Mobile application: donate day

Chit Su Mon¹  Kam Yao Cheng¹  and Abdul Samad Shibghatullah¹
¹ Faculty of Business and Information Science, UCSI University, Jalan Menara Gading, 56000 Cheras, Kuala Lumpur, Malaysia

chitsm@ucsiuniversity.edu.my

Abstract. Mobile application has gradually become a popular application software because it only requires inexpensive electronic devices such as mobile phones and tablets to operate. This paper therefore presents an Android mobile app application that allowed users to donate their items to charitable organizations in Malaysia. The study adopted quantitative research to study people's behavior towards charitable donation and gathered opinion on the mobile donation app. The survey was conducted online with samples of 20 respondents. The paper also adopted the Rapid Application Development (RAD) approach to develop this mobile app's system. The RAD approach enabled the development of the mobile app prototype to be completed quickly and enabled end users to test the mobile app to provide recommendations and make changes easily. The results of the system tests indicated that the mobile app achieved the goals of the study, but the respondents also responded to several improvements needed for the prototype.

1. Introduction
Living standards are constantly improving, advanced technology provides convenience to people, media information can immediately propagate worldwide [1]. Many issues in society, such as wars, genocide, scramble resources, and more, however, accompany these factors. These problems lead to an increase in the number of impoverished people every day [2]. People have met many individuals or charities seeking donations in daily lives. Even governments and celebrities encouraged community to donate and help those in need [3].

The development of the application or software product is considered an activity based on human behaviour [4]. Charities have two major forms of voluntary and monetary donations. There are four key factors that correlate with user donation behaviors such as cultural context, outcome framing, benefit timing, and social status [5]. Besides that, the empathy of individuals and the perceived credibility of also play powerful and additive roles in charitable activities, the higher the empathy of participants, the more likely they choose to participate in a charitable activity[4,5].

The charitable organization involves four major activities such as development of welfare trust to reduce poverty, promote and increase education, promotion of religion and promotion of beneficial initiatives for the community [6]. Many charities consider storytelling to be key in their attempts to engage new audiences. In addition, charitable organizations that were excellent at listening to customer feedback and interacted with customers in such a way has attained the much needed attention and assistance towards charity [7].
Charitable and non-profit organizations recognize the value of online social media platforms to influence consumer responses, particularly among younger consumers [8]. Most people seem to use social media platforms to provide information about the organization and its mission, rather than getting new supporters, raising money or allowing beneficiaries or clients to interact [9,10]. By easily promoting information around the world, E-Philanthropy quickly became a new trend in this age of interconnected society as seen as a new way to gain online donation [11]. Philanthropy's goal is to improve the quality of human life such as promoting welfare, happiness, and culture of mankind. Therefore, E-philanthropy allows people to doubt that the action of a small group of thoughtful committed citizens can change the world.

This was done to develop a mobile app related to a charitable donation organization. There are many websites and apps similar to this project, such as gofundme, Salvation Army Malaysia, Donation Hub Platform, and more. Research shows that to develop a complete mobile app, it is necessary to focus on the positive effects of website quality, transaction convenience, and project content quality on both empathy and perceived credibility [3]. Unlike other monetary donation applications, however, the system adds e-philanthropy in this mobile application development, which is a new trend combined with two words electronic and philanthropy. The user is not limited to donating money but is able to donate supplies resource and help people with the concept of e-philanthropy with time and skills. This concept can eliminate hesitation among people and increase the willingness to help people who need help. This paper is developed as an Android mobile app that enabled users to donate their items to charities in Malaysia.

2. Methodology

The mobile donation apps collected information and analyzed data in a specific way to determine the application's goals and potential issues after reviewing several online donation sites. The project therefore conducted quantitative research on data collection and analysis to achieve project goals.

The project applied Google Forms to organize a simple questionnaire. The survey focused on people's understanding of donations and collecting opinions on new mobile donation apps. Donate Day mobile application offered a variety of features such as modern interface, databases and event page. The mobile donation apps was developed by using Android Studio with API 21, and the screen size of the mobile phone is 1080 x 1920. The mobile donation apps code is written in Java language and its database uses SQLite, which is an additional feature in Android Studio. The system does not adopt any external database functionality because the project focused on the prototype. The system requirements for operating this mobile donation app are shown as follow.

i. The device with using Android API 21 (Lollipop) or higher.
ii. The device screen size is approximately 1080 x 1920.
iii. The device memory has at least 2Gb RAM.

Figure 1 showed the interaction between users, charitable organization and system. Users represent as a donor in the diagram which required to register their information into the system. After that, the user could login to the system and process their activities based on Figure 1. For example, the user can view the information of charity events that listed in the system. The donation order had placed in the system with selected specific location to ensure charitable organization to collect the items easily. Besides, the users had managed to change their profile information such as password, nickname, phone number and address.
Figure 1. Use case diagram.

Figure 2 showed the user sequence diagram which the system provided the users with two main functions. The users had click on the event URL which provided in the system, the user is redirected to official event website so that the user had understood more on the event. Besides, the users placed donation order, the system saved the order to the database. After that, the charitable organization had collected the items based on the database. After the task is completed, charitable organization updated the database and system notified the users with the result and reward point.

Figure 2. Sequence diagram.
3. Implementation

Figure 3(a) showed registration interface that allowed the users to register an account on this page. The users had filled all information provided on the registration page in order to register as a member. The users had clicked the button to allow the system to save information to the database so that the users could log in to the system at any time. Figure 3(b) showed login interface for the mobile donation apps. The users had registered an account could login into the system by entered their correct username and password. Meanwhile, charitable organization also managed to log in to the administration page by entered their secret username and password on this page.

![Register interface](image1.png)

![Login interface](image2.png)

**Figure 3.** (a) Register interface; (b) login interface

Figure 4(a) shows that event interface which charitable organization had promoted their charity events on this platform. Each picture represented charity event which shared by charitable organization. The users had viewed the charity event details by clicked on the image which shown in the interface. The users clicked on charity event that shown on the event interface, system displayed charity information as shown in Figure 4(b). The interface described the description, location and charity event time. The system also provided URL that allowed the users to browse the official website for more information about charity events.
Figure 4. (a) Event interface page; (b) event description interface.

Figure 5(a) shows that the interface which the users had donated items in this mobile apps. The users had chosen charitable organization and entered item descriptions that the users wanted to donate. The users also temporarily changed their address in this page to instruct charitable organization to collect items by follow the address. Figure 5(b) showed the interface which the charitable organization was logged into the system. There were three buttons for the selection. First button allowed charitable organization to view donation order, second button allowed the charitable organization to view the completion donation order record and last button allowed the charitable organization to log out of the system.

Figure 5. (a) Donation interface page; (b) administration interface page.
Figure 6(a) represents the donation order description interface. The charitable organization was able to view donation order description on this page which included username, nickname, phone number, charitable organization, items description and address. The charitable organization was able to edit the item descriptions which donated by the users. The completion donation order description as shown in Figure 6(b). The description included username, nickname, phone number, charitable organization, item description, address and date that the order was completed.

![Figure 6](image)

The project has performed several tests to evaluate the performance of the mobile apps. Although the performance of the mobile donation apps was quite good, but most respondents and users suggested that the system still required some improvements such as interface design, added more features to the system, and most importantly, added online banking services to mobile apps that allowed the users to make monetary donation online. In summary, the mobile apps had successfully met the needs of users but require a lot of enhancements in the future. Therefore, details of system limitation and future enhancement are discussed in the conclusion section.

4. Conclusion
In conclusion, the project had developed an Android mobile app to help people donate items in easy way. The project used the Java programming language to code the system features and used SQL language to manage the system database. The process of the mobile apps is demonstrated through logical design that includes use case diagram, class diagram, activity diagram and sequence diagram from the synthesis section. The system prototype had successfully achieved all project objectives and expected results. However, the prototype exist a lot of limitation and required better enhancement in the future.

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