The Planning and Implementation of Smartphone Application Designed to Efficient Donation for Direct Support to the 2011 Tohoku Earthquake-Affected Area

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Abstract

We designed the smartphone application to promote charitable donation for residents in Tohoku area suffered by the 2011 Great East Japan Earthquake. Our application is one of crowd funding providing direct financial support for the beneficiaries. To make it flexible, we created options where the donor can select the amount of monetary contribution equivalent to the cost of common daily items. Through our application, we hope to sustain long term and continuous support to schools in the affected area.

Keywords: smartphone application, donation, 3/11 Earthquake

1. Introduction

On Friday 11 March 2011, a violent 9.0 magnitude earthquake struck Japan. The earthquake is now commonly referred to as the Great East Japan Earthquake ("Higashi Nihon Daishinsai") or the 3/11 Earthquake. The 3/11 Earthquake and subsequent tsunami caused severe and large-scale destruction in the northeast ("Tohoku") region of Japan [1,2]. Death and missing tolls are approximately 20,000, while over 6,000 people were injured and over 120,000 houses were completely destroyed [1-5], and economic damage amounted to a US$220 billion [5].

Three years after the earthquake, the devastated area is still under rehabilitation and remains several issuers that impede its recovery. As of February 2014, over 50,000 refugees still could not return to their hometown because of the present condition of the area and they are forced to live in temporary housing under poor circumstance [2, 6, 7]. It was also reported that the number of patients with cardiovascular disease and pneumonia increased after the earthquake [8,9]. In addition, survivors are suffered from Post Traumatic Stress disorder (PTSD), and it is sad fact that the PTSDs in young schoolchildren are still critical problem even several months after the disease [10]. The children also lost their playground due to the radioactive contamination following the accident in the Fukushima Daiichi nuclear power plants that are located nearby their hometown [11, 12]. So, it is of paramount importance that the residents receive proper medical and welfare treatment for their overall wellbeing.

To alleviate the aftermath of this calamity, the government and local authorities allocated a significant budget for rehabilitation assistance [4]. Furthermore, the Japanese Red Cross Society, Japan Society together with several other charitable movements, donations and relief funds have already been launched [13-16]. However, these programs proved to be insufficient and/or indirect [15, 17, 18]. We believe that the lack of donations is due to four reasons:

- First, general fund-raising activities do not always show where the donations will be used so donors do not have a clear idea of how their monetary contribution is going to benefit their charity.

- Second, how the donated funds were actually used has not been reported to donors after the fund-raising projects.

- Third, existing programs for charitable activities are not able to quickly respond to urgent matter for the persons who need financial support because they have to wait until the fund-raising project is completed.

- Fourth, fund-raising activities often entail significant operation costs and normally span a long period.

To address these concerns, we propose the smartphone application designed to promote and encourage direct donation. Our application shall provide direct financial support to matters that require immediate action. The application is mainly targeted at urgent projects that have not yet been implemented due to budgetary constraints especially from primary to high schools in the "Tohoku" region suffered the aftermath of the 3/11 Earthquake and the Fukushima Daiichi nuclear power plant radiation-contamination. Our application enables users to provide direct, immediate, interactive, continuous support for these schools.

2. The Application

Though some smartphone applications for monetary donation have already been launched, the existing applications still have several restrictions (Table 1).

Table 1. Comparative Overview of Existing Smartphone Applications for Charitable Fundraising

Applications Capabilities /Functions	App A	App B	App C	"For Smile"
Specification of the target of donation	△ Only for specific organization/ activity	×	△ Intended (but limited) purposes	○ Clearly specified/ selectable
Amount of contribution	× Actual amount to be determined by host organization	△ Depends on the distance walked by donor	× Actual amount to be determined by participating company	○ Selectable from options
Registration of individual fundraising projects	×	×	×	○
Feedback report from beneficiaries after the fundraising projects	×	△ Donator can take gift. No report at all	△ Thank you message from children	○ Comprehensive report with pictures and comments

For example, almost all charitable activities channeled through the smartphone applications are collected by specific organizations or sponsoring companies. Oftentimes, monetary donations are wired through these intermediaries where donors are limited by the fixed amount/denominations that is predetermined by these charitable organizations. When the fundraising activities are concluded, the organization or company that is responsible for the implementation and distribution

of donation determine the allocation for each beneficiary. This means that, the donor is not aware of the actual use of his/her contribution.

Our application presented here is one of the crowd- funding system and software. To provide simple, direct, continuous, and interactive crowd funding, we developed smartphone application designed to promote donation for suffered area of 3/11 earthquake. The name of our application is the "For smile", that was inspired by our continuous prayers for the happiness and smile of residents in the area. The logo of application shows a capital letter D, which stands for donation and inside it is a smile (Figure 1).

Figure 1. The Logo

The characteristics of our application are as follows:

- First, the donor can arbitrarily select not only the organization or school as the beneficiary but also the specific use of the monetary contribution.

- Second, the beneficiary can directly register the project that requires financial support urgently.

- Third, the donor can freely select the amount of each contribution through the option-buttons.

- Fourth, feedback reports such as pictures and documents will be provided by the beneficiary after completion of fund-raising projects.

The application has six panels linked to each pages in the home screen (Figure 2).
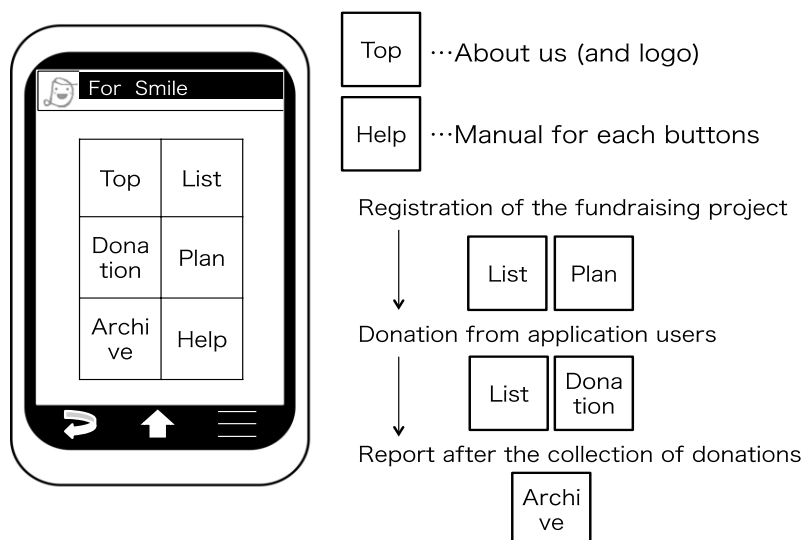

Figure 2. Application Flow

The "Top" page describes brief explanation about the concept and spirit of our application and it's logo. The "Help" page provide detailed instruction of the application. Through the "List" and "Plan" pages, the users can register their urgent or upcoming fundraising projects. The donors make their charitable contribution through the "List" and "Donation" pages. In the "Archive" page, the users can browse the report of the fundraising projects that are already completed. In the application, donor can make financial contribution through two ways.

One is the "target-amount" that corresponds the pathway from the "List" to the "Donation" pages. In the "target-amount" pathway, the donor determines the target project first, and then decides for the final amount of donation. Another one is "amount-target" that corresponds the pathway from the "Donation" to the "List" pages. In the "amount-target" option, donors initially decide the amount of present donation and then specify the target project after.

The "Donation" page is designed in such a way that donors can select the amount equivalent to the cost of the items they want to donate. We will use items that represent the simple pleasures of daily life like juice, coffee, beer, tobacco, taxi, after-party fee, and so on (Figure 3). Through this, donor will be able to directly relate their charitable activity with their personal forgoing and health management through it. For example, donors can choose to contribute their taxi fee to promote walking. We intend to promote the act of donating to form part of their daily habits such as smoking, consumption of sugar or alcohol. In special occasions like class reunions or tribute parties, donors can choose to donate the cost of their drink to charity instead of consuming it themselves.
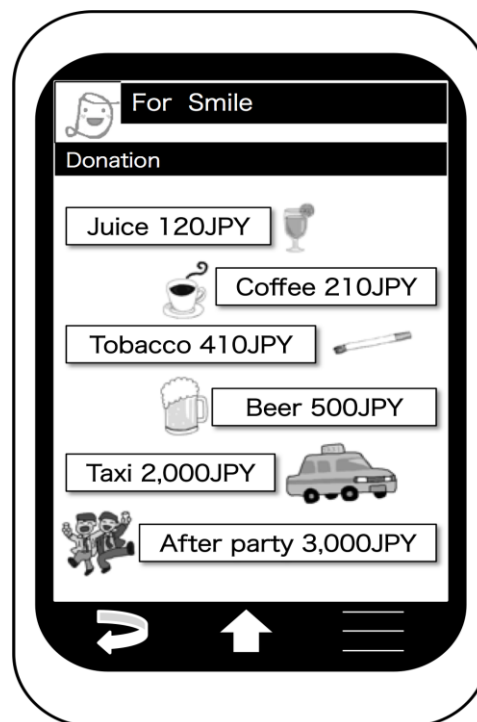

Figure 3. The Amount Selection Buttons for Monetary Donation in the "Donation" Page

In the "Plan" page, not urgent but planned charitable activities can be registered in advance. For example, a school's centennial event or graduate/farewell party can be pre-registered (Figure 4).
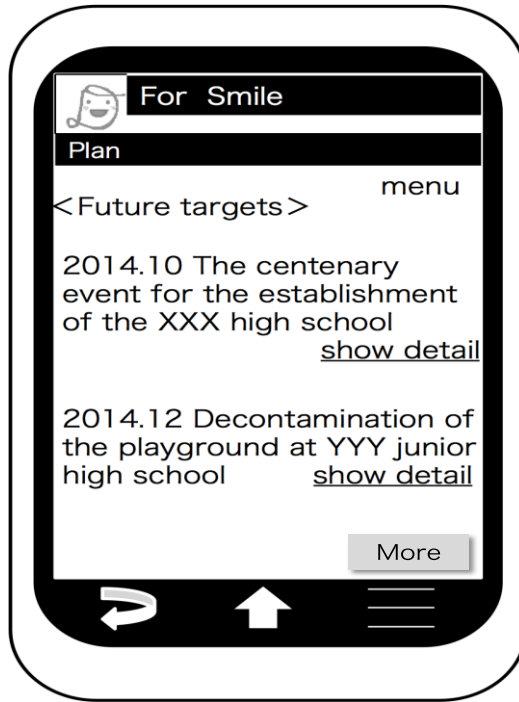
Figure 4. Example of Pre-registration for Upcoming Charitable Activities in "Plan" Page

Through the "Archive" page, donors can browse the report and feedback after the fundraising project. How the funds are actually utilized and how the actual activity that took place is shown with pictures, description and feedback from the students and school officials (Figure 5).
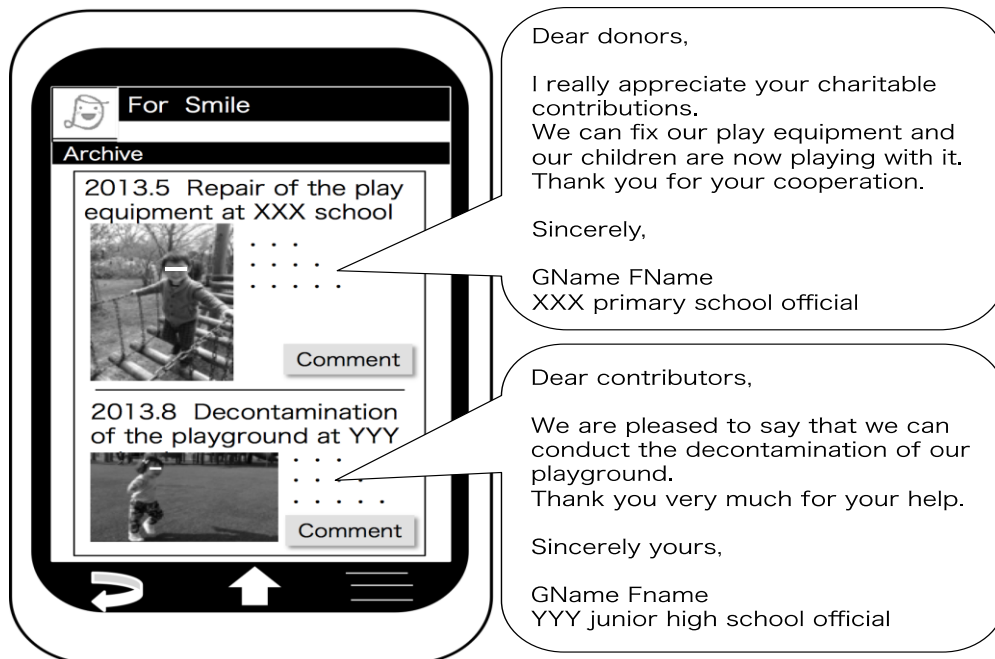

Figure 5. Report and Feedback after the Fundraising Projects through the "Archive" Page

3. Conclusion and Discussion

The existing crowd funding uses website as a main platform for fundraising activities [19-32]. Some of them are launched for specific field or persons such as academia [28], athletes [29], artists [30], animator [31], creator [32]. On the other hand, there are already many useful smartphone applications for charitable donation and crowd funding. Our application will combine the benefit of crowd funding and convenience of charitable donation through smartphone application to ease the restriction of the existing ones.

However, our application still has room for improvement before its launch to the market of smartphone application.

First, it is important to ensure security management. Like any other smartphone applications, our application treats the user's private information with utmost confidence. Thus, we have to maintain the integrity of the data that we gather at all time. To do this, one of the feasible solutions is to outsource security management by requiring our users to create their own account when they log in, and to consolidate management through the issuing ID and creating account.

Second, it is necessary to have an established administrative operations team. On the management and redistribution of charitable contribution, it is essential to observe strict compliance with international and domestic laws such as Act on Specified Commercial Transactions, and draft a User Agreement for the use of the application. We are planning to establish a non-profit organization (NPO) for smooth management of administrative operations such as accounting, marketing, and the like.

Third, it will be required to introduce the smooth and secure payment system for proper management of cash flow. Through the payment agencies such as Softbank Payment service, Pay-pal and Paygent, our application can clearly monitor and visualize the cash flow as well as charitable donation itself, and keep high confidence of monetary donation.

Fourth, we have to do further implementation of the application. It is necessary to improve graphical user interface. For example, such as a sort of the donation list with respect to keyword/deadline, and real-time display of donation in- come will be useful. Also, it will be useful to prioritize the urgent donations through the discussion on message board and/or online voting.

The convenience and user-friendliness of the application will hopefully encourage more long term and continuous donations, the increase of the fund-raising capacity, simplification and facilitation of fund-raising activity and marketing. Furthermore, the transparency on the use and amount of monetary contribution reduces the cost for information acquisition of potential donor and facilitates management of scope and limit of the donations.

Our application provides direct matching between the donors and beneficiaries without tangled subscription paper, grand fund-raising event and extreme manpower expenses that is typically required for solicitation of money. Such a reduction of capital cost leads to proper allocation between supply and demand of monetary donation.

It is imperative that the system is created for the residents in the devastated areas in the hopes of alleviating their quality of life. Our application intends to promote the community-based donations coming from students, parents of students, residents in nearby school, and even from anonymous supporters.

Lastly, the application is also designed to be a source of long term and continuous financial support to affected residents. We are going to use common items from daily life that they can select in the "Donation" page. As a result, our application will sustain the interest of users, including young people who routinely use

smartphones. In other word, the application will be the "ubiquitous" donation. The better we are able to facilitate the circulation of funds, the better chance we have in reaching out to more residents in affected area. We believe that our application will fuel the acceleration of Tohoku rehabilitation.

Appendix

The pilot application was implemented for the Android OS with JAVA language on the Eclipse.

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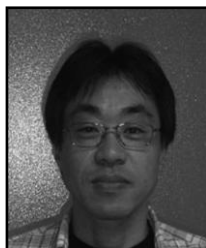
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