

A Crowdsourcing-Based Social Platform to Increase a Community's Sustainability and Well-Being

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Abstract. This study proposes enhanced *micro-crowdfunding*, which is a platform for improving subjective well-being and community sustainability. *Micro-crowdfunding* is a service designed to achieve the former. The study proposes a platform that improves well-being by automatically adding the “Three Good Things in life” exercise to enhance well-being to *micro-crowdfunding*. This exercise is effective for decreasing depression. Our preliminary experiment revealed some pitfalls in our approach.

Keywords: Crowdsourcing · Subjective well-being · Positive psychology

1 Introduction

Information technology as typified by smartphones has become necessary for our lives and it makes our daily lives more valuable [10]. For example, services for deepening people's connections such as Social Network Services (SNS) and services for maintaining health using wearable devices have appeared in recent years. Similarly, many services utilizing information technology exist to improve the quality of life. The spread of challenging attempts to improve subjective well-being has increased. For example, serious game and gamification techniques are used for mental health [13]. It is necessary to raise the well-being to realize a sustainable society because realizing a flourish society is important [3, 10, 11].

On the other hand, these attempts are focused on individuals. We believe that these services will bring better effects through mutual cooperation. This is because the existing services as SNSs and social games in recent years incorporate the connection among people as an important element, and cooperation with others might also be important for the services enhancing subjective well-being.

In this study, we propose a service that enhances the subjective well-being of the community through activities in a small community called a micro-community. The service is designed based on *micro-crowdfunding*, which refers to extended crowdsourcing. *Micro-crowdfunding* contains potential factors that enhance subjective well-being.

2 Micro-crowdfunding

2.1 Basic Design

Micro-crowdfunding is a new crowdsourcing infrastructure that focuses on increasing the recognition of the importance of society's sustainability¹. It tries to address the free rider problem that hinders the realization of a sustainable society. Sustainability will be lost by the free riders who use a high level of public resources, such as natural resources and public facilities. This phenomenon is called the *tragedy of the commons* [1]. Especially in urban areas, many people use public facilities; as a result, the free rider problem appears clearly. This problem is caused by people's selfish pursuit of their own benefits. If everyone tries to maintain resources spending a little idle time, it will solve the problem efficiently. Even significant problems like environmental concerns can be solved by individual efforts. Psychological techniques for changing human behavior have become famous and social psychology has been used in public policies [2, 9].

However, it is difficult for some people in the community to perform socially good actions without incentives. *Micro-crowdfunding* provides social and economic incentives by applying a crowdsourcing-based approach. Using this platform, people can commit to solving many problems in the community, and furthermore can recognize the importance of community sustainability. It is expected that many social problems will be solved using a bottom up approach because the mindset of each community member changes.

Many crowdsourcing and crowdfunding services make use of real currency, but *Micro-crowdfunding* uses virtual currency. It is similar to the local currency that can only be used within a particular community. Using real currency has a limitation in that people who do not have money to spare cannot fund projects. However, using virtual currency, everyone can participate in *micro-crowdfunding* regardless of their economic situation.

2.2 Crowdfunding Activities in Micro-crowdfunding

Micro-crowdfunding is a crowdsourcing infrastructure implemented in the *micro-community*. *Micro-crowdfunding* consists of three phases: organizing, funding, and executing. Figure 1 shows an overview of *micro-crowdfunding*. First, one of the community members frames a problem within the community as a mission. Next, people who want to solve the problem fund the mission. Finally, someone pursues the mission and receives rewards. *Micro-crowdfunding* encourages participation by dividing the commitment to community problems into three stages. This section describes the three stages.

The mission proposed by community members is called a *micro-mission*. It is proposed when a member notices the problem. He or she is called a *mission organizer*. Any member in the community can propose a new *micro-mission*. It is desirable that

¹ More details about design and evaluation of *micro-crowdfunding* were reported in [7, 8].



Fig. 1. Overview of *micro-crowdfunding*

this *micro-mission* is simple enough to be manageable by anyone because all members who want to commit should be able to participate in the *micro-crowdfunding* activities. The goal of *micro-crowdfunding* is to increase the awareness toward sustainability. To achieve this, many community members need to participate in *micro-crowdfunding* and solve their community problems. The organized *micro-mission* is released on a smartphone application, which can be accessed by community members.

In the next stage, when some members think that the proposed *micro-mission* should be solved, they can fund it using virtual currency. These members are called *mission investors*. The users can clarify how important the mission is by checking the amount of funded money for the mission. From another perspective, because everyone can propose a *micro-mission*, it will become difficult to recognize which mission is important in the absence of a *micro-crowdfunding* service that weighs a *micro-mission*. Funding makes it possible to weigh many missions using the power of the crowd.

When funded money reaches a sufficient level, the *micro-mission* becomes performable. After that, a member who has enough time performs it. This member is called the *mission performer*. After the member completes the *micro-mission*, he or she reports its completion to the *mission organizer*. If the *mission organizer* is satisfied with the quality of its accomplishment, the *mission performer* can receive the funded money as a reward.

3 A Way to Enhance Micro-crowdfunding

This section describes how to enhance *micro-crowdfunding* to make communities flourish. Table 1 shows activities that make our daily life flourish as advocated by Lyubomirsky [3]. As mentioned in Sect. 2.1, *micro-crowdfunding* promotes altruistic behavior and aims to solve community problems without free riders. *Micro-crowdfunding* can increase well-being because it promotes “Practicing acts of kindness” and “Nurturing relationships.” Therefore, we aim to enhance the *micro-crowdfunding* platform to one that improves well-being.

Our proposal is to add a *micro-mission* that increases the well-being of *micro-crowdfunding* automatically. We focus on the “*Three Good Things in life*” exercise (TGT exercise) proposed by Seligman as a task to increase well-being [11]. This is a simple and effective exercise. In exercise, people write down three good events that happened on a particular day at the end of the day. In addition, they also write the reason why those good events happened. As a result of continuing this exercise, the subjective well-being is improved, and they tend not to become depressed. This writing activity is associated with “Counting your blessings,” as shown in Table 1. Furthermore, it also involves “cultivating optimism” because it inculcates a positive approach.

The enhanced *micro-crowdfunding* regards the TGT exercise as a customized *micro-mission*. If it is a general *micro-mission*, the TGT exercise is completed by another user before being attempted by the current one. However, everyone can perform the exercise as the task is independent from other users.

Table 1. Lists of activities that make people flourish

Activities that make us flourish	
1.	Counting your blessings
2.	Cultivating optimism
3.	Avoiding overthinking and social comparison
4.	Practicing acts of kindness
5.	Nurturing relationships
6.	Doing more activities that truly engage you
7.	Replaying and savoring life’s joys
8.	Committing to your goals
9.	Developing strategies for coping
10.	Learning to forgive
11.	Practicing religion and spirituality
12.	Taking care of your body

4 Experiment and Discussion

4.1 Experiment

We conducted a preliminary experiment to confirm the potential possibilities and pitfalls of enhanced *micro-crowdfunding*. This experiment was designed based on role-playing game-based method [6]. The method is mainly used when experimenting with the new currency system. In future research, we will conduct a field study in reference to the results of this preliminary experiment. We expect that the field study will yield better results by recognizing the potentials and limitations of our approach. In addition, we believe that this preliminary experiment will also serve researchers who try to increase well-being, because it identifies problems that need to be addressed and thus contributes to the common pool of knowledge.

In this experiment, we present the feasibility of enhanced *micro-crowdfunding* as a platform for increasing well-being when the *micro-mission* is performed. Therefore, we had all participants take on the role of the *mission performer*. We conducted this experiment on the assumption that the *mission organizer* and the *mission investor* existed virtually. The mission posted by the virtual *mission organizer* was “please count the number of instances of alphabet e.” The participants were divided into two groups: Group A and Group B. Members of Group A only performed the above mention. Members of Group B additionally performed the TGT exercise after the counting mission. Figure 2 shows the experimental application we developed. The left screen is *micro-mission* and the right one is the TGT exercise implemented using Google Forms. After all the participants performed their own mission, they answered a questionnaire to measure well-being every day.



Fig. 2. Screenshots of the experimental application

This experiment is divided into 4 stages, and the displayed information on the first screen of the application changed according to the stage. At the first stage, it displayed “There is a simple mission.” At the second stage, the *mission investors’* names were displayed. At the third stage, the social meaning of the mission was displayed. At the last stage, *mission investors’* names and their meanings are displayed. The duration of each stage was 2 days, while that of the whole experiment was 8 days.

The participants were 8 college students (2 females and 6 males, ranging from 21 to 24 years of age); 5 were in Group A and 3 in Group B. After 8 days of the experiment, all participants answered another questionnaire. In the questionnaire, we asked whether the motivation to perform *micro-missions* at each stage changed. In addition, we asked the members of Group B about the TGT exercise and the counting mission as follows: “How important did you believe the counting mission and TGT exercises were?”, “At what level did you perceive incongruence between the TGT exercise and counting mission?” and “How much did you feel like increasing your motivation for performing the *micro-mission*?”

We also interviewed each participant to discuss the effects of the experiment. In an interview about each stage, three participants in Group A answered that their motivation was not affected by the *mission investor*. The other members of Group A and all members of Group B answered that the effectiveness in increasing their motivation was greater when the investor name was clearly displayed.

The results of the measuring well-being showed no clear difference between Groups A and B. However, in the interview, two members in Group B said they could feel the effect of the TGT exercise slightly. In order to strictly evaluate the effect of our approach, we need to conduct another long-period experiment. In addition, the all participants in Group B felt that the relationship between *micro-mission* and the TGT exercise was weak and said that the motivation to participate in the exercise was not high.

4.2 Discussion

In this section, we clarify potential pitfalls of our current approach. As a result of this preliminary experiment, it became clear that the following two pitfalls exist. The first relates to motivations for the TGT exercise. The second is that the TGT exercise is too weak to prevail over the effects of daily events.

We had predicted that the participants had enough motivation to perform the TGT exercise because it could increase well-being. However, participants said the motivation was low. This is because the exercise was a boring task like writing a diary. Therefore, the exercise needs to involve appropriate incentives. The simplest solution is that the system gives users virtual currency as a reward for performing the exercise. However, this approach has its limitations. Internal motivation is lowered by increasing external motivation. Therefore, we need to carefully design incentives.

The second pitfall is that the TGT exercise is insufficient as a task to increase well-being. We are influenced by various events in our daily lives. Of course, negative events lead to a depressed mood. The exercise is not powerful enough to prevail over such effects. The short experiment period can explain the lack of an apparent effect of the TGT exercise. However, to cater to a heterogeneous group of people, we believe that the platform design should involve various tasks and exercises that suit various personality types, rather than just the TGT exercise in isolation.

5 Related Work

In this section, we introduce past works related to crowdsourcing service. *MoboQ* is a real-time location-based question-answering crowdsourcing platform built on micro-blogging service [4]. People can help each other without spending much time. Users can ask location-based and real-time questions on the platform. For example, a user can ask “is the restaurant crowded?” and “does the bank have a long waiting queue?” These are difficult to answer using existing Q&A services.

UbiAsk [5] is also a mobile crowdsourcing platform on an existing social networking infrastructure to assist foreign visitors. On this platform, users can ask image-based questions. Local residents can answer rapidly because of the wide reach of

existing social media. This platform enhances existing social media by focusing on the end-users' participation. While designing the community-based crowdsourcing service, we should also consider the motivation to participate.

6 Conclusion and Future Directions

In this study, we proposed enhanced *micro-crowdfunding* by adding TGT exercise. As a result, we discovered the pitfalls, namely, factors that hinder the motivation to perform the TGT exercise and the weakness of its effects. To address them, we should assign importance to building a platform with micro-crowdfunding, a well-being task, and well-being service.

We consider pitfalls found in this preliminary experiment to be fundamental. Future research should develop a new platform to enhance well-being using community currency with *micro-crowdfunding*. This platform should have characteristics of *micro-crowdfunding*, comprising a mechanism to enhance internal motivation, and designed to further increase well-being, and should have three elements: *micro-crowdfunding*, a well-being task, and well-being service. It should use existing *micro-crowdfunding*. The well-being task should aim to increase well-being as did the TGT exercise. In this preliminary experiment, we used only the TGT exercise. The new platform, however, should comprise several types of well-being tasks. After performing the well-being task, users can receive community currency as a reward issued by the system. This can increase the motivation to perform well-being tasks as mentioned in the previous section. For designing the platform, we should discuss the balance between psychological and economic incentives.

The challenge with community currency is identifying a way to exchange its value. For example, the virtual currency in a social game has value in that it is possible to purchase in-game items. Therefore, the use of the currency determines its value. The use of the virtual currency on this platform should enhance well-being, through, for example, the purchase of collection items that may increase satisfaction like social games. By designing a platform that satisfies these requirements, we will achieve a flourishing society.

We also should discuss the relationship between economic and psychological incentives. For designing a new platform, we need to examine the appropriateness of an incentive scheme first. After that, well-being tasks and services should be considered.

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