

Game of Charity: Gamification of a Vending Machine for Charity to Enhance Happiness and Brand Connection

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ABSTRACT

The following research aims to explore the possibilities of increasing the feeling of happiness connected to the experience of donating as well as the related customer-brand connection, by designing a vending machine for charity. The experiment focuses on the use of gamification in order to enhance the playfulness and enjoyment of the interaction between the user and the machine. Basing on related studies, it also explores the possibility of strengthening or enhancing the connection between customer and charity through emotional arousal.

The results of the experiment can be considered positive as far as it led to an increase of both brand connection and happiness in the act of donating by means of the vending machine, though they resulted not specifically related to the gamification adopted in its design. The playful design, however, increased the overall quality of the experience towards a higher order of enjoyment.

INTRODUCTION

The objective of this research is to explore the possibilities of engaging customers on a short- and long-term perspective towards donating money to charity. In order to achieve that, a previous research [6] has been taken into consideration regarding the enhancement of strong customer-brand relationship through emotions, a psychological state of arousal which can be induced in customers by using a product from a specific brand creating a deep connection. In the case of this research, the focus is on the enhancement of the emotional state of happiness, linked by several research studies to the act of donating money [1][7].

Considering a vending machine as a standard automatic dispenser (for example, for soft drinks) and a playful response as an interaction designed adopting the use of game mechanics and game techniques [2], the aim of the experiment is to induce the mentioned state of happiness in

the selected subjects by testing a vending machine, specifically designed to give a playful response to the act of donating money to a certain charity. Charity can, for instance, be defined as a non-profit organization of people working in order to raise money (or other kinds of goods) to help people in need.

The influence of emotions and, in particular, of receiving benefits in the form of gifts, before or after donating money to charity, has already been experimented, but little or nothing has yet been done regarding the possible influence of emotions to donating in a human-machine interaction, instead of the more widely adopted human-human interaction. The question aimed to be explored with this research is then: to what extent can a playful response to giving money for charity by means of a vending machine enhance happiness and brand connection?

RELATED KNOWLEDGE

Creating happiness through donating money

In current pop psychology, it is widely accepted the association of emotional benefits, such as increased happiness, to donating. This is thanks to a recent study conducted by Anik, Aknin, Norton and Dunn [1] which investigates this theory providing a clear overview of previous studies related to it: it introduces evidences on brain activity, connected to the act of giving money to charity, which can be compared to the activity of a brain experiencing pleasure or receiving rewards [7]. Other studies [5][8] aim to demonstrate as well the psychological outcomes of the act of giving: decreased levels of anxiety, depression and stress, which can be interpreted as an increase in the feeling of happiness. Even though, the mentioned research [1] shows no relations between personal spending and happiness, it links the act of spending to social causes. With an overall on these studies it is then possible to make the following assumption:

donating to charity can lead to an increase in the feeling of happiness.

Another relevant aspect in the study by Anik, Aknin, Norton and Dunn [1] is the theory that informing the subjects on the benefits that result from donating does not negatively affect the positive outcome of it, which is relevant to the methods of experiment presented in this paper.

Brand connection and emotional benefits

It has been recently acknowledged through important research [6] that design should be an integral part of marketing strategies basing on how design and, in the specific, design benefits can be responsible for the enhancement of customer-brand relationships by means of emotions.

Emotions are, in fact, a physiological state of arousal that can be triggered by design benefits, to be interpreted as the features designed into a product, consequently to the interaction between customer and product. To further explain what design benefits are, it is convenient to divide them into three categories, as it follows:

- Functional design benefits are related to the functions designed in the product itself, its usability. They link to a behavioural level of design [10] which can only lead to low order emotional responses such as mere satisfaction or dissatisfaction [6].
- Hedonic design benefits define the sensorial aspect of how products feel, look, smell, or sound. This is, according to Norman [10], the visceral level of design, responsible of evoking deep emotions in the consumer. The hedonic design benefits “can be used to stimulate the full range of human senses” [6], thus a deep level of engagement between brand and customer.
- Symbolic design benefits define what a product means or represents by conveying social, self-expressive or terminal values to the customer. They represent the reflective level of design [10] and they can, according to Franzak, Makarem and Jae, lead to a more intense level of emotional arousal than hedonic design benefits do [6].

Evoking emotions through design benefits can then be considered the key for building a strong and long lasting customer-brand relationship, as we intend to experiment with the hereby presented research.

Fun and Game Design

Research [9] has shown that certain components of play and games, in the specific, the ones responsible for the



Image 1. The designed prototype of vending machine.

engagement of users, can also increase the quality of the user experience in the case of products, towards a more enjoyable experience. This, related to branding theories and practice, suggests that it is possible to design products with the use of gaming components in order to obtain a stronger brand connection.

Gamification is tied to the *ludus* concept of play: it involves gaming structures with rules and a competitive strive towards specific goals. This is different from the *paidia* type of play which is a more free, expressive and open concept which and relates more to playing [4]. This research focuses more on the *ludus* concept of play, based on gamification, which results in a so called “gameful” or “playful” experience [9][2]. Although certain research define playfulness as mostly related to the *paidia* type of play, there is often no distinction in the naming of the two, as it can be seen in the PLEX framework [2] where both types of play are defined as “playful experiences”.

The PLEX framework, in fact, categorizes 22 playful experiences under which it names “Competition - Contest with oneself or an opponent” and “Exploration- Investigating an object or situation”, which are used as a base for the prototype made for this research. In this prototype elements such as surprise and patterns (tied to exploration), score (tied to competition) and sound (experiencing emotions more extreme) can be found.

METHODS

Two aspects need to be analysed with the following experiment in order to fulfil the hypothesis posed with the research question. First of all, whether the response of giving money to a certain charity (Amnesty International) by means of the designed prototype of vending machine [Image 1] can be considered playful; only after this hypothesis has been demonstrated the interaction between

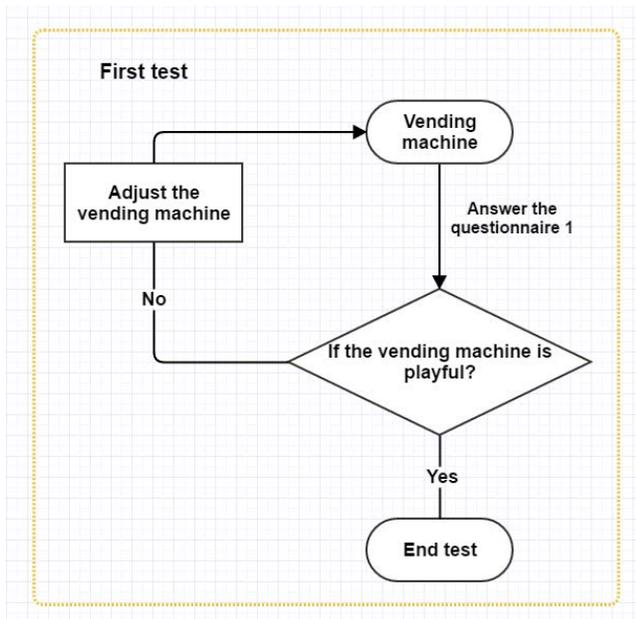


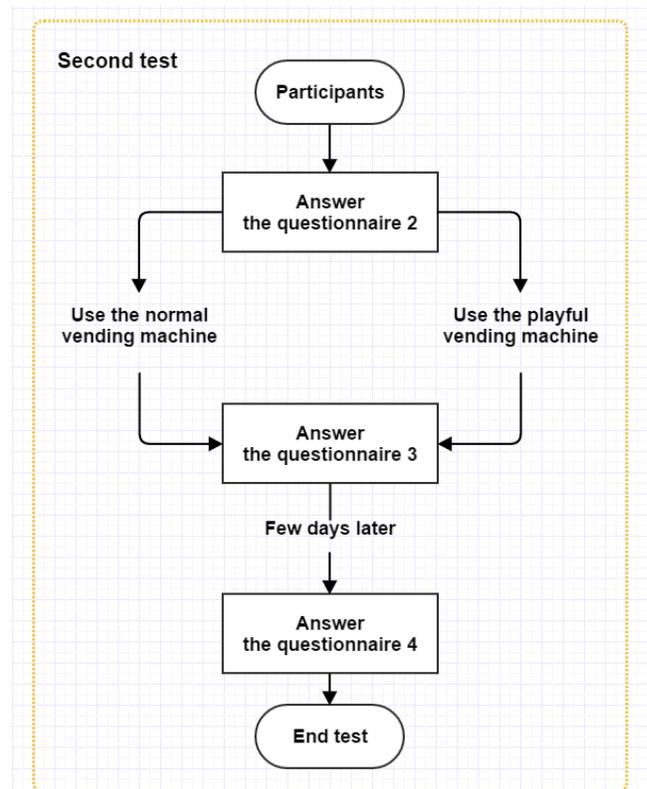
Image 2 (on top). The pilot test setting.
Image 3 (to the left). The final test setting.

user and machine can be adopted as key element of the final user test, adjusting the machine thanks to a first explorative user test. The second and most important aspect to analyse is to collect both quantitative and qualitative data over the influence of the playful response on individual willingness to donate money; eventually, the demonstration of the research hypothesis on the enhancement of happiness and customer-brand connection.

Experiment

The experiment consists of two tests: a pilot test and a final test, operated accordingly to the process described in Image 1 and Image 2, respectively. During the pilot test [Image 2], a number of 10 participants is asked to interact with the vending machine and, afterwards, to evaluate the experience by means of a questionnaire (Q1). The evaluations regarding the first prototype of vending machine mainly focus on collecting insights to adjust its design. Consequently, it has been possible to conclude that the prototype lacked of playfulness in the mean of game mechanics. In order to adjust for it, a point scoring system is then added to the prototype, as well as a playful sound to end the interaction, improving the game feel.

The second and final test [Image 3], is operated asking to two groups of 30 subjects to interact with the designed prototype of vending machine, introduced to solely sell “happiness”. One of the two is considered as control group, which differs from the first group for the machine’s response consequent to the act of donating money: the first group receives a playful response, made of unpredictable



paths and sounds accompanying the final score, whereas the second group only sees the coin dropping without any reaction from the machine. Afterwards, both groups are asked to fill in questionnaires in order to analyse short- and long-term results regarding: the willingness to donate before the test (Q2.1) and the overall experience during the test (Q2.2). Comparing the responses to both Q2.1 and Q2.2, it is already possible to measure whether the playful response of giving money has influence on individual willingness to donating to charity. Furthermore, a third questionnaire (Q3) was sent a week after the test to all the participants, in order to evaluate the experience on a long-term perspective. Comparing the responses collected within Q2.1, Q2.2 and Q3, it is eventually possible to analyse whether the brand connection with the charity has been established.

Session Protocol

The participants to the test are randomly selected in the university campus area, consisting mainly of students. But since only choosing students from one faculty could jeopardize the diversity of evaluations, thus reliability of the study, the participants were selected at the library, which is open to everyone. Each of the subjects is firstly guided to a laptop displaying an introduction to the test and in this moment it is asked to fill in the first part of the questionnaire (Q2.1).



Image 4. Participant testing the playful machine.

The test starts when the participant receives five €0,20 coins and the information that this money is now own and can eventually be kept. The participant is then told to enter a room – supposedly empty, apart from the prototype and the operator (one of the researchers who has to act as the machine) behind it – and it is asked to interact with the machine, having to choose between dropping the money in the machine through the coins' slot or to ignore the test and keep the money. For the group which receives a playful response, when a coin is dropped in, the operator reveals the path that the coin unpredictably follows leading to several possible scores (in points) and a victory sound is played every time a coin reaches the bottom. For the control group, the interactions stops when (if) the participants decides to drop the coin but receiving no reaction from the machine.

In case the participant discovers the operator behind the machine and tries to start a conversation, the operator will make it clear that it's not supposed to happen. Once the participant chooses to leave the room, it is eventually asked to fill in the second part of the questionnaire (Q2.2).

Prototype

The aim of the prototype is to resemble an actual vending machine in order to maintain a sense of realism. Similarly to a standard soft drinks vending machine, a poster is placed on the left side, indicating the charity which is going to benefit of the donation. Together with a note placed on the right side of the prototype, just above the slot where to insert coins, the participants are informed by the researchers on the theory [7] of happiness evoked by donating. The coins dropped by the participants are manually moved by the operator (one of the researchers) behind the machine in order to resemble the actual mechanism of a vending machine [Image 4].

For the control group, nothing more happens than the sound of the coin dropping. In order to achieve the designed playful response, the operator shows a complex track on the

right side of the prototype, directly under the coins slot, by removing a panel and lighting from the back. The operator then drops the coin through the track, which playfully bounce around following an unpredictable path until it lands in one of the seven columns on the bottom. Since the coin's path differs every time, participants can explore its possibilities by dropping in multiple coins.

Questionnaires

During the experiment, three different questionnaires have been used to evaluate several aspects regarding the interaction with the designed prototype and chosen charity. During the pilot test (Q1): the user experience of the vending machine. During the final test (Q2.1 & Q2.2): the overall experience, the feeling of happiness, the brand connection. After the test (Q3): the willingness to donate after few days from the interaction with the prototype.

To gather quantitative data over the participants of the test, the 7 point *Likert* scale has been adopted to evaluate the emotional state of the participants. To adjust the design of the vending machine, Q1 turned out to be an important evaluation to take in consideration for further developments. The questionnaire Q2.2 and Q3 were, instead, used as main data collection of the test for the final analysis, focused on the willingness to donate money to the particular charity. Each of the two questionnaires posed, in fact, similar questions, such as the personal feelings towards the specific charity.

The data gathered this way was necessary to show the variations over time in the emotional state evoked by the vending machine. This way, it is possible to elaborate short and long term prospects on brand connection and willingness to donate money to the charity.

All questionnaires can be found in appendix B.

RESULTS

Elaborating the data gathered from the experiment, it was possible to draw the following results.

Experienced playfulness and enjoyment

The T-Test for perceived playfulness of the experience provided by the two machines showed that the playful machine was perceived significantly more playful ($M= 5.40$, $SD= 1.40$) compared to the control machine ($M= 3.67$, $SD= 1.12$), $t(58)= -5.28$, $p= 0.000$. The T-Test for enjoyment of the experience provided by the two machine also showed that the playful machine ($M= 5.17$, $SD= 1.23$) was experienced significantly more enjoyable than the control machine ($M= 4.00$, $SD= 1.17$), $t(58)= -3.75$, $p= 0.000$.

Thus, a playful response to donating, when acted by means of a vending machine, leads to the perception of the specified machine as more playful and the perception of the donating experience as more enjoyable.

Happiness trough donating

The T-Test for the increased happiness after using either the playful (M= 5.00, SD= 1.20) or control machine (M= 4.53, SD=0.78) showed no significant difference, $t(58) = -1.79$, $p = 0.079$. However, both groups scored well above average on increase in happiness.

From this data it can be assumed that donating through a vending machine increases the happiness state.

Brand connection

The T-Test for brand connection to Amnesty International immediately succeeding the interaction with the vending machine showed no significant differences between the playful (M= 4.03, SD= 0.96) and the control machine (M= 4.20, SD=1.13), $t(58) = 0.61$, $p = 0.54$.

Comparing the results from the two tests operated with the playful machine (the first test immediately succeeding the use of the machine and the second test submitted a week later than the first), focusing on the results to the questions exploring the brand connection, there is no significant difference in the experience of this when comparing the first test (M= 4.00, SD= 1.10) to the second test (M= 4.48, SD= 0.87); $t(20) = -1.48$, $p < 0.5$. However, in the case of the control machine, a significant difference can be evidenced in the experienced brand connection between the results to the first test (M= 4.22, SD= 1.06) and to the second test (M= 4.89, SD= 0.76); $t(17) = -2.29$, $p < 0.05$.

Brand connection to Amnesty International is, indeed, slightly elevated when donating through a vending machine, but there is no significant increase in brand connection between the playful and control group.

Brand connection to Amnesty International increases over time, in the case of the control group, but not in the case of the playful group. However since not all the participants reacted to the second questionnaire it is not possible to consider these significant results.

Feeling obliged

The subjects who experienced the vending machine's playful response to the act of donating felt less obliged to donate money than the subjects who did not experience a playful response, in the case of the control group: the T-Test for the feeling of obligation to donate showed that the subjects felt significantly less obliged to donate when using the playful machine (M= 3.30, SD= 1.93) compared to the subjects who tested the control machine (M= 4.43, SD= 1.83), $t(58) = 2.33$, $p = 0.023$.

DISCUSSION

What was found out from the operated test is that donating through a vending machine increases the emotional state of happiness, as both groups of participants to the test scored well above the average, though it is not including any

evidence of an increased enjoyment related to the experience. This differs from the expectation of a stronger increase in the happiness level of the playful group, as the fun experienced with an enjoyable interaction was supposed to be closely related to happiness [3][11]. A possible explanation for similar increases of happiness could be related to the singular act of donating, and not to the playful response succeeding the donation, as responsible for the increased happiness in both groups.

As regards for the brand connection, it was detected no difference succeeding the first test. However, after the second test the connection between the brand and the participants from the control group grew in a significant way. Possible explanations of this relies in the assumption that a vending machine for charity is supposed to trigger the brain to feel happy by donating [1] but, since the user is not provided with a positive experience, in order to recollect the feeling of happiness the brain links this emotional arousal to the image of the charity, enhancing the long-term connection to it. Further research should determine whether this situation is only occurring when donating through a vending machine or if it is as well occurring when interacting with a standard vending machine.

Although the focus is not specifically the feeling of obligation, an interesting finding regarding this topic came out of the experiment: a vending machine that provides a playful response succeeding an act of donating provides the user a higher pleasure during the experience, which overrules the feeling of obligation usually experienced in donate to charity. It could be interesting in relation to the feeling of obligation which is, instead, happening in a human-human interaction with charity, which can possibly be related to a lower pleasure in the experience of donating.

The participant group for the second test was smaller than the selected one to the first test, invalidating the results of the second test. Analysing the results of the second test it is also significant in relation to the brand connection. In order to determine whether these conclusions can be drawn, the test will have to be repeated with a similar amount of participants to both of the tests.

Other aspects that might have influenced the results were: the research group focused mostly on students, the age difference (more than 1 year) between the control and playful group, providing the money to the participants instead of asking them to use own money, the unrealistic vending machine, clearly operated by one of the researchers. To determine if these elements may or may not have had an influence, the test should be repeated in a more neutral context, with an individually functioning prototype.

CONCLUSION

In order to fulfil the hypothesis of this research, basing on the submitted results, it can be concluded that a playful

response to the act of donating money to charity by means of a vending machine does not necessarily enhance happiness and brand connection. It resulted, in fact, that the two machines - the “playful” one, designed adopting game techniques, and the control one, not designed according to gamification purposes - both increased in the participants a feeling of happiness which, therefore, cannot be considered relevant to the use of gamification. However, the playful response increased the quality of the human-machine interaction accomplishing a more enjoyable experience. As regards for the enhancement of a customer-brand connection, the results indicate a higher long-term connection between the charity and the users from the control group, who did not receive a playful response to the act of donating money through the vending machine.

These results mostly depended on a too closely focused research group and the unnatural circumstances of the experiment, which determine an impossibility in generalising the presented research. However, assuming the influences of these factors on the test would be minimal, this research can be useful in a broader sense, in order to explore the possibilities of evoking specific spending behaviours related to charity through a more gamified interaction design, taking in consideration the feeling of obligation and the customer-brand connection.

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