persuasive principles and their definition	Implementation in Netflix
Praise	Users can praise reviews of other users by voting them as helpful or not.
Systems that offer praise can be more persuasive than those that do not	
Rewards Persuasive systems should offer rewards to encourage users to keep carrying out their target behavior	Netflix rewards its new users with a free one month trial.
Reminders Systems that remind users of their target behavior are likely to be more persuasive	Netflix emails its users when new movies are added to the system. Netflix also reminds users to rate and review a movie right after watching to improve future recommendations.
Suggestion Persuasive systems should offer suggestions to users	Netflix offers movie suggestions to users in various categories like *popular on Netflix, trending now, Netflix originals, top picks for you*.
Similarity A persuasive system should behave similarly to its users.	Users can create and personalize their profiles so that movie recommendations are as close to the user's preferences as possible.
Liking Systems that appeal to the user are likely more persuasive	The appeal of Netflix to users is subjective and can only be determined through a user study, but it`s high customer base could be an indication of its appeal.
Social role Persuasive systems should take up a social role.	Netflix has a life chat session to support users that need help.

4. CONCLUSION

Though persuasive technology is widely used, there has been little research on evaluating persuasive systems. This paper reviews the Persuasive Systems Design (PSD) framework, a framework for developing and evaluating persuasive systems. This framework comprises of persuasive principles that could be used to develop and implement strategies that encourage personalization and adaptation to user preferences. Using Netflix as a case study, we identified the implementation of the persuasive principles in the third phase of the mode; design of system features. This study can act as a guide for the development of evaluation metrics for persuasive systems. A user study to validate the effectiveness of these principles is currently being proposed.

5. REFERENCES

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