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Gamification and social dynamics behind corporate cycling campaigns

Alexandra Millonig ^{a*}, Matthias Wunsch ^a, Agnis Stibe ^b, Stefan Seer ^a,
Chengzhen Dai ^b, Katja Schechtner ^b, Ryan C.C. Chin ^b

^aAIT Austrian Institute of Technology, Mobility Department, Giefinggasse 2, 1210 Vienna, Austria

^bMIT Massachusetts Institute of Technology, Media Lab, 75 Amherst St., 02139 Cambridge, MA, USA

Abstract

The promotion of cycling is of great importance for fostering sustainable and healthy modes of transport in urban areas. For this reason, many cities around the world organize biking competitions in order to motivate citizens to commute by bike. The success of such campaigns appears to demonstrate the positive effects of using playful settings for encouraging a specific type of behavior; however, the actual determinants of behavior changes have yet to be thoroughly investigated.

This paper presents the results of an experimental bike commuting challenge among 14 companies, which has been conducted in Boston, MA. This six week study involved 239 participants using a socially influencing system for reporting commutes and displaying the rankings. The results revealed a variety of different motivation strategies developed by the companies. Social dynamics (motivating others or being motivated by others) had a very strong effect on the participants, suggesting that emotional aspects (team spirit, fun) have higher potential than more rational factors like health or environment.

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1. Introduction

Being among the oldest forms of transportation, cycling is also one of the most promising future transport modes, especially in urban areas. The benefits of cycling comprise ecological, economic, structural, social as well as

* Corresponding author. Tel.: +43 50550 6672; fax: +43 50550 6439.

E-mail address: alexandra.millonig@ait.ac.at

individual advantages, e.g. cycling is a carbon neutral form of transportation and requires only 1/30 of resources as compared to private motorized vehicles during its life cycle (Lähteenoja et al., 2006); cycling provides major health and financial benefits both on the individual side (low costs) as on the economic side: the estimated value of health benefits and respective reduced mortality resulting from the average 5% modal share of cycling for Austria is 405 million Euro per year according to the WHO Health economic assessment tool (HEAT) for cycling and walking, related health benefits “save” 412 lives every year owing to regular physical activity (WHO, n.d.), and cycling requires less space than private motorized transport (about 10% for parked vehicles and 60% for moving vehicles, only outperformed by walking and public transport with high occupancy levels; Randelhoff, 2015).

However, despite the documented advantages of cycling, in many cities there is still a very small share of cyclists. A range of different barriers to cycling are responsible for the fact that cycling is not perceived as a legitimate form of transport: a negative image of cycling and cyclists in general, perceived dangers involved with cycling, or cycling being considered as inconvenient (Scott and Span, 2009). As many of these barriers are based on individual perceptions and emotional aspects, the provision of cycling infrastructure and access to bikes is not sufficient for getting a large number of people to start biking. For this reason, there are several attempts to increase and foster bike usage by implementing initiatives to promote biking through e.g. gamification and socially engaging approaches in order to motivate citizens to voluntarily switch to more sustainable modes of transport (Richter et al., 2011). However, little is known about the effectiveness of specific factors within such approaches, i.e. whether incentives and prizes, game elements or social dynamics are most relevant in triggering behaviour changes, and how these factors can be initiated most successfully. In order to gain more insight into these mechanics, this paper describes a study investigating which factors are relevant for encouraging biking within a community based competitive biking challenge. Starting from a short overview on related work in this area, the paper describes the biking competition which has been set up for this purpose, the study design and the methodology. The following section summarizes the results and the closing section discusses how these results can be used for the future design of biking campaigns in order to increase biking in cities.

2. Gamification in biking campaigns

In the field of mobility a growing number of attempts for motivating behavioural changes using game elements such as incentives or rewards are emerging. A meta-study on the general use of gamification (Hamari et al., 2014) revealed that there is evidence that gamification produces positive effects and benefits, but that it can also have unexpected and undesired consequences: e.g. negative side effects can be provoked, impacts are very user specific and limited to specific groups, and usually only some – not all – of the mechanics and motivational affordances worked in the studies reviewed. Although the literature on the effects of gamification in mobility is somewhat limited, there are a few confirmed conclusions which can be identified based on the published findings (Millonig and Mitgutsch, 2014):

- Gamification is a useful tool to provoke behaviour and aptitude change in the area of mobility behaviour change (Hamari et al., 2014; Jylhä et al., 2013).
- In particular gamification can enrich the users’ motivation and engagement in specific activities, but also in exploring new possibilities and options (Hamari et al., 2014; McCall et al., 2013).
- When players engage within the game mechanics, behaviour other than intended can occur due to the dynamics set in motion through the game (McCall et al., 2013; Ecker et al., 2011).
- The nature of the gamified systems strongly impacts the effect of the gamification (Hamari et al., 2014).
- Therefore it is key to get a good sense of the users’ motivation, but also of player styles and types (McCall et al., 2013).

Recently, the positive effect of playful elements has increasingly been used in biking programs in order to increase e.g. bike commuting (Pucher et al., 2011). These promotional measures use elements like competition, lotteries, team experience or awards, adding an emotional quality to the more objective arguments for biking, such as health benefits, time saving or climate change mitigation. The campaigns show promising effects, but there are only a few examples

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