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by M Azhar

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1. Introduction

Willingness to help those in need is a noble act. Helping others becomes particularly impactful when the process is straightforward and accessible, it can transform what may be a simple gesture for one into a significant lifeline for another person. This embodies the essence of donating- a proactive approach to aiding others.

In contemporary society, addressing the challenges faced by marginalized populations through effective resource sharing within the local communities is crucial for sustainable development. Efficient charity management supports the sustainability and effectiveness of charitable organizations. In today's digital era, mobile application development offers a promising solution to enhance efficiency and engagement in charitable activities.

One significant hurdle for this new projects is the lack of financial support. Scientists developing their research careers and entrepreneurs without business experience often struggle to prove the potential value of their innovations. While some seek financial backing from institutions like banks and venture capitalists, innovation ideas can face validation challenges in conventional markets due to perceived lack of realism. This difficulty in persuading investors can hinder progress (Kim, Por and Yang, 2017)

Collaborative technologies within the information systems (IS) domain, provide an alternative means for desperate entrepreneurs to secure financial support. Crowdfunding allows desperate entrepreneurs to collect money online without requiring personal contacts (Fernandes, Lynch and Netemeyer, 2013). The process is straightforward; an entrepreneur known as a project founder posts their business project idea on the fundraising platform. Potential investors or backers who are then interested in the idea can then invest in it. These platforms help entrepreneurs create webpages to advertise their ideas and offer consumers the opportunity to receive innovative products or services before they hit the market. Crowdfunding operates on the principle that collective wisdom effectively evaluates a project. Importantly, it allows entrepreneurs to raise funds without losing control over their company (Valanciene and Jegeleviciute, 2013).

This dissertation proposes the development of a platform-independent application called as "Electronic Charity". Its purpose is to facilitate donations and resource sharing between campaign creators (such as NGOs) and donors. By simplifying and expediting the donation process via the internet, ensuring that donors can directly contribute to verified NGOs. It addresses the challenge of identifying legitimate charitable organizations, providing a secure platform where donors can confidently send their contributions.

2. Research Background

Living standards are steadily improving due to advancements of technology which makes life of a human being more convenient. However, these advancement also come with serious societal issue like wars, resource conflicts and poverty etc. As a result of which people are deprived of their strengths and there is a growing need for donations. Therefore, even government, celebrities and charities encourage people to donate to help those who are in need (Bock, Eastman and Eastman, 2018).

Mobile applications have become popular because they can be used on affordable devices like smartphones and tablets, providing ease to its users. However earlier donation applications faced several challenges, limiting their effectiveness respectively. For instance, an android application named Donate Day was built for Malaysian people to donate items but with limited reach and functionality. It could not be used internationally. Thus, does not support different types of donations. It was an android application build using Java and SQLite and also lacked effective communication feature that can help donor and recipient directly communicate with each other. Another platform Happy to Help –HTH allowed donation of money, food, blood and other items to orphanages and old age homes in Malaysia but had separate versions for web and Android devices. However, it does not have any version for ioS devices.

Several other applications such as Eta'am, Makkah charity, Saudi Food Bank, NemahKeep and Alber Charity etc., were also introduced to improve donation processes by using GPS tracking to keep a record of donors in Saudi Arabia specifically. These applications used cloud computing for efficient data storage and retrieval. Based on official statistics from Alber Charity Organization in Al-Ahsa city, the number of physical donation was 12, 787,060 Rayals in the year 2015 respectively. This number is huge but great amount of expected donation is wasted because unfortunately there was no efficient way for their collection and distribution. According to our investigation, the donators must come to the charity offices to make donation while with Eta'am charity one can contact them and send early request before having any ceremony. While in other application i.e., NemahKeep the donator will call the one responsible for collecting the donations by cell phone and tell them their address but for large cities it will be difficult for the charity to know exact location. Therefore, it will be hard for charity organization to keep track of all donation boxes and collect them on time. Dar Alshair launches a new donation box recently to record the progress of donation automatically. The main function of the new box is to change light from green to red color to intimate the donors to know that the box is filled [7].

In Android Blood Bank application, the blood donor can find exact path of the NGOs using GPS. The details of blood donors will be saved and can only be viewed by the administrators. They used technologies like PHP, MySQL and Android Studio. In "MBB: A Life-Saving Application" a method is proposed to create a website with android application. In this application the donor location can be tracked by GIS – Geographic Information System. The purpose of website is used to update the current system where data can only be view by the authorized user. This can only work on two type of devices i.e., an android phone with Android OS and a computer on which database information will be stored about the donor. Similarly an application "An Android Application for volunteer Blood Donors" is developed for volunteer blood donor to notify the donor location regularly to Rh++. Rh++ is a smart information system aims to control the blood donation easily. Another one names as "Android-Based Health Application in Cloud Computing for Blood Bank" is an android application developed for blood donor in which donor's information is stored in the cloud. The user can request for blood donation which is then sent to nearby hospitals or blood donors which are registered on the cloud. In "The Optimization of Blood Donor Information and Management System by Technopedia" a method was proposed to create a website with android application as well in which blood donors are easily available within the required time. In this application, the information of donor who has already given blood in the various

hospitals while comparison to manual system, a computer based information system is time-consuming.

The concept of data mining is really beneficial to the blood bank sector. It is a fundamental tool to analyze the data that is gathered by blood banks through their information system. In "Android Blood Donor Life Saving Application in Cloud Computing" an application is deployed for emergency blood donation delivery by displaying the list of donors that are available within the city. This application can enable immediate access to donor's information and location. It will ensure that only the register person can access the instant location tracking and communication respectively.

Our new donation application offers several significant benefits that will overcome shortcomings of previous systems and enhance overall donation experience for end users and charitable organization. Unlike previous application that are limited to specific regions the proposed application is designed to be used anywhere in the world. This will allow users from different countries to participate in charitable activities and support global accessibility. The application will also provide multi lingual support as well making it accessible to non-English speakers ensuring that the language barriers do not hinder the process of donation. The application will also provide the flexibility to users to donate not just money but also their time and skills so that more people can contribute in different ways that best suit their resources and capabilities. This application will provide messaging features that allow direct communication between donors and charitable organizations. It also provide real-time chat support to help users navigate through the application, resolve issues quickly and receive immediate assistance when needed respectively. Our proposed application will be built using Flutter technology, therefore, the application will run seamlessly on multiple platforms including both Android and iOS with a single codebase. This reduces development time so the focus can be on the consistent performance across devices. Having single codebase also simplifies updates and maintenance allowing for quick implementation of new features and bug fixes respectively.

3. Research Questions:

1. How can a mobile application that works on all platform enhance and simplify the donation process for both donors and charities?

2. What are the main problems faced by existing donation applications in term of accessibility, usability and their functionality respectively?

3. How do features like in-app messaging and chat support affect donor's satisfaction and engagement?

4. How a mobile application can ensure that the donations are secure and the organization that are receiving charities are legitimate?

5. What are the benefits and limitations of Flutter technology for development of donation applications?

4. Aims:

The primary aim of this dissertation is to develop a platform independent mobile application, "Electronic Charity" to facilitate the process of donation and enhance resource sharing between donors and charitable organizations. By providing an application that work seamlessly across different devices and platforms we ensure that users can access this donation platform from any device regardless of different Operating System i.e., iOS , Android etc. This is done to make donation easier for a wide range of audience. We also integrate advanced communication tools such as in-app messaging and live chat support feature. This feature enhances the interaction between donors and charities to help build trust and keep them engaged together. It will also provide diverse donation options to allow users to donate not just only money but also can donate his/her time, skills and any physical items as well. This flexibility will help attract more donors to contribute to charity organization in various ways. It also ensures that the user data is secure and the listed charitable organization on the platforms are legitimate so that the trust is built among the donors and users. It also offer support for multiple languages and currencies to so make it easier for people from different countries to use the application with ease. It will also keep a track of donations and will provide notifications about new donation opportunities to manage resources more effectively.

By achieving these aims, the proposed application "Electronic Charity" seeks to create a more efficient, user-friendly and enhanced platform for donors and charitable organization, so that they can make donation worldwide seamlessly.

5. Objectives:

- To identify and analyze the limitations of existing donation applications.
  - Conducting a comprehensive literature review of existing donation applications to analyze their features, functionalities and user experiences.
  - Evaluation of user feedback on existing application such as Donate Day and Happy to Help- HTH to identify their advantages and weaknesses.
- Designing and development of "Electronic Charity" application.
  - Utilization of Flutter technology to create a cross-platform, user-friendly and secure mobile application that operates flawlessly on various devices.
  - To ensure that the application support multiple languages and currencies to attract a global audience, increasing its usability.
- To integrate advance communication feature within the application.
  - Development of features such as in-app messaging and chat support to facilitate interaction and communication between donors and NGOs.
  - Testing of these communication tools to check their effectiveness and user engagement.
- To implement robust security measures to verify charitable organizations.
  - Development of a secure platform where donors can confidently contribute to verified NGOs to make sure that the donation process is safe and secure.
  - Implementation of verification protocols to ensure the legitimacy of charitable organizations listed on the application building trust among users.

- To compare the proposed solution with existing donation platforms.
  - Performing a comparative analysis between "Electronic Charity" and other existing donation applications to highlight differences and improvements between them, to demonstrate the proposed application advantage over current alternatives.

6. Deliverables:

1. Literature Review Document
   a. A comprehensive review of existing donation applications and related technologies.
   b. Analysis of user feedback on previous donation systems like Donate Day and HTH.
2. Requirement Specification Document
   a. Details of requirements gathered from potential users, charitable organizations and other stakeholders.
   b. Functional and non-functional requirement for the proposed application.
3. Design Documentation
   a. UI/UX design mockups and wireframe.
   b. System architecture diagrams illustrating the overall design of the proposed application.
4. "Electronic Charity" Application
   a. A cross-platform mobile application developed on Flutter.
   b. Integration of advanced communication features such as in-app messaging, chat support, multi-language support.
   c. Secure donation protocols implementation and verification for NGOs.
5. Testing and Evaluation Report
   a. Test cases and results for various functionalities.
   b. User feedback on effectiveness and satisfaction of the application.
6. Final Dissertation Document
   a. A comprehensive documentation of overall research process that includes introduction, background, methodology being used, designing and implementation, testing and conclusion respectively.
   b. Comparative analysis of the developed system with existing donation applications.
   c. Discussion on research findings and potential future works for enhancement of donation process.

7. Academic Challenge:

The proposed system "Electronic Charity" aims to address several academic challenges associated with existing donation applications. These includes conducting an in-depth review of existing donation applications to identify gaps and areas of improvements in them, gathering diverse requirements from stakeholders such as potential users, charitable organizations and NGOs to ensure that the proposed application meets users' needs and expectations. It also create ease for the end users by creating a simple and easy to access user interface for users with different technical backgrounds respectively. It also provide cross-platform functionality by using Flutter framework. This overcomes the

major challenge related to maintenance of consistent performance across different devices and operating systems. Additionally, it integrates advanced features such as in-app messaging, chat support, multi-languages as well. These features will optimize the app's performance and user experience simultaneously. Another key focus includes implementation of strong verification processes to ensure the legitimacy of NGOs which has a significant importance in building trust among users. The proposed solution also emphasizes on performing rigorous testing procedures to verify and validate that all functional and non-functional requirements are meet. This includes testing of functionalities, performance and security of the application under various conditions. By addressing these academic challenges, the "Electronic Charity system" aims to develop a robust and user-friendly platform that enhances the efficiency and accessibility of charities and donations made worldwide.

8. Resources

- **Hardware:**
  - High Performance computer capable of running the necessary development environments and tools efficiently.
  - Sufficient storage capacity to host datasets, tools and the developed application.
- **Software:**
  - **Flutter:** It is used to develop cross-platform mobile applications that can run on various devices and operating systems such as iOS, Android and various web platforms with the help of only single codebase.
  - **Dart:** It is the programming language that is used within the Flutter framework for building this cross-platform donation application.
  - **SQL:** It is used for real-time database management and authentication service to ensure efficient data handling and user management.
  - **APIs:** Various APIs are used to integrate essential functionalities such as in-app messaging and Google Login/Signup to enhance app's capabilities and user experience.
  - **Secure Communication Libraries:** This includes end-to-end encryption libraries and protocols for in-app messaging and ensure user privacy.
  - **Authentication and Verification Tools:** These are used for verification of NGOs legitimacy and to ensure secure transactions in the donation process.
- **Collaboration and Research:**
  - **UI/UX Design Professionals:** To validate the user interface and design experience of our application to make sure that the end product application is user-friendly and intuitive.
  - **Academic Literature Databases:** Subscriptions or access rights to comprehensive academic literatures on various topics such as mobile application development, user engagement and security measure in donation platforms to support informed and evidence based development decisions.

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