



# Research on Consumers' Intention to Participate in WEEE "Internet +" Recycling Based on Trust Transfer Theory—Take the Aihuishou Platform for Example

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**Abstract.** Consumer participation in recycling is an important part of the "Internet +" WEEE recycling system, so how to improve the enthusiasm of consumer participation is an urgent problem to be solved. This paper constructs the trust mechanism of the consumer recycling platform based on the D&M model, SOR model, and trust transfer theory. A total of 269 valid data were collected through the questionnaire to verify the hypothesis. The results show that information quality, perceived reputation, and trust propensity positively affect the consumer trust mechanism, and there is a trust transfer process in the "Internet +" recycling process. Trust in platform plays a partially mediating role in information quality, perceived reputation, and intention to participate in recycling. The research explores the consumer trust mechanism in the "Internet +" WEEE recycling, and the impact on consumers' intention to participate in the "Internet +" recycling, which provides beneficial enlightenment for platform managers.

**Keywords:** "Internet +" recycling · Consumer trust · Intention to participate in recycling

## 1 Introduction

With the development of technology, the speed to replace electronic products is accelerated, and the amount of waste electrical and electronic equipment (WEEE) is increasing. The scale of second-hand e-commerce scale has reached 100 billion and is growing. China has promoted the "Internet + recycling" model, however, the current main recycling method is still "second-hand vendors low price recycling—simple reuse—disorderly dismantling—scrap discard" (Li et al., 2015). As a new recycling mode, the existing researches mainly focus on the recycling mode and the intention or behavior of "Internet +" recycling. The trust issue in the field of recycling has also gradually attracted the attention of scholars (Liu et al., 2021; Li et al., 2019). However, the trust mechanism is still unclear.

Therefore, it is of great significance to study the consumer trust mechanism to promote consumer recycling. This paper combines the S-O-R model and trust transfer theory

to build a theoretical model of consumers' intention to participate in "Internet +" recycling and conducts empirical analysis to explore the trust mechanism, to put forward relevant suggestions and management insights for solving the recycling dilemma.

## **2 Theoretical Background and Hypothesis**

### **2.1 Website Quality and Trust in Recycling Platform (TP)**

Website quality refers to users' evaluation of website functions that meet their requirements and reflect the overall advantages of the website (AM et al., 2002), and this definition has been adopted by most scholars. The dimensions of website quality are mainly divided into three aspects: information quality, system quality, and service quality. Information quality (IQ) refers to the content characteristics of a website, such as the accuracy and relevance of information (Zhang, 2021). Consumers form an initial impression of a website by browsing the information on it. This paper refers to whether the website information can be closely related to recycling content and user needs. Therefore, the following hypothesis is proposed:

H1: Information quality has a positive impact on trust in the recycling platform.

System quality (SQ) mainly refers to the user's perception of all aspects of the website hardware facilities, such as the running speed of the website, visual perception effect, and so on. Websites with high system quality can provide users with a pleasant experience, thus influencing their attitudes and behavior (Wei et al., 2019). Sikandar et al. (2021) pointed out that website design and other qualities have a positive impact on consumers' purchase intention, and trust plays a significant intermediary role. Therefore, the following hypothesis is proposed:

H2: System quality has a positive impact on trust in the recycling platform.

### **2.2 Perceive Website Reputation (WR) and Trust in Recycling Platform (TP)**

Platform reputation is a comprehensive evaluation of the historical behavior of a platform made by a third-party institution (Zhang, 2021), which is an important factor for a website, especially in the period of initial trust establishment. The positive platform reputation is conducive to the emergence of consumer trust. Zhang (2021) pointed out that consumers' perceived reputation of cross-border online shopping sub-platforms, as an edge path, would positively affect consumer trust. In the field of recycling, the quantity and quality of online word-of-mouth, as well as the professional degree of publishers, have been proved to positively affect consumers' perceived trust (Li et al., 2019). Therefore, the hypothesis is proposed:

H3: Perceived reputation has a positive impact on trust in the recycling platform.

### **2.3 Trust Propensity (TP) and Trust in Offline Stores (TS)**

The propensity to trust refers to an individual's general willingness to trust others, which varies depending on experience, personality traits, cultural background, etc. People who

trust others are more likely to trust offline stores. Yan et al. (2020) studied consumer trust in the sharing economy and believed that trust propensity positively affected consumer trust in the sharing economy and was regulated by familiarity. Therefore, this paper proposes the hypothesis:

H4: Trust propensity has a positive impact on consumers' trust in offline stores.

## 2.4 Trust and Intention to Participate in "Internet +" Recycling (IR)

Trust was first applied in the field of psychology, and then gradually applied to marketing, management, etc. Trust is an important antecedent for people to participate in business activities and has been proved to be a critical factor for the success of e-commerce (Gefen et al., 2003). Due to the virtuality and opportunism of electronic services, trust can increase behavioral intention by reducing uncertainty, and acting as an antecedent of behavioral intention. Belanche et al. (2014) studied the mediating role of trust among perceived service quality, perceived website quality, reputation, and purchase intention. Xiao et al. (2018) found that consumers' trust in offline communities and online platforms in the O2O environment jointly significantly affected consumers' repurchase intention. To sum up, this paper proposes the hypothesis:

H5: Consumers' trust in the platform has a significant positive impact on their intention to participate in recycling.

H6: Consumers' trust in offline stores has a significant positive impact on their intention to participate in recycling.

H7: Consumers' trust in the platform significantly affects consumers' trust in offline stores.

H8: Platform trust plays a mediating role among information quality (a), system quality (b), perceived reputation (c), and intention to participate.

## 3 Methodology

### 3.1 Questionnaire Design and Survey Administration

Questionnaires for this study were distributed through the online research platform named Wenjuanxing from April 12 to May 15, 2022. The questionnaire contained 8 variables, and adopted a 5-level Likert scale. After removing 14 responses in which more than 10 consecutive questions were marked the same value, a total of 269 valid responses were used for the empirical analysis of this study. Young consumers tend to be the main force of rapidly discarding electronic products, and college students are the representative samples (Kumar et al., 2019; Aboelmaged et al., 2021). Therefore, it is reasonable that 57.2% of the respondents are college students.

**Table 1.** Test results of internal consistency and convergent validity.

	Cronbach's alpha	CR	AVE
PR	0.667	0.817	0.599
IQ	0.629	0.801	0.574
IR	0.694	0.831	0.621
TP	0.687	0.827	0.615
WR	0.749	0.857	0.666
SQ	0.618	0.795	0.564
TS	0.711	0.839	0.636

## 4 Results

### 4.1 Measurement Model Test

In this paper, the partial least squares structural equation model of Smart PLS is used to test the model and analyses the data. It can detect the relationship between paths without being strictly restricted by the normal distribution of data (Aboelmaged, 2021). In addition, it can estimate all the values needed to judge the validity and reliability of the construction. As shown in Table 1, Cronbach's  $\alpha$  values were all greater than 0.6, and CR values were all greater than 0.7, indicating that the study data had good reliability.

The validity of measurement can be explained by two indicators, namely convergence validity and discriminant validity. In general, the factor load should be greater than the base value of 0.7, and the AVE value must be no less than 0.5. All loading values and AVE values meet the requirements of standard values. Therefore, the convergence validity of this study has been confirmed. The discriminant validity of constructs can be tested by the following two criteria. First of all, the square root AVE of each construction in Table 2 is greater than its correlation coefficient with other constructions, indicating that the measurement model has good discriminant validity. In addition, the load of all items on corresponding constructs greatly exceeds the cross load on other constructs, thus confirming the discriminant validity of constructs in the research model.

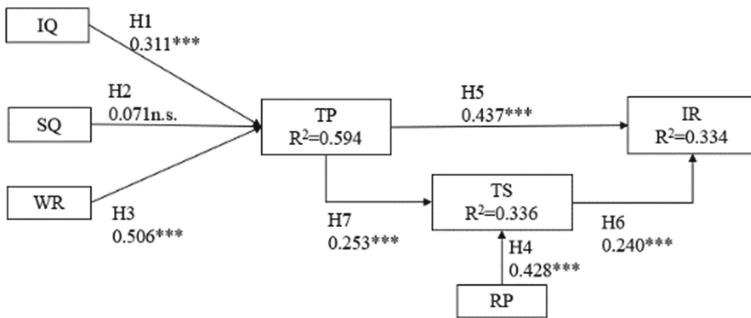
### 4.2 Structural Model Test

Smart PLS was used for structural equation model (SEM) analysis to test the relationship proposed in the research model. Figure 1 shows the path coefficients between each of the two constructs in the structural model. Information quality had a positive effect on platform trust ( $\beta = 0.311$ ,  $P < 0.001$ ), while system quality had no significant effect on platform trust ( $\beta = 0.071$ ,  $P > 0.05$ ). Perceived reputation was positively correlated with platform trust ( $\beta = 0.506$ ,  $P < 0.001$ ), and trust propensity positively affected offline trust ( $\beta = 0.428$ ,  $P < 0.001$ ). Platform trust promotes offline trust ( $\beta = 0.253$ ,  $P < 0.001$ ), and positively affects consumers' intention to participate in recycling ( $\beta = 0.437$ ,  $P < 0.001$ ). Offline trust also significantly affects consumers' intention to participate in recycling ( $\beta$

**Table 2.** Correlations between constructs.

	PR	IQ	IR	TP	WR	SQ	TS
PR	<b>0.774</b>						
IQ	0.453	<b>0.758</b>					
IR	0.480	0.550	<b>0.788</b>				
TP	0.425	0.668	0.560	<b>0.742</b>			
WR	0.394	0.538	0.481	0.705	<b>0.816</b>		
SQ	0.366	0.668	0.506	0.570	0.518	<b>0.751</b>	
TS	0.532	0.353	0.413	0.431	0.435	0.285	<b>0.797</b>

Note: The bold portion is the square root of AVE



**Fig. 1.** Path coefficient of the structural model; \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

= 0.240, P < 0.001). Therefore, all hypotheses are tested except H2. The influence of system quality on consumer platform trust has not been verified, which may be due to the high similarity of network systems and the small difference in system quality (Yao et al., 2021).

Sobel Test was used in this study to test the significance of the mediation effect. The value of the Sobel Z Test greater than 1.96 indicates that the mediation effect is significant. In addition, when VAF is above 80%, complete mediation exists; when VAF is below 20%, no mediation exists; when VAF is between 20% and 80%, partial mediation exists. As shown in Table 3, only the mediating effect of platform trust is only verified among information quality, perceived reputation, and intention to participate, and all of them are partial mediating effects. Therefore, H8a and H8c are supported and H8b is not verified.

## 5 Conclusions

Based on the D&M model and the theory of trust transfer, this paper studies the consumer trust mechanism and consumers' intention to participate in recycling under the situation of online recycling, and draws the following conclusions: The information

**Table 3.** Mediation effect test.

	IQ-> TP-> IR	SQ-> TP-> IR	WR-> TP-> IR
IE	0.053	0.013	0.086
Sobel Z Test(> 1.96)	2.137	1.102	2.253
TE	0.238	0.181	0.138
VAF	22.22%	7.00%	62.42%

quality of websites, the reputation of websites perceived by consumers are positively correlated with the trust of platforms, and the trust propensity is positively correlated with the trust of stores; Trust in the platform and offline stores have a positive impact on recycling participation intention, and trust in the platform has a positive impact on offline trust. Despite the contributions, this study has limitations in several aspects. First, future research can be conducted on multiple recycling platforms to further study the consumer trust mechanisms. Second, the study is based on a static perspective, but users' trust evolves dynamically over time, which is the limitation of most trust studies so far.

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Jianling Wang: overseeing research integrity and design.

## Bibliography

1. Li Chunfa, Han Fangxu, Yang Qiqi. (2015). Science and technology management research, 35(06):168–174.
2. Liu Yongqing, Jin Caiyun, Ding Wenbin. (2021). Electronic waste recycling network platform based on C2B trust mechanism empirical study [J]. Journal of human university of science and technology (social science edition), 24 (4):119–127. The <https://doi.org/10.13582/j.carolcarrollnki.1672-7835.2021.04.016>.
3. Li Chunfa, Feng Jianjun. (2019). Research on the influence of eWOM on consumers' willingness to participate in "Internet+" used cell phone recycling [J]. Ecological economy, 35(03):73–78.
4. Aladwani A M, Palvia P C. (2002). Developing and validating an instrument for measuring user-perceived web quality[J]. Information & Management, 2002, 39(6):467–476.
5. Zhang H N. (2021). Research on the influencing factors and mechanism of consumer trust of adjunct cross-border online shopping platform [D]. Jilin university, 2021. 10.27162/, dc nki. Gjlin. 2021.000062
6. Wei Gao & Xue Li (2019) Building presence in an online shopping website: The role of website quality, Behaviour and Information Technology, 38:1, 28–41, <https://doi.org/10.1080/0144929x.2018.1509127>

7. Qalati, S. A., Vela, E. G., Li, W., Dakhan, S. A., Hong Thuy, T. T., & Merani, S. H. (2021). Effects of perceived service quality, website quality, and reputation on purchase intention: The mediating and moderating roles of trust and perceived risk in online shopping. *Cogent Business and Management*, 8 (1). <https://doi.org/10.1080/23311975.2020.1869363>
8. Yan Qiang, Hu Cheng-rong, Zhang Le. (2020), Shared economic factors affecting consumer trust in the empirical study [J]. *Journal of scientific research management*, 9 (10): 202–209. <https://doi.org/10.19571/j.carolcarrollnki.1000-2995.2020.10.022>.
9. Gefen, D., Karahanna, E., & Straub, D. W. (2003). Inexperience and Experience With Online Stores: The Importance of TAM and Trust. 50(3), 307–321.
10. Belanche, D., Casalo, L. V., Flavian, C., & Schepers, J. (2014). Trust transfer in the continued usage of public e-services. *Information and Management*, 51(6), 627–640. <https://doi.org/10.1016/j.im.2014.05.016>
11. Xiao, L., Fu, B., & Liu, W. (2018). Understanding consumer repurchase intention on O2O platforms: an integrated model of network externalities and trust transfer theory. *Service Business*, 12(4), 731–756. <https://doi.org/10.1007/s11628-018-0370-0>
12. Kumar, A., (2019). Exploring Young adults' e-waste recycling Behaviour using an extended theory of planned behaviour model: A cross-cultural study. *Resources, Conservation & Recycling* 141, 378–389
13. Aboelmaged, M. (2021). E-waste recycling behaviour: An integration of recycling habits into the theory of planned behaviour. *Journal of Cleaner Production*, 278, 124182. <https://doi.org/10.1016/j.jclepro.2020.124182>
14. Yao Hai-lin, Zhu Rong. (2021). Will “Internet + Recycling” website quality affect consumers' willingness to participate in online recycling? [J]. *Modern Urban Research*, 2021(10):125–132.

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