

Promoting Positive Employee Health Behavior with Mobile Technology Design

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Abstract. In this paper, we present an augmented mobile technology that can enhance the positive health behavior of employees, as well as companies' social welfare. Our proposed mobile technology encourages walking behaviors among employees, which are then transformed into monetary incentives or a tangible donation. We draw on two social behavior theories for our technology design and also introduce a conceptual model that provides a "step-by-step" approach to enhance employees' health and improve social welfare.

Keywords: Health management system, corporate social responsibility, consumer-driven health care, health promotion and wellness.

1 Introduction

The general lifestyle of people in the 21st century lacks basic recommended daily physical activity. This sedentary way of living causes several major public health problems [1]. Research shows that people who are physically active can reduce their risk of developing major chronic diseases such as coronary heart disease, stroke, and type 2 diabetes by up to 50%, as well as reduce the risk of premature death by approximately 20~30% [2, 3]. In addition, physical inactivity at all stages of life (i.e., from childhood to adulthood) contributes to negative effects (e.g., diseases, disorders, and premature mortality), and the risks tend to become greater as people age [4].

Related to sedentary life patterns, the significant amount of time people spent at their office working further reduces physical activity. At the same time, however, the dominant role of workplace in modern society makes it a great setting for health promotion to take place. Any new mechanism that can align health benefits for employees and benefits for firms can achieve this goal. Eventually, both parties can view health promotion programs targeting employees as a solution for a win-win outcome, and not as a trade-off relationship in which one wins, but the other loses.

To this end, the current research intends to fulfill such an opportunity that resides in workplaces. Specifically, by choosing everyday walking as a focal type of physical activity, we propose a conceptual model based on the concepts of corporate social

responsibility and behavioral economics. Given the increasing demand for sustainability and corporate social responsibility (CSR), firms are being asked to perform more socially desirable functions and become an active part of the community. Unfortunately, we have yet to see an integrative perspective of health promotion design that considers the organic relations holistically (employees, firms, the communities). Therefore, we propose an augmented mobile technology that can facilitate the promotion of good health among employees as a solution to benefit all of the related stakeholders. In our proposal we show how everyday walking can have additional meanings in both economic and social conceptual models, and how employees, firms, and communities can all win by adopting these models.

2 Incentive-Based Human Behaviors

The hedonic principle that people approach pleasure and avoid pain has been the basic motivational principle throughout the history of psychology [5]. How incentives affect decisions has been considered critical in economics [6]. People often respond to incentives in change or development of their behaviors.

On the corporate side, firms use this theory to structure employees' compensation in a way that the employees' and owners' goals are in alignment. Financial incentive, and the tools for encouraging certain behaviors or outcomes based on this theory, have been proven effective for obtaining best work performance [7]. Reflecting on the power of incentives to motivate desirable behavior, incentives at the workplace manifest themselves in a variety of forms, such as yearly bonuses, stock options, and pay for performance. In the context of promoting physical activity, the presence of incentives can encourage employees to develop healthy habits, such as regular everyday walking, as we will discuss later.

3 Corporate Social Responsibility

Over the last two decades, corporate social responsibility (CSR) or sustainability has become a significant issue for business strategy. Media coverage of this issue has proliferated, together with public and governmental attention on this topic [8].

Corporate social responsibility (CSR) initiatives cover a wide range of activities, including traditional corporate philanthropy, socially responsible manufacturing practices, and community involvement. Prior research has found that CSR initiatives can have a positive impact on a company [9, 10]. For instance, "consumers want to buy product from companies they trust; suppliers want to form business partnerships with companies they can rely on; employees want to work for companies they respect; and NGOs, increasingly, want to work together with companies seeking feasible solutions and innovations in areas of common concern" [11].

CSR emphasizes that businesses should cooperate within society [12]. CSR means more than merely making financial contributions. People expect corporations to be engaged in their communities in a variety of ways. It also involves multiple stakeholders, including the government, shareholders, employees, consumers, the media,

suppliers, NGOs, and the general public. Satisfying each group while minimizing conflicts will allow companies to develop a new win-win situation.

The enhancement of employees' health is a domain in which the CSR concept is readily applicable. Employee illness can increase healthcare costs. Further, it may reduce productivity or increase uncertainty via unanticipated absences. In fact, several research studies show that workplace health promotion programs can generate more profits than they incur in costs [1, 13]. Therefore, designing successful interventions in employee well-being will provide significant returns, such as increasing productivity, profitability, and savings in healthcare costs. CSR can also be used as a way to connect companies to non-profit organizations. In our proposed model, we describe dual routes by which an individual employee's physical activity for good health can contribute to an increase in a company's CSR.

4 Conceptual Models to Improve Employees' Everyday Walking

We propose a conceptual model to encourage employees' everyday walking. Employees can opt for a commuting option requiring more walking. They can use their break time for a 10-minute walk, or they can use the stairs instead of elevators. They can even use lunchtime for 30-minute group walks outside of the building.

4.1 Direct (Monetary or Non-Monetary) Incentives

Our model focuses on the individual employee's role and its relationship with cost savings for companies. Figure 1 shows the interrelationship between employees and companies. The key notion herein is that employees' walking behavior is compensated by companies through incentive systems, and companies can reduce insurance costs and enjoy improved productivity.

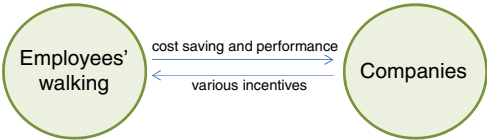


Fig. 1. Basic Conceptual Model

In this model, a company's main roles are: 1) to promote employees' walking by providing sufficient incentives, monetary or non-monetary (for example, promotion, benefit); and 2) to enlighten/educate employees regarding the importance of personal health management and provide easy steps for achieving good health conditions (e.g., walking). The three benefits the company would have are: 1) to reduce insurance costs; 2) to create an active work environment, which may induce job efficiency/efficacy; and 3) ultimately to improve employees' well-being by enhancing their health.

4.2 Indirect (Social) Incentives

Our basic model can be extended to include another component, where corporations can exercise CSR initiatives in a broader context, and eventually become better corporate citizens: charitable giving toward non-profit organizations in their local communities. Figure 2 describes how the basic model is extended.



Fig. 2. Extended Nonprofit-based Model

An additional role that the companies should play are: 1) to envision a societal role for firms among employees; 2) to add social meaning to the employees' participation in the walking program; and 3) to select the causes or charity organizations as the beneficiaries. A company's benefits are also extended: 1) to gain a positive brand image and social legitimacy from the public; 2) to increase awareness of the brand among prospective consumers; and 3) to gain tax benefits.

5 Technological Implementation

To make this initiative involving employees' walking and incentives proportionate to their walking activity, we employ mobile technology in our design.

Currently, pedometers or step counters are popularly used as everyday exercise measurers or motivators. Pedometers are portable and can also be integrated into personal electronic devices, such as mobile phones. There are five main features implemented in the mobile phone application: Steps, Distance, Calories, Progress, and Donation. For example, the Steps icon shows the number of steps a person takes. The Distance icon displays a user's walking distance in miles or kilometers. The Calorie icon shows a user's calculated calories burned, based on the user's exercise, considering the individual's weight, height, walking distance and the level of the ground. By employing GIS technology, the difficulty level of the area will be calculated, which is then used for calorie calculation. For example, walking uphill will be differently calculated from walking on level ground or walking downhill. The Progress icon will show the temporal pattern or progress up to date. If a person sets a certain goal for a certain month, a status in comparison to the end point can be displayed, so as to further motivate the walker. Lastly, the Donation icon will enable the walker to allocate his/her incentives that have accumulated to either his/her own incentives or donations to nonprofits. Additionally, the walker will be given a list of nonprofits or causes, from which s/he can choose the beneficiary of his/her walking.

6 Conclusion

In this paper, we proposed a conceptual model that seeks to increase everyday walking for employees, decrease health insurance costs for employers, and ultimately contribute to our society's well-being: a win-win situation. By using this overarching model, companies will simultaneously meet two goals: promoting their employees' health, as well as increasing corporate social responsibility. An augmented mobile technology can play a new role as a facilitator to help companies increase cooperative social responsibility through a change in employees' lifestyles. We use simple everyday walking as an example of physical activity. However, it can be extended and modified by applying this model to other forms of contributions from individual employees in addition to other methods of promoting companies' corporate social responsibility.

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