

Developing Charity Web Application to Eradicate Poverty in Bhutan

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Abstract—This paper describes the designs and features deduced from the extensive literature review that helped us to build the prototype of the charity web application. Literature review on poverty helped us to understand feasibility and the need of building charity web application to uplift the poor communities in Bhutan. The prototype had been built considering the Human Computer Interaction (HCI) domain such as navigability, visual and page design. Navigability is achieved by providing the links on the side bar, breadcrumbs for a complex site and search tools for the ease of use. Visual design includes the logical structuring of contents and appropriate use of fonts, graphics, space and colors. Successful user friendly website with the possibility to minimize the access time issue is defined in page design. The HCI concepts are considered while building the prototype to achieve overall effectiveness, efficiency of charity web application and user satisfaction.

Keywords- Poverty, Human-Computer Interaction (HCI), Charity Web Application (CWA)

I. INTRODUCTION

The Non-profit organizations are working to support the underprivileged communities in Bhutan. They are thriving for self-reliant community by inculcating the skills from the charity activities they organize. They provide help from building the shelters to supporting young children for education. These activities have been conducted in most conventional way. However, incorporating the internet media facilities and activities, helps revolutionize new charity methods as a result of which the reach for potential donors and volunteers increases [1].

The charity web application will be built to reduce poverty in the nation by helping each other. Psychologist, economist and neuroscientist say that helping other leads to higher level of happiness [2], thereby nations' goal to become happy will be achieved. The authors in [3] found that people in better financial position and people who are employed gives more donation. The charity web application will allow people to know and understand the scenario of needy people and make the donations and it will give happiness to both benefactor and beneficiary.

This paper presents the prototype of charity web application after the data collection from survey, literature reviews and charity website reviews. The survey undertaken has shown the feasibility to develop charity web application in the vicinity to mainly circulate information about help in effective and efficient ways. Literature reviews on various subjects have given the clear idea for development of prototype and website reviews within Bhutan was done to conclude that there is no charity web application built so far in Bhutan.

II. LITERATURE REVIEW

Thorough literature reviews were done to understand the requirements to design the project. The Project aims to help the underprivileged people in Bhutan, therefore, literature review on poverty status was carried out. Similarly, literature reviews include some of the charity organizations and their corresponding activities. The prevailing charity websites of the organizations were extensively studied in order to compare and help synchronize the project to develop a prototype of charity web application. Benefits of charity web application is deliberated which defines the feasibility of charity web application to flourish. Literature reviews on the Human Computer Interaction (HCI) concepts is also done comprehensively.

A. Poverty in Bhutan

Bhutan is landlocked country sandwiched between China and India. Helping each other in the society is the community relationship indicator, that falls under Community vitality domain of Gross National Happiness Index of Bhutan [4]. The concept of Gross National Happiness (GNH) was enunciated by His Majesty Jigme Singye Wangchuck in late 1980s [5]. This philosophy pertains that "Happiness is more important than Consumption" [6] and it prioritizes individual's spiritual, material and emotional needs [5]. As per [5], 31.7% of the population was categorized as poor with the monthly consumption of less than Nu. 740.38 per month. Poor population were recorded mostly in rural area as compared to urban places. [5] recorded 4.2% of urban population and 38.3% of rural population as poor. Royal Government of Bhutan thrive towards achieving its Millennium Development Goals and had taken remarkable responsibility on poverty

alleviation and in 2012 the poverty rate was reduced to 12% [7].

Until all the Bhutanese prosper above the national poverty line, every individual in the community must help those 12% of the population to join the rest of the 88%. Majority of the Bhutanese population have an average income and therefore cannot effort to donate in a large scale. However, each individual can at least help the fellow citizens in need by giving away used goods, physical services and money in times of despair.

The Bhutanese believe in giving and helping each other with no reciprocity which is a selfless action. This philosophy was enriched from our forefathers to even today where people still exist for their selfless service and a piece of work as a voluntary [8]. However, with the rapid development and progress, the number of issues arises related to economic inequality in the country that has led to more poverty. Many of the poor people are suffering in order to survive with the rapid changes. Hitherto, there are no platform that ease the charity activities though people are willing to help poor communities. There are non-profit organizations who are trying to uplift the poor communities but there are people who are still living in poverty.

Bhutan has ranked 11th in the World Giving Index which measures charitable giving behaviors among countries [9]. Three questions which include whether any money has been donated to a charity, any voluntary work has been contributed to an organization, and whether any help has been provided to a stranger, all in the past month had been asked. Average responses to those three questions was taken as the annual index and based on the percentage score, each country was ranked accordingly [9].

B. Charity Organization in Bhutan

The non-profit organizations are registered under Civil Society Organization (CSO). The prominent non-profit organization, Tarayana work towards elevating the lives of vulnerable individuals and community in Bhutan [10]. One of their main objectives is to “help the poor communities become self-reliant through facilitation of income generating activities” [10].

1) Activities

Tarayana Foundation had been actively engaging themselves in uplifting the poor community in the country by providing the services. The foundation acquires funds from the philanthropist or from the larger organizations inside or outside Bhutan. One such organizations include Japan Fund for Poverty Reduction(JFPR) that provides grants to the poorest and most vulnerable to developing member countries

of the Asian Development Bank(ADB) with the goal to reduce poverty. This involves direct participation of Nonprofit Organizations, community groups, and civil society [11]. The project funded by JFPR in 2013 involved Tarayana Foundation which aimed to improve the economic status of vulnerable women and girls in selected urban and rural areas. Tarayana Foundation conducts various social and economic development programs. Vulnerability Reduction under social development program contribute to poverty reduction in country. Two of the highlighted activities that falls under this domain are as described below:

a) Surgical camps

Tarayana Foundation offers invigorating assistance to the patient who are deprived of proper care which is either too expensive or unavailable in Bhutan. The physical and psychological suffering for victims may be due to any congenital or tragic accidents. Tarayana organize and provide logistical supports for restorative surgical camps. The venture was success with the collaboration team of Ministry of Health and Surgicorp International, an American surgical group based in Pittsburgh, Pennsylvania, Smile Asia,Singapore, Paro District Hospital and the team from the Jigme Dorji National Referral Hospital(JDWNH) [12].

b) Housing Improvement Program

Bhutan has vibrant architectural structures that include monasteries or residential buildings. However, in some rural part of the country, people still seek the shelter under the very rudimentary and ragged habitations. The possible reasons for this conditions can be related to lack of funds, building materials and ignorance of building techniques. People are more vulnerable to health hazards and sanitation concerns. Their shelter does not even provide the basic protection and ultimately makes the living difficult. Tarayana helps to build the houses in the rural communities. Those communities are able to construct their own houses and earn the income from the skills developed in masonry and carpentry [13].

2) Website

All the organizations registered in CSO have the website each. It is vital in order to display the information about the organizations and the activities undertaken. The information updated in the website can be availed 24*7 and it saves the extra expenditure that would otherwise have to be spent on the printing of the necessary information. Websiteⁱ of Tarayana Foundation has all the consensus information of the organization. It allows interested users to download the annual reports. Since, receiving donation is fundamental for the organization to proactively help the poor communities, the account details are provided.

C. Charity Web Application (CWA)

1) Benefits

The use of Internet is becoming significantly vital with rapid advancement technology. Consumers who are more engaged towards charity visit charity websites more frequently. This situation aids the adoption of more effective Charity Web Application(CWA) to attract good number of donation and selfless volunteerism. The online CWA method bear low cost related to communication and solicitation unlike other method. This method has an advantage of no time constraints required for receiving donation of goods and services. The CWA that provides a picture of real-life victim of unfortunate circumstances and sense of sympathy for victim by true stories stimulates consumers to visit the application more often [14]. CWA provides user-friendly platform that arouse consumer to communicate with other philanthropist. "In the charity context, arousal might be achieved through a website that confronts the visitor with attention grabbing headlines and vivid and shocking portrayals of distressing issues or situations" [14]. After this arouse is met, the consumer will probably be encouraged and motivated to provide their support for the charity such as donation for the needy one or to provide volunteer service. This stimulates people to get involved with the charity to give donation in both time and resources. The online CWA stimulates sense of life satisfaction after donation and volunteer support [14].

Both benefactor and beneficiary can communicate through CWA. "Individuals who enjoy their interaction with a website view it more positively and hence are more motivated to engage in future interactions" [14]. Beneficiaries can seek for the help and the benefactors can avail opportunity to contribute in both time and resources willingly. This gives an opportunity for donor and charity receiver to interact [15]. Many of the benefactor that have goods such as unwanted clothes, household and other accessories, they can contribute as a part of donation [16]. This kind of donation enhance effective management of goods where unwanted goods can be recycled and reused by other individual.

Looking at the current scenario of the donation behavior in the vicinity, people are able to contribute and help the poor only if there are group of people who volunteers to collect items that are reusable. This takes much of the efforts and time of the volunteers. People are not able to directly reach out to underprivileged. It could be because they are unaware of the needy ones or due to their busy schedule and are not able to deliver it directly. CWA provides help in donation process and lessen the effort of the donator [15].

The details along with the picture of those who proactively participate in the charity activities (donation of money, goods and service) must be put in CWA. In this way, the public

recognition and trust will be obtained as social good and this further motivate other people to donate and the donor to continue supporting charity. Ultimately, CWA will be in a leading goal of lessening the misery of underprivileged and managing the waste effectively [16].

2) Human Computer Interaction (HCI)

Human Computer Interaction (HCI) as the name suggest, involve three components: Human, Computer and interaction between human and computer. HCI plays a vital role in shaping the relationship between human and computers that communicate for the ease of usability. It has evolved as leading role to advance utility in both system and software development [17]. The better understanding of HCI will enforce progress in the field of interaction of users with the computer - the usability which is measured by the effectiveness, efficiency and then, the satisfaction that the user achieved while interacting with interface [18]. Many of the HCI research study that the human-centered design and the usability has increased productivity with much of benefit in terms of execution speed, limited errors and increase in user's satisfaction [19].

a) Navigation design

From the HCI perspective, the navigation design needs to be considered for the ease of navigating the website[20]. The designer and developer must emphasize on the navigation scheme and provide navigation tools that will elucidate the various organizations of website. In the field of HCI, navigation design is a critical task that requires better understanding of the principle of structure considering the problems of disorientation, homogeneity and cognitive overhead that the user will encounter. The organization of website need to be explicit to the users and ensure that users can navigate successfully throughout the site. Some of the navigation design includes links on the side bar, breadcrumbs for a complex site and search tools for the ease of use [20].

b) Visual Design

The various visual tools emphasize on the logical structure of the user interaction. Tools for layout include, physical grouping: similar things that logically belong together are grouped together, ordering of items: setting natural order of items, decoration such as fonts, style, text background colors can be used to emphasize groupings, alignment and use of whitespace[21]. Space are used to separate blocks that can be used to create more complex structures and if focused on the counter, one can get the overall feel for the layout [21].

Display on the screen is very important for effective human and computer interaction. Displaying appropriate information depends on kind of information (text, numbers maps, tables),

technology available to display it, line drawing, graphics, and purpose for which is being used. Good graphics and attractive displays can increase users' satisfaction and improve productivity. "Pretty interface is not necessarily a good but interface should be aesthetically pleasing" [21].

Use of most appalling color leads to worst interface and overuse of color can be distracting. Color should be used sparingly and not relied upon to give information, but rather to reinforce other attributes [21]. Authors in [21] says that "Even the non-color-blind users will find it hard to read text where the intensity of the text and the background are similar. A good trick is to adjust the color balance on your monitor so that it is reduced to grays or print screen on a black and white paper. If your screen is unreadable in grayscale, then it is probably difficult to read in full color".

c) Page design

The principle of HCI is applied for the successful user friendly website with the possibility to minimize the access time issue. The designer can develop website in a way that the site can be accessed faster by the visitors. The designer and the developer need to take care of the web pages so that web pages are not larger enough to even load because the research shows that smaller web pages and less graphically rich loads faster compared to larger web page [20]. However, images can be optimized using the tools to improve the load time of web page [22].

III. METHODOLOGY

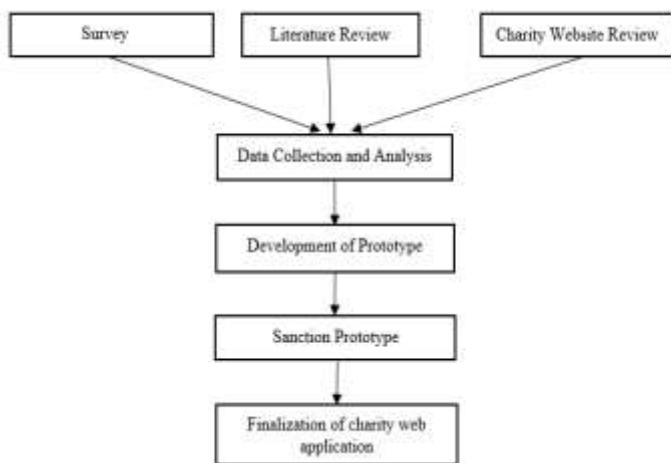


Figure 1: Research Methodology

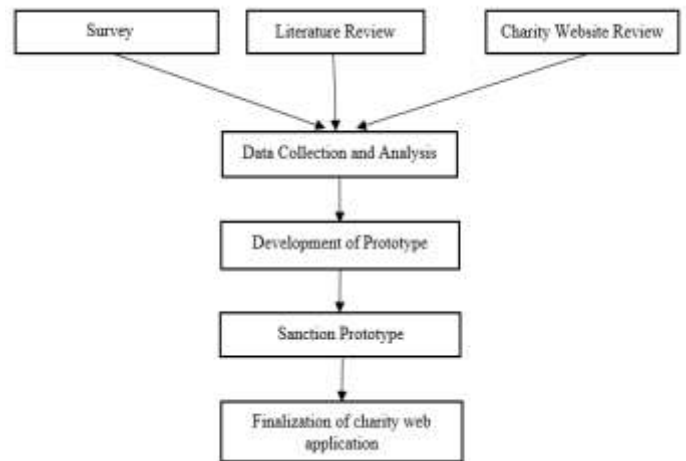


Figure 1 depicts the overall methodology to build the prototype of charity web application. Survey, literature reviews and charity website reviews were done to procure requirements to develop the prototype of the project.

A. Survey

To develop the application for the use of society, it's very important to study the feasibility first. The survey was conducted with the aim "Feasibility study to eradicate national poverty through Information and Communications Technology". The survey was based on questionnaire method which included dichotomous and multiple type questions. It was variedly answered by students and staffs of College of Science and Technology, Royal University of Bhutan and few staff working in different organizations in Phuentsholing area. People were willing to help the underprivileged communities and contribute to elevate social development. However, they are not able to involve themselves in charity activities often or not at all since they miss the information about the need of help. With the advancement of world, Internet technology is used as the integral part of the life to connect and help each other. The survey has concluded that there is feasibility to build the charity web application as imperative to provide information widespread in short notice and help poor communities efficiently and effectively.

B. Literature review

The survey was conducted to study the feasibility of application in the locality. Next, the literature review was done extensively to obtain the clear idea to build the prototype. It helped us to understand required features to develop charity web application. Literature review on the poverty status was done to foresee the benefits of building charity web application in the community. Subsequently, the existing charity organizations who aim to reduce poverty in country had been completed along with the activities they do. The source of the literature review was mostly, reports, journal and online resources.

C. Charity website review

There are websites for each non-profit organization in Bhutan. It provides information about their organizations and some static information about the charity activities. However, it is found that these websites don't provide interactive platform in the course of charity activities to be held or provided. So, the development of charity web application in Bhutan is a very new concept. This idea had been proposed with the intention to help the poor community.

D. Data Collection and analysis

Survey, literature review and charity website review had led to collection of meaningful data. It had been analyzed properly and thoroughly discussed with the project members and with the guide. Methodology of this whole project had been iteratively designed and worked upon.

E. Prototype

The collection of data gave us the clear picture and idea on building the prototype of CWA.

Navigation design

The Charity Web application has 6 distinctive features namely Success Story, Donate Goods, Request Service, Fundraiser, Filter and Donation as in Figure 2. Accessing these feature is fast and easy. It is all grouped on the left hand side of the application making the navigation easy and simple. The search tool can be seen in Figure 3.

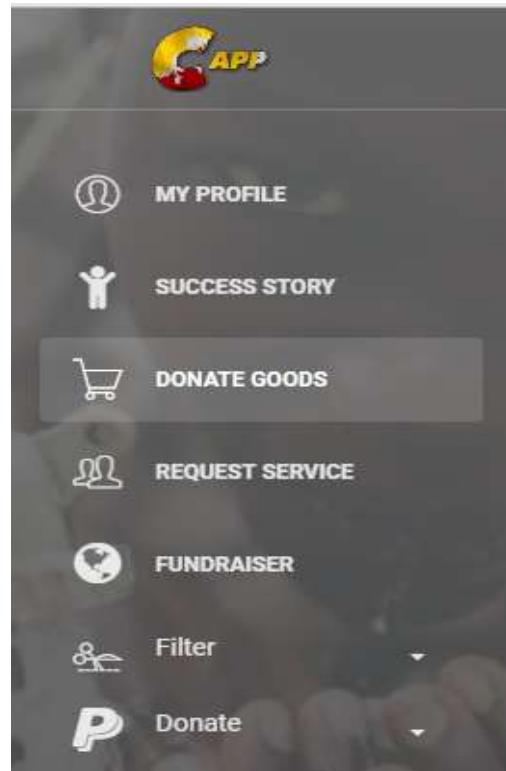


Figure 2: Prototype with navigability feature.

Visual Design

Design is fairly simple. In Figure 3, features that keeps updating are grouped together i.e. notifications and message on the top right hand corner and navigations in the left. All the buttons are self-explanatory. Whenever a user logs into the account, welcome message is displayed as shown in Figure 4 which highlights the importance of users' contribution.

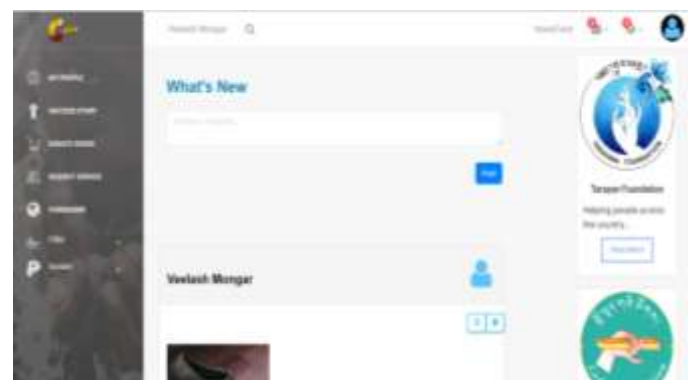


Figure 3 logical structuring of components.

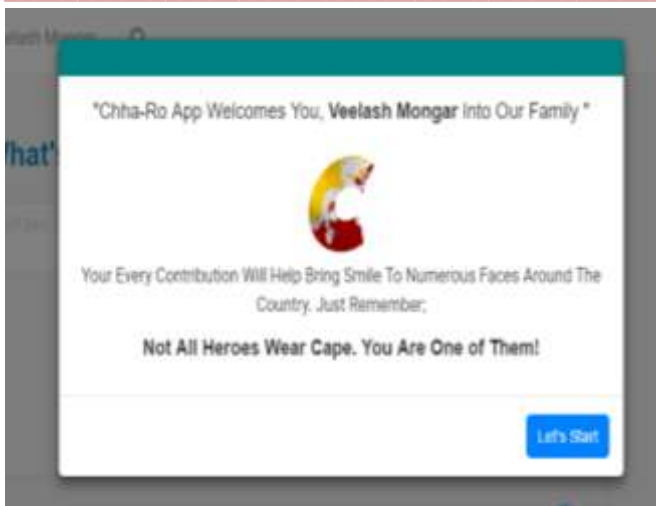


Figure 4: users' contribution highlights.

Figure 5 demonstrates the use of encouraging phrases in order to enhance the motivation of the users and to psychologically influence them to donate more.



Figure 5: Using quotations to motivate.

F. Sanctioning and finalizing Prototype

After the vigorous discussion on the prototype, we jointly completed making prototype based on the requirements we obtained from literature review. Then, it was presented to panel members comprising lecturers from department of Information and Technology, College of Science and Technology and sanctioned the prototype. Valued feedbacks and suggestions received from the panel members were analyzed and incorporated properly in our developed prototype. The prototype had to undergo multiple revisions and then it was finalized to build the charity we application.

IV. DISCUSSIONS

By the end of the extensive literature reviews we have come up with the following discussions

- Though there are many non-profit organisations working to alleviate poverty in country, their aids are not reached to all poor communities.
- Internet is one of the powerful technologies that can effectively and efficiently convey the information in the community. Therefore, building a charity web application mainly to bring all the benefactors, organisations and beneficiaries all in one common platform can help to collaborate and work towards helping poor communities or even the victims of some calamities.
- Through this research, it is found that ease of navigation should be provided in the application in order to avoid users' frustration. The good visual design which include appropriate graphics, text style, space and colours can attract users to use the application more.
- The charity web application needs to be built for the users to interact in more efficient way. There are certain HCI principles that had been inculcated in the prototype. The application designed will provide better navigability, visual and accessibility or text design as described in the literature review.

V. ACKNOWLEDGMENT

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VI. CONCLUSION

Charity web application can be used as an essential tool to disseminate information related to charity in efficient ways to the wider public. Bhutan has seen increasing use of internet and internet technology devices which is an added advantage to prominently market charity application among the Bhutanese citizens.

Charity application will further help existing organization to works towards reducing the poverty in the country. In addition to the external funds, contribution from citizens will exponentially help organization to achieve goals of reducing the poverty and uplifting every community standing.

The relevant features found by doing this research will be incorporated in this web application to promote charity and inculcate the sense of selfless giving altogether.

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