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DOI
10.1016/j.cities.2024.105073

Publication date
2024

Document Version
Final published version

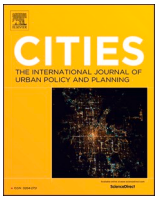
Published in
Cities

Cities 150 (2024) 105073

Contents lists available at ScienceDirect

Cities

journal homepage: www.elsevier.com/locate/cities



Exploring the dilemma of enterprises participating in the old community renewal: Perspective of managers

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ARTICLE INFO

Keywords:
Community renewal
Urban renewal
Sustainability
Enterprise participation
Theory of planned behavior

ABSTRACT

The renewal of old communities (OCR) is a crucial component of China's urban renewal strategy. However, the huge funding gap, coupled with the unwillingness of enterprises to participate, has impeded the sustainable development of OCR in China. This issue has become a major practical challenge for the government. This study employed the modified theory of planned behavior (M-TPB) to examine enterprise behavior, focusing on how internal capabilities and external conditions influence their participation. Data was collected from 261 questionnaire surveys, and structured equation modeling was used to analyze the data. Further in-depth interviews were conducted to explain and validate the results from the SEM. The findings illustrate that: (1) the M-TPB offers a more detailed and nuanced explanation of the mechanisms influencing participation behavior; (2) the attitude towards participation is an important factor in shaping the intention to participate; (3) there is a significant negative correlation between perceived behavioral control, which is based on external conditions, and the participation intention; and (4) different types of enterprises show differences in attitude and perceived behavioral control. These findings provide new insights and perspectives on the OCR dilemma in China, highlighting some important practical implications for fostering various forms of enterprise participation in OCR projects.

1. Introduction

With the rapid development of urban renewal in Chinese cities and the growing demand from residents for an improved quality of life, old community renewal (OCR) is becoming increasingly important in China (Cheng et al., 2022; Gu et al., 2019; Zheng et al., 2017). In the Chinese context, 'old community' refers to the residential district built prior to 2000, which generally suffers from poor management and maintenance, and lacks adequate municipal support and community service facilities (Wang et al., 2014; Zhang et al., 2013). Currently, OCR projects in China place strong emphasis on improving the living quality of residents through comprehensive renewal, which includes the repair and maintenance of buildings, improving infrastructure facilities, and establishing effective long-term management structures (Huang et al., 2023a; Liu et al., 2021). OCR holds significant importance as it promotes internal economic circulation, enhances the living standards of residents, and facilitates sustainable urban development (August, 2016; Huang et al., 2023a; Lelévrier, 2013). According to the data from the Ministry of Housing and Urban-Rural Development of the People's Republic of China, there are nearly 160,000 old communities in China, involving >42 million households. With a construction area of approximately 4 billion m^2, the capital required for the renewal of these old communities is expected to be around $700 billion.

The Chinese government has been actively promoting OCR, with plans to complete the renewal of 160,000 old communities over the next 5 years. However, implementing these plans has presented several challenges, with the most critical being the acquisition of large-scale and long-term capital investment (Zhao et al., 2023). Considering the extensive scale of OCR that needs to be undertaken in China, the government is facing difficulties financing and delivering high-quality OCR projects on its own (Zheng et al., 2023). Moreover, government-led renewal is generally accompanied by inefficient systems and is

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https://doi.org/10.1016/j.cities.2024.105073
Received 28 October 2022; Received in revised form 16 April 2024; Accepted 19 April 2024
Available online 4 May 2024

characterized by unfair resource allocation (Karaman, 2014). Thus, for achieving high-quality OCR, relying solely on government contributions is not sustainable (Fu, Zhuang, et al., 2023).

The participation of enterprises can create significant opportunities for achieving high-quality and sustainable OCR in China. Diverse enterprises have the potential to bring in much-needed funding, which can solve the problem of capital shortages faced by many OCR projects. Moreover, the enterprises are better equipped to manage resource allocation for delivering better OCR projects and have the capability to improve project efficiency to offer better quality of life for residents in old communities (Codecasa & Ponzini, 2011; Yang et al., 2019). Indeed, the importance of enterprise participation has now been recognized, and with this, OCR projects are transitioning from being government-led to being led cooperatively by both the government and the enterprises (Alvanchi et al., 2021).

However, attracting these enterprises has remained a big challenge for the government. Due to strict regulations and controls on urban planning, a lack of supporting infrastructure, high transaction costs, and issues related to coordination failures among various stakeholders, the traditional logic of generating profit from land utilization and housing no longer applies to the renewal of old residential areas (Fu, Qian, et al., 2023; Shen et al., 2021). This implies that it is almost impossible for enterprises to reap sizable rewards by participating in OCR projects, especially in the short term. Moreover, OCR also poses unique challenges including technical, financial, and internal capabilities of enterprises. Despite government efforts to promote enterprise participation through supportive policies, many enterprises remain hesitant, adopting a 'wait-and-see' approach to the OCR market. In fact, Shen et al. (2021) refer to this situation as 'the trap of the renewal of China's old residential areas'. Attracting enterprises to participate in OCR projects has become a key issue in sustainable OCR development in China.

Exploring the dilemma that deters enterprises from participating in OCR projects in China is important. For enterprises, active engagement in OCR represents not only an innovative shift in their business models but also a significant test of their organizational capabilities and structural efficiency. In this context, Su et al. (2023) highlighted the critical role of middle- and senior-level managers in understanding new strategic directions and forecasting future development trajectories in evolving business landscapes. Previous studies have also corroborated the pivotal roles played by middle- and senior-level managers in entrepreneurial efforts, enhancing corporate performance, and making critical business decisions (Glaser et al., 2021; Ouakouak et al., 2014). Therefore, the purpose of this study is to analyze, specifically from the perspective of managers, the attitude and behavior of enterprises regarding their involvement in OCR projects.

Current research on enterprise participation is predominantly descriptive and qualitative, lacking in systematic analysis. More importantly, existing studies have yet to uncover the key factors that influence enterprises' participation in OCR. This study aims to bridge that gap. In doing so, this study focuses on the perspective of enterprises' managers and their behavioral intention towards OCR participation. Utilizing the well-established theory of planned behavior (TPB), this research aims to systematically analyze the intention and behavior of individuals or organizations in the context of OCR. Specifically, the TPB model is modified to improve the model's analytical capability. The analysis seeks to attain the following objectives: (i) identify the key factors that influence the participation of enterprises in OCR projects; (ii) recognize the impact of internal capabilities and external conditions on enterprise participation; and (iii) offer recommendations for promoting the participation of the enterprises in OCR.

The rest of this paper is organized as follows: Section 2 reviews the previous literature relevant to this topic. Section 3 presents the conceptual framework of the modified TPB (M-TPB) and outlines the hypotheses of this study. Section 4 then explains the research data and methods. Section 5 details the main findings from the analysis, and Section 6 presents the discussion of the findings and their policy implications. Finally, Section 7 summarizes the main conclusions.

2. Literature review

2.1. Enterprise participation in OCR

The role of enterprises has long been recognized by the academic community as being an integral part of urban development. The urban regime theory proposed by Stone and Sanders identifies three key drivers of urban development: municipal governments, business groups, and communities (Stone & Sanders, 1987). Urban development in China has now entered a new stage where equal attention is paid to stock asset renewal and incremental asset construction (Liu et al., 2020). Scholars have argued that the participation of enterprises is vital for this new stage of sustainable urban development (Zhu et al., 2020; Zhuang et al., 2019).

Several studies have discussed the importance of enterprise participation, specifically in the context of OCR. For example, Hodkinson (2011) argued that enterprise participation not only alleviates the government's financial pressure and improves renewal efficiency, but also facilitates in sustained performance of renewal projects. Furthermore, it supports long-term community governance and promotes the sustainable development of old communities. Kleinhans (2017) analyzed the public goods attribute of OCR and concluded that enterprises can improve renewal effects and governance efficiencies. The OCR market in China is still in the early stages of development, lacking a well-defined framework for enterprise participation (Pan & Du, 2021). There have been some studies that have examined the mode of enterprise participation. Typically, these studies have categorized enterprise participation into three distinct areas: construction and infrastructure, repair and maintenance, property and professional services (Bruns-Berentelg et al., 2022; Shen et al., 2021; Van Meerkerk et al., 2018). While these studies offer a valuable blueprint for OCR project operation, serving as a useful reference for future initiatives, they do not address the pressing challenge of attracting enterprise participation in these projects.

The participation of enterprises in OCR is affected by the attributes and characteristics of old communities. Drawing from Samuelson's public goods theory, where goods are classified as public, private, or quasi-public based on their competitiveness and exclusivity (Samuelson, 1954), it can be argued that OCR falls into the public goods or quasi-public goods category because OCR projects serve communities rather than individuals. Moreover, the inherent public welfare focus of OCR, which contrasts with the profit-oriented objectives of enterprises, makes these projects unattractive to enterprises (Chaskin & Greenberg, 2015).

OCR is considered a micro transformation, a redevelopment method involving restoration improvement and partial refurbishment (Li, Huang, et al., 2022), where the main income for the enterprises comes from government subsidies and other operating revenue such as property fees, shop rents, and service provisions. Shen et al. pointed out that, unlike the high revenue seen in traditional real estate development, OCR is characterized by low returns and extended payback periods, significantly diminishing the willingness of enterprises to participate in these projects (Shen et al., 2021). Moreover, old communities have many practical challenges, such as low building performance, a lack of public facilities, and underdeveloped road and traffic management systems (Liu et al., 2020). These characteristics of old communities significantly increase the difficulty and cost for enterprises participating in OCR projects (Horak & Dantico, 2014).

Most of the research discussed above is descriptive and qualitative. Although the concerns of enterprise participation in OCR are highlighted and explained, no systematic analysis is performed to examine the problem and establish the link between the issues' relative relevance. Moreover, these studies have not explored the factors that drive enterprises to participate in OCR. Although some scholars have analyzed the mechanisms influencing enterprise participation behavior in the context of urban renewal, there is currently no research that has focused on the

participation intentions of enterprises in OCR. Therefore, analyzing the behavioral intention and participation behavior of enterprise managers in OCR presents a clear gap within the current research.

2.2. Theory of planned behavior (TPB)

The theory of planned behavior (TPB) was proposed by Icek Ajzen in 1985. It is one of the fundamental theories in the field of social psychology that studies behavior. It provides an analytical framework for studying what influences behavior and behavioral intention, as shown in Fig. 1 (Ajzen, 1985). The theory identifies three main predictors of a particular behavior: (i) AB—attitude towards behavior, which refers to favorable or unfavorable evaluation of the behavior; (ii) SN—subjective norm, which refers to the perception of the expectations of relevant others; and (iii) PBC—perceived behavioral control, which refers to perceived internal and external conditions to successfully exhibit the behavior (Ajzen, 2002).

The TPB model shown in Fig. 1 illustrates that behavioral intention (BI) has a direct influence on behavior (B), while other factors, including AB, SN, and PBC, have an indirect effect on behavior. The model suggests that the more positive the personal attitude, the stronger the support from relevant individuals, and the greater the perceived autonomy in control, the higher the likelihood of the individual exhibiting corresponding behavioral intentions and actions. Moreover, PBC, together with BI can directly predict the behavioral actions. When two individuals have similar intentions, the one who is confident in their capabilities and conditions to exhibit the behavior is more likely to persevere than the individual who has doubts about their abilities.

Originally developed to study personal behavioral intentions, TPB has been broadly applied in various fields to analyze the behaviors of both individuals and organizations. Researchers have used TPB for analyzing enterprise behaviors in the context of investment, green economic activities, and government-enterprise cooperation (Cordano & Frieze, 2000; Dai et al., 2022; Singh et al., 2018; Wu et al., 2017). Extant research has demonstrated the application of the TPB in examining corporate engagement behaviors in various contexts, such as school-enterprise cooperation (Zhang et al., 2022) and public-private partnership (PPP) initiatives (Zhang et al., 2018). However, there is a notable lack of research focusing on corporate engagement in urban renewal and OCR projects (Huang et al., 2023b). Furthermore, existing TPB-based studies on corporate engagement behaviors lack nuanced analyses of the internal and external contexts that shape corporate actions (Belak et al., 2010; Li, Ni, et al., 2022; Li et al., 2023). It is important to recognize that corporate behavior exemplifies a form of organizational action that is closely intertwined with both the external environmental factors and the internal organizational structure and resource integration capabilities (He et al., 2018; Qian et al., 2023). Yet, existing research largely construes corporations as discrete and self-contained entities, thereby overlooking the essential perspective of managers and the comprehensive assessment of how enterprises' participation behaviors interact with both internal and external factors. Therefore, TPB is used here to provide a new perspective for studying enterprise participation in OCR by investigating the behavioral intentions of managers.

3. Theoretical model and hypotheses development

3.1. Modified theory of planned behavior (M-TPB)

In this study, the TPB model is modified to examine the context of the OCR in China. The behavioral intention of the enterprise managers to participate in the OCR is examined by analyzing their AB, SN, and PBC. The TPB is modified for analyzing PBC by separating it into two distinct elements: perceived behavioral control based on internal capabilities (PBC-IC) and perceived behavioral control based on external conditions (PBC-EC). PBC-IC focuses on analyzing enterprise managers' perceptions of internal capabilities to exhibit the behavior. PBC-EC examines enterprise managers' perception of external conditions to exhibit the behavior. The modified TPB model (M-TPB) is shown in Fig. 2.

The primary rationale for separating PBC into PBC-IC and PBC-EC is to recognize that both internal capabilities and external conditions uniquely influence the participation behaviors of enterprises. This distinction is crucial for a more nuanced understanding of enterprise behavior in OCR, an area that is yet to be studied. We argue that analyzing PBC-IC and PBC-EC independently can help explain the core problem of why enterprises remain unwilling or unable to participate in the OCR projects, even when the government has created favorable conditions for their participation and whether the core issues are related to their own capabilities or arise due to the external environment. Moreover, Ajzen himself acknowledged that PBC includes external and internal factors while pointing out that in complex situations, it is necessary to measure the two separately (Ajzen, 2002). Therefore, we argue that this modification is in line with the original theory and can present a better approach to examine enterprises' behavior in the context of the OCR.

Hence, AB, SN, PBC-IC, PBC-EC, BI, and behavior (B) are used as the latent variables in the M-TPB. Additionally, in this study, M-TPB analysis is compared with TPB to determine the interpretation capability of the model.

3.2. Hypotheses development

3.2.1. Attitude towards behavior (AB)

In the TPB model, the subject's attitude towards a certain behavior depends on their beliefs about that behavior. According to Ajzen, behavioral belief can be defined as the subjective probability that a behavior will achieve a specific result (Ajzen, 2011). The positive attitude towards participating in OCR projects can be interpreted as enterprises having favorable expectations regarding the returns from their project as a result of their participation behavior (Singh et al., 2018). In China, the short-term return from OCR projects is low; however, the huge OCR market and the potential long-term benefits can make it

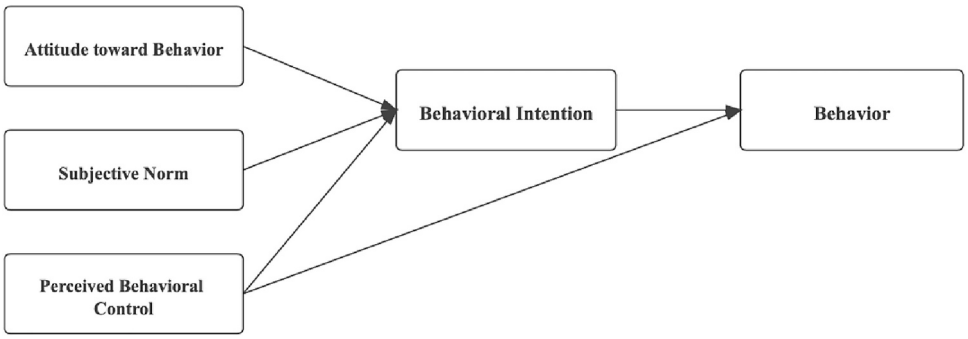

Fig. 1. TPB model framework.

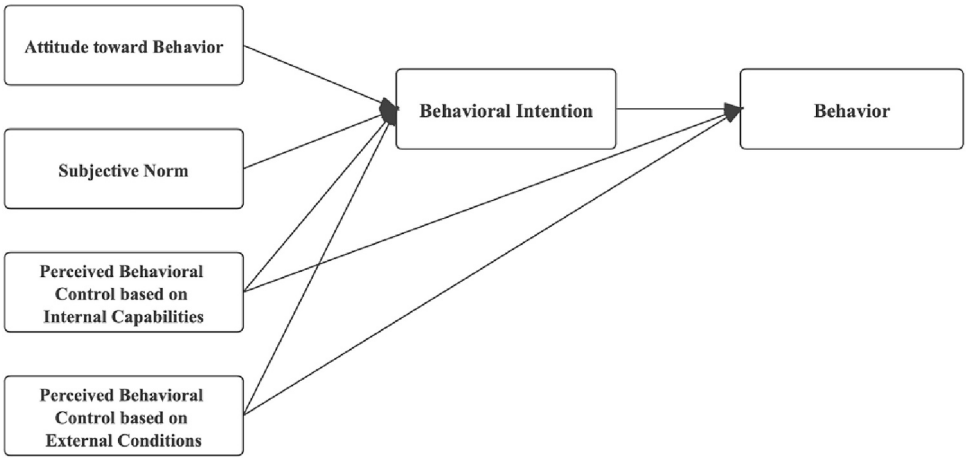

Fig. 2. Modified theory of planned behavior.

attractive to enterprises. Additionally, there is some evidence to support the claim that the few enterprises that have successfully engaged in OCR projects in China have been able to accelerate their market expansion and strategic development (Shen et al., 2021). An example is the Visionary Group, the enterprise that was responsible for the renewal of the Beijing Jinsong Community Project. Through its participation in the OCR, it managed to successfully capture a large market share while creating its 'Jinsong' model, which was used as a strategic template for the old community renewal business all over the country.

Another important factor that needs to be considered while assessing AB is the social attributes of the OCR projects. OCR has a significant impact on residents' livelihoods; thus, enterprise participation will also have social attributes associated with it, through which enterprises can fulfill their social responsibilities and improve their social reputation (Engberg & Larsen, 2010).

Based on these discussions, five observation variables to measure enterprises' AB in OCR are drawn: (i) expected profits (AB1), (ii) market expansion (AB2), (iii) strategic development (AB3), (iv) social responsibility (AB4), and (v) social reputation (AB5).

Hypothesis 1 (H1). *Attitude towards behavior has a positive impact on the intention of enterprises to participate in the OCR.*

3.2.2. Subjective norm (SN)

SN is defined as the social pressure perceived by the subjects when performing any behavioral action. It explains how the subject considers the views of the 'relevant others' when performing a certain behavioral action. More specifically, it explains what these 'relevant others' believe in regard to how the subject should behave (Wan et al., 2018). In the OCR, the 'relevant others' mainly include the government, the residents, corporate partners, and competitors (Zhuang et al., 2019). As policy-makers and initiators of OCR, the government's attitude directly affects the intentions and behavior of enterprises. Similarly, the residents' attitudes towards enterprise participation are important influencing factors (Li et al., 2019). Although the resident group is the direct beneficiary of the renewal, their attitudes are affected by factors such as project funding and the payment structure for property management fees (Dong et al., 2020). Comprehensive renewal requires the involvement of a diverse range of companies, including construction firms, property management companies, and specialized service providers. The support of these project partners is crucial for enterprises. Furthermore, as Mol and Birkinshaw (2009) have asserted, enterprises' behavior can be directly affected by the behavior and decisions of their competitors. Based on these arguments, four observation variables to measure SN for OCR participation are selected as follows: (i) governments' attitude (SN1), (ii) social public attitude (SN2), (iii) corporate partners' attitude (SN3), and (iv) competitor's attitude (SN4).

Hypothesis 2 (H2). *Subjective norm has a positive impact on the intention of enterprises to participate in the OCR.*

3.2.3. Perceived behavioral control based on internal capabilities (PBC-IC)

PBC-IC variable measures enterprises' perception of the ease (or difficulty) of exhibiting a certain behavior based on their perception of their own capabilities. This may involve self-assessing their technical strengths, management abilities, financing abilities, risk tolerance, and relationship with the government. OCR projects are characterized by substantial long-term investment requirements, making the acquisition of lower financing costs an important means for generating and maintaining profit. Therefore, it is essential for enterprises to secure funds at lower financing costs (Aguacil et al., 2017). Moreover, as current policies, systems, and standards for the OCR are far from perfect, having good relationships with the government can play an important role in obtaining project information and resource support (van der Pennen & van Bortel, 2016). In addition, enterprises participating in OCR are faced with multiple risks with high significance levels, such as a long operation cycle and complex stakeholder relationships. Thus, the risk tolerance and risk management capability of enterprises are important factors that need self-assessment.

Therefore, five observed variables to measure PBC-IC in OCR are selected as follows: (i) perception of technological strength (PBC-IC1), (ii) perception of management ability (PBC-IC2), (iii) perception of financing ability (PBC-IC3), (iv) perception of government relations (PBC-IC4), (v) perception of risk tolerance (PBC-IC5).

Furthermore, we argue that enterprises' PBC-IC has a direct effect on their participation behavior. Drawing from Ajzen's explanation of the relationship between PBC and behavior, it can be argued that when two enterprises have similar intentions to participate in OCR projects, the one that perceives its own capabilities as more robust is more likely to participate in the project (Ajzen, 1985, 2011). So, the following hypotheses are put forth.

Hypothesis 3 (H3). *Perceived behavioral control based on internal capabilities has a positive impact on the intention of enterprises to participate in the OCR.*

Hypothesis 4 (H4). *Perceived behavior control based on internal capabilities has a positive impact on enterprise participation in the OCR.*

3.2.4. Perceived behavioral control based on external conditions (PBC-EC)

PBC-EC variable measures enterprises' perception of the ease (or difficulty) of exhibiting a certain behavior by understanding the external conditions. For enterprises operating in OCR, the external conditions are mainly related to government behaviors, community involvement, the financial environment, and factors related to the publicity of the project

(Zhuang et al., 2019). As the government promotes enterprise participation in OCR, the environment they create and the policies they implement directly impact the enterprises' intention to participate. Similarly, community involvement has an important role in influencing enterprise behavior. For example, community organizations such as neighborhood committees can assist enterprises by facilitating resident coordination during the renewal process. The financial environment is another external condition that affects enterprise behavior (Kim et al., 2021). A good financial environment for OCR projects means that enterprises can obtain low-interest financial support. Moreover, effective financial tools can help enterprises solve funding problems (Kim & Kim, 2022). The publicity regarding enterprise involvement in OCR is also an important factor in the OCR projects. Although publicity may not have a direct impact on enterprise behavior, it significantly shapes societal attitudes towards enterprise participation in OCR (Zhuang et al., 2019).

Therefore, five observed variables to measure PBC-EC in the OCR are selected as follows: (i) perception of supportive policy (PBC-EC1), (ii) perception of community organization assistance (PBC-EC2), (iii) perception of the financial environment (PBC-EC3), (iv) perception of financial tools (PBC-EC4), (v) perception of publicity (PBC-EC5). Furthermore, this study focuses on the distinction between PBC-EC and PBC-IC, particularly for policy perception. The perception in PBC-IC focuses more on the capability of the enterprise itself. For instance, what is emphasized in the perception of government relations (PBC-IC4) is related to the enterprise's own ability to communicate with the government. On the other hand, in PBC-EC, this study pays more attention to the support from the surrounding environment rather than the enterprise's own capability. For example, what is highlighted in the perception of supportive policy (PBC-EC1) is related to the perceived support from the government towards the enterprise itself, rather than the enterprise's own capabilities. Besides, we assume that PBC-EC will have both a direct and indirect impact on behavior through behavioral intention.

Hypothesis 5 (H5). *Perceived behavioral control based on external conditions has a positive impact on the intention of enterprises to participate in the OCR.*

Hypothesis 6 (H6). *Perceived behavioral control based on external conditions has a positive impact on enterprise participation in the OCR.*

3.2.5. Behavioral intention and behavior

Previous studies have established a strong correlation between behavioral intention and behavioral execution, demonstrating that behavioral intention is a reliable predictor of behavior (Cristea & Gheorghiu, 2016). Behavioral intention has a positive effect on behavior, and strong intention increases the possibility of actual behavioral execution (Le-Anh et al., 2023). So, enterprises will only intend to participate when they are confident that their involvement will

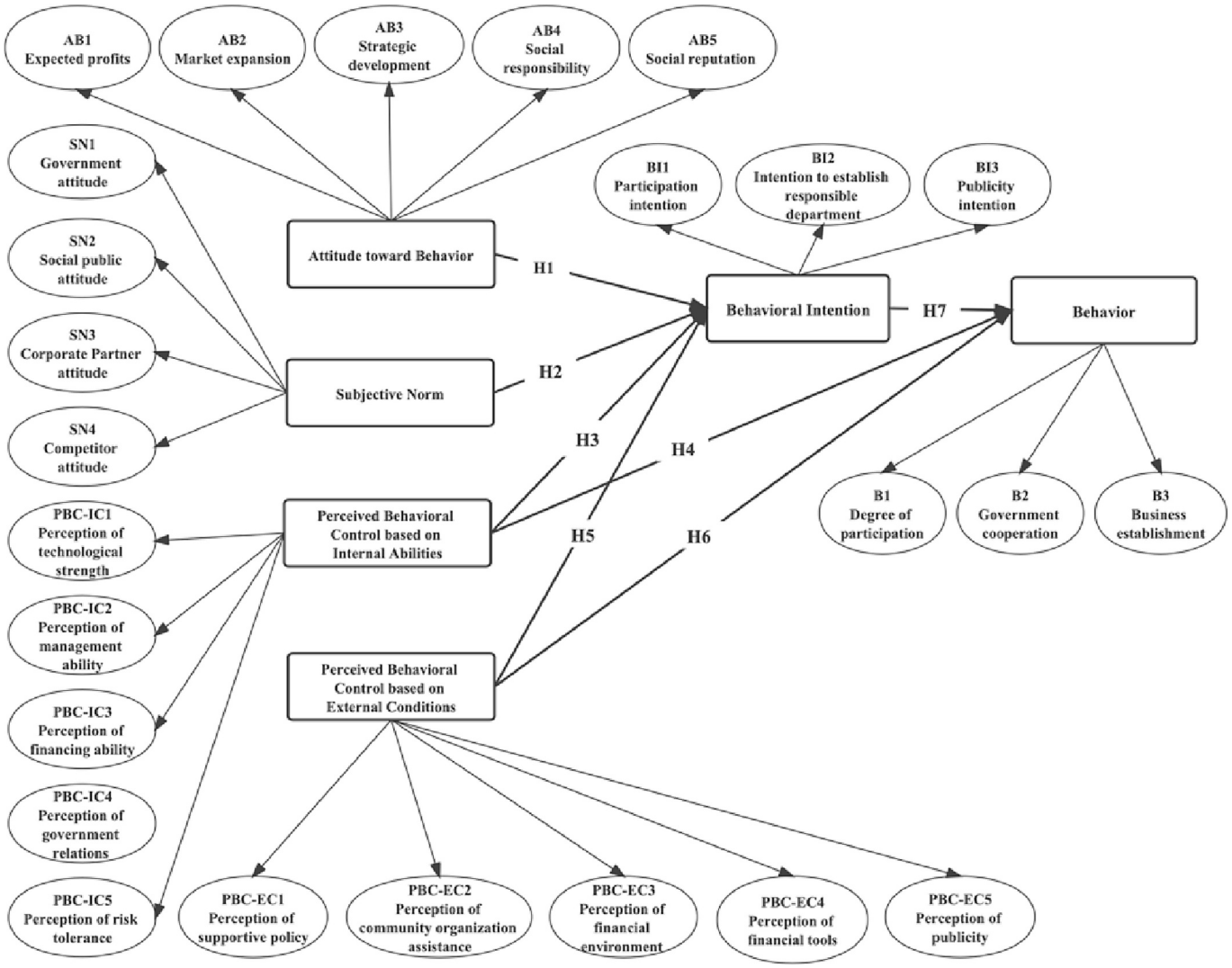

Fig. 3. Hypotheses and observed variables.

yield positive results. Following the initial intention, enterprises then scrutinize the economic benefits, social reputation, and relevant risks, taking into account their own capabilities as well as the external conditions, to form a definitive intention to participate in the project. In their decision-making process, factors such as their attitude could have a positive or negative impact on their intentions or behavior.

Hypothesis 7 (H7). *The intention of enterprises to participate in the OCR has a positive impact on participation behavior.*

The application of the M-TPB with the proposed hypothesis and observed variables are depicted in Fig. 3.

4. Research method

4.1. Structural equation modeling (SEM)

Structural equation modeling (SEM) was used as the primary research method to test the research hypotheses. SEM is often used in behavioral and social sciences, and is the most commonly used tool involving TPB research (Hollett et al., 2020; Zhou et al., 2016). It is a powerful method that presents a mathematical model reflecting the objective state of things by analyzing the hypothetical relationships between observed and latent variables (Ringle et al., 2020). SEM is also a confirmatory statistical method where the causal hypothesis must be based on a certain theory. Since the hypotheses developed in this study are based on TPB, SEM is an appropriate method to examine enterprise participation behavior in OCR projects. SEM combines two statistical techniques: factor analysis and path analysis. It can simultaneously evaluate the measurement quality and detect the relationship between potential variables, which can help us understand the real world with a more credible theoretical framework (Cepeda-Carrion et al., 2018). Furthermore, SEM can test 25 observation variables contained in M-TBP and further explore and predict the relationships among the 7 latent variables.

4.2. Data collection

Primary data for SEM was collected by means of questionnaire surveys. The surveys were targeted at the managers of enterprises that are associated with the OCR projects. Two relevant policy documents served as important references for identifying and incorporating a broad list of target companies beyond just the construction, operation and property management enterprises. The first was "*Guiding Opinions of the General Office of the State Council on the Comprehensive Promotion of Old Community Renewal*," which promotes the use of the "platform + entrepreneurial units" approach to encourage the participation of private entities and the development of novel community service formats like those for elderly care, childcare, and domestic assistance. Drawing from this policy framework, companies operating in the areas of childcare, and domestic assistance sectors were included as target companies for the survey. The second source used was "Establishment and Functional Requirements of Community Commercial Facilities" (GB/T37915-2019), which provides precise definitions of companies that qualify as community commercial facilities. Drawing from this policy document, the scope was further expanded to include enterprises operating in medical care, food and beverage, cleaning services, etc. In all, the research subjects encompassed managers from real estate development companies, construction companies, asset management and operation companies, design companies, property management companies, and professional service companies in areas of community pension, nurseries, medical care, food and beverage, cleaning services, etc.

With the target sample identified, 50 participants from the above-mentioned companies were initially selected through personal contacts and were invited to take part in the survey. A snowballing strategy was then used to identify additional survey participants. Participants were requested to suggest other participants who fulfilled the criteria of having knowledge of OCR projects. Using this approach, an additional 275 samples were identified and approached. In total, 325 survey requests were sent out.

A total of 261 valid responses were received from managers of 175 enterprises. With a response rate of 80 %, the collected data fulfilled the requirement for using SEM. The general rule is to have at least 10 samples for each observed variable (Bentler & Yuan, 1999). Since the model in this study has a total of 25 observed variables, having at least 250 valid samples satisfies the criteria for using SEM.

The details of the survey respondents are shown in Table 1. The majority of the respondents were managers of real estate companies, construction companies, and design companies. Among the respondents, 68 % were middle and senior-level managers, and the proportion of respondents from state-owned and private companies was both 46 %. The experience of respondents in OCR projects ranged from no experience (39 %), 1 to 3 projects (30 %), 3 to 5 projects (14 %), and, 6 and above projects (17 %).

4.3. Measures design

The initial measurement scale used in the questionnaire was developed based on Ajzen (2002). The reliability and validity of the scale were further improved through group discussion and a pilot study of 56 participants. Based on the feedback from the participants, improvements were made by refining the survey questions and improving the wording of the questions to make the measurement scale easier to understand. The measurement scale used in the final questionnaire is shown in Appendix A. The final questionnaire included two sections. The first section requested participants to provide background information, including company name, their position in the company, their involvement in OCR projects, etc. In the second section, the questions were designed to measure seven latent variables by asking the participants to use a seven-point Likert scale from 1 (strongly disagree) to 7 (strongly agree) to provide their answers. As opposed to a 5-point scale, which is more common, a 7-point scale was used in this study as it provides more response options, allowing participants to express their opinions with greater nuance. According to Cicchetti et al. (1985), Oaster (1989), and Preston and Colman (2000), the Likert 7-point scale has been tested to possess higher reliability. The increased sensitivity can help capture subtle differences in attitudes, and according to Albert and Tullis (2022),

Table 1
Demographic information of respondents.

Characteristic	Category	Percentage (%)
Gender	Male	71.72
	Female	28.28
Industry	Real estate development companies	40.00
	Construction companies	21.82
	Asset management and operation companies	3.18
	Design companies	16.36
	Property management companies	5.00
	Professional service companies	4.09
	Others	9.55
Number of OCR projects participated	0	38.64
	1–3	30.45
	4–5	13.64
	6–10	3.18
	>10	14.09
Type of enterprise	State-owned enterprises	45.91
	Private enterprises	45.91
	Sino-foreign joint enterprises	3.18
	Others	5.00
Class position	Junior staff	31.90
	Grass-roots management	30.17
	Middle management	25.86
	Senior management	12.07

the Likert 7-point scale can also yield more accurate test results.

4.4. Structural model evaluation and comparison

With the data collected, SEM was then used to test the model by examining the reliability, validity, and goodness-of-fit. The relationships between the latent variables were then further analyzed. Finally, the M-TPB model was compared with the TPB model to examine the interpretation abilities of the two models. As PBC was split into PBC-IC and PBC-EC, under the premise of meeting the reliability and validity requirements, we used the observed variables of PBC-IC and PBC-EC to construct the PBC measurement model. Finally, the results from SEM were used to determine whether M-TPB model could better explain the influence mechanism of enterprise participation in the OCR.

4.5. In-depth interviews

In order to delve deeper into the findings from the SEM analysis, in-depth semi-structured interviews were conducted. The interviews were conducted for two reasons: (i) to verify the results from the SEM analysis; and (ii) to find explanations for some of the results that are inconsistent with the findings from previous studies. Specifically, the interview questions were designed to clarify the influence of PBC-IC and PBC-EC on behavioral intention and behavior.

One representative each from eight different enterprises that had taken part in the questionnaire survey was selected for the interviews. It is important to emphasize that the rationale behind adopting in-depth interviews in this study was to enhance the explanation of the outcomes obtained from SEM. Consequently, in alignment with the research approach proposed by Boddy (2016), this investigation did not subscribe to a positivist perspective, thereby obviating the need for an extensive sample size. As explained by Boddy (2016), low sample sizes are justified so long as it can fulfill the main purpose of the investigation. Vasileiou et al. (2018) underscored the significance of an ample sample size in ensuring theoretical saturation and analytical rigor. However, it is important to note that the pursuit of theoretical saturation is not the primary objective of the in-depth interviews in this specific study, given that the SEM analysis already ensures robust theoretical grounding. Instead, the primary purpose of the interviews here is to validate and explain the findings obtained from SEM. To maintain analytical rigor, interviews were conducted with diverse group of enterprise managers rather than seeking high sample size (see Table 2). Eight carefully selected samples were deemed methodologically adequate to meet the analytical requirements and research objectives of this study.

Following the criteria of diversity and multiplicity (Siggelkow, 2007), the enterprises that operate within different areas of business were purposefully selected. The participants were all mid- or senior-level managers in their organizations (see Table 2). Among the eight managers, five had previously been directly involved in OCR, while the other three had no prior experience but were interested in participating in OCR projects. Furthermore, in the process of selecting interviewees, efforts were made to ensure a diverse representation of enterprise types. The objective was to encompass the various business categories mentioned earlier. During the interviewee selection process, it was observed that many enterprises are not confined to a single commercial domain. Some companies are involved in multiple business formats during the OCR process. For instance, as indicated in Table 2, the enterprise associated with EM1 is concurrently engaged in small-scale retail operations within the community. The enterprise connected to EM2 has previously participated in and developed businesses catering to community pensions and childcare within the community. Additionally, the enterprise associated with EM6 has experience in the area of food and beverage. Given this context, the diversity of business types represented by the selected interviewees' respective enterprises was carefully considered. This approach aimed to ensure a representative sample of participants, thereby enhancing the effectiveness of the interviews, while at the same time, optimizing the research budget and timeline. The semi-structured interviews allowed the managers the freedom to express their views in a non-rigid manner while providing reliable, comparable data for the analysis. The outline of the interview questions is presented in Appendix B. Each interview lasted about half an hour and were recorded. The recorded data was then transcribed and coded, and was analyzed to identify clear and reoccurring themes that helped examine and explain the findings for the SEM analysis.

Table 2
The information of interview enterprises and interviewers.

Enterprise managers code	Previous engagement with OCR	Business type	Position of interviewee
EM1	Previously participated	Asset management and operation company	Mid-level manager
EM2	Previously participated	Real estate development company	Mid-level manager
EM3	Previously participated	Property management company	Mid-level manager
EM4	Previously participated	Design company	Mid-level manager
EM5	Previously participated	Professional service company (With pension and nursery)	Mid-level manager
EM6	Interested, but not yet participated	Real estate development company	Mid-level manager
EM7	Interested, but not yet participated	Construction companies	Senior-manager
EM8	Interested, but not yet participated	Construction Company (With investment)	Mid-level manager

5. Findings and analysis

5.1. Model analysis

SPSS 24.0 was used to test the reliability of the data from the questionnaires. Cronbach's Alpha coefficient for all latent variables was over 0.7, indicating that the measurement results showed sufficient internal consistency (Huang, Xie, et al., 2023; Li, Jansen, et al., 2022). AMOS21.0 was then used to perform confirmatory factor analysis (CFA) on the model. The observed variables with path coefficients below 0.7 in each latent variable, including SN2, PBC-IC3, PBC-IC4, PBC-EC4, and PBC-EC5 were excluded from the analysis.

Employing the two-step procedure proposed by Anderson and Gerbing, we conducted a further analysis of the data (Anderson & Gerbing, 1988). Firstly, we tested the reliability and validity of the measurement model; and secondly, we tested the structural model to determine the degree of goodness-of-fit between the theoretical model and the observed data. According to the results of AMOS21.0, the residual of AB1 had an obvious covariant relationship with the residuals of AB2 and AB4, so AB1 was excluded to improve the goodness-of-fit of the model.

5.1.1. Reliability and validity

For the confirmatory factor analysis (CFA), we analyzed the reliability and validity of the measurement model based on the AVE and CR indicators. According to Fornell and Larcker, CR $>$ 0.7 is a good criterion for constructing reliability, and AVE $>$ 0.5 is a good criterion for convergent validity (Fornell & Larcker, 1981).

In the M-TPB model, CR of all latent variables was between 0.85 and 0.92, which is $>$0.7, indicating that the measurement model has good construction reliability; AVE of all latent variables were between 0.62 and 0.79, which is $>$0.5, indicating that the measurement model had good convergence validity (see Table 3). On the other hand, for the TPB model, the CR of all latent variables was between 0.85 and 0.92, which is $>$0.7, indicating that the measurement model had good construction reliability; the AVE of the latent variable was between 0.52 and 0.79,

Table 3
Reliability and validity for modified theory of planned behavior.

Variables	Loading factor	Mean	Cronbach's α	CR	AVE
B	0.825–0.920	4.480	0.896	0.904	0.760
BI	0.814–0.935	4.001	0.906	0.919	0.791
AB	0.759–0.833	4.712	0.868	0.867	0.620
SN	0.732–0.883	4.712	0.843	0.848	0.652
PBC-IC	0.712–0.894	4.539	0.857	0.866	0.685
PBC-EC	0.647–0.930	4.587	0.864	0.875	0.706

NOTE: BI = behavioral intention, B = behavior, AB = attitude towards behavior, SN = subjective norm, PBC-IC = perceived behavioral control based on internal capabilities, PBC-EC = perceived behavioral control based on external conditions. AVE is the abbreviation for Average Variance Extracted. CR is the abbreviation for Composite Reliability.

which is also >0.5 (see Table 4), indicating that the convergence validity of the measurement model meets the requirements.

5.1.2. Goodness-of-fit of the models

We analyzed the goodness-of-fit of the models based on the main indicators using AMOS21.0. Most fit indices of the M-TPB model were at a good level, and some fit indices of TPB model were at an acceptable level (see Table 5). The results indicate that the fit indices of two models provide an acceptable fit to the data.

5.2. Hypotheses testing

Based on the analysis, 4 out of 7 paths were found to be non-significant, and 3 of the hypotheses proposed were supported (see Table 6). According to the results, behavioral intention has a decisive influence on behavior ($\beta = 0.831$, $p < 0.001$). AB was identified as the most significant factor influencing behavioral intention ($\beta = 0.730$, $p < 0.001$). SN was found to have no significant impact on behavioral intention, which indicates that 'relevant others' is not an important factor affecting enterprise participation intention. Besides, PBC-IC had no significant path coefficients for behavioral intention, however, it did have a significant relationship with behavior ($\beta = 0.127$, $p < 0.01$). This implies that in OCR, PBC-IC has a direct impact on behavior.

Interestingly, our findings illustrate that PBC-EC and behavioral intention show a significant negative correlation ($\beta = -0.214$, $p < 0.001$) which suggests that external conditions are negatively correlated with the enterprises' intention to participate in OCR. This finding is contradictory to the findings of previous studies that have indicated that improved external conditions will promote the participation of enterprises. In addition, our analysis suggests that the relationship between PBC-EC and behavior is not significant.

5.3. Model comparison

In the TPB model, 3 out of 5 paths were found to be significant (see Table 7). In both the TPB model and the M-TPB model (Figs. 4 and 5), behavioral intention had an important influence on behavior where AB was the most important factor affecting behavioral intention, while SN had no significant influence on behavioral intention. However, there were some differences between the two models. The TPB model showed a significant negative correlation between PBC and behavioral intention ($\beta = -0.179$, $p < 0.001$). Conversely, in the M-TPB model there was a significant negative correlation between PBC-EC and behavioral intention ($\beta = -0.226$, $p < 0.001$), while there was no significant relationship between PBC-IC and behavioral intention. In addition, there was no significant relationship between PBC and behavior in the TPB model, whereas in the M-TPB model, there was a significant positive correlation between PBC-IC and behavior ($\beta = 0.127$, $p < 0.001$). These results indicate that M-TPB offers more comprehensive results compared to TPB.

Table 4
Reliability and validity for theory of planned behavior.

Variables	Loading factor	Mean	Cronbach's α	CR	AVE
B	0.823–0.920	4.480	0.896	0.904	0.760
BI	0.814–0.935	4.001	0.906	0.919	0.791
AB	0.712–0.849	4.712	0.868	0.850	0.590
SN	0.718–0.894	4.712	0.843	0.848	0.652
PBC	0.535–0.911	4.563	0.871	0.860	0.520

NOTE: BI = behavioral intention, B = behavior, AB = attitude towards behavior, SN = subjective norm, PBC = perceived behavioral control.

Table 5
Goodness-of-fit of the initial measurement model.

Goodness-of-fit measure		Level of acceptance fit	Fit statistics	
			M-TPB	TPB
Absolute fit	χ^2/df	<5.0 acceptable; <3.0 good	2.604	3.020
	GFI	>0.8 acceptable; >0.9 good	0.878	0.842
	AGFI	>0.8 acceptable; >0.9 good	0.833	0.789
	RMSEA	<0.1 acceptable; <0.08 good	0.079	0.088
Incremental fit	NFI	>0.9	0.915	0.899
	IFI	>0.9	0.946	0.930
	TFI	>0.9	0.933	0.915
	CFI	>0.9	0.945	0.930

Table 6
Hypotheses testing for modified theory of planned behavior.

Hypotheses	Factor loading		Supported/unsupported
H1	BI ← AB	0.730***	Supported
H2	BI ← SN	0.226 (*ns*)	Unsupported
H3	BI ← PBC-IC	0.110 (*ns*)	Unsupported
H4	BI ← PBC-EC	−0.214***	Unsupported
H5	B ← BI	0.831***	Supported
H6	B ← PBC-IC	0.127*	Supported
H7	B ← PBC-EC	0.002 (*ns*)	Unsupported

NOTE: *** < 0.001, ** < 0.01, * < 0.05; *ns* = not significant.
BI = behavioral intention, B = behavior, AB = attitude towards behavior, SN = subjective norm, PBC-IC = perceived behavioral control based on internal capabilities, PBC-EC = perceived behavioral control based on external conditions.

Table 7
Standardized parameter estimates and effects for theory of planned behavior.

Path	Factor loading
BI ← AB	0.826***
BI ← SN	0.206 (*ns*)
BI ← PBC	−0.179***
B ← BI	0.882***
B ← PBC	0.066 (*ns*)

NOTE: *** < 0.001, ** < 0.01, * < 0.05; *ns* = not significant.
BI = behavioral intention, B = behavior, AB = attitude towards behavior, SN = subjective norm, = perceived behavioral control.

5.4. Interview findings

The findings of the semi-structured interviews facilitated in further understanding the findings drawn from the SEM. The interview content is outlined in Appendix C. From the interview findings, it was seen that for enterprises managers, the huge OCR market is attractive. According to the forecast by Shengang Securities, OCR projects slated for initiation between 2020 and 2023 will, upon completion, yield an impressive total revenue of approximately 350.4 billion yuan for property management enterprises (Cailianpress, 2023). This market enthusiasm is further underscored by the strategic cooperation agreements signed in 2020

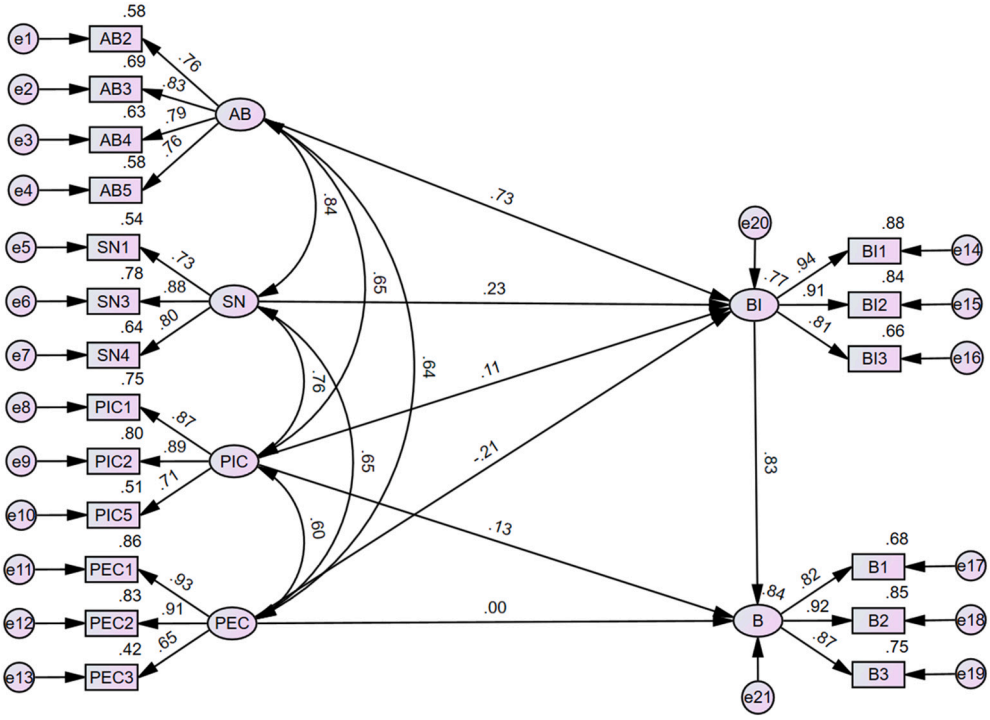

Fig. 4. Estimates for modified theory of planned behavior.
NOTE: BI = behavioral intention, B = behavior, AB = attitude towards behavior, SN = subjective norm, PBC-IC = perceived behavioral control based on internal capabilities, PBC-EC = perceived behavioral control based on external conditions.

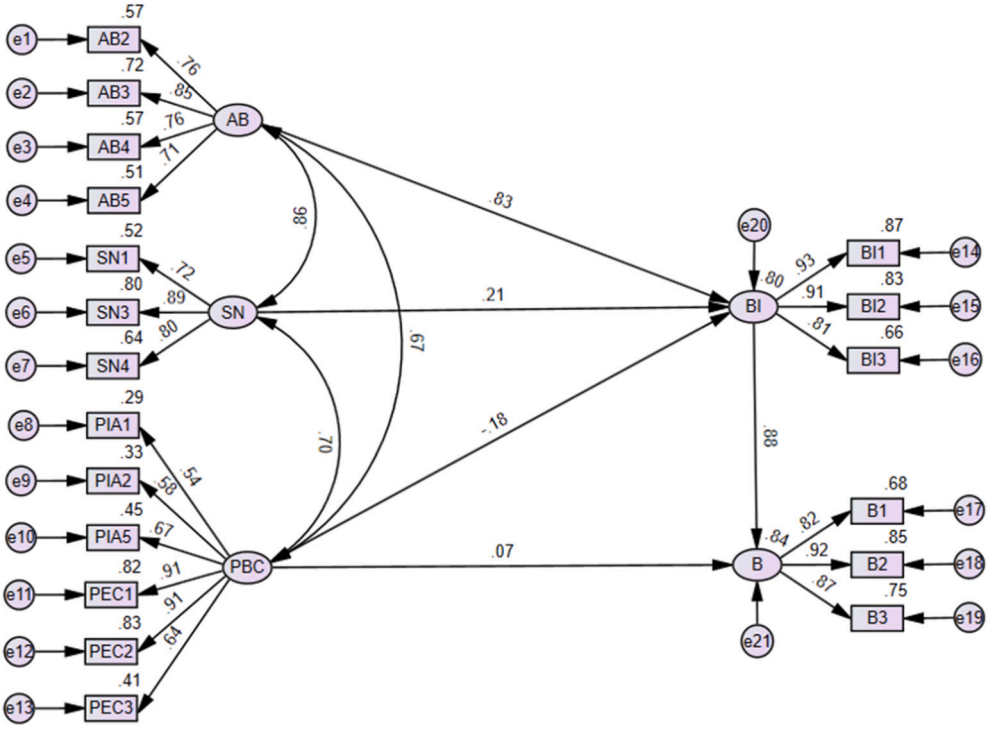

Fig. 5. Estimates for theory of planned behavior.
NOTE: BI = behavioral intention, B = behavior, AB = attitude towards behavior, SN = subjective norm, PBC-IC = perceived behavioral control.

between the China Development Bank, the China Construction Bank, and nine cities across five provinces. These agreements commit a substantial 436 billion yuan in loans over the next five years to support OCR initiatives, with a particular focus on encouraging private sector involvement (Ding et al., 2021). While governmental support and anticipated returns suggest that OCR projects should inherently attract enterprise participation, a notable sentiment among interviewees was that while they acknowledged the appeal of OCR ventures, they also

expressed concerns regarding the practicality of such allure in yielding substantial returns.

The findings also illustrated that the return on investment (ROI) is an important consideration for enterprise managers contemplating OCR participation. It was found that enterprises already operating in the OCR market typically adopt business models focused on long-term returns with relatively lower levels of profit. It was also clear that this type of business model fails to meet the needs of most enterprises. In addition, for real estate enterprises and construction enterprises, OCR participation does not fit into their current strategic direction.

EM1	Asset management and operation company	*"Our OCR projects' income is mainly from government subsidies in installments, property management and low efficiency asset operation in the community, whose operation cycle is 10 years."*
EM2	Real estate development company	*"Our company's project in Guangzhou will achieve profits through 15 years of commercial operation."* *"We have the ability to participate in the OCR , but we have not yet implemented it as a core strategy."*
EM5	Professional Service Company	*"OCR is an important market for us, but we are still exploring a long-term profitable model."*
EM7	Construction Company	*"Compared with demolition and reconstruction, comprehensive renewal of old communities brings very limited benefits."*

The interviews revealed that enterprise managers with prior experience in OCR had distinct differences in perspectives regarding external conditions from those with no experience. Enterprise managers that had participated in OCR had a deeper understanding of relevant policies and other OCR conditions, and they perceived external conditions as imperfect. On the other hand, enterprise managers without prior involvement in OCR lacked a thorough understanding of the OCR environment, yet they perceived a bias in current policies favoring OCR. This explains why there was a negative correlation between PBC-EC and participation intention, and to some extent, this also shows the dissatisfaction experienced by the participating enterprise managers. Therefore, although current external conditions are attractive at some level, the effectiveness of external conditions such as policy, financial, and community support remains limited.

EM1	Asset management and operation company	*"The enterprise's financing costs are higher than state-own enterprises. The enterprises do not have an advantage in the OCR. The government needs to push the financial sector to guarantee low interest rates for the enterprises."*
EM3	Property management company	*"The current government has not established the participation mechanism, and the participation of the enterprises lack paths and rules."*
EM6	Real estate company	*"The OCR is the direction of the future, received policy guidance and support, but there are still lots of risk."*

There were also differences in attitude and behavioral perception among managers of different enterprise types. For real estate enterprise managers, the profit model of OCR did not align with their organizations' existing business strategy. They highlighted that the current real estate market is weak; without external financial backing, it is impossible for businesses to invest large sums of money in OCR. Managers of construction enterprises believed that local small and medium-sized enterprises were better suited to participate in OCR than large organizations; however, it was more difficult for them to obtain information and opportunities to participate. Managers of asset management companies viewed OCR as a key expansion strategy for the future, although there were concerns over OCR's business model and funding challenges. Managers of design companies and property companies, on the other hand, had a more positive attitude towards the OCR because it would bring new business opportunities for them. However, these managers also expressed that the current OCR market lacks specific norms and legal guarantees for enterprise participation, and this, along with the complexities of old communities, creates substantial risks for their enterprises to participate. Finally, specialty service company managers seemed interested in the OCR market but were still exploring viable business models.

6. Discussion

This study introduced a behavioral perspective into the study of enterprise participation in OCR and explored the key influencing factors affecting enterprise participation. Specifically, we found that attitude, a previously overlooked factor, is important in influencing enterprise participation in OCR. Furthermore, the M-TPB model allowed us to explore the effectiveness of current external policies, highlighting areas worthy of further investigation. So M-TPB could have broader applications in researching both organizational and individual behaviors.

6.1. Improving attitudes towards participation in the OCR

Our findings illustrate that the intention to participate significantly influences participation behavior, while attitude plays a key role in shaping the intention to participate. Existing research has mostly identified factors such as underdeveloped markets, imperfect policy support, insufficient financial support, and difficulty in community coordination as barriers to enterprise participation (Yang et al., 2019; Zhang et al., 2019), and these studies have rarely considered attitudes as an important factor in the context of OCR. We can see from the analysis of M-TPB and interviews that enterprise managers typically feel confident in their capabilities and do not consider participating in OCR to be a challenging task. Meanwhile, the limited impact of SN's influence on participation intention further indicates that enterprise managers prioritize their own enterprise's attitude over the opinions of relevant others. Therefore, improving participation attitudes should be a key measure to promote enterprise participation.

Securing benefits is a key factor influencing attitudes towards enterprise participation. Benefits include short-term and long-term benefits. In the short-term, enterprises have the potential to increase their revenue through fees and charges for property management, parking, advertising, etc., in addition to saving on construction costs (Shen et al., 2021). Long-term benefits can include aspects such as enhancing corporate social reputation, building government-enterprise relationships, accumulating experience, and increasing the value of the OCR area to serve future project development. The Yongqingfang project in Guangzhou City is a good example of how enterprises can realize long-term benefits from OCR. Located in Liwan District of Guangzhou, China, the project covers an area of approximately 8000 m^2. It includes 63 residential units along with various zones designated for offices, long-term rental apartments, public amenities, and educational facilities (Deng et al., 2023). Project discussions between the Liwan District Government and Vanke Group (one of the largest real estate developers in China) commenced in 2016, with the construction commencing in 2018. According to the findings of Wang et al. (2022), Vanke Group initially adopted a cautious stance towards the project's potential profitability. Some managers raised concerns, suggesting that the resources and efforts allocated to this project could be more effectively utilized in completing three other large-scale real estate projects elsewhere. From a short-term perspective, the project appeared to be less attractive for enterprise participation. However, as the project progressed, rental prices experienced a significant increase, escalating from the initial 30–40 RMB/m^2 to 70–150 RMB/m^2 in 2017, and eventually rising to 170–200 RMB/m^2 in 2019 (Wang et al., 2022). Consequently, it took Vanke Group less than six years to realize a profit from the project, a shorter duration than they had expected (Wang et al., 2022). Thus, from a long-term perspective, the Yongqingfang project yielded substantial benefits for Vanke Group. Notably, this venture also facilitated the

establishment of a robust collaborative relationship between Vanke Group and the Guangzhou Municipal Government, laying solid groundwork for future developmental prospects. The lesson gained from this is that enterprises should consider emphasizing the acquisition of long-term benefits rather than concentrating solely on short-term gains.

Huang et al. (2022) highlighted the severe impact of COVID-19 on China's real estate industry. The deceleration in the growth of this sector has created indirect ramifications for numerous upstream and downstream enterprises (Agyemang et al., 2021; Xu et al., 2021). This assertion is corroborated by the rising unemployment rates in various industries, including construction and real estate (Huang, Tian, & Wang, 2023). Against this backdrop, enterprises are urged to explore innovative commercial models, enhance resource integration capabilities, and improve their ability to seize new opportunities. With the growing emphasis on OCR, enterprises may need to rethink their strategies and redefine their business models. Shifting from short-term to long-term perspective, enterprises should consider sustainable profit mechanisms within the OCR framework. The profitability approach of Vanke Corporation serves as an example of the potential within OCR. However, many enterprises dismiss the prospect of profiting from OCR before even entering the market. So, the primary imperative for these enterprises should be to transform their perceptions regarding OCR.

6.2. Improving external conditions to promote enterprise participation

Improving external conditions is an important tool for governments to promote enterprise participation, but its effectiveness deserves further exploration. It is generally accepted that external conditions are important measures to promote enterprise participation. But the negative correlation between PBC-EC and participation intention in our M-TPB contradicts this general opinion. The interview findings suggest that the disparity between the perceptions and actual behaviors of participants, distinguishing those with experience from those without, is the underlying reason for this phenomenon. Inexperienced participants were only concerned with current incentive policies and conditions since they had not yet participated in OCR, while experienced participants recognized the limitations of the current external conditions from their experience in OCR. Therefore, while this finding does not refute the efficacy of improving external conditions, it does cast doubt on the effectiveness of the current external conditions.

Lai and Tang explore the existing conditions for OCR, noting that local governments have fostered enterprise participation by implementing OCR policies, but that this top-down approach is vulnerable to failure due to the lack of involvement of other stakeholders (Lai & Tang, 2016). OCR policy needs to pay more attention to the opinions of enterprises. Most research that has applied Ajzen's TPB focuses on the behavior of the subject with a high degree of control (Cop et al., 2020; Hagger et al., 2022). Cordano and Frieze's research revealed that there may be a significant negative correlation between PBC and BI when the subject does not have full control over its behavior (Cordano & Frieze, 2000). In the context of OCR, most of the participating enterprises come from the real estate market. Although they have relatively strong financial and management capabilities, they do not have much control over the external policies and conditions related to OCR. Therefore, understanding their needs and incorporating mechanisms to support them via better policies can facilitate better enterprise participation.

6.3. Policy implications

This research emphasizes the importance of attitude towards OCR participation and external conditions. Accordingly, we put forward some suggestions for the government. It is important that government should pay attention to the improvement of enterprises' attitudes towards OCR participation. One effective strategy is fostering cooperation between the government and enterprise, as it can positively shift enterprises' attitudes and enhance policy effectiveness. Such partnerships are increasing recognized as vital for creating sustainable urban development frameworks (Zhu et al., 2020). The active involvement of the government can reduce the difficulty of enterprise participation, and at the same time, it can help the enterprises reduce transaction costs, including financing costs as well as transaction costs associated with administrative processes (Lai & Tang, 2016). Additionally, cooperation can help enhance communication between the government and enterprises, providing a direct basis for informed policymaking and improving the effectiveness of those policies. Looking at the experience of the urban renewal policies in the UK and the US in the 1990s, it can be leant that governments can promote sustainable development of OCR through stable partnerships with enterprises and communities (Diamond, 2002).

Furthermore, the government should work on improving enterprises' expectations of the OCR market, which can change their attitude towards participating in OCR. The government can encourage the adoption of business models that focus on long-term gains and lower immediate profits, as well as provide better visibility of long-term market strategies. While the short-term profitability in OCR may be lower, the enormous OCR market in China has the potential to offer long-term benefits to enterprises (Zhu et al., 2020). Moreover, the government could provide some level of profit guarantee for enterprises, such as guaranteeing the long-term asset operation rights of enterprises, carrying out multi-project joint renewal, combining OCRs with the development of new properties, etc. Participating in OCR will help enhance the social reputation of the company and establish a good relationship between the government and enterprises, laying a strong foundation for the future development of the enterprise.

It is important to clarify here that the suggestions mentioned above do not imply that governments should focus on improving enterprises' PBC-EC to enhance their attitudes. Although improving PBC-EC could potentially improve enterprises' attitudes, it falls outside the scope of our discussion. Our emphasis is on shifting enterprises' attitudes through enhancing their beliefs. For instance, fostering collaboration and highlighting the long-term advantages of engaging in OCR projects, as previously discussed. Nonetheless, we also recommend that future studies explore the role of PBC-EC in shaping enterprises' attitudes.

The government should also enhance the effectiveness of external conditions. For OCR models with lower profit margins over the long term, obtaining low-cost capital is an important condition for enterprise participation. It is also a common concern for enterprises, especially for those in real estate and asset management. To address this, first, the government should improve the financial management structure of OCR, clarify the financing norms, and reduce the financing threshold. Second, the government should collaborate with financial institutions to develop innovative financing instruments for OCR projects, providing enterprises with effective capital tools. Drawing from our M-TPB analysis and interview findings, we put forward targeted suggestions for different types of enterprises to enhance policy effectiveness and encourage enterprise participation in OCR (see Table 8).

In addition, the government should also tailor the business environments and modes of participation to suit enterprises of varying scales. OCR presents distinctions between conventional real estate development and other projects. Unlike typical real estate ventures, most OCR projects do not entail extensive construction activities such as demolition and reconstruction. Consequently, the financial outlay required for OCR projects is not on the same scale as that of large real estate projects. As a corollary, the potential for substantial profits in OCR projects is relatively limited compared to more lucrative large-scale real estate projects. Essentially, OCR projects require less capital and simpler construction, which typically results in lower profits. For bigger companies, with their strong financial resources and need for quick investment returns, OCR projects don't align well with their main investment goals. Hence, some interviewees suggested that “managers of construction enterprises believe that local small and medium-sized enterprises are more suited to participate in OCR than large organizations.”

Table 8
Policy recommendations for different types of enterprises.

Type	Policy implications
Real estate development enterprises	1. Promote the long-term and low-profit mode of OCRs and manage the expectations of enterprises. 2. Combine the OCR and new property development to meet the profit expectations of the enterprises. 3. Improve the cooperation between the enterprise and relevant bodies in the community to guarantee the right of asset operation.
Construction enterprises	1. Establish a bidding mechanism, publicize participation information, and encourage local small and medium-sized construction enterprises to participate. 2. Package multiple OCRs, expand the project scale, and promote the participation of large construction enterprises.
Design enterprises	1. Publish design specifications for the OCR. 2. Establish a list and series of ongoing and planned projects within OCRs to reduce design costs.
Property management enterprises	1. Increase property service subsidies for old communities with difficulties collecting property fees. 2. Establish property management norms for old residential areas after renovation.
Professional service enterprises	1. Encourage the main unit of OCR to introduce special service enterprises for cooperation. 2. Provide enterprise subsidies for aged care and other special services.
Asset management and operation enterprises	1. Promote the long-term and low-profit mode of OCRs and improve the expectations of enterprises. 2. Improve the cooperation between the enterprise and the relevant bodies in the community to guarantee the right of asset operation. 3. Package multiple OCRs and expand the project scale to increase revenue.

Indeed, this incongruity between the attributes of OCR projects and the capacities of larger enterprises can be aptly characterized as an excessive application of resources to a relatively modest endeavor. This has negative external ramifications for the companies involved. Large-scale corporations may opt to withdraw from OCR projects due to the challenges associated with significant capital investments and extended investment recovery periods. A case in point is when Guangzhou Times Holdings Group Co., Ltd. sought to exit from eight OCR projects in 2022 (Na, 2022). On the other hand, small and medium-sized enterprises, though potentially well suited to undertake smaller-scale development projects due to their lighter financial commitments, may hesitate to adopt new business models and assume unknown risks. These uncertainties often stem from inadequate comprehension of government support and the prevailing market conditions. Therefore, this study recommends that enterprises foster improved collaboration with governments. Large-scale enterprises should proactively conduct thorough assessments of project risks and engage in constructive dialogue with the government to explore risk mitigation strategies. Small-scale enterprises should actively pursue extensive communication with the government to acquire a comprehensive understanding of the supportive policies tailored to their specific needs. Furthermore, enterprises must pivot their attitudes and collaborative networks. Unlike conventional real estate developments, OCR projects diverge by not entailing high-risk, high-reward investments. The light asset profile inherent in OCR initiatives poses a challenge to large-scale enterprises accustomed to heavy asset-centric strategies. This challenge manifests notably in dissatisfaction with investment yields and unease surrounding the adaptation of business models. Yet, amid the turbulent environment of the Chinese real estate market, enterprises must contemplate leveraging from OCR projects for corporate transformation. This underscores the imperative for enterprises to reassess their corporate positioning and refine their selection of collaborative partners. Meanwhile, the government should adopt a facilitative role in the market, proactively disseminating relevant information to enterprises of varying scales. Moreover, the formulation of policies specifically tailored to different enterprise types can foster a favorable environment for the successful implementation of OCR projects.

6.4. Limitations and future research

As with any research, this study has some limitations. Firstly, it is important to acknowledge that this study encountered limitations in terms of research funding and time constraints, which restricted the acquisition of a larger dataset of questionnaire responses. As a consequence, a comprehensive analysis of potential differences in participation behavior across various cities and enterprises could not be carried out. There may be a need for a more extensive data set to facilitate multilevel structural equation modeling and multi-group structural equation modeling studies, since participation behavior can vary across different enterprises and city policies. Future research endeavors could focus on addressing these limitations. Secondly, given the nationwide initiation of China's OCR in 2019, obtaining suitable panel data to substantiate the research presented a challenge. Access to panel data would have enabled a more robust examination of the phenomena under consideration. To advance the depth and breadth of knowledge in this field, future research initiatives are encouraged to explore strategies for aggregating relevant panel data to facilitate more comprehensive and in-depth analyses. Thirdly, during the semi-structured interview process, many interviewees raised concerns about the impact of enterprise size on the profitability of OCR projects. However, due to constraints in funding and time for this study, the influence of enterprise size was not considered. Future research could further analyze the effect of enterprise size on participation in OCR projects. Lastly, the interviews conducted in this study served the primary purpose of explaining the outcomes derived from structural equation modeling (SEM). While these interviews offered valuable insights, they represent only one facet of a multidimensional phenomenon. To delve further into the intricacies and nuances underlying the SEM results, future research endeavors could incorporate larger sample sizes for conducting in-depth interviews. Such an approach would enhance our understanding of the underlying factors influencing the observed SEM outcomes.

7. Conclusion

The purpose of this research was to explore the dilemma of enterprises participating in the old community renewal. So far, little to no research have analyzed the participation intentions of enterprises through the lens of TPB in the context of OCR. Examining the behavior and intentions of the enterprise managers helped reveal the most direct information to promote enterprise participation.

The theory of planned behavior was used as a theoretical framework for studying how multi-dimensional concepts can potentially reveal and predict the behavior of enterprise participation. We modified the model and conducted an empirical test based on the data from 261 respondents from 175 related companies. The M-TPB model revealed some key answers that the traditional TPB model could not. It was confirmed that examining internal capabilities and external conditions independently can facilitate deeper knowledge of the mechanisms of enterprise participation behavior.

The findings show that the participation attitude of enterprises has an important influence on their intention to participate, and the intention directly determines their participation behavior. Distinct from existing knowledge, our findings show that PBC-EC has a negative impact on intention. We cross-examined these results through in-depth interviews and found that this phenomenon was mainly caused by the low effectiveness of current policies and external conditions.

For the government, changing the attitude of enterprises and improving the effectiveness of policies are important approaches to promoting enterprises' participation. We put forward tailored

suggestions for investment-oriented enterprises and non-investment-oriented enterprises based on their respective characteristics.

Future studies may focus on how to change the enterprises' attitude and improve the effectiveness of external conditions, so as to achieve high-quality and sustainable development in the renewal of China's old communities.

CRediT authorship contribution statement

Guiwen Liu: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Validation, Visualization, Writing – original draft. **Ruopeng Huang:** Data curation, Formal analysis, Validation, Writing – review & editing. **Kaijian Li:** Conceptualization, Funding acquisition, Investigation, Project administration, Resources, Supervision, Validation, Writing – review & editing. **Asheem Shrestha:** Data curation, Formal analysis, Validation, Writing – review & editing. **Hanbing Wang:** Supervision, Writing – review & editing. **Minhong Cai:** Conceptualization, Investigation, Resources, Supervision.

Declaration of competing interest

The authors declare that they have no known conflicting financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Acknowledgements

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the National Natural Science Foundation of China [grant number 72371041]; the National Natural Science Foundation of China [grant number 72271035]; the Humanities and Social Science Fund of Ministry of Education of China [grant number 18YJC630071]; the Natural Science Foundation of Chongqing [grant number CSTC2021JCYJ-MSXMX1064]; the Fundamental Research Funds for the Central Universities [grant number 2019CDJSK03PY07]; the Fundamental Research Funds for the Central Universities [grant number 2021CDJSKPT03]; the Chongqing Technology Innovation and Application Development Program [grant number CSTB2023TIAD-LDX0013].

Appendix A. Questionnaire

Table A-1
Questionnaire about enterprise participation in old community renewal.

Latent variable	Number	Questionnaire
Attitude towards Behavior (AB)	AB1	Participating in the renewal of old communities can bring long-term returns for our business
	AB2	Participation in the renewal of old communities will help expand the existing market of our enterprises
	AB3	It is consistent with our enterprise's development strategy to participate in the renewal of old communities
	AB4	Our company has the responsibility to participate in the renewal of old communities such as livelihood projects
	AB5	Participating in the renewal of old communities helps our company to build a positive reputation and social image
Subjective Norm (SN)	SN1	The local government wants our company to participate in the renewal of the old community
	SN2	Local people generally believe that the renewal of old communities needs the participation of enterprises
	SN3	Our corporate partners support us to participate in the renewal of old communities
	SN4	Our competitors are actively involved in the renewal of old communities
Perceived Behavioral Control based on Internal Capabilities (PBC-IC)	PBC-IC1	Our enterprise has the necessary technology, capital and other conditions for the renewal of old communities
	PBC-IC2	Our enterprise has the management experience and ability of old community renewal project
	PBC-IC3	Our enterprise has the ability to obtain the capital needed for the renewal of old communities at a lower cost of financing
	PBC-IC4	Our company keeps close contact with the local government
	PBC-IC5	Our company can bear the risk of participating in the renewal of old communities
Perceived Behavioral Control based on External Conditions (PBC-EC)	PBC-EC1	Enterprises participating in the renewal of old communities can obtain strong policy support from the local government
	PBC-EC2	Enterprises participating in the renewal of old communities can obtain the support of the community organizations where the project is located
	PBC-EC3	Enterprises involved in the renewal of old communities can get low-interest loans
	PBC-EC4	There are already effective financial tools that can help companies solve the financing problem of participation
	PBC-EC5	Enterprises can expand the social impact of participating in the renewal of old communities through media publicity
Behavioral intention	BI1	Our company is willing to participate in the renewal of old communities
	BI2	Our company is willing to set up a department/team which is responsible for the renewal of old communities
	BI3	Our enterprise is willing to actively promote and participate in the renewal of old communities
Behavior	B1	The degree of our enterprise's participation in the renewal project of old communities
	B2	Our enterprise actively negotiates with the government department the old community renewal
	B3	Our enterprise has or will participate in the old community renewal as an important business development

Appendix B. Outline of semi- structured interview questions

1. What is the intention of your enterprise to participate in the renewal of old communities?
2. What are the main factors that affect the intention of your enterprise to participate?
3. In addition to making profits, what other goals does your enterprise have for participating in the renewal of old communities?
4. Will the fulfillment of social responsibility and the establishment of social image improve the intention of enterprises to participate in the renewal of old communities?

5. What impact will the attitude of relevant others have on the participation?
6. What are the capabilities required for enterprises to participate in the renewal of old communities?
7. What are the main risks of participating in the renewal of old communities?
8. What does your enterprise think of the external conditions for the renewal of old communities?
9. Will the increase of policy support have a significant impact on your enterprise participation?
10. Will financial policy support and effective financial instruments have a significant impact on enterprise participation?

Appendix C. Review of semi- structured interview results

Type	The attitude of managers towards OCR participation	Managers' perception of their own enterprise's internal ability to participate in the OCRs	Managers' perception of external conditions to participate in the OCRs
Real estate development enterprises	**Positive** · By participating in the OCR, an enterprise can establish a good relationship with the local government. · Some projects can acquire the development rights of the surrounding land. **Negative** · Compared with traditional housing development, old residential areas have a longer capital recovery cycle and lower profits. · The company has no strategy to participate in the OCR during the current downturn in the real estate market.	**Positive** · Compared with traditional development projects, the capital investment scale is small, and the enterprises have the financial ability to participate in some OCR projects. **Negative** · The capital recovery period is long and the risk is high, which has high requirements on the enterprise's anti-risk ability. · Part of the revenue depends on long-term operation, which has high requirements on the company's operation ability.	**Positive** · The government encourages enterprises to participate in the OCR, and can provide a certain degree of special fund support. **Negative** · Lack of effective financial instruments to help enterprises address the cost of participating in the OCR and the issue of capital recovery. · The OCR project has the characteristics of long recovery cycle and high risk, and no effective safeguard measures.
Construction enterprises	**Positive** · Construction enterprises usually participate as business parties rather than as investors due to their own technical characteristics · OCR projects are suitable for local small and medium-sized construction enterprises as the direction of business development **Negative** · With the OCR focusing on micro-transformation, the scale of the project is small and the company's income level is low. · The complex conditions of OCR projects will make it difficult for enterprises to make profits.	**Positive** · The OCR is mainly a partial transformation. Although some OCR projects have complicated conditions, medium and large construction companies have the required capital and technical capabilities. **Negative** · In the process of participating in the OCR, enterprises need to coordinate the interests of multiple subjects, which is significantly more complex than ordinary projects.	**Positive** · As most of the OCR projects are government-led projects, the risk of capital recovery is low. **Negative** · Although the government has introduced policies to encourage participation in the OCR, it is difficult for small and medium enterprises to obtain relevant information. ·The financing cost is also relatively high.
Design enterprises	**Positive** · Due to the government's promotion of the OCR, the company's design business has increased significantly. · Successful projects can enhance the reputation of the enterprises. **Negative** · The project conditions are complex and the design cost is high.	**Positive** · The enterprises have the ability to design old communities. **Negative** · The old community is in poor condition and needs to meet the diverse needs of residents, which makes the design more difficult.	**Positive** · The government, designers association and other organizations encourage participation in the OCR. **Negative** · The government encourages enterprises to participate in the OCR, but there is a lack of relevant design specifications and design technical standards.
Property management enterprises	**Positive** · The OCR is an important direction for enterprise business development **Negative** · The property charge level of the old community is low, and the profit space is relatively small	**Positive** · Our company has long-term property management experience and capability base. **Negative** · Compared with the new project, residents in the old community are less aware of property payment and have higher requirements for operation ability.	**Positive** · Our company has a long-term cooperation with government departments and the government supports us to participate in the property management service of the old community. **Negative** · There is no guarantee for enterprises to participate in the OCR. The government can appropriately increase subsidies to enterprises to ensure the income. · In the actual project process, there was great difficulty in communicating with the community and residents about the charging issue.
Professional service enterprises	**Positive** · Participating in the OCR is an important development direction of the company. · There is a large market space for elderly care, medical care, and other special services for the old community, and it can also facilitate residents, especially the elderly residents. **Negative** · A mature development mode has not yet been formed, and there are large risks, which still need to be explored.	**Negative** · The enterprise has the ability to provide services, but does not have the ability to participate alone. At present, the enterprise is exploring the participation mode of cooperation with the transformation enterprises.	**Negative** · There is no specific landing mechanism, leading to resistance and uncertainty in participation. · Lack of specific subsidy measures and safeguard measures, enterprises need to bear greater risks.
Asset management and operation enterprises	**Positive** · The OCR has a considerable market in the future, which is the direction of strategic expansion of the enterprise. **Negative**	**Negative** · There is a great difficulty in operation. In addition to the traditional property service and other income, it is still necessary to expand new	**Positive** · Part of the projects are negotiated by the government, and some of the reconstruction costs can be solved by government subsidies and residents' investment.

(*continued on next page*)

(*continued*)

Type	The attitude of managers towards OCR participation	Managers' perception of their own enterprise's internal ability to participate in the OCRs	Managers' perception of external conditions to participate in the OCRs
	·The specific transformation mode and industrial environment are not fully formed, and the business model is still in the exploratory stage. · Government subsidies and long-term operation are difficult to guarantee the profitability of the project. · The overall operation cycle of the project is long and there are great risks. · The enterprise hopes to expand the project scale and increase its income through the scale effect.	business models to improve the income in operation period.	**Negative** · Lack of effective financial tools to help enterprises solve the problems of upfront cost and later revenue recovery of participating in the OCR. · Participating in the OCR mainly relies on communication and consultation with local government departments of the project, which is costly.

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