

PROMOTING ENVIRONMENTALLY SUSTAINABLE BEHAVIORS USING SOCIAL MARKETING IN EMERGING PERSUASIVE TECHNOLOGIES

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Abstract

We argue that social marketing, a strategy that uses techniques from corporate marketing to influence the behavior of target audiences, is a useful framework for thinking about motivating people to enact environmentally sustainable behaviors. We critically examine some pervasive green applications through the lens of social marketing and discuss how we might study various persuasive factors encouraged by social marketers in these domains and in our own research.

1. Introduction

Social marketing uses tools from corporate marketing to influence the behavior of target audiences [1, 6]. Kotler and Zaltman, reflecting on successful marketing campaigns for products like soap, observed that some principles might translate to selling social causes. In the ensuing 35 years, social marketing has become particularly widely accepted in the public health domain, where it has been successfully used to influence behaviors concerning drunk driving and childhood obesity, for example. In this paper, we suggest using principles from social marketing to enhance persuasive technologies and help focus them on changing behaviors, and not just raising awareness.

2. Social Marketing: Setting the Stage

In his recent text [1], Andreasen describes a set of concepts, many from corporate marketing, that make the social marketing process effective. While social marketers emphasize the importance of considering the factors listed below, the degree of effectiveness of some of these factors has not been carefully studied. To that extent, one important research contribution will be the study of the effectiveness of these factors in the area of encouraging environmentally sustainable behaviors.

Benefits and Costs

Like obtaining a product, when an individual chooses to enact a certain behavior, they must pay some cost, and hopefully acquire some benefits. The social marketer's challenge is to sell the benefits while minimizing the costs. Related to this is how the benefits are presented. Research shows that the order in which requests of individuals are made can have a significant effect on engagement behavior [7]. In addition, the method of presentation can be very important [10].

Other People

Robert Cialdini has shown that 1) when deciding on a behavior to enact, people are strongly influenced by knowing what others are doing and 2) in certain situations, people report that they do not think they will be strongly influenced by others, but in fact these same people appear to be most strongly influenced by what others are doing [2]. This perhaps surprising result means that social influence can be particularly powerful because people do not guard themselves against such influence.

Self-Assurance (or Self-Efficacy)

Even if benefits, costs and other people are aligned in favor of an individual enacting a certain behavior, that individual may still not act. One reason is that they may believe they cannot enact the behavior. This is where we must provide support mechanisms like support groups (e.g. Alcoholics Anonymous) and skills training [13].

Segmentation and Identity

Because of large variability in target audiences, it is unlikely that treating the audience as one large, coherent market will be successful, and thus we should perform market segmentation. Identity-based marketing is related to this idea. Controlled studies have shown that if individuals with a relevant identity (say they are "green" individuals) that is primed (the individual is given content that surfaces "green" thoughts) are then much more likely to purchase a product related to that identity when compared to green individuals who were not primed [11].

3. Pervasive Green Applications through the Social Marketing Lens

3.1. Highly Sensed Virtual Environments

Green social networking site applications have been discussed in the literature [8] and appear online. One popular green application on Facebook is called "I Am Green" [4]. Users provide the application with a list of their green behaviors. Each green behaviors gets you a leaf, and you are compared to your other friends who have also installed the application. As a leaf collecting competition, it may be effective, but it is unclear if it is actually effective at advocating and motivating users to enact environmentally sustainable behaviors.

Consider the profile view of the "I Am Green" application in Figure 1. What is most prominent is the number of leaves the friends have, not the behaviors they enact. To leverage social influence, the application could instead say "4 of your friends recycle, even when it is not convenient." If four of my friends do it, based on Cialdini's work, we can hypothesize that we are already more likely to enact that behavior. Furthermore, I could click on the behavior and learn more about it, like its benefits and costs. Similarly, popular behaviors could be advertised.

Finally, recall the social marketer's emphasis on audience segmentation. Social networking sites provide such detailed information about individuals and their social network that creating audience segments of size one is possible. Indeed, we hypothesize that presenting users with recommended behaviors based on collaborative filtering instead of the most popular behaviors will lead to increased adoption of the recommended behaviors.

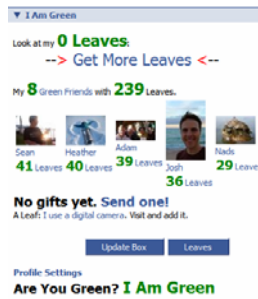


Figure 1: Screenshot from the I Am Green Facebook application

3.2. Dormitory Energy Competition at Oberlin College

On the Oberlin campus in 2005, an energy saving competition was run between dormitories [9]. The dormitories that saved the most energy, over a certain period, would win a prize. Building on the well documented effect of providing energy consumption feedback to reduce future consumption [3], the researchers provided one group of dormitories with real-time consumption information they could view on the Internet (see Figure 2 below for a particular residence, Kade Hall), or on an interactive display in the lobby of the building. Dorms engaged in the competition using these advanced monitoring systems saw significant energy reduction, over and above those dorms that did not have such detailed monitoring technology. However, examination of energy consumption patterns after the end of the competition suggests that the numbers have returned to near their original, pre-competition baseline [5]. From a social marketing perspective, this is not surprising. One of the primary benefits offered to students in the dorms was the potential to win the competition. When the competition is discontinued, both the benefit of having a prize, and the benefit of friendly competition, disappear, and what's left is the somewhat intangible benefit of reducing the campus' electricity consumption and maybe indirectly helping the planet. This is one hypothesis for the return to the baseline. We could examine the benefits hypothesis in future competition by redesigning the benefits to be seen as continually useful. Another possibility is to ensure the benefits remain for a long enough period so that individuals internalize their behaviors. Such work has been done in residential settings.

4. Our Work

We intend to study the effectiveness at reducing consumption of the social marketing concepts outlined above, and game-like mechanisms (e.g. competition, scoring points) as demonstrated in the Dorm Energy Competition. First, we can perform basic experiments in a laboratory setting to study the impact of different social marketing factors incorporated in technologies on behavioral change (as in [2, 7, 10]). In the field, we hope to study these factors in two domains:

4.1 Highly Sensed Virtual Environments

In an online social networking environment, we will build an application that promotes environmentally sustainable behaviors. The application may be similar to the "I Am Green" application, in that users must select behaviors that they enact. Concretely, we would then manipulate the persuasive factors mentioned above for different groups, and monitor the uptake of behaviors. Here are some of the persuasive factors we may study:

Social Influence: since the application sits on top of a social network, we can leverage information about friends. We can present performance information about friends, make comparisons between individuals and their friends

Game Mechanisms (scoring, competition): behavior choices might be translated to a score (like leaves in "I Am Green") and can be billed as a competition amongst participating individuals

4.2 Reducing Individual Energy Consumption in Office Spaces

Office buildings consume a huge proportion of energy in most countries. Lighting and electronics usage by individuals is a significant component of office building energy consumption. We are building a dashboard display for an office space. Based on survey work by the Center for the Built Environment at Berkeley, often office occupants feel they have very little control over energy consumption in their space. Thus, one experiment we may run is between visual displays that only display consumption information, and those that display consumption information and promote appropriate behaviors for changing consumption in the space.

Game mechanisms may also be effective in this domain. A study [12] showed that competition between office spaces yielded increased reductions when compared to spaces that did not compete.

5. About the Authors

Omar Khan is a 3rd year PhD student studying human computer interaction. He is trying to persuade individuals to enact environmentally sustainable behaviors. John Canny is the Paul and Stacy Jacobs Distinguished Professor in the UC Berkeley Department of Computer Science. His research interests include activity-oriented design and educational and persuasive information systems.

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