

Influencing Factors of Residents' Intention to Participate in the Governance of Old Community Renewal: A Case Study of Nanjing

Tiantian Gu, Dezhi Li, Mian Zhang, Ying Jiang

Abstract—Considering the characteristics of residents' participation in the governance of old community renewal (OCR), a theoretical model of the determinant of residents' intention to participate in the governance of OCR has been built based on the theory of planned behavior. Seven old communities in Nanjing have been chosen as cases to conduct empirical analysis. The result indicates that participation attitude, subjective norm and perceived behavioral control have significant positive effects on residents' intention to participate in the governance of the OCR. Recognition of the community, cognition of the OCR and perceived behavioral control have indirect positive effects on residents' intention to participate in the OCR. In addition, the education level and the length of residence have positive effects on their participation intention, while the gender, age, and monthly income have little effect on it. The research result provides suggestions for the improvement of residents' participation in the OCR.

Keywords—Old community renewal, residents' participation in governance, intention, theory of planned behavior.

I. INTRODUCTION

THERE are a large number of old residential areas in China, involving more than 40 million households [1]. These old residential areas generally have material, socio-economic, institutional and other environmental problems, such as "dirty and messy" public space, clustering of difficult people, and "weak network" under grid management [2], which are difficult to achieve the residents' pursuit of a better life. To solve this problem, the OCR has been conducted in many cities. Although the OCR is complicated and varies from city to city, it basically includes the restoration of building bodies, the renewal of community public environment, and the improvement of community governance [1].

Considering the complexity of the old communities, OCR is often affected by the socio-cultural context which involves residents with diverse (and sometimes competing) attitudes and interests in old residential areas [3]. Risks have been posed due to residents' dissatisfaction, such as inefficient or unsuccessful implementation, waste of resources, unsustainable renewal

projects [4]. For instance, residents who experienced the OCR in Wuhan province were not satisfied with construction waste being dumped in their neighborhoods without notice and lodged complaints [5]. The phenomenon of "unintentional participation", "inability to participate", "no way to participate" and "disordered participation" in public affairs is still common among the residents in old communities. Meanwhile, increasing attention on OCR has been received in this research field. Progress has been achieved on the technical aspects, such as the renewal object and the renewal content [6]-[10]. The exploration of the renewal subject is mainly about the government and the market, and there are few systematic studies on residents' participation in governance. More efforts are needed to assess the performance of OCR projects by analyzing the residents' intention to participate in the governance in these communities. Hence, understanding residents' intention to participate in the governance of the OCR projects and its determining factors are vital for offering new insights into assessment of OCR and promoting residents' participation in the governance of the OCR projects in China. This paper aims to assess residents' intention to participate in the governance of the OCR projects and examine its determinants by developing a broad conceptual framework. Empirical analysis is conducted by taking Nanjing as a case. In particular, we seek: (1) to explore the levels of residents' intention to participate in the governance of the OCR perceived by the residents in old communities; (2) to examine different factors affecting the overall residents' intention to participate in the governance of the OCR; (3) to provide recommendations that will help promote residents' participation in the governance of the OCR.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Theory of Planned Behavior (TPB) describes the decision-making process of individual behavior, proposed by Ajzen. It is mainly concluded that behavior intention is the behavior motive or tendency of an individual when he intends to adopt a specific behavior. It is influenced by three variables, including subjective norm, behavioral attitudes, and perceived behavioral control [11]. TPB theory has been widely applied in the fields of sociology, management and psychology, and has been proved to have high prediction and explanation for willingness and behavior. Therefore, this study explores the influencing factors of residents' willingness to participate in governance in old communities based on TPB theory.

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A. Attitude

Attitude refers to the individual's optimistic or pessimistic evaluation of the behavior and the event that caused the behavior. Ajzen clearly pointed out that attitude will directly affect the participation [12]. In addition, attitude has a significantly positive effect on participation intention in the field of environmental governance [13], waste separation [14], community sanitation [15], and water conservation [16]. Attitude was significantly positively associated with behavioral intention in community engagement in genetic research [17]. Accordingly, we developed the following hypothesis:

- H1: Attitude will positively affect residents' participation intention in old community governance.

B. Subjective Norm (SN)

SN has been defined as "a person's perception that most people who are important to him think he should or should not perform the behavior in question" [18]. These pressures are often created by subjects in the social structure, such as family, friends, colleagues, etc. [11]. Most scholars have explored the influence of SN on individual's participation intention, and proved their positive effects. SNs have significant prediction ability regarding knowledge sharing intention [19], pro-environmental intention [20], [21] and efficient transportation intention [22]. Thus, we developed the following hypotheses:

- H2: SN will positively affect residents' participation intention in old community governance;
- H3: SN will positively affect residents' participation attitude in old community governance.

C. Perceived Behavioral Control (PBC)

PBC refers to the degree to which an individual can control the behavior before an action to be implemented [21]. In terms of analyzing the content of PBC, there are two different opinions currently. Ajzen thought that PBC is the same as self-efficacy while some scholars believe that in addition to self-efficacy, PBC also includes perceived control which affects individuals to take specific behaviors [23]. In this paper,

perceptual behavior control includes two factors: self-efficacy and perceived control. Some empirical research supports that PBC significantly and positively influences participation intention in pollution reduction [24] and social commerce online-community [25]. PBC has positive effects on attitude as for the willingness to pay for noise pollution reduction [26]. Thus, the following are hypothesized:

- H4: PBC will positively affect residents' participation intention in old community governance;
- H5: PBC will positively affect residents' participation attitude in old community governance.

D. Residents' Cognition and Community Renovation Recognition

Based on the TPB theory, some scholars have found that individuals' cognition of community or events usually affect their participation attitudes through case study [21]. Dean et al. pointed out that community recognition and understanding can significantly affect participation intention in water-sensitive cities [27]. Pradhananga et al. considered that community recognition and sense of belonging affects citizens' attitudes toward storm water management [28]. Therefore, the sixth and seventh hypotheses can be proposed:

- H6: Recognition of community positively will positively affect residents' participation attitude in old community governance;
- H7: Cognition of renovation projects will positively affect residents' participation attitude in old community governance.

Residents' gender, age, education, income, and length of residence also have an impact on the participation intention in old community's governance [27], [28]. The differences in the residents' participation in governance need to be further analyzed. Based on the above hypothesis and the TPB theoretical framework, a model for influencing factors of residents' participation in governance is proposed, as shown in Fig. 1.

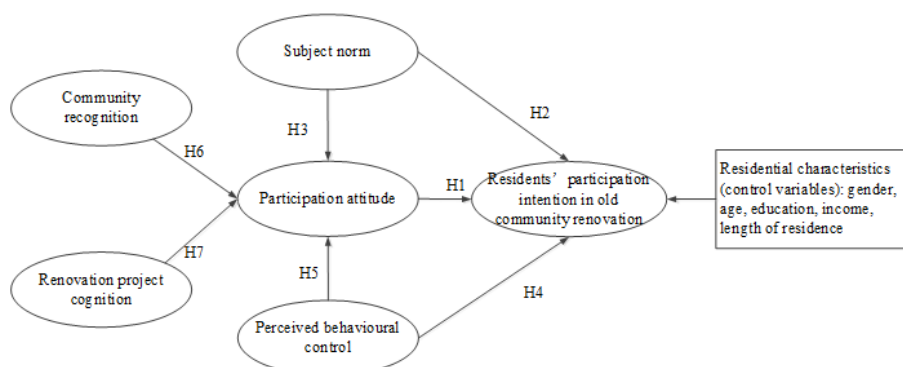


Fig. 1 A model for influencing factors of residents' willingness to participate in governance in old community

III. RESEARCH METHODOLOGY

A. Questionnaire Design

In order to verify the accuracy of the model of influencing

factors for residents' participation in old community renovation, this paper intends to distribute questionnaires for empirical analysis. The questionnaire consists of three parts. The first part is about the description of residents' participation

in the OCR. The second part is the basic information of the interviewees, including gender, age, education, income level, and length of residence, which constitute the control variables of the SEM. The third part is the willingness to participate in the governance of old community and its influencing factors, constituting the observed variables of later-mentioned SEM. Due to the lack of ready-made table for residents participation

in the governance of old community renovation and its influencing factors, this paper establishes 21 items in 6 dimensions, including community recognition, transformation cognition, participation attitude, SN, and PBC based on TPB theory and the hypotheses H1~H7. Items are in the form of five-level Likert scale except the question for reconstruction cognition (REC1), as shown in Table I.

TABLE I
RELIABILITY AND FACTOR ANALYSIS RESULTS OF EACH VARIABLE

Variables	Measurement items	Standard factor loading	Cronbach's α
Community recognition	CRE1 Concern for community public affairs	0.874	0.897
	CRE2 Whether community facilities and hardware conditions is satisfactory	0.911	
	CRE3 Whether community greening and environment is satisfactory	0.812	
	CRE4 Whether community affairs decision is satisfactory	0.860	
Cognition of renovation project	REC1 The content cognition of old community renovation	0.786	0.832
	REC2 Old community renovation can effectively solve current community safety and environment problems	0.893	
	REC3 Old community renovation makes life more convenient	0.806	
Participation attitude	ATT1 I support old community renovation project	0.798	0.888
	ATT2 I think it's meaningful to participate in the renovation of the community	0.840	
	ATT3 If I participate in the decision-making, implementation and maintenance of community renovation, I can learn technology and management knowledge	0.836	
	ATT4 I think surrounding residents should be encouraged to participate in the decision-making, implementation and maintenance of community renovation	0.863	
Subject norm	SN1 I believe that government, streets, neighborhood committees and news media all encourage residents to participate in the renovation activities of the community	0.765	0.808
	SN2 I believe that people who are important to me, such as family members, friends or neighbors, want me to participate in the old community renovation project	0.868	
	SN3 I believe that people around me, such as family members, friends or neighbors, are actively participating in the old community renovation project	0.860	
PBC	PBC1 I can spare time and energy to participate in old community renovation	0.865	0.909
	PBC2 Given the chance, I feel I have the ability to make renovation project more reasonable by participating in the old community renovation	0.864	
	PBC3 Before old community renovation, I can get relevant renovation information	0.878	
	PBC4 My Suggestions on the renovation of old residential areas can be respected and adopted by the relevant departments	0.872	
Participation intention	INT1 I hope to participate in the decision-making of old community renovation	0.852	0.906
	INT2 I hope to put forward advice in the construction of old community renovation and cooperate with the reconstruction work	0.885	
	INT3 I am willing to cooperate with the maintenance of relevant facilities after the completion of old community renovation	0.893	

Note: Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalization.

B. Sample and Procedure

For a long time, Nanjing (Jiangsu Province, China) has attached great importance to renovation of old community. From 2008 to 2015, a total of 14.06 million square meters of renovation has been implemented. In 2016 and 2017, 184 and 240 old communities were renovated separately. In 2018, 192 old districts were planned to be renovated. This article selected seven old and renovated communities in Nanjing as the research object by random sampling. The questionnaires were distributed in two old communities in Qinhuai District (Qinhuai Garden Community and Bailu Dongyuan Community) three old districts in Xuanwu District (Jiefangmen Community, Xijia Datang Community and Taicheng Garden Community) and two old residential areas in Gulou District (Kangju Xinxiang Community and Hua'an Xincun Community). At the end of 2017, the total population of Nanjing was 8.335 million. According to the 95% confidence level and the 5% confidence interval, 384 questionnaires should be distributed in theory. A total of 420 questionnaires were given out in consideration of

factors such as actual errors. According to statistics, 408 questionnaires were collected, of which 392 were valid.

Among 392 respondents, 54.6% were males and 45.4% were females, which is accorded with the requirements of the analysis. The proportion of all age groups was reasonable. Age structure was mainly concentrated in the age group between 51 and 65 years old (34.9%), followed by those over 65 years old (20.7%). In terms of education, 142 people had gone to college or university (36.2%) and the second was junior high school (30.6%). The level of education is uneven. In terms of monthly average income, people whose income is between 401-6000 yuan (22.7%) is the most, followed by 1501-3000 yuan (20.4%), which indicates that the average monthly income level of residents in old community is not high. As for length of residence, 30.4% of the residents stay in the community for 11-15 years while 34.9% more than 15 years, which means the length of residence in old community is relatively stable. The collected data sample tallies with the real situation fundamentally.

IV. DATE ANALYSIS

A. Measurement Model Testing

In this paper, the Cronbach's Alpha coefficients of community recognition, cognition of renovation, participation attitude, SN, PBC, participation willingness and some other variables are measured by SPSS22.0 software. As shown in Table I, these statistics are all above 0.7, which shows good internal consistency and pass the credibility test.

Validity analysis is usually divided as the measurement of content validity and that of structural validity. In terms of content validity testing, the questionnaire is based on literature review, further revised and improved according to the results of pre-survey. Therefore, it can be considered to achieve the required content validity. In terms of structural validity, the exploratory factor analysis is conducted. The result showed that KMO = 0.830 (greater than 0.7) and Bartlett's spherical test value is significant (Sig. < 0.001), which indicated that the questionnaires meet the requirements of factor analysis. Then, the principal component analysis method was used to extract the common factor whose characteristic root is greater than 1. And the factor analysis was carried out by using the maximum variance orthogonal rotation. The total explanatory ability reached 77.702% (more than 50%), which indicated that the six selected factors had good representativeness. Moreover, the standard factor loads of the items measured are all greater than 0.5 (see Table I for details), and each item has the corresponding factors, indicating that the scale has good structural validity.

B. Structural Equation Modelling (SEM)

The SEM was employed to explore the interrelations among

constructs. Considering the over-sensitivity of known chi-square test to sample size, small deviation from normality small model misjudgment, and model fitting is usually evaluated by sample size-independent fitting indices, such as comparative fitting index (CFI), Tucker-Lewis index (TLI) and root mean square error of approximation (RMSEA).

392 questionnaires' data and the abovementioned theoretical model were fitted with structural equation by using AMOS 22.0 software. And we selected the CMIN test, ratio of CMIN/DF, GFI, AGFI, RMSEA, NNFI and IF to evaluate the fitness of the whole model. The results are shown in Table II. It can be seen that: CMIN/DF is 1.990, less than standard 3; GFI, AGFI, NFI, TLI, IFI, CFI are all above standard 0.9; RMSEA is 0.050, less than 0.08. Above all, most of the fitting indicators are in line with the standard of SEM. It can be considered that the model has good fitness.

TABLE II
MODEL FITTING

Fitting indicator	Acceptable interval	Measurement
CMIN		350.208
DF		176
CMIN/DF	<3	1.990
GFI	>0.9	0.924
AGFI	>0.9	0.900
RMSEA	<0.08	0.050
IFI	>0.9	0.965
NFI	>0.9	0.932
TLI(NNFI)	>0.9	0.958
CFI	>0.9	0.965

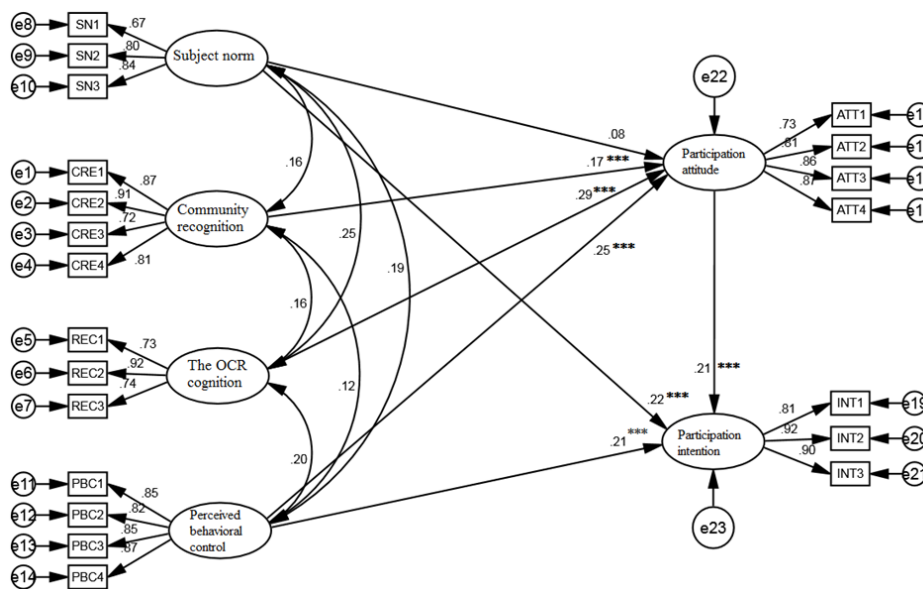


Fig. 2 The result of SEM

V. RESULTS

The theoretical model in Fig. 1 is validated by SEM. The

results are shown in Fig. 2. It shows that six of the seven hypotheses proposed in this paper have been validated and one has not passed the saliency test. The detailed analysis is as

follows.

H1 was verified. Residents' participation attitude has a positive impact on residents' willingness to participate in governance. The path coefficient is 0.21 and $P < 0.05$, which shows that H1 has been verified. The load coefficients of ATT2, ATT3 and ATT4 are high (0.87, 0.86 and 0.81 respectively), and the explanation in terms of participation attitude is significant. However, the average values of the three are 2.75, 2.78 and 2.67 respectively (all less than the average of 3). It can be seen that residents are not active as for the benefits of renovation and encouraging others' participation. At the same time, participation attitudes are also significantly affected by community acceptance, renovation cognition and PBC. Path coefficients are 0.17, 0.29 and 0.25, respectively, which confirms the mediating role of participation attitudes in these three variables.

H2 was verified and H3 was not established. SN has a significantly positive impact on willingness of participation in governance. The path coefficient is 0.22, which verifies the H2. In the measurement model of SN, the load coefficients of SN2 and SN3 are 0.80 and 0.84 respectively, which explains that important people's support or confidence of neighbor's participation tend to contribute to higher willingness to participate in governance. Meanwhile, the average values of SN2 and SN 3 are 3.61 and 3.67, which indicates that individuals feel strong external social pressure before participating in governance. However, SN has little significant impact on participation attitude as the standardization path coefficient is only 0.08. H3 is not valid.

Both H4 and H5 were verified. PBC has a positive effect on willingness of participation in governance. The path coefficient is 0.21, which indicates that the H4 is verified. Meanwhile, the standardized coefficient of PBC is 0.25 and $P < 0.05$, which indicates that PBC has a significantly positive impact on participation attitude. H5 is also verified. In its measurement model, the load coefficients of the four observational variables of self-efficacy (PBC1, PBC2) and control (PBC3, PBC4) are 0.85, 0.82, 0.85 and 0.87, respectively. It shows that people with strong self-efficacy and control usually have higher PBC. In addition, the average values of PBC1, PBC2, PBC 3 and PBC4 are 2.76, 3.01, 2.89 and 2.92, respectively. They are hovering up and down around the average scores, which shows that residents do not have a strong sense of whether they can control their participation in the renovation and management of old community in the future.

H6 was verified. The standardized coefficient of community recognition on participation attitude is 0.17, and $P < 0.05$, which indicates that community recognition has a significantly positive impact on participation attitude. Among them, CRE2 has the highest degree of explanation, with an average value of 2.81 (less than the average of 3), indicating that residents' satisfaction with the basic public service facilities and hardware conditions of the community at this stage is not very high; the second one is CRE1, whose average value is also less than 3, indicating that residents are not very concerned about community public affairs; the third one is CRE4, with an average value of 2.61, indicating that residents are not satisfied

with the decision-making on community public affairs at present; the last one is CRE3, with a small mean, showing that the greening of the community, the environment and the use of public space are not satisfactory.

H7 was verified. Residents' cognition of renovation projects in old community has a significantly positive impact on residents' participation attitude. The path coefficient is 0.29, assuming that H7 is valid. REC2 has the highest degree of explanation, with the load coefficient 0.92 and the average value 3.04, which indicates that understanding of residents in terms of community safety and environment problems is in the general level. REC1 and REC3 are significant as for the cognition of renovation projects. The load coefficients of REC2 and REC3 are 0.73 and 0.74, respectively, with an average value of 3.30 and 2.97, which indicates that residents have a relatively good understanding of the content of renovation. But the recognition of old community transformation to make life more convenient is not very strong.

VI. CONCLUSION

Based on the TPB, this study has developed a broad conceptual model to investigate the determinants of residents' intention to participate in the governance of the OCR. The empirical results suggest that residents' intention to participate in the governance of the OCR is influenced by participation attitude, SN, recognition of the community, cognition of the OCR and PBC. This finding is in support of hypothesis H1, H2, H4, H5, and H6 while hypothesis H3 was not verified. Moreover, it proved the feasibility and applicability of the model. We believe that this type of analysis has been done in the context of the OCR projects for the first time. These empirical results also have several policy implications. First, precise measures should be taken to improve the community public environment and enhance residents' community recognition, such as maintaining the public facilities in the community regularly. Second, the publicity of the transformation of old residential areas could be strengthened and the residents' awareness could be improved. For instance, making full use of the main channels to disseminate educational material about the OCR and incorporating lessons to teach residents how to participate in the implementation process would be helpful. Finally, the system of residents' participation in the governance of the OCR should be established and more opportunities to promote their engagement could be offered. It is necessary to encourage residents with different attributes to engage in the OCR projects, which could better consider the needs of local residents in the process of old community renewal. However, there are two limitations in this research. First, due to the relatively small sample size of this study, insignificant results need to be explained with caution. Second, the implementation of the OCR is a dynamic process. With the improvement of residents' recognition and behavior, more complex models should be built to analyze the longitudinal variables. Future research will consider similar examination of residents' experience with OCR in other cities of China. Larger-scale sets of data and longitudinal data will be used to explore the determinants of residents' intention to participate in

the governance of the OCR when data become available.

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