Develop a Community Social Media to Enhance Environmental and Social Sustainability

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Abstract. Environmental sustainability has been a popular issue in recent years. People pay more and more attention to the issues of environmental protection and sharing economy. So they have intention to extend the product life cycle and share what they have. Nowadays, there are lots of second-hand market and business model of sharing economy like Airbnb and Uber. In second-hand market, most of demanders will tell what they need first and then the suppliers will try their best to satisfy the needs. In addition, people need to pay for service provided in business model of sharing economy. However, there is no appropriate way for supplier to provide free items and services. The only thing they could do now is to donate things to charities or sell the second-hand items. Therefore, we plan to provide a platform which integrates second-hand market and business model like Uber but all for free especially for people in the same district. Because of the regional relationship, they could provide not only the second-hand items but also surplus food for free. They could also offer their neighbors free services. In this situation, they are both supplier and demander. Through this platform, we provide a new way to extend the product's life cycle and thus realize the concept of environmental sustainability.

Keywords. Product Life Cycle, Sustainability, Sharing Economy, Humanitarian Assistance and Social Media

Chapter 1. Introduction

In these years, sustainable development has become one of the most popular issues. In this generation, people live with plenty goods and advanced technology, industries produce more products but cause more wastes at the meantime. It makes human beings attach importance to the sustainable development which highly emphasize the reuse and the recycling of goods, including junk, industrial waste, used daily necessities, and so on. All of these form the initial concept of the circular economy and the sharing economy.

The so-called circular economy and sharing economy advocate renting instead of buying. Users don't have to own something, they can pay the rent whenever they want to use it. It can maximize the goods utilization and reduce the idle time. While it combines with the donate platform, it will form another supply chain, such as the humanitarian supply chain. It provides a platform for donors and donees or charities to interact. Yet, logistics can always be a big problem. Besides, donations may be some used stuff from donors sometimes, once these donations don't meet charities or donees' expectations, they will become junk and wastes.

To improve these kinds of situations, this research plans to develop a donate platform for the smallest administrative zones, village, in Taiwan separately. Next, we will discuss the functions of our platform in two parts, tangible things like items and food, and intangible services. In terms of tangible things, the platform is different from others. Nowadays, most of platforms focus on the need of donees and most of donees are underprivileged minority such as the poor, victims, charities, etc. The donees tell what they need first, and then donors will try their best to meet the needs of donees. In this situation, most of the donors think of 'helping others' rather than 'environmental sustainability'. However, the main reason to provide this platform is that we hope to maximize stuff utilization and reduce the waste. We can distinguish the items into two categories, time-sensitive items and others. Because of the regional relationship, some time-sensitive items like food are also a kind of items which can be given to others on this platform. This is a little bit like food hub on some sidewalks where people could put surplus food in storage and whoever have requirements can take them away freely. Through this platform, we can realize the concept of environmental sustainability.

In addition, most of platforms provide donating function for the purpose of reusing and recycling. It's hard to find a donation platform for people who are willing to help someone but fail to donate things they need. Considering that providing services by people who live in neighborhood is more convenient, we determine the area as village. This platform can not only realize mutual cooperation of neighbors but also care about underprivileged minority who live in the same village. Residents post services which they can afford and people in need also look for someone who is willing to help on this platform. For example, people can provide cooking service to the elder who live alone. When a family is preparing dinner, they can prepare a little bit more for the elder who live alone. Through this way, we can make contribution to our communities and realize the concept of "Donate money if you have money, donate labor if you have muscle."

In the digital generation, the social media leads people to a new communication way. People would rather make conversation by it than talk to each other face to face. To cope with the problems, this research is going to design a website. Through bring the concept of the sharing economy for free and caring underprivileged minority, the aim of this study is to provide a brand-new platform for villages to care more about the earth and help people who is in need.

Therefore, the aim of this study is to provide a donation platform for residents who live in the same village which helps develop mutual cooperation and environment protection. The paper is organized as follows. In chapter 2, we will talk about relative literatures. In chapter 3, we illustrate the methodology and the framework of this study. And then, we will do some case study and validate our platform in chapter 4. Conclusions, future studies and references will be given in chapter 5.

Chapter 2. Literature Review

This section introduces the humanitarian assistance, product life cycle, sustainability, sharing economy, and social media.

2.1. Humanitarian assistance

Now, we are in the situation which there is more of something than is needed or can be used. However, the daily necessities are uneven distributed. Most of people in advanced country may have more than what they need and they wouldn't treasure it. In contrast, most of people in poor and backward countries or war-torn countries are living in lack of daily necessities. Therefore, people attach great importance of humanitarianism. According to "United States Code (2000 Edition)" [1], the meaning of "humanitarian assistance" is assistance to meet humanitarian needs, including needs for food, medicine, medical supplies and equipment, education, and clothing.

Lots of Non-Profit organizations (NPOs) conduct humanitarian assistance campaigns which are a part of humanitarian supply chain [2] to help the people in poor and backward countries. Humanitarian supply chain includes collecting staffs, the process of shipping these donations, giving donation to donees. For example, the recovery program of Tsunami in South Asia in 2004 is the first time that The Red Cross Society of the Republic of China participated in international humanitarian actions [3]. Besides conducting humanitarian assistance, NPOs also reshape their relationship with various partners within humanitarian assistance networks to enhance the influence on their supply market [4].

There are two types of donations which are used in humanitarian assistance. The first type is the thing which is new or things which cannot be reused, such as food, tissues, drinking water, etc. The second type is something which has been used but still usable, such as bedspread, pillow, clothes, etc. However, some used but usable things which are not daily necessities couldn't be used as a kind of humanitarian assistance. There may be no place or NPO for those people who would like to denote these kinds of things to donate. That's the reason why we would like to provide a platform to balance the needs of donors and donees.

2.2. Sustainability and Sharing Economy

Owing to the awareness of sustainability, people hope to donate the thing they don't need to others who need it rather than throw it away. In this way, people may extend the product's life cycle. There are some literatures which introduce the relation between sustainability and product life cycle. [5][6]

To maximize stuff utilization, ideas such as sharing economy [7], recycling economy [8], and circular economy are promoted widely. They used to be implemented in industries and different enterprises form an ecological industrial chain to save resources and waste. Nowadays, people try to apply similar ideas in daily life as well. For example, there are lots of places set food hub to share food with those who are in need. They put surplus food and ingredients in storage, and whoever has requirements can take them freely. Second hand markets and garage sales can be regarded as a kind of circular economy. Used but usable stuff will be transfer to others, buyers can get what they want in a cheaper price, while sellers will get extra subsidies in return, and most important of all, instead of being abandoned, those stuff may become others' treasures.

2.3. Social Media

In the past decade, the social media has brought about a huge revolution in the way people communicate. Billions of information can be rapidly transmitted all over the world on the Internet. The social media can help people make sense of information on the Web [9]. In addition, some organizations try to build strong relationships with members and professionals by applying the social media. [10] [11] [12] For example, the American Red Cross developed a two-way dialogue with younger constituents, the media, and the community through Twitter and Facebook to build lasting relationships [13]. It seems the social media as the most flexible and efficient way now.

However, even social media is powerful, there is no organization offer an interaction platform for users to donate items, food, and especially free services simultaneously. In addition, most of them focus on the requirements of donees rather than what donors want to donate. Most of the donations are new things instead of old but usable things. People need to pay extra money or even logistic fee to send the donation. Not only does the problem of waste not be solved but it also does greater harm to the environment.

Therefore, we plan to provide a platform to integrate the ideas of donation platform and communicating interaction platform in order to fulfil the purposes of resources sharing and information rapidly transmitted. In this way, we could not only shorten the time spent on communication, but also reduce the difficulty of making conversation with your neighbour. Besides, we could reduce time and carbon dioxide which is produced during the transportation by donating staff to the people who live in the same district. Furthermore, chief of village could use the on-line bulletin board to announce news or activities. To sum up, there will be a considerable reduction of the waste on information transmitting and further form an eco-friendly area.


Chapter 3. Methodology

Nowadays, people pay more and more attention to environmental sustainability issue. There are two ways for them to reach this target. One is reusing things by donating or selling them as second-hand items. The other is sharing things with others and sharing services at the same time. Therefore, we provide a platform to integrate reusing and sharing things or services. In this section, we will develop and validate the functions of platform.

3.1. VOC

In order to develop the functions of our platform, we interviewed 35 people, including 28 people with experiences and 7 without. Through the interview, we may find out the difficulties people may face when donating (Table 1).

Table 1. The difficulties people may face when donating.

No.	Voice of customer	Total	Yes	No
5	I have something to donate, but I don't know who need them.	27	23	4
4	I have something unused, but it's too profligate to throw them away. I don't know where to donate.	20	18	2
1	No platform for neighbors to exchange things	16	12	4
6	I am afraid that the donees didn't receive the items I donate.	14	11	3
2	No place on-line to donate some big furniture which are still usable	12	8	4
3	I have food which are easily rotten. If I ship it to my relatives, the food are already rotten. So, I need someone near to share these kinds of food	12	9	3
11	Information of donation are imperfect. It takes me much time to search the information.	12	10	2
9	It's not easy to find out requirements from underprivileged minority. I have no idea what they need.	11	9	2
12	There is no organization that is responsible for collecting donation.	11	10	1
10	I don't know whether the people around me are underprivileged minorities or not.	8	6	2
7	I don't want to pay additional fee for transmitting if I donate to charities.	6	4	2
8	Cannot afford donation, but I would like to help others by using my abilities. I don't know where to help others.	3	3	0
13	others	0	0	0
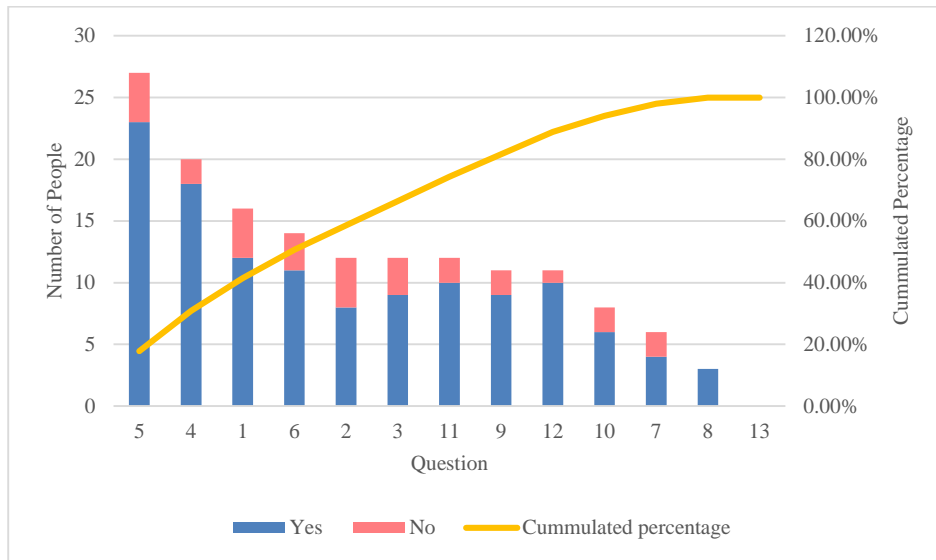
Figure 1. The pareto chart of the difficulties.

According to pareto chart (Figure 1), we can distinguish the difficulties that most people concern into 2 classes. The first is that it is not easy to share some time-sensitive items and something too big to ship. Second, it spends much time for people to match

their needs. In addition, someone may concern about the additional fees for transmit. Moreover, we find out that some people are not rich enough to donate things, but they think they could try their best to help others. Mostly, they may want to provide some services. Therefore, we come up with an idea. We plan to provide a platform which people can provide whatever they think it is good for others, such as second-hand items, surplus food, or even services, and we limit donation area to village to avoid wasting time and extra cost. Now, there are no platform to balance the needs of suppliers and demanders, especially on 'providing services'. So, we ask a further question to make sure that there is the need of this kind of platform. The followings are some services they may need.

Table 2. Free services people may need.

No.	Voice of Customer	Amount
1	It is difficult to prepare meals for only one or two people. Hope that someone could share with us.	7
2	The elder live by themselves. Hope that those who cook could prepare meals for them.	12
3	The elder live by themselves. Hope that someone could buy boxed meals for them.	20
4	Cannot afford the tuition of tutorial class for children. Hope that someone could accompany them.	4
5	Hope that someone could take care of my parent when I am on a business trip.	6
6	Hope that someone could take care of my children when I am out for emergency.	3
7	I want to buy something unusual, but I don't know where to buy. If there is a guy who know it and can help me buy it, it will be a good service.	11
8	Can't buy things in some supermarkets without member card. Hope some members could help me buy it.	18
9	Team buying	23
10	Others	1

According to the voice of customer (Table 2), we find out that there are many services the residents need. Through this platform, they could find the service provided by others which match their needs. In this way, the residents may get closer to each other. In addition, because of the regional relationship, people can help their neighbors who are not familiar with computer or internet look for help.

In next section, we are going to introduce some main functions of our platform.

3.2. Functions of platform

We aim to provide 6 main functions to meet requirements from interviewee who are mentioned in previous section.
1. Different villages, different boards
   Users of this platform need an account and a password to login the board of their village. People living in different villages are members of different boards.
2. Post what they want to provide

Every member can post what they want to provide in the board of their village.
3. Set the number of donees
    Members can determine the number of people who make a request of their items/food/services.
4. Choose the classification
    When a member decides to post a post, they need to choose the classification of what they want to provide, such as food, item, and service, and then they are asked to do further classification.
5. Revise information every month
    Manager will revise information on every boards by clearing posts last month.
6. Set expiry date of post
    Members need to set expiry date of food when they make a post on food board.

After showing the main functions of our platform, we introduce the process of the platform (Figure 2). As we can see in the figure, this platform focuses on donors rather than donees. In addition, the donors could choose any donee whom they think need the items/services the most and contact him with chatroom.
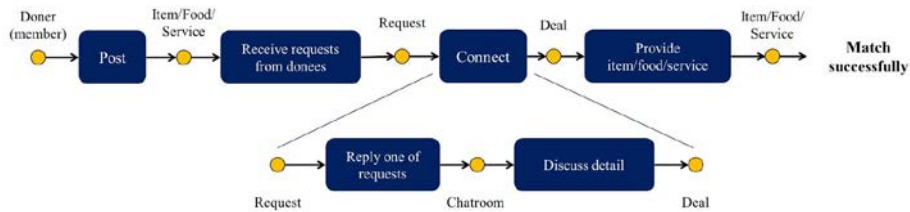
Figure 2. Process of the platform

In next section, we will introduce the interface of our platform and make some comparison with others.

Chapter 4. Case Study

We take four villages in Hsinchu as example (Figure 3). The followings are the main web pages. As you can see in figure 4, residents should choose the village they are in first, and log in as a member.


Figure 3. Village Site Map

Figure 4. Community Page

Figure 5. Sharing Page

After that, the residents could post the items/food/services in sharing pages (Figure5). They need to choose a category for their items/food/services. In this way, donees could pick the items/food/services easily.

Residents who care about environment a lot would like to find some second-hand items or others' surplus food in order to reduce the waste. They should choose items, food or services first for further searching. Then they could choose the category they like in page of donation information (Figure6). The website will show all of the items and their information in this category for them. If the donations are kind of food, it will also show the expiry date.
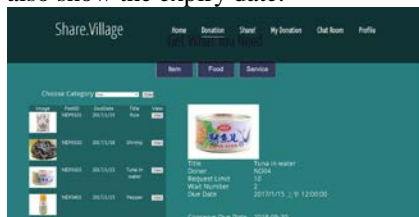

Figure 6. Page of donation information

Figure 7. Page of chatting room

After deciding what to take, residents could send a request to the donor and the donor may reply it. They can contact with each other through the chatting room of the website (Figure7). When the demand and supply are match, the items/food/services will be transmitted from donor to donee.

If donors want to add or delete a certain donation, they can fill in information in "Share!" page (Figure8). They can also revise donation information or delete it in "My Donation" page.
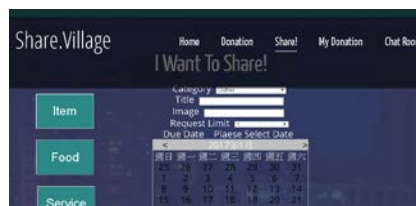
Figure 8. Page of adding new donations

Because of the regional restriction, people don't need to pay for delivery and there is no limitation of donation size. In addition, people could care more about their neighbors and give them a hand in need. However, we didn't provide a place for donees to tell their requirement. We hope that we could add this function and the system could match the demand and supply automatically as further improvement.

Chapter 5. Discussion

After the case study, we found out there are some differences with other donation platforms (Table 3).

Table 3. Comparison of as-is and to-be model

Comparison	As-is (others)	To-be (our platform)
Delivery cost	V	X
Regional restriction	X	V (Village)
Limitation of size	V	X
Donation with expiry date	X	V
Provide free services or not?	X	V
A place for donees to tell their requirement.	V	X
A place for donors to tell what to provide.	X	V

As we can see in table 3, people can share things without price and size limitation so that the product life cycle will be lengthen and sharing economy will be fulfilled. Through social media, this website provides people with not only sharing platform but also a chance to enhance environmental and social sustainability.

Chapter 6. Conclusions

In this research, we successfully develop a donation platform that can promote eco-friendly and cooperation between neighbors. After validating website by questionnaire, we can confirm that this platform makes a huge distribution for environmental sustainability and helps people who live in same village, especially underprivileged minority. In the future, we hope that the platform is able to add more useful functions to meet users' requirements and try to develop the version for elder.

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