Analysis of the Relationships among Motivation to Recycle, Willingness to Recycle, and Satisfaction with Recovery Stations in Taiwan

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Abstract: - Recovery stations hold a key role in the recycling process. This study investigates the relationships among the motivation to recycle, user satisfaction with recovery stations, and willingness to recycle, with consideration of the mediation and moderation effects. We find a positive relationship between motivation to recycle and satisfaction with recovery stations, between satisfaction with recovery stations and willingness to recycle, and between motivation to recycle and willingness to recycle. In addition, we find that customer satisfaction with a recovery station is a mediating variable, and marital status is a moderating variable. Governmentsshould consider encouragingrecovery stations to improve customer-service satisfactionand should develop strategies for gettingunmarried people to recycle.

Key-Words: -Recovery station, motivation to recycle, willingness to recycle, mediation effect, moderation effect

1. Introduction

Sciencedevelopments, technology, and economics have led to a new wave of demand for computers, consumer electronics, and communications products; but they are discarded when consumers choose new products with attractive functions.Now,becauseglobal warming is a serious problem for all nations, the idea of sustainability is receiving much attention from academic institutions, governments, and nongovernmental organizations(NGOs), whose major goals are to reduce the effects of the climatic anomalies (Nawrocka et al., 2009). The concepts of reuse, recycling, and reduction (3R) for endofproductlifecycle are gradually taken seriously. These practices may effectively reduce the use of natural resources and the release of pollutants and carbon emissions, and the environmental impacts of technology (Bystorw and Lonnstedt, 2000; Chung and Poon, 2001; Nasiret al., 2000; Tucker, 2001). In addition, with 3C products, emphasis is on the qualification of Waste Electrical and Electronic Equipment (WEEE), to place the responsibility for the disposal of waste electrical and electronic equipment on the manufacturers, who should establish an infrastructure for collecting waste equipment from private households (Nnorom, 2009; Wang et al., 2011). In order to face the green trend and rules, the Executive Yuan of Taiwan established the National Council for Sustainable Development (NCSD), and then revised the waste disposal act, to promote the implementation of the recycling system. A “polluter-pays” model was established to share the recycling duty among the responsible enterprises; they pay a recycling fee, for recycling subsidies under the Resource Recycling Management Fund (RMF) (Fan et al., 2005). Based on financial support from the RMF, private recovery firms have more incentives to recycle and then dismantle their waste products into recycled materials or remanufacture them into derivative products. The upstream of recovery firms are recovery stations, where people engage in the collection of waste products and offer rewards to collectors, households, or businesses when they collect 3C waste products, waste papers, all types of scrap metal, PET bottles, and other recyclable products, and deliver these to recovery stations. For example, Tzu Chi Foundation in Taiwan, which operates over 4,500 recovery stations,collects PET bottles and transfers them to recovery firms, where they are rinsed, shredded, and converted into polyester resins, which are then used in the manufacturing of thermal underwear, T-shirts, hospital bed sheets, medical gowns, and uniforms for Tzu Chi volunteers (http://www.tzuchi.org.tw/).

We believe that recovery stations hold an important position in 3R work. A clear description of the relationships between recovery stations and residents could support the recovery stations in developing strategies for getting people to recycle actively. Therefore, in this study, we focus on the motivation

to recycle and user satisfaction among participants to determine if users' satisfaction with their recovery station affects their willingness to recycle. The objectives of this paper are to present an updated review of and innovative information about the relationship between recyclers and the recovery stations in Taiwan.

1.1 The motivation to recycle and satisfaction with recovery stations

In Taiwan, residents and recovery stations interact closely in the recycling system because most residents receive incentives to recycle and obtained rewards from recovery stations (Werner and Makela, 1998). In addition, surveying the motivating factors for recycling in Taiwan may be valuable for finding the reasons why most residents don'trecycle. Numerous studies have found that most residents cite inconvenience and lack of time as the main reasons why they do not recycle (Vining and Ebreo, 1990). De Young (1989) found that recyclers and non-recyclers have similar economic, social, and ecological motivations toward recycling. Moreover, most non-recyclers were younger people, or were from a lower socioeconomic class, and the reasons for their non-recycling included longer distance between home and the recovery station, or a lack of education or information about recycling (Hopper et al., 1994). González-Torre and Adenso-Díaz (2005) found that most residents disposed of their waste products in the bins that were closet to their houses. Chen and Chen (2008) found that household solid waste was related with household incomes, recycling behaviors, and cultures for environmental concerns. Lin et al. (2000) stated that the main reasons people do not participate in recycling in neighborhoods are insufficient environmental education, a lack of information about the pricing of recovery products, and a lack of enthusiastic governmental leadership toward recycling.In summary, we believe that residents have different types of motivation to recycle that stimulate recycling performance. In Taiwan, rewards and social and ecological factors might not be the only motivators, and we need to induce the incentives that lead people to recycle. In addition, we should consider the factor of user satisfaction with the recovery stations in order to connect the relationships among motivation to recycle, satisfaction with recovery centers, and willingness to recycle. The first hypothesis will investigate these relationships.

1.2 Willingness to recycle

Most of the people polled think of recycling as a kind of mandatory housework. Most reported becoming more environmentally aware, but they are usually discouraged insufficient information about how to treat their collected waste products. For example, it is difficult to find the location of the nearest recovery station or the nearestrecycling containers and recycle bins, or to know when the resource-recovery vehicles will come to collect waste products. Werner and Makela (1998) stated that some residents complained that recycling work is messy and time consuming, and that they did not have enough space to stack the disposed of waste products. Vicente and Reis (2000) stated that the collection and processing of waste products is difficult to achieve, because theircommunity did not have enough places to set the recycling bins. Moreover, understanding the classification of waste products is complicated for some people. The fluctuating sale price of recovered materials is also a problem they noted. Some researchers have focused on the association between recycling behaviors and differences of gender, age, education level, family income, or political ideology (Scott, 1999; Owens et al., 2000). Lin et al. (2000) found that the most common occupations of recyclers ranked as agriculture-related worker, businessperson, government official, homemaker, industrial worker, and service-industry worker; the educational level of recyclers ranked as "under high school," "senior high school," and "college above." Ye et al. (2000) found that attitude and norms of subjective and consciousness behavior control would positively affect the habitualness of recycling.To summarize, we find that some people were not satisfied with the recovery system, including the recovery station, the recycling bins, or the resource-recovery vehicles, and all of these factor may affect a person's willingness to recycle. For the sake of simplicity, we focus on the discussions about users' satisfaction with recovery stations, and we try to identify the factors that affect people's level of satisfaction with recovery stations. Then, we evaluate the relationship between willingness to recycle and satisfaction with the recovery center. Next, we examine the relationship between willingness to recycle and motivation to recycle. We need to consider whether a higher motivation to recycling implies a higher willingness to recycle. Therefore, the second and third hypotheses will investigate these two relationships.

1.3 Mediationand moderation analysis

To show the relationship among motivation to recycle, satisfaction with recovery stations, and willingness to recycle, we test the indirect effect of motivation to recycle on willingness to recycle through the satisfaction with the recovery stations. That is, we tested satisfaction with the recovery station as a mediating variable. Moreover, Ye et al. (2000) found that women are more serious about recycling than men are, but we were unable to find out whether those testers have married or not. Thus, we want to test furtherthe marital-status variable, which we suspect might affect thewillingness to recycle. Therefore, the fourth and fifth hypotheses will investigate these two relationships. Fig. 1 describes the relationships among the constructs.

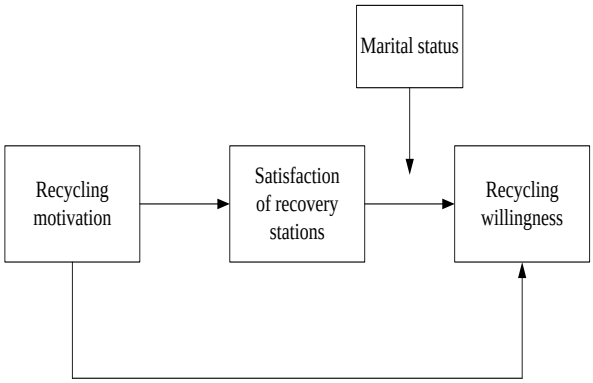

Fig. 1. Motivation to recycle, satisfaction with recovery stations, and willingness to recycle

2. Methodology

2.1. Sample and data collection

In this study, we designed a questionnaire to collect information from residents in Taiwan who may or may not be recycling waste products. The questionnaire has four parts. The first partdeals with recycling behaviors, the reasons for them, and the main motivation factors that attract people to recycling. The second part deals with satisfaction with recovery stations to identify the main factors that influence residents' level of satisfaction. The third part deals with willingness to recycle waste materials or products. The fourth part collects the nominal data for the interviewees. For the first three parts, we measured these items by means of a five-point Likert-type scale, between April 20 and May 20 of 2010. The interviewees were from the northern area of Taiwan. We conducted interviews at different hours and during various days of the week to collect the data as randomly as possible. We collected 280 samples, and identified 255 of them as valid.

2.2. Statistical data analysis

We analyzed the data using factor analysis, and then describe the variabilityamong the observedvariables,in terms of a potentially lower number of factors. In this study, we intended to apply a principal components analysis (PCA), where 16 items were carried to assess the motivations toward recycling. We decided not to work with the 16 initial motivation variables, and instead decided to reduce them, in order to make the factor characterization easier and more understandable. Moreover, the strong correlations observed among the 16 items made it pertinent to use a PCA. To assess the adequacy of the PCA to the set of initial variables, the KMO statistic was computed, and the Bartlett's test was performed (Hair et al., 1995). The reliability of the new dimensions was measured by means of Cronbachαcoefficient. The PCA was applied to the set of 16 satisfaction levels for reducing data.Next, in our model, some independent variables are correlated with some dependent variables. Not only do the independent variables exert some direct effect upon the dependent variables, but also, they cause changes in a mediating variable (M), which causes changes in the dependent variable. Then, the $X \rightarrow M \rightarrow Y$ relationship is as a mediation effect that shows the indirect effect of X on Y through M. Therefore, using a multiple regression model, we can predict Y from X and M, where the partial effect of M must be significant.Inaddition, a moderation effect occurs in which the relationship between two variables depends on a third variable, such that the third variable is as themoderator variable. The effect of a moderating variable is as aninteraction where a qualitativeorquantitative variableaffects the direction and/or strength of the relation betweendependent and independent variables. Therefore, a moderation analysis is used to quantify the effect of the moderating variable in a regression model.

3. Recovery Systems in Taiwan

The increasing amount of waste is an important concern for manufactures. Taiwan has proposed the use of the EPR system of the Environmental Protection Administration, since 1997, to promote "Resource Recycling Four-in-One Program" policy, which integrated residents, recycling companies, local governments, and recycling funds to carry out resource recycling and waste minimization. As shown in Fig. 2, first, residents can deliver their waste products to a garbage collection team, a recovery station, or a community-based voluntary recycling organization. Next, these three recycling

organizations can sell their recyclable waste products to recycling enterprises. Finally, recycling treatment firms can begin to treat these waste products and prepare them for reuse or to become remanufactured products, and they can isolate recyclable materials from useless materials. In addition, the RMF supervised recycling fees from the designated responsible entities, and provided subsidies to recycling treatment firms and incentive mechanisms for promoting convenient recycling channels. Therefore, recovery stations play an important role in the Four-in-One Program. The recycling ratio has been increasing since 1997 (Tsai et al., 2007); however, garbage-collection teams handle the recyclable waste products with waste trucks at a given point and given time, and residents need to sort the recyclable waste products in their homes, which is sometimes an inconvenience for the residents (Chen and Chen, 2008). Moreover, Taiwan is a small island country, with a total ca. 36 000 km^2, and it can be difficult to have enough places to conduct community-based voluntary recycling programs. Most of the residents could choose to recycle at a recovery station, where residents need not handle the recyclable waste products or rely on waste trucks at a given point and time, and would therefore not have to locate their community-based voluntary recycling program. Residents can find a recovery station that is close by, and then they will be paid for the recyclable waste products from the recovery station. However, the traditional recovery station in Taiwan is usually dirty and is uncomfortable for some residents, which might reduce the willingness of the residents to use recovery stations. Therefore, we hope to find the relationships among the motivation to recycle, satisfaction with the recovery station, and the willingness to recycle, so that the EPA may develop a recycling policy that promotes the use recovery stations primarily, which will improve environments.

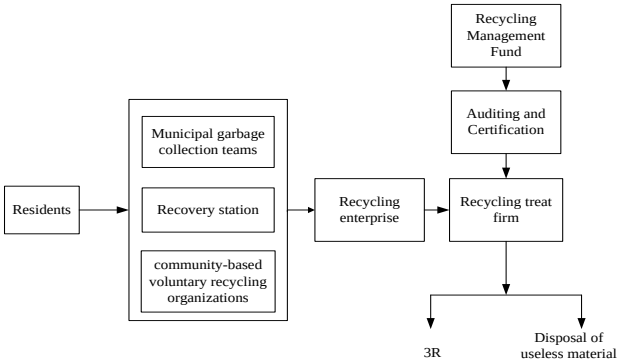

Fig. 2. The recycling system

4. Results

The data analysis for the descriptive statistics show that in terms of occupation, 25.9% of the interviewees were students (the greatest proportion of the sample) and 1.6% were police officers or agricultural, forestry, or fisheries workers (the least greatest proportion of the sample). In terms of the gender variable, 43.1% of the interviewees were male, and 56.9% were female. Whereas, 52.2% were unmarried, and 47.8% were married. We use factor analysis to obtain the degree of motivation to recycle and satisfaction with recovery stations, which is shown in Table 1 and Table 2. In Table 1, we apply PCA for factor analysis, and then defined four factors: *habitual motivation*, *green motivation*, *altruistic motivation*, and *policy motivation*In Table 2, we define four factors: *service satisfaction*, *process satisfaction*, *reward satisfaction*, and *information satisfaction*

Table 1. The factors of the motivation to recycle

NO.	Input Variable	Habitual motivation	Green motivation	Altruistic motivation	Policy motivation
D1	You will carry out the recycling all the time.	0.699			
D2	Without receiving environmental protection news, you will also recycle actively.	0.850			
D4	You will carefully read the recovery and environmental protection news.	0.536			
D8	You will support to the recovery work vigorously.	0.686			
D5	You will purchase or use secondary products.		0.594		
D7	You will purchase a green product even if its functions are worse.		0.734		
D11	You will purchase a green product even if its price is more expensive.		0.797		
D3	You will recycle effectively after deriving information from the website or the active electronic monitoring system.			0.705	
D13	Do you think that the resource recovery four-in- one plan has made a major contribution to the development of recycling?			0.786	
D16	You will reuse recyclable materials or products (i.e.,plastic bags, green chopsticks, etc.).			0.441	
D9	Your workplace or school carries out the recovery classification correctly.				0.430
D10	Roughly, you satisfy the recovery-service process in the recovery station.				0.744
D15	You are willing experience more waiting time in the recovery-service process.				0.680
Cronbach'sα		0.723	0.574	0.531	0.542
Eigen value		2.402	1.655	1.652	1.537
Accumulative explained variance		18.478%	31.208%	43.912%	55.734%
KMO = 0.716		Bartlett χ^2 = 610.219			

Table 2. The factors of the satisfaction with the recovery station

NO.	Input Variable	Service satisfaction	Process satisfaction	Reward satisfaction	Information satisfaction
S1	The recovery station can clearly reply to your questions.	0.618			
S6	You are familiar with classifications for the recovery items.	0.651			
S9	You will go to the same recovery station for recycling.	0.656			
S2	The recovery station will clearly introduce the recovery items.		0.455		
S3	Your workplace or school has a close relationship with the recovery station.		0.572		
S4	The recovery items are classified and demonstrated regularly and clearly.		0.582		
S7	Is the recovery station near your house?		0.488		
S8	The clerk in the recovery station has a good service attitude.		0.558		
S10	Do you think that the recovery station is highly profitable?			0.816	
S11	Do you think that the recovery work is highly profitable?			0.802	
S5	Will you purchase or use the reuse products?				0.844
S14	Is the parking place indicated clearly?				0.539
S16	After the transaction in the recovery station, you can easily understand the recycling price for each item.				0.511
Cronbach'sα value		0.508	0.592	0.655	0.563
Eigen value		1.941	1.819	1.716	1.502
Accumulative explained variance		14.933%	28.926%	42.123%	53.680%
KMO = 0.722		Bartlett χ^2 = 540.955			

Clearly, residents with different nominal characteristics might have different degrees of motivations to recycle and differing levels of satisfaction. The relationship between motivation to recycle and satisfaction with the recovery station requires further consideration and confirmation. Moreover, many residents with a willingness to recycle were what we consider "block leaders," residents who arranged meetings with neighbors, promoted the idea of recycling, and gave instructions on the recycling programming (Cook and Berrenberg, 1981). Therefore, the willingness to recycle is important to recycling efforts. By linking the information about motivation, satisfaction, and willingness, recycling efforts can be improved, promoted, and sustained effectively. Based on the above considerations, we tested the following hypotheses.

Hypothesis 1 The motivation to recycle is positively related to satisfaction with recovery stations.

We use the motivation factors of "habitual motivation," "environmental motivation," "altruistic motivation," and "policy motivation" as independent variables, and use each of the satisfaction factors, "service satisfaction," "process satisfaction," "reward satisfaction," and "information satisfaction,"as the dependent variables, respectively; then, the multiple regression models can be obtained by setting the significance value of α to be 0.05. First, we use habitual motivation, green motivation, altruistic motivation, and policy motivation as independent variables, and service satisfaction as the dependent variable, and then we derived the multiple regression equation, as shown in Table 3. In Table 3, policy motivation and habitual motivation positively affect the service satisfaction associated with the recovery stations. Therefore, we clearly have shown that higher levels of policy and habitual motivations in recycling work occur with higher levels of satisfaction with recovery stations.

Table 3.Motivation and service satisfaction

	Unstandardized coefficient		t Value	p-value
	coefficient	standard deviation		
policy motivation	-1.029E-16	0.056	0.000	1.000
habitual motivation	0.407	0.056	7.243	0.000

Second, we use habitual motivation, green motivation, altruistic motivation, and policy motivation as independent variables, and process satisfaction as the dependent variable; then we derived the multiple regression equation as shown in Table 4, in which policy motivation positively affects the service satisfaction associated with the recovery station. Therefore, we have clearly shown that higher policy motivation in recycling work is positively related with higher process satisfaction.

Table 4.Motivation and process satisfaction

	Unstandardized coefficient		t Value	p-value
	coefficient	standard deviation		
Constant	-1.822E-16	0.061	0.000	1.000
policy motivation	0.263	0.061	4.334	0.000

Third, we use habitual motivation, green motivation, altruistic motivation, and policy motivation as independent variables, and reward satisfaction as the dependent variable. We then derived a multiple regression equation, as shown in Table 5. In Table 5, habitual motivation positively affects the reward satisfaction associated with the recovery station. Sansone et al. (1992) proposed that when a task is not inherently pleasurable or rewarding, residents will not do it unless they have some reason to persist. In this regression equation, it shown that inherently habitual motivation to recycle is positively related with reward satisfaction.

Table 5.Motivation and reward satisfaction

	Unstandardized coefficient		t Value	p-value
	coefficient	standard deviation		
Constant	-1.979E-16	0.062	0.000	1.000
habitual motivation	0.162	0.062	2.608	0.010

Fourth, we use habitual motivation, green motivation, altruistic motivation, and policy motivation as independent variables, and information satisfaction as the dependent variable. We then derived the multiple regression equation shown in Table 6. In Table 6, policy motivation positively affects information satisfaction associated with the recovery station. In recycling work, education or advertisement can promote recycling by facilitating attitude change, which is an important incentive to residents with higher policy motivation, and thus they could be driven toward a higher information satisfaction in relation to the recovery station.

Table 6.Motivation and information satisfaction

	Unstandardized coefficient		t Value	p-value
	coefficient	standard deviation		
Constant	-5.693E-17	0.062	0.000	1.000
policy motivation	0.130	0.062	2.090	0.038

The hypothesis test results shown in Table 3 to Table 6can be rewritten as shown in Table 7. Clearly, habitual motivation is positively related to service and reward satisfaction, and policy motivation is positively related to service, process, and information satisfaction. Therefore, Hypothesis 1 is partially significant, in that some incentive strategies for increasing the motivation to recycle could improve the satisfaction with recovery stations. Practically speaking, the EPA in Taiwan could establish some incentive policies for residents. Moreover, according to the results of testing our hypothesis, we believe that good policies could improve satisfaction with recovery stations.

Table 7.Integration between motivation and satisfaction

Independent variable	**Dependent variable**	**Hypothesis result**
Habitual motivation	Service satisfaction	Positive relationship
	Process satisfaction	Not significant
	Reward satisfaction	Positive relationship
	Information satisfaction	Not significant
Green motivation	Service satisfaction	Not significant
	Process satisfaction	Not significant
	Reward satisfaction	Not significant
	Information satisfaction	Not significant
Altruistic motivation	Service satisfaction	Not significant
	Process satisfaction	Not significant
	Reward satisfaction	Not significant
	Information satisfaction	Not significant
Policy motivation	Service satisfaction	Positive relationship
	Process satisfaction	Positive relationship
	Reward satisfaction	Not significant
	Information satisfaction	Positive relationship

Hypothesis 2 Satisfaction with the recovery stations is positively related to the willingness to recycle.

In the recycling process, in Taiwan, a recycling station directly contacts residents in areas where research results indicate that people hold positive attitudes toward recycling and are therefore more likely to recycle (De Yuung, 1986). In investigating Hypothesis 2, we want to check if positive attitudes imply a satisfaction with the recovery station. Therefore, we model a multiple regression equation by using the factors of satisfaction with the recovery station, including service satisfaction, process satisfaction, reward satisfaction, and information satisfaction, as independent variables, and willingness to recycle, as the dependent variable. In the regression equation shown in Table 8, the service satisfaction associated with the recycling station is positively related to the willingness to recycle. Clearly, Hypothesis 2 is partially significant such that some incentive strategies to improve the service of the recovery station can improve the willingness to recycle.

Table 8.Satisfaction and willingness to recycle

	Unstandardized coefficient		t Value	p-value
	coefficient	Standard deviation		
Constant	2.608	0.064	40.694	0.000
service satisfaction	0.197	0.064	3.064	0.002

Hypothesis 3 The motivation to recycle is positively related to the willingness to recycle.

In this hypothesis, we use the factors of motivation to recycle, as independent variables, and willingness to recycle, as the dependent variable. The Table 9indicate that policy motivation is positively related to the willingness to recycle, whereas altruistic motivation is negatively related to the willingness to recycle. Clearly, residents with altruistic motivation might be affected by some factors that are negatively related to the willingness to recycle. For example, some residents may recycle to support sustainability and the environment, and, while this might be time-consuming, they may feel social pressure and receive no reasonable reward, and thus they recycle even with little willingness to recycle. Therefore, we have to consider some mediating variables for this indirect effect of the motivation to recycle on the willingness to recycle.

Table 9.Motivation and willingness to recycle

	Unstandardized coefficient		t Value	p-value
	coefficient	Standard deviation		
Constant	2.608	.063	41.573	.000
Policy motivation	.169	.063	2.693	.008
Altruistic motivation	-.240	.063	-3.820	.000

Hypothesis 4 Satisfaction factors associated with recovery stations are mediating variables for the motivation to recycle and the willingness to recycle.

To check Hypothesis 4, we test to see if satisfaction variables related with recovery stations are mediating variables that have indirect effects on motivation and willingness to recycle. Therefore, we use the motivation to recycle and satisfaction with recovery stations, as input variables, and the willingness to recycle, as the dependent variable. We then can derive the mediation results show in Table 10. We believe that service satisfaction associated with recovery stations is positively related to willingness to recycle, which also involves the indirect effects of policy motivation and altruistic motivation on willingness to recycle, through the mediation of service satisfaction related with the recovery station. Therefore, service satisfaction is an important factor for the recovery station, any improvement in the service satisfaction will promote the willingness to recycle.

Table 10. The mediation analysis

	Unstandardized coefficient		t Value	p-value
	coefficient	Standard deviation		
Constant	2.608	.064	40.573	.000
Service satisfaction	.416	.158	2.629	.009

Hypothesis 5 Marital status is a moderating variable for satisfaction with the recovery station and willingness to recycle.

In this Hypothesis, we want to show thatthe relationship between satisfaction with the recovery station and willingness to recycle depends on the marital-status variable. Therefore, we defined the marital-status variable. We use service satisfaction associated with the recovery station as the independent variable, and the re-recycling variable as the dependent variable; then, we use the moderation analysis to quantify the effect of the moderating variable of marital status in a multiple regression model. The results shown in Table 11 indicate that marital status significantly affects the willingness to recycle. Therefore, we can conclude that marital status is a moderating variable where married residents have a greater willingness to recycle than unmarried residents have.

Table 11. The mediation analysis

	Unstandardized coefficient		t Value	p-value
	coefficient	Standard deviation		
Constant	2.485	.089	28.046	.000
Marital status	.213	.129	1.655	.099
Service satisfaction	.281	.133	2.117	.035

5. Conclusion and Discussion

Over the past decade, the trend toward green environmental management has changed from “cradle to grave” to “cradle to cradle,” in pursuit of sustainable environmental development, pollution prevention, and increasing resource recycling. Recovery stations hold a key role in the green actions of recycling, reuse, and reduction. Therefore, we have attempted to identify and discuss questions and potential benefits for improving EPA policy.

5.1 Benefits for governments and recovery stations

This study used multiple regression equations to find positive relationships among motivation to recycle, satisfaction with recovery stations, and willingness to recycle. The hypothesis results show that motivation to recycle positively affects satisfaction with recovery stations, and that motivation to recycle indirectly affects the willingness to recycle, through the mediation of satisfaction with the service of the recovery station. These results can support the EPA in Taiwan in proposing and promulgating incentive-based regulations to best motivate recyclers or nonrecyclers and to encourage recovery stations to look for competitive advantages in improving their service performance. For instance, promotion of service satisfaction can positively affect willingness to recycle. A new style of recovery station could be built, and clear price information could be provided for recyclers. In addition, because marital status is a moderating variable that affects the willingness to recycle, the EPA should coordinate, promote, or educate unmarried residents so that they may perceive the importance of recycling as an effort toward a sustainable environment. Accordingly, the EPA and recovery stations would be able to make some new strategies based on special considerations, to derive more recycling actions from recyclers and nonrecyclers.

The relationships among the motivation to recycle, the level of satisfaction with the recovery station, and the willingness to recycle are noteworthy and important to the field. The effects of satisfaction with the recovery station on the relationships between motivation to recycle and willingness to recycle need further study. Moreover, the importance of working toward a sustainable environment is growing. We hope that these findings can encourage future researchers in this field. Finally, additional research on moderating variables for the willingness to recycle can support our understanding of the underlying mechanisms and the consideration of the diffusion effect, when green work becomes more important. Thereafter, governments could determine which variables are the most effective, and this could lead to greater willingness to recycle and an elevated sense of the importance of working toward a more sustainable environment. In these days of tighter public-sector budgets, governments need clearer regulatory approaches and guidelines.

5. 2 Summary

It is often assumed that persuasion, educating people, or offering rewards encourages people to recycle. This study begins to explain the magnitude of the relationships among motivation to recycle, satisfaction with recovery stations, and willingness to recycle, and how these affect recycling. From this research, we can better understand why people do not recycle more. We have found a positive relationship between motivation to recycle and satisfaction with recovery station, a positive relationship between satisfaction with recovery stations and willingness to recycle, and a positive relationship between motivation to recycle and willingness to recycle. In addition, we also found that satisfaction with recovery stations is a mediating variable, and that marital status is a moderating variable. We recommend that the EPA consider encouraging recovery stations to improve their level of customer-service to improve customer satisfaction, and that they develop and promote strategies to get unmarried people to recycle. We hope that this and future research on these relationships can support recovery station managers in their ongoing debates on service performance, and help governments to propose effective rules for recycling.

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