

# Sharing Economy –NTHU Second-hand Action Platform

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**Abstract.** With the rapid development of technology, many things and concepts can be realized or thrive, such as internet, smart phone and even AI which can apply to machines or robots that can replace a lot of works done by human. Sharing economy is one of them and also is a very popular terminology recently. In the past, we could't imagine that we can sell or rent out those we don't need to others, but now we can really do so. Sharing economy is an umbrella term including a wide variety of meanings, usually used to describe the economic activities involving online transactions. And this terminology originated from the peer-to-peer based sharing access of merchandises and services. The concept of peer to peer (P2P) also exists in the block chain which is also popular now. Thanks to quick progress of some hardware devices and softwares, sharing economy is not a dream anymore. Go back to few years ago, E-commerce was a hot word, but it seems that it's not that popular now. The difference between E-commerce platform and sharing economy platform is that E-commerce is involved by the third party and sharing economy platform is not. It means that in the E-commerce, if someone wants to sell or rent out something, they will be exploited, namely the profit they earn will significantly decrease through the third party. On the other hand, on the sharing economy platform, we can act as a two-sided role which means we can sell or rent out something to the others without the interference of the third party. So you can be a seller as well as a buyer on the platform. As a student, we may need a platform to do those, but don't need a large platform like ebay. Accordingly, this project survey the needs of some students and build a website platform called "NTHU Second-hand Auction Platform" to meet the students' needs and base on those needs to decide the function of this website.

**Keywords.** Sharing Economy, Sharing Economy Platform, Peer to Peer (P2P)

**Number of words.** words

## 1. Introduction

Sharing economy is an umbrella term including a wide variety of meanings, usually used to describe economic activities involving online transactions. The terminology originally came from the the open-source community to refer to share of access merchandises and services on the peer-to-peer base. And now, sharing economy has a broader sense to describe the transactions via online markets. Peer to peer is the core concept of sharing economy which means consumers can buy goods from sellers directly and vice versa. Under the circumstances, consumers can easily acts as a two-sided role, namely consumers may act as both providers of resources or obtainers of resources. We all know that almost all of the transactions followed this rule or mode in

the ancient period. But as time passed by, the transactions became much more complicated because product flows got bigger and bigger, the diversity of products increased, and some other situations came together. Thus, the third party appeared, it helped consumers and sellers to handle what a consumer can't handle independently. There are some advantages that the third party interferes in our transactions, however, there are also some disadvantages. For example, the profit earned by sellers is exploited by the third party and accordingly consumers have to pay more money to get the goods or services. Besides peer to peer, there is another idea "share" which is also the spirit of sharing economy. We can find that there are many things we don't need or we seldom utilize, and we just leave them there. Sometimes we might think it's a pity to get rid of them, but actually we waste a lot of space to store them and continue to buy new things following the same fate. Sharing economy platform can solve this problem, if we have something we don't need and would like to sell them or rent them out to others, then sharing economy platform can help us make the dream come true. For consumers, they can buy or rent what they want; on the contrary, sellers can sell or rent out what they don't need. Furthermore, resources can be saved because we don't need to produce as many as we produce now anymore, and the cost of coping with those waste will also be reduced. Consequently, sharing economy can lead to cycling economy which is really good for our earth.

After realizing the power and advantages of sharing economy, this project started to search whether there was any sharing economy platform. And this project found that there existed some sharing economy platforms indeed but not many. There are some big problems of sharing economy, and one of them is that not everyone is willing to share those they don't need with others, they want to occupy them. Another problem is sharing economy should be built on the trust, or it will really hard to be successful. Take rental for instance, there was a sharing platform of the car rental in China, but it eventually failed, because many people didn't return the cars and this caused very big loss. From these main fail factors, this project learned that a good and successful sharing economy platform must have complete framework and well-established system.

This project was interested in this research field and found that there is a platform called "NTHU&NCTU Second-hand Auction Platform". In fact, it is a sharing economy platform, students of NTHU and NCTU can make transactions as a consumer and simultaneously a seller on that platform on the base of peer to peer. After using the platform, this project found that it was a little bit inconvenient with respect to its operation mode. Because that platform is built on the FB, the goods you want to buy or are interested in disappeared rapidly, and then you are hard to find them out again. There is still another little drawback, there isn't any search function on the platform, so the goods of different types mix together that make you hard to find the goods you want. Hence, this project distributed some questionnaires to the students of NTHU to check functions they really need on the auction platform. We found that most students hope that the platform can be website-based because that is much convenient for them to use. So this project decided to develop a website platform to solve the problems. And finally, did As-Is & To-Be analysis to check if the website platform really meets students' needs.

## 2. Literature review

This section introduces the importance or trend of sharing economy, sharing economy platform, and the website platform.

### 2.1. *Sharing Economy*

Information and communications technologies (ICTs) have enabled the rise of so-called “Collaborative Consumption” (CC): the peer-to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services. CC has been expected to alleviate societal problems such as hyper-consumption, pollution, and poverty by lowering the cost of economic coordination within communities. However, beyond anecdotal evidence, there is a dearth of understanding why people participate in CC. Therefore, in this article we investigate people's motivations to participate in CC. The study employs survey data (N=168) gathered from people registered onto a CC site. The results show that participation in CC is motivated by many factors such as its sustainability, enjoyment of the activity as well as economic gains. An interesting detail in the result is that sustainability is not directly associated with participation unless it is at the same time also associated with positive attitudes towards CC. This suggests that sustainability might only be an important factor for those people for whom ecological consumption is important. Furthermore, the results suggest that in CC an attitude-behavior gap might exist; people perceive the activity positively and say good things about it, but this good attitude does not necessary translate into action.

Peer-to-peer markets, collectively known as the sharing economy, have emerged as alternative suppliers of goods and services traditionally provided by long-established industries. The authors explore the economic impact of the sharing economy on incumbent firms by studying the case of Airbnb, a prominent platform for short-term accommodations. They analyze Airbnb's entry into the state of Texas and quantify its impact on the Texas hotel industry over the subsequent decade. In Austin, where Airbnb supply is highest, the causal impact on hotel revenue is in the 8%–10% range; moreover, the impact is nonuniform, with lower-priced hotels and hotels that do not cater to business travelers being the most affected. The impact manifests itself primarily through less aggressive hotel room pricing, benefiting all consumers, not just participants in the sharing economy. The price response is especially pronounced during periods of peak demand, such as during the South by Southwest festival, and is due to a differentiating feature of peer-to-peer platforms—enabling instantaneous supply to scale to meet demand.

Despite the success of some environmental and sustainability initiatives and measures in policy-making, business and society, overall trends follow an unsustainable path. Especially in the field of production and consumption of goods and services, environmental sustainability and social equality remain critical challenges. Therefore new approaches are needed alongside existing strategies and policy instruments. The "sharing economy" has the potential to provide a new pathway to sustainability - and transdisciplinary sustainability science has the opportunity to co-shape and accompany this pathway

## *2.2. Sharing Economy Platform*

The “sharing economy” wasn’t supposed to be this way. Aided by the tiny computers most of us carry with us all day, every day, we would be free from the burdens of ownership and making money in our spare time by renting out our unused possessions. The vision was—or at least appeared to be—an idealistic one. Even before they enter kindergarten, every child learns the value of sharing, and here were the beneficent forces of Silicon Valley bringing us innovative new tools to strengthen our communities, disrupt outdated ways of doing business, and maybe even reduce our carbon footprints.

The reality turned out to be a little different. Sure, Uber and its ilk offer remarkable convenience and a nearly magical user experience, but their innovation lies just as much in evading regulations as in developing new technology. Behind the apps lies an army of contract workers without the protections offered to ordinary employees, much less the backing of a union. This new economy is not really about sharing at all. Rather, as Trebor Scholz argues in this study, it is an on-demand service economy that is spreading market relations deeper into our lives.

With these new middlemen sucking profits out of previously un-monetized interactions, creating new forms of hyper-exploitation, and spreading precarity throughout the workforce, what can we do? Scholz insists that we need not just resistance but a positive alternative. He calls this alternative “platform cooperativism,” which encompasses new ownership models for the Internet. Platform cooperativism insists that we’ll only be able to address the myriad ills of the sharing economy—that is to say platform capitalism—by changing ownership, establishing democratic governance, and reinvigorating solidarity. In this paper, Scholz breathes life into this idea by describing both actually existing and possible examples of platform co-ops, outlining basic principles for fairly operating labor platforms on the Internet, and suggesting next steps.

## *2.3. Website Platform*

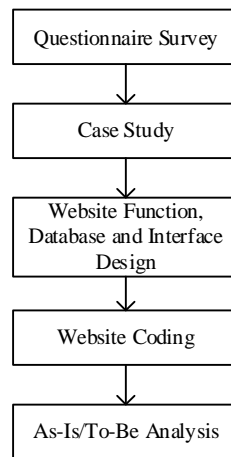
A system and method for a uniform website platform are provided. For a representative embodiment, a website is created so that one or more of its web pages are subdivided into a series of panels. Each panel is associated with a collection of inserts. Each insert can include any combination of the objects that are normally found on web pages, including content and applications. Users request pages from the website using their browser programs. The responding web server dynamically selects inserts for each of the panels included in each requested page. The selection process may be based on any number of different selection criteria including user preferences and the country or region associated with the web site. The web server renders the selected panels to create each requested page. The dynamically created pages are then returned to the requesting browser.

Various embodiments of the present invention are directed to a storage platform comprising a database engine, a data store, an application programming interface. The data store is implemented on the database engine for storing data therein, and the data store implements a data model that supports the organization, searching, sharing, synchronization, and security of data stored in the data store. Specific types of data are

described in schemas. The application programming interface enables application programs to access services and capabilities of the storage platform and to access the data described in the schemas. The storage platform supports interoperability with existing file systems, enables users and systems to synchronize data stored in different instances of the data store, and provides the ability for application programs to be notified about and to track changes made to the data in the data store.

### 3. Methodology

#### 3.1. Research Framework



**Figure 1.** The research framework.

#### 3.2. Questionnaire Survey

Firstly, this project should know the students' requirements before starting to develop the platform. So this project distributed questionnaires to students and check where the platform should be built on or what functions do they need on the platform. With respect to the result of questionnaires, we found most students hopes that the platform can still be built on the website (the platform they are using is built on FB) because that is much more convenient for them to use. Additionally, they need a place to temporarily store the goods they are interested in and the search function which can help them quickly find the goods they want. Thus, this project decided to develop a sharing economy platform suitable for these students.

#### 3.3. Case Study

After deciding the research direction, this project has to do some literature review to support the research, so this project should find some papers which are related to sharing economy, sharing economy platform and website platform etc. The papers are introduced in the chapter 2.

### 3.4. Website Function, Database and Interface Design

Depending on the requirements of students, this project decided to add “searching module” which can help students to find out goods faster and “my favorite” to let students store the records that they may want to visit next time. Besides the above two functions, this project added an extra function “message board”, so that consumers can ask sellers some questions and sellers can answer the consumers’ questions. And then the database was designed to correspond to the requirements of the functions. As to the interface design of the website, this project followed the principle of satisfying the users.

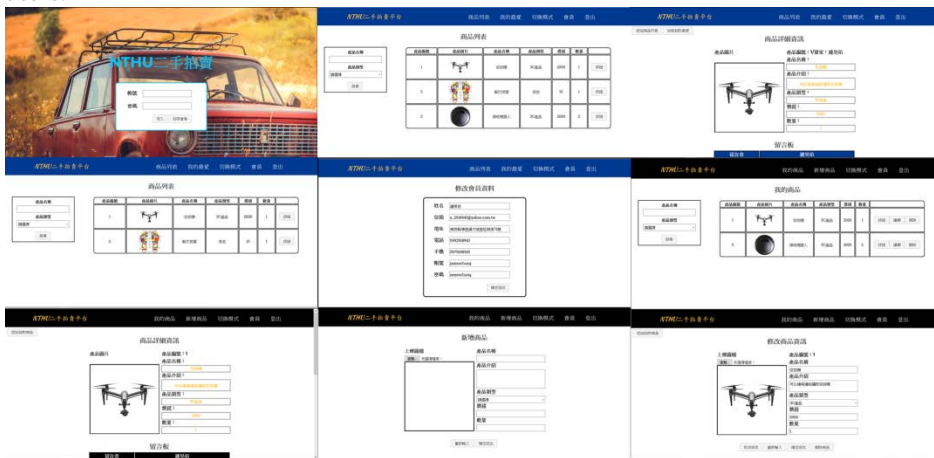


Figure 2. The interfaces of the website platform

	user_id	name	email	address	telephone	cellphone	account	password
<input type="checkbox"/>	1	鍾吳佑	a_2918943@yahoo.com.tw	南投縣埔里鎮大城基街城街71號	0492918943	0975698918	jameschung	jameschung
<input type="checkbox"/>	2	周博仁	andyfan@gmail.com	桃園縣中壢	043939889	0973658426	andyfan	andyfan
<input type="checkbox"/>	3	范哲瑋	phebe0302@yahoo.com.tw	台北市士林夜市	03654878	0938564825	phebefan	phebefan
<input type="checkbox"/>	5	馮柏奕	kevin@gmail.com	台北三峡	02235684	0965321854	kevinfung	kevinfung

	product_id	account	picture_name	product_name	product_introduction	product_type	unit_price	quantity
<input type="checkbox"/>	1	jameschung	camera airplane.jpg	空拍機	可以遙控拍攝的空拍機	3C產品	2000	1
<input type="checkbox"/>	2	andyfan	massage.jpg	幫忙按摩	按摩每小時10元	其他	10	1
<input type="checkbox"/>	3	jameschung	sweeping machine.jpg	掃地機器人	很好用	3C產品	3000	2

	serial_num	account	product_id
<input type="checkbox"/>	3	jameschung	1
<input type="checkbox"/>	4	jameschung	2

	serial_num	product_id	account	content
<input type="checkbox"/>	1	1	jameschung	您好，請問空拍機還有嗎？
<input type="checkbox"/>	2	1	jameschung	我了解空拍機的性能
<input type="checkbox"/>	3	1	jameschung	電池可以持續1000小時囉
<input type="checkbox"/>	4	1	jameschung	不告訴你
<input type="checkbox"/>	5	1	andyfan	我也想知道空拍機的性能!!
<input type="checkbox"/>	6	2	jameschung	怎麼按？
<input type="checkbox"/>	7	3	andyfan	想問這下掃地機器人的規格
<input type="checkbox"/>	8	3	jameschung	不告訴你

Figure 3. The database of the website platform.

### 3.5. Website Coding

In the process of developing the website, we used many website languages such as Html, PHP, Javascript, jQuery and MySQL database.

### 3.6. As-Is/To-Be Analysis

The As-Is process of purchasing goods is that we should go to FB and then find the goods we want one by one. If we forget who is the seller or we want to search the same products, then we have to search the products one by one again. This motion waste a lot of consumers' time. And in the other situation, if we want to search a specific type of products, we have to search them one by one again because all kinds of products are in the same interface without the searching function. From the view point of sellers, if they want to find their products, they have to search them one by one too. There are not different interfaces or searching function to help them find their products. On the contrary, these problems are solved in the To-Be process. The searching module and my favorite can prevent users from repeatedly searching.

## 4. Conclusions

The NTHU Second-hand Auction Platform is friendly to the users. And in the As-Is/To-Be analysis, we found that it really works to get rid of those shortcomings in the old process and improve the user experience. But there are still a lot of things to improve, as this project previously refer to, building an sharing economy platform with well-established framework is very hard and also important. For the future directions, this platform can be improved through integration of website and APP, adding the function of chat room or even let machine tells you what you need or don't need, where you can get or sell those things. By doing so, the sharing economy platform will show its real value. Sharing economy is really a good concept that can help everyone to win their profits and get what everyone needs. The most importance is if we achieve cycling economy everywhere in the real world, then we can really save our earth and be sustainable development.

## 5. Acknowledgement

This study is the final report of E-Enterprise Integration.

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