



The Intention of Residents in Urban Renovation

-A case study in Tainan, Taiwan

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Abstract

Recently, urban Renovation became one of the most important strategies for the government to implement urban regeneration. It more focuses on improving community environment or buildings. The government had tried many different ways to encourage people to participate in urban renovation projects, such as tax exemption, floor area incentive, and subsidies. However, despite of its great promotional effort, the government had not seen results. Thus, this research set out to reveal the key factors which can influence the intention of residents in urban renovation.

A conceptual model of this study was built in two steps. First, social cognitive theory, theory of planned behavior, and technology acceptance model were applied to analyze residents' behavior in urban renovation. Second, key impact factors which influence the intention of residents were revealed through literature review and pilot text. Once the theoretical model was built, a questionnaire was designed based on the model to understand the intention of Tainan residents. Structural equation modeling was then applied to survey result to modify the conceptual model in order to estimate the most likely relationships between the variables.

There are two major accomplishments in this research. First, a conceptual model of resident's intention in urban renovation was built. The key impact factors are personal attitude, perceived usefulness, neighbors, residential dissatisfaction and perceived ease of use. Researchers can apply this model in different studies to reveal residents' intention in urban renovation. Second, the results of the structural coefficients show

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that residential dissatisfaction and personal attitude were identified as the most important factors to influence Tainan residents' intention. In addition, people are more concerned about the quality of community environment than the buildings themselves. Thus, Tainan city government should implement projects from a neighborhood or local community. Furthermore, not only tell residents how many subsidies the government can provide but also show them how much the urban renovation project can improve their environment.

1. Introduction

In the context of urban regeneration (UR), governments generally seek to implement policies aimed at improving the social and physical environment. Moreover, it is an important issue for promoting a sustainable city (Roberts & Sykes (2000) ; Wallbaum .et al , 2011) Unfortunately, these policies usually fail, or have unsatisfying results (Mathers .et al,2010). Many studies have tried to explore the reasons behind the unsatisfactory results of such policies, most of past studies focused on improving the policy or providing more incentives. However, residents play a more and more important role in urban regeneration affairs. A UR project cannot be succeed without resident's support (Gullino, 2009; Chen, 2009). However, the factors that influence residents' intention in urban regeneration still remain relatively unclear. Thus, this research set out to reveal the key factors which can influence the intention of residents in UR.

In Taiwan, urban renovation became one of the most important strategies to implement urban regeneration since 2009. It more focuses on improving community environment or buildings. The government had tried many different ways to encourage people to participate in urban renovation projects, such as tax exemption, floor area incentive, and subsidies. However, despite of its great promotional effort, the government had not seen results. Comparing with other UR policies, local residents play the most important role in urban renovation project. Residents can be the main developer, and implement the project without any other private sectors. Thus, it is an appropriate example to understand the intention of the resident.



2. Model development

This part will start from reviewing the theories utilized in this study and then outlines the model development. Finally, the hypotheses and conceptual model was built to reveal resident's intention in urban regeneration

2.1 Theoretical background

In the literature that utilizes psychological behavior theory in modal choice research, the theory of planned behavior (TPB, Ajzen, 1985) has been widely used in predicting and explaining intended behavior across a variety of disciplines. Moreover, the technology acceptance model (TAM) is among the most commonly employed theories for examining the new technology acceptance (Davis, 1989). Recently, it applied to exam people's intention for the new policies. Below are some details of above three theories.

Theory of Planned Behavior (TPB)

The TPB provides a useful conceptual framework for dealing with the complexities of human social behavior. Ajzen (1991) proposed the TPB to improve the explanatory power of Theory of Reasoned Action (TRA) by adding the construct of perceived behavioural control, in order to address the limited when TRA dealing with behaviours over which people have incomplete volitional control. The TPB is based on the proposition that an individual's behavior is a direct function of behavioral intention and perceived behavioral control. Intentions are themselves shaped by attitude (toward the behavior), subjective norms and perceived behavioral control (Ajzen, 1991). The three determinants of behavioral intentions are each based on an underlying belief structure: behavioral, normative, and control beliefs. In their respective aggregates, behavioral beliefs produce a favorable or unfavorable attitude toward the behavior; normative beliefs result in a perceived social pressure or subjective norm; and control beliefs give rise to perceived behavioral control with regard to performing the behavior (Fishbein & Ajzen, 1975). Taken together, attitude toward the behavior, subjective norm, and perceived behavioral control translate to the formation of a behavioral intention which is the immediate determinant of actual behavior (Heberlein & Black, 1976). In keeping with Ajzen's model of the TPB, Figure 1 shows how attitude toward using a self-issue and return

system, the subjective norm, and perceived behavioral control affect users' intention to use it. Over the years, support for TPB as a model of general social behaviour came from many studies. Recently, it has been applied to predict and explain people's intention of public policies.

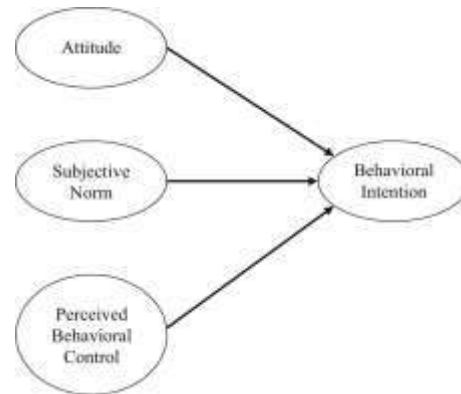


Figure 1. TPB model (source: Ajzen, 1991)

Social Cognitive Theory (SCT)

SCT explains how people acquire and maintain certain behavioral patterns, while also providing the basis for intervention strategies (Bandura, 1997). Evaluating behavioral change depends on the factors environment, people and behavior. SCT provides a framework for designing, implementing and evaluating programs (figure 2).

Environment refers to the factors that can affect a person's behavior. There are social and physical environments. Social environment include family members, friends and colleagues. Physical environment is the size of a room, the ambient temperature or the availability of certain foods. Environment and situation provide the framework for understanding behavior (Parraga, 1990). The situation refers to the cognitive or mental representations of the environment that may affect a person's behavior. The situation is a person's perception of the place, time, physical features and activity (Glanz et al, 2002). The three factors environment, people and behavior are constantly influencing each other.

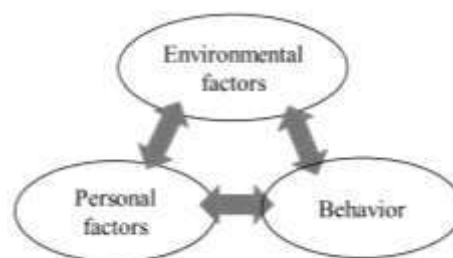


Figure 2. SCT model



Technology acceptance model (TAM)

In the technology adoption context, the technology acceptance model (TAM) is among the most commonly employed theories for examining technology acceptance (Davis, 1989). The appeal of TAM lies in that it is both specific and parsimonious, and displays a high level of predictive power with regard to technology use. TAM suggests that perceived ease of use (PEOU) and perceived usefulness (PU) are the two most important factors in explaining technology use. PEOU is the perception that a particular system or technology is easy to use, whereas PU is the degree to which an individual believes that using a technology will enhance his or her performance (Davis, 1989; Ajzen, 1986; Ajzen & Madden, 1986; Chen & Chao, 2010). The introduction of an urban renovation strategy in urban regeneration can be viewed as a new policy from the residents' perspective. Therefore, this study also applied TAM to build up a theoretical model.

2.1 Conceptual model

TAM and TPB are social psychology theories and applied to predict people's behaviour. The reason for including TAM and TPB is that both models are extended from the theory of reasoned action (TRA), but have different foci, making the inclusion theoretically compatible and potentially complementary (Fishbein & Ajzen, 1975). Comparing with the SCT, these two theories more focus on the personal and social factor, but not deeply consider the physical environment factor which is an important issue in urban regeneration (urban renovation). In order to provide an suitable model to reveal resident's behavior in urban regeneration policies, above three theories are applied to build up a theoretical model as figure 3.

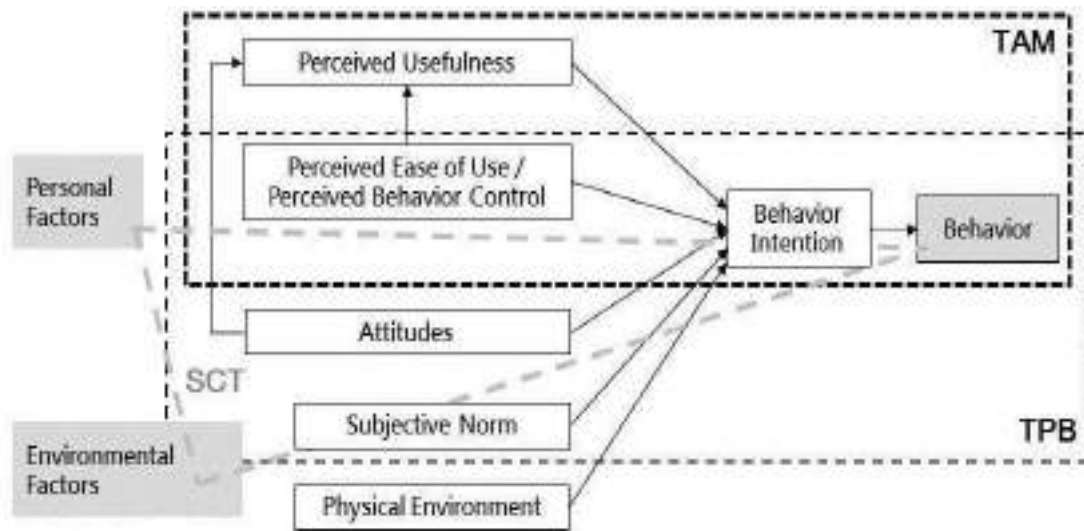


Figure 3. Theoretical model

2.2 Hypotheses and conceptual model

Based on the theoretical model, the conceptual model (figure 4) and hypotheses (H0~H7) were established to reveal the relationship between the key factors and resident’s intention. Intentions capture the motivational factors that drive a person to perform a behavior (Ajzen, 1991). H0 was omitted from this model because urban regeneration is at very beginning stage and difficult to find enough sample who had moved into the implement stage. Moreover, the role of intentions on actual performance has been reported to be a strong predictor of actual usage (Ajzen, 1991 ; Venkatesh et al., 2003).

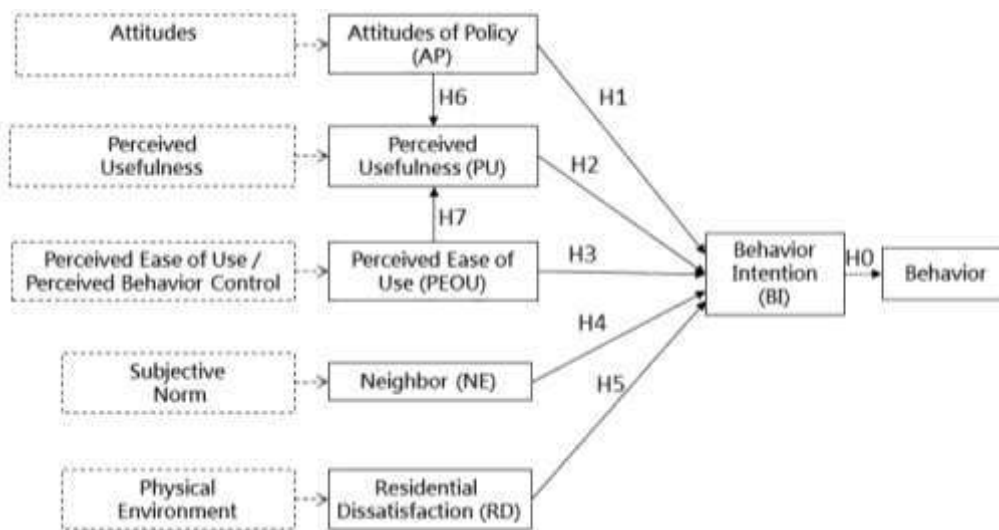


Figure 4. Conceptual model



- H0. Behavior intention (BI) has a positive effect on behavior.
- H1. Attitudes of policy (AP) has a positive effect on behavior intention
- H2. Perceived Usefulness (PU) has a positive effect on behavior intention
- H3. Perceived Ease of Use (PEOU) has a positive effect on behavior intention
- H4. Neighbors' intention (NE)) has a positive effect on behavior intention
- H5. Residential dissatisfaction (RD) has a positive effect on behavior intention
- H6. Attitudes of Policy (AP) has a positive effect on perceived usefulness (PU)
- H7. Perceived ease of use (PEOU) has a positive effect on perceived usefulness (PU)

3. Analysis and Results

3.1 Data collection

The questionnaire survey was conducted to collect data from residents who live in the regeneration area⁴ in Tainan during April to June of 2011. A total of 216 questionnaires were distributed and 181 useful samples yielding an effective response rate of 83.7%. Out of all respondents 42.0% were female, 58.0% male. A majority of the respondents were the 3~5 people family (70.1%). While 8.8% of the respondents indicated their annual household income was less than NT\$240,000 (around US\$8,000), 83.4% reported their annual income was within the range of NT\$240,001–NT\$350,000 (around US\$11,667), and 7.7% reported annual income of more than NT\$1,350,000 (around US\$45,000). 50.3% response live in business district and 49.7% in residential district. A majority of the respondents' house has been built over 21 years (79.2%) so it is reasonable to implement urban renovation in these areas.

3.2 Measurement development

A survey questionnaire with all the measures was developed using items that were validated from previous studies. A pre-test was carried out with randomly selected residents in Tainan regeneration area. Based upon feedback from a pilot sample of 102 residents, the questionnaire was revised to improve clarity and reliability. Moreover, the Kaiser-Meyer-Olkin (KMO) of variables under 0.6 was eliminated from the questionnaire. According to the hypothesis model, the questionnaire is designed in six main parts in order to collect the data for RD, PEOU, NE, PU, BI, and

⁴ Regeneration area is pointed by the Tainan government which normally are the older or poorer area in the city.

AP. Likert scale was applied to measure the first 4 parts and nominal scale was applied to measure resident's behavior intention of urban regeneration.

3.3 Reliability and Factory analysis

Reliability refers to the consistency of a measure and Cronbach's alpha is often applied to test whether it produces consistent results under consistent conditions. The higher the score, the more reliable the generated scale is. Nunnaly (1978) has indicated 0.7 to be an acceptable reliability coefficient. Most of the coefficients are over 0.8 (table 1) and it indicated that internal consistency is acceptable. Only the coefficient of PEOU is lower 0.7 which meaning its two questions are not consistency. However, both urban regeneration knowledge and economical ability are very important in urban regeneration issues. Thus, the two questions are still applied in the questionnaire.

Table 1. Cronbach's alpha values for all measures

Measures	Cronbach's alpha
Attitudes of policy	0.831
Perceived Usefulness	0.863
Perceived Ease of Use	0.384
Neighbours	-
Residential dissatisfaction	0.816
Behaviours Intention	0.921
whole	0.837

Factor analysis

Factor analysis is a collection of methods used to examine how underlying constructs influence the responses on a number of measured variables. The KMO measures the sampling adequacy which should be greater than 0.5 for a satisfactory factor analysis to proceed. According to the test results, the KMO measure is 0.809 and the Bartlett's test of sphericity is significant which indicate that it is appropriate to apply a factor analysis for the data.

A preliminary CFA was then conducted. As all factor loadings in table 2 are over 0.5 and the variance explained of each factor is over 50%, it indicate the factors can explain the data and analysis the latent variable (Hair et al., 1992).

Table 2. Exploratory factors analysis results

Factor	Question	Eigenvalue (factor loadings)	Variance explained (%)
RD	Neighborhood conveniences	0.62	58.105
	Neighborhood safety	0.66	
	Neighborhood appearance	0.78	
	Housing appearance	0.72	
	Housing safety	0.68	
AP	Idea of urban regeneration	0.83	85.544
	Government's urban regeneration policies	0.86	
PEOU	Urban regeneration knowledge	0.46	61.908
	Economical ability	0.52	
BI	Barrier-free facility improvement	0.84	76.621
	Public infrastructure improvement	0.88	
	Neighborhood appearance improvement	0.92	
	Housing appearance improvement	0.85	
	Housing structure improvement	0.75	
NE		–	–
PU	Housing interest	0.90	78.949
	Neighborhood interest	0.81	
	Economical interest	0.78	

3.4 Structural model and hypothesis tests

According to Table 3, error variance are positive, T-test are significant, most of the factor loadings are between 0.5 to 0.95, and the standard error is low. All above test result shows that the fitness of model is acceptable.

Table 3 Fitness judgments

Test	Result	Fitness
Error variance	All positive numbers	Yes
T-test	Significant (over 1.96)	Yes
Factor loadings	Most of the factor loadings are between 0.5 and 0.95. Only urban regeneration knowledge of PEOU is only 0.46.	acceptable
Standard error	low	Yes

Discriminant validity, which assesses whether individual indicators can adequately distinguish between different constructs, is ensured if the square root of Average Variance Extracted (AVE) for each construct is greater than the correlation between that and all other constructs in the model (Fornell & Larcker, 1981). The correlation matrix in Table 4 indicates that the square root of AVE (shown in gray background along the diagonal) of each construct was higher than corresponding correlation values for that variable in all cases, thereby assuring discriminant validity.

Table 4. Result for the test of Discriminant Validity

	AP	PEOU	NE	PU	RD	BI
AP	.878					
PEOU	.000	.180				
NE	.000	.000	.947			
PU	.370	.107	.000	.578		
RD	.000	.000	.000	.000	.374	
BI	BI	.056	.115	.207	.173	.379

3.5 Hypotheses testing

Based on the previous test, the initial model was modified as figure 5 in order to improve the fit. Compare with the initial model, the PEOU only has a directly positive effect on PU and has an indirectly positive effect on BI through PEOU.

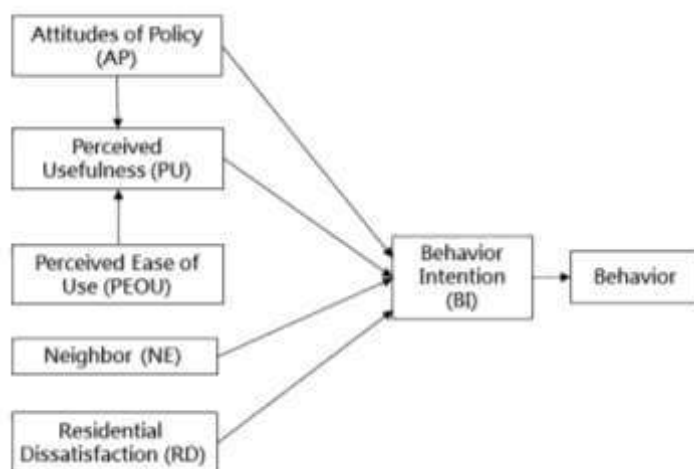


Figure 5. Modified mode

The modified mode was text by SEM and the result of T-test is significant. Figure 6 is the result of path analysis. Only the coefficient of PEOU and NE is lower but others are acceptable.

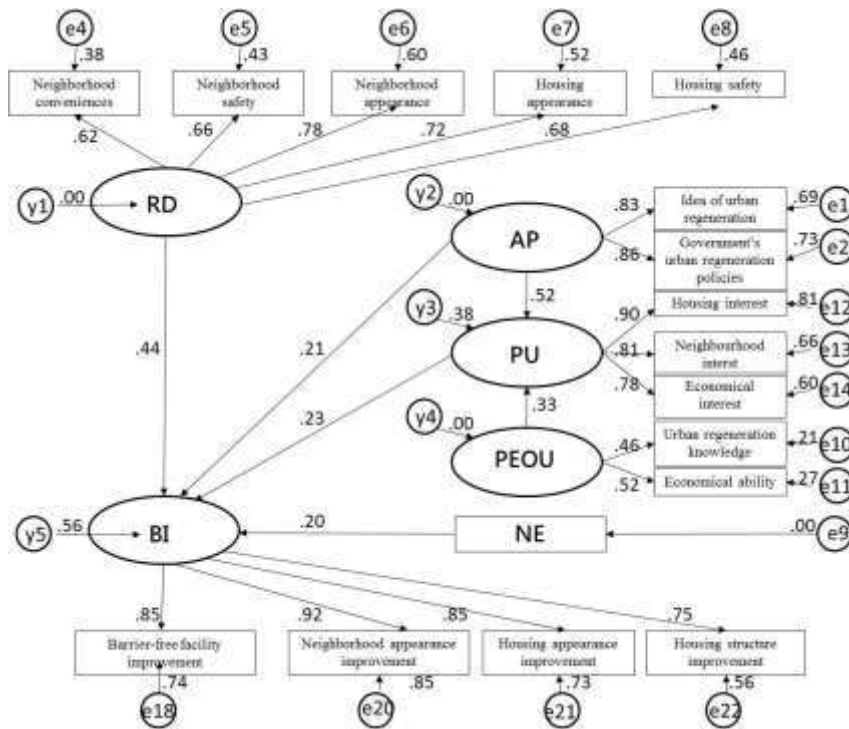


Figure 6. Path diagram of the modified model

Table 5 is the result of the path analysis. AP, PU, NE, and RD have direct effect on BI. RD has a highest effect on BI (0.44), follow are AP (0.41), PU (0.23), and NE (0.20). Moreover, AP and PEOU have indirect effect on BI and the result is 0.52 and 0.33. It indicates that AP and PEOU have direct effect on PU, and effect BI through PU.

Table 5 Path analysis

	Path relationship	Direct	indirect	whole
AP	→ BI	.401		.522
	→ PU → BI		.121	
PU	→ BI	.232		.232
PEOU	→ PU → BI		.078	.078
NE	→ BI	.206		.206
RD	→ BI	.445		.445



5. Discussion and conclusions

There are two major accomplishments in this research. First, a conceptual model of resident's intention in urban renovation was built. Second, the results indicate the important factors to influence resident's intention in urban regeneration.

A conceptual model of residents' intention in urban renovation was established

The key impact factors are personal attitude, perceived usefulness, neighbors, residential dissatisfaction and perceived ease of use. Also, the questions for measuring each factor were sieved out by literature review and pre-test. Furthermore, the modified conceptual model (figure 5) indicates the fitness relationship between the factors. Researchers can apply this model in different studies to reveal residents' intention in urban renovation. The government officers can utilize the model to test the new urban regeneration policies before implement.

The results of SEM indicate the key factors to influence Tainan residents' intention

The results of the structural coefficients show that residential dissatisfaction and personal attitude were identified as the most important factors to influence Tainan residents' intention. In addition, people are more concerned about the quality of community environment than the buildings themselves. Thus, Tainan city government should implement projects from a neighborhood or local community. Furthermore, not only tell residents how many subsidies the government can provide but also show them how much the urban renovation project can improve their environment.

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