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UNTUKMU.COM : THE CROWDSOURCING APPLICATION TO LEVERAGING THE USED OF SECONDHAND GOODS

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ABSTRACTS - Information technology can be used in profit or non-profit activities. The concept of crowdsourcing has been widely used in fundraising in the form of money, better known as crowdfunding. In general, most people has secondhand items that are still good to use by others. On the other hand, there are also many people who need those items but cannot afford to buy them. A Website application with the Crowdsourcing concept can be used to bring together donors with recipients of donations in the form of goods.

This study conducted data collection to assess the needs of application through questionnaires and analyzed the data using descriptive statistical analysis and Chi Square independence tests, and then developed a website-based application *untukmu.com*. This study examined the relationship between age, type of work and intention to donate and the type of goods needed. The Chi Square independence test showed that there is no relationship between age and type of work to the intention to donate. The descriptive statistics analysis showed that the majority (82%) of the types of goods usually donated by the donors are clothing. The results of the analysis provides input for the development of the application *Untukmu.com*. In the last stage, the study evaluated the level of satisfaction of the users (i.e. the donors) based on the level of ease of using the application and the time needed to master the application. The analysis showed that there is no relationship between the ease of use of the application and the donors satisfaction, but there is relationship between time needed to master the application to the user satisfaction. *Untukmu.com* application has a good usability level since users have no difficulty in using this application and are satisfied with the features available in the application.

Keyword: *Crowdsourcing, Website, Descriptive Statistics Analysis, Chi Square Independence Test, Donation*

INTRODUCTION

Information technology is not only used in activities related to business but also has been widely used in social or non-profit activities. For example : a fundraising application such as *kitabisa.com* is used to raise money from various sources to help those in need, the *charge.org* application is used to gather support from the public to support a petition. Other examples are the application for blood donors who apply GPS technology to provide recommendations for prospective donors in the closest distance to those who need blood (Hamlin & Mayan, 2017)

or the *Blood Hero* application that uses the game concept to increase people's interest in donating blood (Domingos et al., 2016)

Research related to charity also began to be widely developed, including research conducted by Gilbert which examined the link between gender and donation activities (Roberts, 2015). Based on Marybel's review of 110 articles relating to philanthropic, there were several topics that became the focus of research related to social activities, namely topics related to volunteers involved in social activities with regulation and activities in non-profit organizations (NPOs) (Perez, 2016). Petri examines the relationship between the level of needs and types of needs and the amount of money to be donated (Kajonius, 2014).

The concept of crowdsourcing is widely used in raising funds, which is better known as crowdfunding (Gan, Li, Wang, Fu, & Wang, 2017; Haruvy & Popkowski Leszczyc, 2016; Li & Wu, 2016). Crowdsourcing is also applied in data collection for research purposes that use the website as a tool for online surveys (Behrend, Sharek, Meade, & Wiebe, 2011). Website platforms are more widely used in fundraising activities and ideas from various communities or the general public (Shank, 2016)

Nowadays, there are some applications with crowdsourcing concepts that can be used to connect donors and recipients of donation in the form of money. However, there is still no facilities that can be used to link donors of donation in the form of new or used items to those who need it. Pre-survey results show that many people have used items such as cabinets, chairs and others, which still can be used by others. On the other hand many people like orphanages and nursing homes need these kind of items. This is the aim of the research, namely to provide a platform that can connect parties who need items to those who want to donate them. With this platform, it is expected that used goods can be reused by other parties. And non-profit parties who need the goods do not need to spend money because they have been provided by the donors. By utilizing the concept of crowdsourcing, donors can find out which orphanages or non-profit organizations need the goods. Conversely, institutions and non-profit organizations can use this platform to find the donor of items they need.

This study will also examine whether there is a relationship between the age of respondents and their intention to make donations in the form of goods. This study will also measure whether there is a relationship between the level of ease of use of applications with the level of satisfaction felt by users, both as donors and recipients of goods donations.

Crowdsourcing

According to Brabham, crowdsourcing is a model to involve participants from the online community in solving problems (Brabham, 2012). According to Brabham there are four typologies of crowdsourcing applications, namely the knowledge discovery and management approach, the broadcast search approach, the peer-vetted creative production approach, and distributed human intelligent tasking. The knowledge discovery and management approach focus on the discovery and collection of information in a common format. The Broadcast search approach is generally used in scientific research to solve practical problems. While the Peer-Vetted Creative Production type focuses on creating and choosing creative ideas. The last type is the Distributed Human Intelligent Tasking which focuses on analyzing lots of data using

artificial intelligent. The type of crowdsourcing used in the *Untukmu.com* application is to use the concept of Knowledge discovery and management.

Chi-Square Independence Test

One of the application of the chi-square distribution involves using sample data to test for the independence of two categorical variables. The data is presented in a two-way contingency table. The following is a two-way contingency table (Tbl 1) (Hayter, 2012):

Table 1 The two-way contingency table

First Variable	Second Variable				Total
	Level 1	Level 2	…	Level c	
Level 1	O_{11}	O_{12}	…	O_{1c}	$O_{1.}$
Level 2	O_{21}	O_{22}	…	O_{2c}	$O_{2.}$
…	…	…	…	…	…
Level r	O_{r1}	O_{r2}	…	O_{rc}	$O_{.c}$
Total	$O_{.1}$	$O_{.2}$	…	$O_{.c}$	$O_{..}$

Where :

$O_{i.} = \sum_{j=1}^{c} O_{ij}$

$O_{.j} = \sum_{i=1}^{r} O_{ij}$

$O_{..} = \sum_{i=1}^{r} \sum_{j=1}^{c} O_{ij} = n$

The hypotheses for this test of independence are
H0 : There is no relationship between the two variables
H1 : There is relationship between the two variables
The Chi-Square test statistics is as the following (Anderson, Sweeney and Williams, 2008):

$$\chi^2 = \sum_{i=1}^{r} \sum_{j=1}^{c} \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \quad \text{…….(1)}$$

where

$E_{ij} = \frac{O_{i.}\, O_{.j}}{O_{..}}$

A size α hypothesis test *accepts* the null hypothesis of independence if the chi-square statistic is *less* than the critical point $\chi 2\ \alpha,v$, and *rejects* the null hypothesis of independence if the chi-square statistic is *greater* than $\chi 2\alpha,v$, where the degrees of freedom v=(r-1)×(c-1).

Methodology

The methodology used in the study consists of several stages as illustrated in Fig. 1.

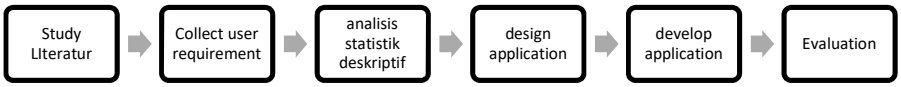

Figure 1. The research Methodology

In the first stage, a literature study was carried out on scientific articles relating to social research (charity). Then data collection is conducted to find out the needs of the donors and recipients of donations such as non-profit foundations or orphanages or nursing homes. Then the Chi square independence test is performed to determine the target user based on age and type of work and the descriptive statistical analysis was conducted to see the types of goods donated and the frequency of donations. Based on the results of statistical analysis, the user interface is designed for the prototype of the application which then name as *Untukmu.com*. The last stage is to evaluate the level of satisfaction of users both donors and those who receive donations, based on the level of difficulty and the time to learn the application.

Results and Discussion

The first objective of this research is to find out about the target users of the website applications that connect between the donors and recipients of donations. Characteristics of the users are observed based on age and type of work. The following (Table 2) shows the characteristics of donors based on age.

Table 2 Donation Activities based on Age

Age (Years)	have Donation Activities	
	No	Yes
< 18	2	4
18 – 30	29	50
> 30	4	13

Based on the data above, the Chi Square independence test is conducted to test whether there is a relationship between age and donation activities. The test results show that the Chi Square test statistic value is 1.0808 and p-value is 0.5825. Because p-value is greater than α (0.05) then H0 fails to be rejected. So it can be concluded that there is no relationship between age and donation activities. This shows that donations can be made by all age categories.

Furthermore, the following Table 3 shows the characteristics of donors based on the type of work.

Table 3. Donation Activities based Tpe of Work

Type of work	have donation activities	
	No	Yes
housewives	0	3
employees	11	20
students	21	40
Entrepreneurs	3	4

There are 4 types of job categories observed, i.e. : housewives, employees, students and entrepreneurs. The results of Chi Square independence test in the data above shows that the Chi Square test statistic value is 1.813 and the p-value is 0.6121. Therefore it can be concluded that there is no relationship between types of work and donation activities, means that donation activities can be carried out by all job categories.

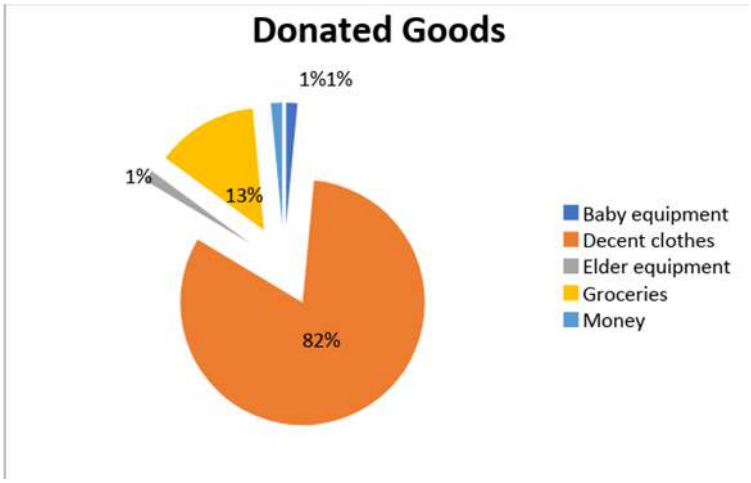

Figure 2. Donated Product Categories

The data shows that the majority (82%) of the types of goods usually donated by donors are clothing worthy of use. Furthermore, 13% of donations are in the form of groceries and the rest are children's equipment, equipment for the elderly and money.

Prototype of Untukmu.com Application

The prototpe of application was made to link the needs of recipients of donations and donors. Donors can be anyone and he can look for recipients of donations that match their needs. The Use Case Design of the application *Untukmu.com* can be seen in Figure 3

Figure 3. Use Case of *Untukmu.com* Application

The User interface of *Untukmu.com* application is shown in Figure 4 to 6.

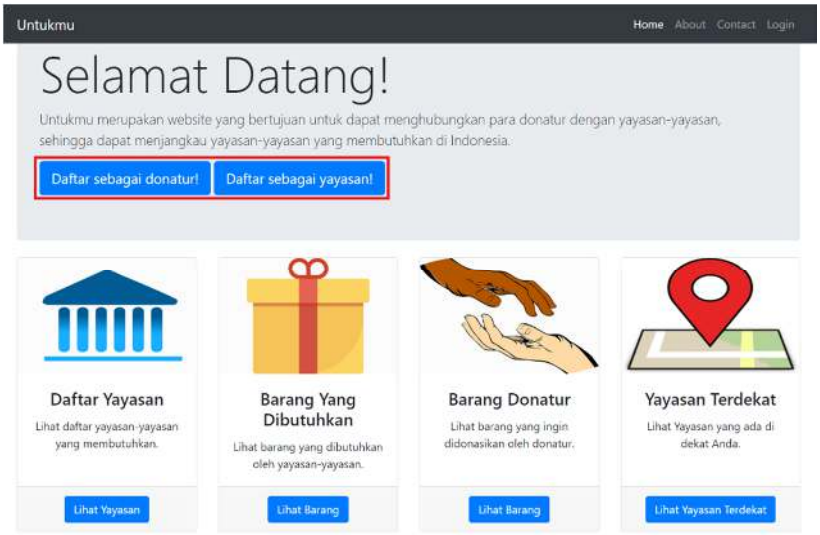

Figure 4. Home page *Untukmu.com*

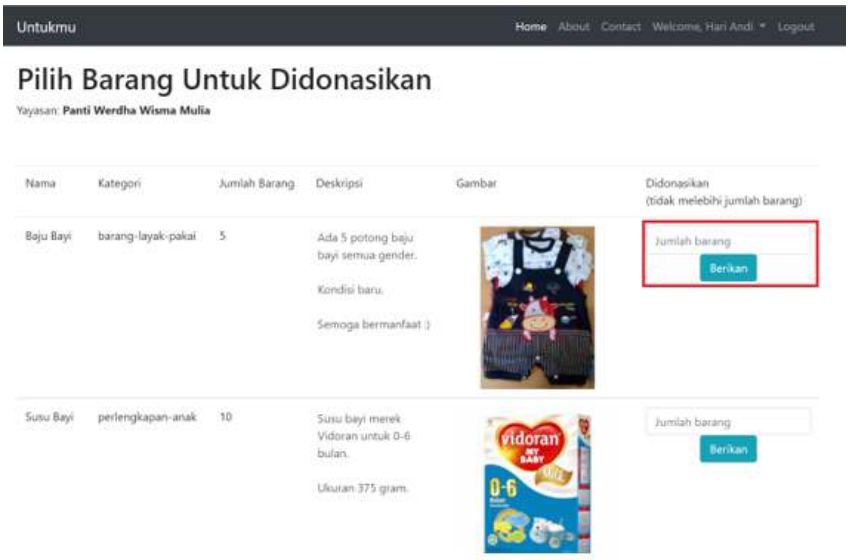

Figure 5 Donated Item Transaction Page

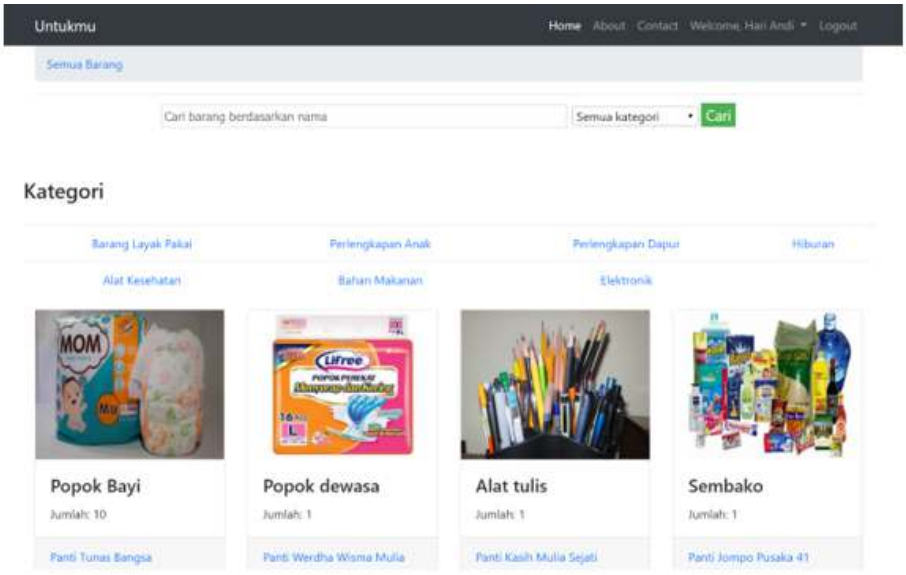

Figure 6. Manage Donated Item Page

The application has been tried out to donors and has been evaluated based on donor satisfaction for the ease of use and the time to learn it. The following are the results of evaluating donor satisfaction for the ease of use of the application (Tbl. 4).

Table 4. The donors' Level of Satisfaction by the ease of use of application

Ease to use	The Level of Satisfaction	
	satisfied	very satisfied
so so	4	2
easy	5	19

The results of the independence test resulted in a Chi Square test statistic value of 2.2146 and a p-value of 0.1367. By using α of 0.05, it fails to reject H0. This shows that there is no relationship between the ease of use of the application and the donors satisfaction to the application.

Next is to examine the relationship between donors satisfaction in using the application and the time to learn to use the application (Tbl. 5).

Table 5. The donors' Level of Satisfaction by the time to learn the application

Time to learn	The Level of Satisfaction	
	satisfied	very satisfied
so so	6	4
easy	3	17

The independence test showed that the Chi Square test statistic value is 5.8594 and the p-value is 0.01549. Because the p-value is smaller than α of 0.05, then H0 can be rejected. This shows that the time needed to master the application is related to the user satisfaction. This means that the user will be satisfied if they do not need a long time to understand the application. The data showed that 56.7% of the donors very satisfied for the short time to learn. Therefore, it can be concluded that this application has a good usability level because the user does not need a long time to use the application, the user does not experience difficulties and the user is satisfied in using the application.

Conclusions

Untukmu.com application can provide convenience for donors and recipients of donations in the form of goods. The results of statistical analysis shows that age and type of work do not give influence in motivation to give donations of used goods. *Untukmu.com* application has a good usability level since users have no difficulty in using this application and are satisfied with the features available in the application. The concept of crowdsourcing is applied in applications can become a forum for anyone who wants to become a donor of goods and through the *Untukmu.com* website can be used to bring together donors with recipients of donations in the form of goods.

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