

Chapter 9

Motivating Sustainable Recycling Practices Through Persuasive Technologies

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ABSTRACT

Despite the importance of recycling in the current and pressing context of preserving the environment, it is still not adopted by all of us. Several mobile tools have become available with the aim of sensitizing and motivating the population towards sustainable behaviours, with limitations in information availability and in integration with formal as well as informal sources. Moreover, persuasive characteristics, such as the use of gamification also need improvement towards raising competitiveness (and awareness) in the targeted community. The authors thus propose a mobile responsive gamified application for motivating recycling attitudes centred around an interactive map, supported by the curated data of one of the reference companies of the environmental sector in the region. The app includes collaborative persuasive elements as well as validation processes for crowdsourced content proposed by the community. The results of an evaluation process, with promising results, are described.

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INTRODUCTION

Through Recycling, used materials are transformed into new usable products. This process has gained importance in the current and pressing context of preserving the environment and reusing its natural resources (EPA, 2018). Despite the growth in the number of people who now carry out recycling, this behaviour was not yet adopted by all of us. It is necessary to act quickly in this field, educating, sensitizing, and encouraging people to a sustainable use of our planet's resources, and raising awareness for the consequences of their habits soon. In Portugal, recycling services are not standardized across the country, often because they are the result of several partnerships between city councils and a wide range of private companies. The task of informing users of the various existing services is thus complicated, due to the variety of companies operating in these markets. The lack of knowledge about recycling rules and methods can also lead to population demotivation. Thus, it is important to implement mechanisms that are able, at the same time, of informing the population about the recycling services that exist near them, as well as to keep them motivated to practice sustainable activities, such as recycling. Several digital tools have been developed with the aim of addressing this problem, lacking effectiveness in the integration of the relevant information and in maintaining long-term user interest.

We thus present, in this paper, a responsive mobile application, whose main objective is to facilitate the users' recycling process by combining information from various recycling service providers, and using persuasive and gamification techniques, as a way of keeping the users motivated to change their attitudes and behaviours regarding recycling and sustainability. This application also uses crowdsourcing techniques to include the community in the process by sharing data which will effectively contribute to maintain and improve the platform content.

Mobile Technology can play a central role in solving the issues that involve recycling, since it is used by most people in their daily lives, mainly through the use of smartphones. The availability of recycling motivational tools in these conspicuous devices can effectively persuade their owners to take an active role in caring for the environment in which we live and, through this, make recycling an activity that is sustainably part of their daily lives.

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Since its beginning, this project has had the contribution of Amarsul¹, a company that operates in the market for the management of solid urban waste in the District of Setúbal. Amarsul provided access to the recycling spots database used in the project, which includes the geographic location of the collection spots, the supported recycling materials for each spot and the collection schedule. Amarsul updates this data daily, providing, almost in real time, updated information about its collection spots, through API access.

RELATED WORK

In this section, we analyse existing recycling applications which involve the use, to a certain extent, of a spatial context, as well as gamification and persuasive technologies, during the recycling activities led by the users. The success of the application of these approaches is analysed in the context of the state of the art in this topic, with a reflection and proposed improvements, supported by the work.

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