Improving Resident Participation for Neighborhood Rehabilitation in Post-pandemic China From Initiation to Continuation

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Improving Resident Participation for Neighborhood Rehabilitation in Post-pandemic China

From Initiation to Continuation

Dissertation

for the purpose of obtaining the degree of doctor
at Delft University of Technology
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chair of the Board for Doctorates
to be defended publicly on
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by

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TOC

This dissertation has been approved by the promotors.

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Cities have the capability of providing something for everybody,
only because, and only when, they are created by everybody.

Jane Jacobs

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Just as urban renewal thrives on public participation, my PhD journey has been enriched by your involvement.

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Lastly, my deepest gratitude goes to my parents and boyfriend, who gave me everything. Thank you to my relatives and friends as well. Having you in my life is truly a blessing. Your encouragement, support, and patience are my boundless sources of energy, sustaining me throughout my journey in the Netherlands.

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List of Acronyms and Abbreviations

ACM	Acceptance-continuance model (for resident participation)
ANOVA	Analyses of variance
AVE	Average variance extracted
BERC	Building Energy Research Center of Tsinghua University
CBO	Community-based organization
CPC	Communist Party of China (often abbreviated as the Party)
CCoCPC	Central Committee of the Communist Party of China
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CMIN/DF	Chi-square to df ratio
CO	Community-based organization
CP	Consulting party
CR	Composite reliability
CSF	Critical success factor
CSUS	Chinese Society for Urban Studies
DC	Implementation and construction unit
ECM	Expectation-confirmation model
ECT	Expectation-confirmation theory
ENA	Ecological network analysis
FL	Factor loading
GaWC	Globalization and World Cities Research Network
HBHURD	Department of Housing and Urban-Rural Development of Hubei Province
HC	Homeowner committee
HERC	Human Research Ethics Committee
IAP2	International Association of Public Participation
ICT	Information and communication technology
LG	Local government
MI	Mutualism index
ML	Maximum likelihood
MoF	Ministry of Finance of the People's Republic of China

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MOHURD	Ministry of Housing and Urban-Rural Development of the People's Republic of China
MW	Municipality of Wuhan
NBS	National Bureau of Statistics of China
NC	Neighborhood committee
NDRC	National Development and Reform Commission of the People's Republic of China
NGO	Non-government organization
NIMBY	"Not in My Backyard" behavior
NPCSC	National People's Congress Standing Committee
NR	Neighborhood resident
NUA	Network utility analysis
PD	Planning and design professional
PDF	Participation description framework
RMSEA	Root mean square error of approximation
RP	Resident participation
RQ	Research question
SC	State Council of the People's Republic of China
SD	Standard deviation
SDG	Sustainable Development Goal
SI	Synergism index
SIM	Stakeholder influence model
SNA	Social network analysis
SPSS	Statistical Product and Service Solutions
UBW	Unauthorized building work
UNFPA	United Nations Population Fund
UN-Habitat	United Nations Human Settlements Programme
WBHSM	Wuhan Bureau of Housing Security and Management
WBNRP	Wuhan Bureau of Natural Resources and Planning
WSB	Wuhan Statistical Bureau

Summary

After witnessing displacement and gentrification caused by brutal demolition and reconstruction, rehabilitation has become a preferred paradigm for recent urban renewal efforts. Unlike the knock-down-and-rebuild strategy for redevelopment, urban rehabilitation is a restoration and enhancement, aiming to modernize backward urban areas to meet current development needs. It minimizes the evacuation or displacement of original inhabitants, thereby maximizing the preservation of indigenous culture and social networks. Consequently, rehabilitation is recognized as a crucial strategy for sustainable urban development, particularly effective at the residential neighborhood scale.

Meanwhile, with a growing appeal for social sustainability and reconstruction of civil society, neighborhood rehabilitation is shifting from an economic stimulus to a social innovation, thereby advocating the active participation of neighborhood residents. Anticipated benefits of participatory neighborhood rehabilitation include cultivating local insights and shared values, contributing to equitable and resilient decision-making. Moreover, it offers a means to reduce superfluous expenditure and delay, thus enhancing the efficiency, effectiveness, and overall satisfaction of the project. For residents, engaging in these processes provides substantial opportunities for social learning, promoting acquiring knowledge and skills while nurturing self-identity and confidence. It also bolsters neighborhood cohesion and enhances subjective well-being. Beyond these economic, environmental, and social benefits, resident participation also catalyzes a democratic renewal of grassroots governance. Therefore, from the initial efforts in North America, the United Kingdom, and Europe to recent advancements in developing countries, participatory strategies have been integrated into renewal policies, aiming to promote not only economically viable, environmentally sound, but also socially acceptable urban renewal and environmental management.

Reflecting this global trend, resident participation has become a focal point in China's recent neighborhood rehabilitation initiatives. The *2017 Symposium on the Pilot Programme of Old Neighborhood Rehabilitation* marks the formal integration of the public participation concept into China's urban renewal strategy, articulated as "Co-Creation" (Gongtong Dizao) in policy frameworks. Rehabilitation activities provide practical scenarios for applying this concept, encouraging residents to collaborate with public, private, and other social actors to identify problems,

allocate resources, make decisions, and share the benefits of these improvements. Recent shifts in government administration and grassroots governance in China further underscore the integral role of residents in neighborhood issues. Aligned with the "People-centered" (Yirenmin Weizhongxin) [1] development philosophy, the Chinese government is transitioning from a management-centric to a service-centric approach. This shift is also reflected at the grassroots level, where governance is evolving from a management-based model to a collaborative one, sharing responsibilities, authority, and resources with other actors, especially the local community. Moreover, the COVID-19 pandemic and subsequent lockdowns highlight residents' growing willingness and capabilities in grassroots governance. These developments have prompted the Chinese government to view recent neighborhood rehabilitation initiatives not merely as development projects but as opportunities to promote sustained participation among residents.

Despite policy improvements and the advent of Co-Creation concept have boosted resident participation in China, recent cases show that the effectiveness of participation practices is often clouded by uncertainty. This uncertainty is not exclusive to China, where the history of participation is relatively brief, and democratic culture is less developed. The phenomenon is equally apparent in developed countries, marked by a low degree of engagement, an absence of order and strategy, and minimal impact on decision-making. Such "pseudo" participation is more detrimental than non-participation. The uneven distribution of benefits it causes can fuel conflict, amplify tension between residents and other stakeholders (e.g., local government, designers, constructors), resulting in halted or failed projects. Moreover, these adverse effects may linger beyond the project's lifespan, deepening divisions within the neighborhood, perpetuating social discord, and further undermining the legitimacy of governing bodies and their fragile trust. In extreme scenarios, the disappointment and inefficacy engendered by unsuccessful past experiences can emerge as the foremost hindrance to re-engaging residents in later similar issues.

Notably, since the outbreak of COVID-19, numerous challenges have emerged that affect people' perceptions and behaviors toward resident participation. These challenges stem from changes in residents' perceptions of and attitudes towards their living environments, relevant actors' roles and public images, the rationale for access to and distribution of resources, interaction patterns, underlying

1 People-centered denotes that the people are the creators of history and the fundamental force that determines the future and destiny of the Party and the country. The country takes the people's aspiration for a better life as the ultimate goal of endeavor, and relies on the people to create historical greatness.

power structures, etc. Consequently, these shifts may affect people's views on the usefulness, feasibility, and validity of participation activities, and thus, their perceived necessity of resident involvement in the rehabilitation process. Considering these changes, an updated examination of resident participation and relevant stakeholders in the post-pandemic context is therefore imperative.

Research aim and questions

Given this backdrop, this thesis aims to better understand and improve resident participation for neighborhood rehabilitation in post-pandemic China. Suggestions are provided to enhance the planning, design, organization and governance of resident participation, thereby promoting socially sustainable urban renewal. Accordingly, it addresses the following research question:

— **How to improve resident participation for neighborhood rehabilitation in post-pandemic China?**

Building on established research in public participation and the unique characteristics of neighborhood rehabilitation, this thesis develops a conceptual framework that centers on three pivotal elements of public participation: stakeholder concerns, power dynamics, and information sharing. Additionally, it enhances the comprehension by investigating the mechanisms that drive residents' sustained engagement in urban renewal processes. The conceptual framework is translated into four research sub-questions and addressed in Chapters 3-5 of the thesis: Given a backdrop of post-pandemic China, 1) What are the **concerns** of different stakeholders regarding resident participation in neighborhood rehabilitation? 2) How do **power dynamics** influence resident participation in neighborhood rehabilitation? 3) How does stakeholder **information sharing** influence resident participation in neighborhood rehabilitation? 4) How to promote residents' **continued participation** in neighborhood rehabilitation?

Data and methods

This thesis employed a case study approach to answer the overarching research question. This approach is preferable as this doctoral research seeks to address "how" questions, involves minimal researcher intervention in the phenomena, and focuses on ongoing real-life events. It also provides a "thick description" that facilitates a comprehensive understanding of complex and evolving social phenomena.

Wuhan was selected as the case study area for this thesis. Beyond data availability, Wuhan was chosen for its proactive role in neighborhood rehabilitation and emphasis on resident participation. From 2020 to 2023, Wuhan has rehabilitated 1,459 aging neighborhoods, benefiting approximately 685,700 households. Public participation practices emerged in 2008 and were institutionalized into urban renewal policies by 2020. More critically, Wuhan serves as a compelling case study because of its relevance to both developing and developed urban contexts. Insights from Wuhan are instrumental in calibrating and contextualizing findings from more developed regions and offer lessons for other developing areas characterized by relatively centralized administrative structures and conservative socio-cultural settings. Moreover, Wuhan's experiences with fiscal constraints in the post-COVID-19 era mirror the financial challenges encountered by Western countries after the 2008 economic crisis. This parallel makes Wuhan an invaluable case for Western countries facing similar ongoing fiscal challenges.

The four research sub-questions were all addressed using the mixed-method approach, integrating qualitative and quantitative data to provide a comprehensive analysis. Chapters 2 and 5 are cross-sectional studies. Chapter 2 compared perceptual differences among six main stakeholder groups in neighborhood rehabilitation in the context of China: **local government**, **community-based organizations**, **planning and design professionals**, **implementation and construction units**, **consulting groups**, and **neighborhood residents**. Chapter 5 examined dynamics within the resident group. Chapters 3 and 4 are longitudinal studies that tracked the evolution of the behaviors of six main stakeholder groups at different phases of the neighborhood rehabilitation project lifecycle.

Moving into specific chapters, followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020, Chapter 2 began with a systematic review to develop a comprehensive list of stakeholder concerns. To identify the primary concerns of each stakeholder group, 30 semi-structured interviews and 255 questionnaire surveys were conducted across the seven central districts of Wuhan. Additionally, the Analysis of Variance (ANOVA) was used to explore the similarities and differences in these concerns, which vary according to the stakeholders' roles in neighborhood rehabilitation and their levels of experience with such projects.

Chapter 3 utilized desk research, 44 semi-structured interviews, and four months of moderate participant observation in both rehabilitated and ongoing rehabilitation projects across Wuhan's seven central districts to investigate the power dynamics among stakeholders. It also examined stakeholders' influence strategies on resident participation and how these strategies evolve throughout the various phases of the project lifecycle.

In Chapter 4, Social Network Analysis (SNA) and Ecological Network Analysis (ENA) were integrated to analyze stakeholders' behaviors and interrelationships regarding information sharing. A representative neighborhood rehabilitation project in Wuhan served as the study case, with data derived from 10 interviews, 35 questionnaires, and 3 focus groups. It enhanced the understanding of how these dynamics affect resident participation throughout different stages of neighborhood rehabilitation. UCINET, NetDraw and Python software were employed for data processing and visualization.

Chapter 5 began with a literature review of public participation and Expectation-Confirmation Theory to understand the underlying mechanisms and determinants of residents' intention to re-engage. These determinants were validated through 22 semi-structured interviews and 367 residents surveys conducted in rehabilitated neighborhoods across seven central districts of Wuhan. Path analysis was utilized to examine these mechanisms and determinants.

Summary of the research results

In Chapter 2, a total of thirty-seven stakeholder concerns were identified and clustered into eight groups: A. External environment; B. Project benefit and impact; C. Participation scheme and approach; D. Resource and support; E. Information and communication; F. Power distribution and relationship; G. Leadership and team organization; H. Local perceptions and expectation. While all these thirty-seven concerns were perceived as important by stakeholders, their most critical concern is *Financial incentive* (for participation organizers), followed by *Information disclosure and transparency*, and *Trust* (of the residents). Moreover, each stakeholder group had its specific idea on the most critical concern for effective resident participation in neighborhood rehabilitation:

- Local government - *Information disclosure and transparency*
- Community-based organization - *Financial incentive* (for participation organizers)
- Planning and design professional - *Financial incentive* (for participation organizers)
- Implementation and construction unit - *Trust* (of the residents)
- Consulting party - *Reward and punishment* (for residents)
- Residents - *Equity and justice*

ANOVA results revealed significant differences among the six groups in their prioritization of most concerns (25 out of 37), particularly in *Participant Education* and *Prejudice against the Working Group*. Additionally, as stakeholders gained more experience in rehabilitation, they increasingly viewed *Trait and Capacity* (of the

working group) and *Participation-assistance Technologies* as critical. Synthesizing the findings, it became apparent that while almost all stakeholder groups aimed to achieve consensus in resident participation, conflicting interests frequently led to dismissing opposing viewpoints and detrimental actions to other parties. These conflicting concerns and irresponsible behaviors further introduced three significant challenges in participation practices: geographic disparities in participation opportunities, rationalized apathy among residents, and an exclusionary participation process.

Leveraging the stakeholder theory, Chapter 3 introduced an analytical framework termed the Stakeholder Influence Model (SIM), detailing four direct and seven indirect strategies stakeholders use to influence resident participation in urban rehabilitation projects. Directly, stakeholders influence through *Assets*, *Knowledge*, *Traits*, and *Position*. Indirect strategies include *Direct withhold/usage*, *Indirect withhold/usage*, *Resource building*, *Coalition building*, *Conflict escalation*, *Communication and credibility building*, and *Direct action*. The results of deductive content analysis showed that the SIM effectively captures and categorizes the various influence strategies of stakeholders. In the Wuhan case, *Assets* emerged as the most prevalent direct method among the six stakeholder groups, followed by *Knowledge*, *Traits*, and *Position*, while *Resource building* was stakeholders' preferred indirect strategy, with *Direct action* being the least utilized. Few stakeholders utilized all types of direct strategies. Instead, they tended to influence resident participation indirectly through intermediaries—usually neighborhood committees or their designated resident representatives. Additionally, the Wuhan case study highlighted several significant challenges: the indirect involvement of local government, the excessive authority transfer to neighborhood committee, and an irrational, unequal distribution of power among residents had collectively jeopardized the equality and inclusiveness of the participation process. These dynamics also challenged the long-term viability of neighborhood rehabilitation initiatives.

In Chapter 4, the case study indicated that SNA and ENA are complementary and competent in identifying critical stakeholders while uncovering undesirable behaviors such as manipulation and monopolization, and highlighting disruptive interrelationships like exploitation and competition. The SNA results indicated the critical role of neighborhood committees in disseminating information, demonstrating significant autonomy and control. Conversely, homeowners exhibited a marked dependence and lack of control, especially in the planning and design phase. The ENA findings highlighted neighborhood committee's enduring struggle with information exploitation, whereas homeowner progressively amplified their discourse power, shifting from passive recipients to active decision-makers. Although neighborhood committee and local media facilitated resident participation, their

effectiveness was compromised by stakeholders' excessive dependence on the committee for information. This over-reliance created a fragile information network and led to the marginalization of local media, undermined by dwindling trust and autonomy. Innovations in communication methods, including calling *Mayor's hotline*, reaching out to deputies of the provincial Chinese People's Political Consultative Conference (CPPCC) and National People's Congress (NPC), commenting on the government's social media accounts, and filing lawsuits, have facilitated participation among residents. Nevertheless, well-informed residents monopolized information sharing, deliberately excluding others with conflicting interests, intensifying issues of inequity and opacity.

In Chapter 5, the path analysis results revealed the underlying mechanisms to facilitate re-engagement: *Perceived Usefulness* emerged as the most critical determinant, followed by *Participation Satisfaction*, both of which directly and positively influence residents' *Intentions to Re-engage*. Residents' initial participation experiences had an indirect effect on their re-engagement intentions. Specifically, more straightforward participation activities, earlier involvement in the process, and greater influence on decision-making all enhanced residents' willingness to participate again. Yet, *Number of Activities* and *Number of Stages* did not significantly affect residents' re-engage intention. Regarding personal attributes, younger residents, homeowners, females, and those with higher incomes, flexible work types, and longer tenure in the neighborhood were more likely to re-engage. Education level, however, did not significantly affect re-engaging intentions. Among project-related factors, the level of investment warranted additional attention. *Higher Investment* in rehabilitation projects can feasibly promote re-engagement, as it involved residents in more activities and at earlier phases, leading to greater participation satisfaction and, consequently, a stronger intention to participate again.

General conclusion and suggestions

The overarching aim of this thesis was to better understand and improve resident participation in neighborhood rehabilitation in post-pandemic China. These four studies offered insights into the nature of public participation and the unique challenges facing post-pandemic China. The first challenge identified for residents' initial participation is an inadequate understanding and intervention in the conflicting interests and expectations among stakeholders. The second significant issue is the excessive delegation of authority and responsibility from local governments to community-based organizations, particularly the neighborhood committee. This has led to significant differences in residents' willingness and opportunities

to participate, jeopardizing the equality and inclusiveness of participation. The third challenge concerns stakeholders' over-reliance on and exploitation of the neighborhood committee to obtain and disseminate information. This reliance has marginalized social entities, particularly the local media, leading to vulnerabilities in the information network and homogenization of its content. Notably, to promote residents' continued participation, bridging the substantial gaps between theoretical assumptions and actual practices is crucial. This involves addressing the discrepancies between scholarly expectations of empowerment levels and process sophistication and the actual preferences of residents.

Building on these insights, this thesis argues that improving resident participation hinges on the strategic orchestration of organizers and, to a lesser extent, on the active participation of residents. Consequently, recommendations were formulated to assist organizers in better envisioning, designing, organizing, and governing the participation process. In post-pandemic China, these key organizers include government agencies, community-based organizations, design and construction practitioners, and consulting parties. The proposed suggestions encompass both short-term countermeasures and long-term strategies. The short-term tactics focus on refining and enhancing existing systems to improve the effectiveness of residents' initial participation experiences. Specific measures include offering economic incentives for organizers, refining community planner systems, and regulating the actions of neighborhood committees and homeowner committees. In contrast, the long-term strategies go beyond the Chinese context and seek to address the "acceptance-disruption anomaly" observed in international practice. To break this anomaly, overall, a comprehensive and radical change of beliefs and mechanisms is imperative. This requires a paradigm shift in the objectives of public participation from a substantive to a normative rationale, emphasizing social learning and citizenship development over project success. It also calls for a transition in evaluating participation from quantitative to qualitative measures, incorporating subjective criteria such as satisfaction, accessibility, and inclusiveness into the assessment framework. Such improved public participation, as envisaged in this thesis, is expected to improve urban development processes, making them more equitable, fair, transparent, inclusive, and resilient.

Relevance of research

The synthesis also highlights the scientific and societal relevance of the thesis. Scientific relevance: Firstly, this research provides a clear definition of "effective participation," addressing a significant gap in clarity and precision, particularly within the Chinese context. Secondly, the thesis proposes and validates several

theoretical frameworks which enhance our understanding of public participation. For instance, the comprehensive list of stakeholder concerns regarding resident participation, outlined in Chapter 2, lays a solid foundation for further exploration into the dynamics influencing participation outcomes. The Participation Description Framework (PDF) proposed in Chapter 5 addresses a significant gap where participation has historically been challenging to quantify and assess, providing a methodological advancement that can be utilized across various studies. The Acceptance-Continuance Model (ACM), developed and validated in Chapter 5, offers substantial value for researchers focused on understanding factors that drive sustained engagement in social and environmental initiatives. The ACM is particularly innovative, as it encapsulates the dynamics of re-engagement, a largely underexplored area in participation research.

Societal relevance: This research provides a vital societal contribution through its comparative study of different stakeholder groups involved in urban renewal. By understanding these diverse perspectives and behaviors, stakeholders are better equipped to evaluate the impacts of their actions, facilitating negotiations and decisions that lead to mutually beneficial outcomes. Moreover, the research delineates several robust pathways for sustaining resident engagement. These insights enable governments and practitioners to refine their strategies for goal setting, process design, and resource allocation. Such a refined approach not only enhances the initial participation experience for residents but also cultivates their long-term engagement, ensuring that rehabilitative initiatives maintain momentum and relevance over time. Furthermore, this thesis provides actionable strategies that can be implemented to ensure resident participation, thereby fostering environments where residents not only contribute to but also benefit significantly from renewal projects. This collaborative approach to urban planning and renewal is essential for developing cities that are not only physically upgraded but also socially vibrant and equitable.

Implications for future research

This thesis opens several avenues for future research. Firstly, extant studies and the findings from this research indicate that stakeholder concerns often exhibit interdependencies and causal relationships that can affect the dynamics of resident participation. To address this complexity, future research could adopt a holistic analytical framework that allows for a systematic exploration of the interactions and mutual influences among these concerns. Secondly, since tenants represent a significant demographic in old neighborhoods in China and globally, future research could focus on this group to gain deeper insights. Thirdly, this thesis assumes

that sufficient information sharing facilitates public participation. Nonetheless, an increasing number of scholars and schools of thought (e.g., behavioral economics and transaction costs) argue that public is not guaranteed to participate by having more information, especially given their limited rationality and uneven information-processing capabilities. Hence, future research could explore the tipping point of information sharing and determine the appropriate quantity and quality of information that encourages public participation without overwhelming or underwhelming the target audience. Lastly, this thesis addresses residents' intentions to re-engage in renewal initiatives rather than their actual behaviors. Although intentions are proven strong predictors of behavior, a notable intention-behavior gap often exists—what people intend to do differs from what they actually do. Longitudinal and follow-up studies, thus, are highly recommended to close the gap.

Samenvatting

Na het aanschouwen van verplaatsing en gentrificatie veroorzaakt door brutale sloop en wederopbouw, is rehabilitatie een voorkeursparadigma geworden voor recente inspanningen op het gebied van stedelijke vernieuwing. In tegenstelling tot de strategie van afbreken en herbouwen voor herontwikkeling, is stedelijke rehabilitatie een restauratie en verbetering, gericht op het moderniseren van achtergestelde stedelijke gebieden om te voldoen aan de huidige ontwikkelingsbehoeften. Het minimaliseert de evacuatie of verplaatsing van oorspronkelijke inwoners, waardoor de instandhouding van inheemse cultuur en sociale netwerken wordt gemaximaliseerd. Dientengevolge wordt rehabilitatie erkend als een cruciale strategie voor duurzame stedelijke ontwikkeling, met name effectief op de schaal van woonwijken.

Tegelijkertijd, met een groeiende aantrekkingskracht voor sociale duurzaamheid en de reconstructie van de burgermaatschappij, verschuift buurtrehabilitatie van een economische stimulans naar een sociale innovatie, en pleit daarmee voor actieve deelname van buurtbewoners. Verwachte voordelen van participatieve buurtrehabilitatie omvatten het cultiveren van lokale inzichten en gedeelde waarden, en dragen bij aan billijke en veerkrachtige besluitvorming. Bovendien biedt het een middel om overbodige uitgaven en vertragingen te verminderen, waardoor de efficiëntie, effectiviteit en algehele tevredenheid van het project wordt verhoogd. Voor de bewoners biedt het deelnemen aan deze processen aanzienlijke kansen voor sociale leer, bevordert het verwerven van kennis en vaardigheden en het koesteren van zelfidentiteit en vertrouwen. Het versterkt ook de samenhang van de buurt en verbetert het subjectieve welzijn. Naast deze economische, milieutechnische en sociale voordelen, katalyseert de deelname van bewoners ook een democratische vernieuwing van het bestuur op grassrootsniveau. Daarom, vanaf de eerste inspanningen in Noord-Amerika, het Verenigd Koninkrijk en Europa tot recente ontwikkelingen in ontwikkelingslanden, zijn participatieve strategieën geïntegreerd in vernieuwingsbeleid, met als doel niet alleen economisch haalbare, milieuvriendelijke, maar ook sociaal aanvaardbare stedelijke vernieuwing en milieubeheer te bevorderen.

Weerspiegelend op deze wereldwijde trend is bewonersparticipatie een focuspunt geworden in China's recente initiatieven voor buurtrehabilitatie. Het *Symposium van 2017 over het Pilootprogramma voor Oude Buurtrehabilitatie* markeert de formele integratie van het concept van openbare deelname in China's strategie voor stedelijke vernieuwing, uitgedrukt als "Co-Creatie" (Gongtong Dizao) in beleidskaders.

Rehabilitatieactiviteiten bieden praktische scenario's voor het toepassen van dit concept, waarbij bewoners worden aangemoedigd om samen te werken met publieke, private en andere sociale actoren om problemen te identificeren, middelen toe te wijzen, beslissingen te nemen en de voordelen van deze verbeteringen te delen. Recente verschuivingen in overheidsadministratie en grassroots bestuur in China onderstrepen verder de integrale rol van bewoners in buurtkwesties. In lijn met de "Mensen-gecentreerde" (Yirenmin Weizhongxin)[2] ontwikkelingsfilosofie, gaat de Chinese overheid over van een beheergerichte naar een dienstgerichte aanpak. Deze verschuiving weerspiegelt zich ook op grassroots niveau, waar het bestuur evolueert van een managementgebaseerd model naar een collaboratief model, waarbij verantwoordelijkheden, autoriteit en middelen worden gedeeld met andere actoren, met name de lokale gemeenschap. Bovendien benadrukken de COVID-19-pandemie en de daaropvolgende lockdowns de groeiende bereidheid en capaciteiten van bewoners in grassroots bestuur. Deze ontwikkelingen hebben de Chinese overheid ertoe aangezet recente initiatieven voor buurtrehabilitatie niet slechts als ontwikkelingsprojecten te zien, maar als kansen om aanhoudende participatie onder bewoners te bevorderen.

Ondanks beleidsverbeteringen en de opkomst van het Co-Creatie concept, dat de participatie van bewoners in China heeft gestimuleerd, tonen recente gevallen aan dat de effectiviteit van participatiepraktijken vaak wordt vertroebeld door onzekerheid. Deze onzekerheid is niet exclusief voor China, waar de geschiedenis van participatie relatief kort is en de democratische cultuur minder ontwikkeld is. Het fenomeen is evenzeer zichtbaar in ontwikkelde landen, gekenmerkt door een lage mate van betrokkenheid, een gebrek aan orde en strategie, en minimale impact op besluitvorming. Dergelijke "pseudo"-participatie is schadelijker dan geen participatie. De ongelijke verdeling van voordelen die het veroorzaakt, kan conflicten aanwakkeren, spanningen tussen bewoners en andere belanghebbenden (bijv. lokale overheid, ontwerpers, bouwers) versterken, resulterend in stilgelegde of mislukte projecten. Bovendien kunnen deze nadelige effecten blijven bestaan na de levensduur van het project, verdiepen ondermijning van verdeeldheid binnen de buurt, voortzetten van sociale onenigheid en verder ondermijnen van de legitimiteit van bestuursorganen en hun kwetsbare vertrouwen. In extreme scenario's kan de teleurstelling en ineffectiviteit die door eerdere mislukte ervaringen is ontstaan, naar voren komen als de voornaamste belemmering om bewoners opnieuw te betrekken bij latere soortgelijke kwesties.

2 Mensen-gecentreerd betekent dat de mensen de scheppers van de geschiedenis zijn en de fundamentele kracht die de toekomst en het lot van de Partij en het land bepaalt. Het land beschouwt de aspiratie van het volk voor een beter leven als het uiteindelijke doel van streven, en vertrouwt op het volk om historische grootheid te creëren.

Opvallend is dat sinds de uitbraak van COVID-19 tal van uitdagingen zijn ontstaan die de percepties en het gedrag van belanghebbenden ten opzichte van bewonersparticipatie beïnvloeden. Deze uitdagingen komen voort uit veranderingen in de onderliggende machtsstructuren, zoals variaties in overheidsniveaus en de dynamiek tussen gemeenschapswerkers en bewoners. Deze verschuivingen in macht beïnvloeden de percepties van belanghebbenden over het nut, de haalbaarheid en de geldigheid van participatieactiviteiten en bijgevolg hun waargenomen noodzaak van bewonersbetrokkenheid in het rehabilitatieproces. Gezien deze veranderingen is een geactualiseerde beoordeling van bewonersparticipatie en relevante belanghebbenden in de post-pandemische context noodzakelijk.

Doel en vragen van het onderzoek

Tegen deze achtergrond streeft deze scriptie ernaar het begrip en de verbetering van bewonersparticipatie in buurtrehabilitatie in het post-epidemische stedelijke China te vergroten. Er worden suggesties gegeven om het ontwerp, de organisatie en het bestuur van bewonersparticipatie te verbeteren, waardoor de overgang van bewoners van passieve acceptatie naar voortdurende betrokkenheid bij stedelijke ontwikkelingsinspanningen wordt vergemakkelijkt. Dienovereenkomstig behandelt het de volgende onderzoeksvraag:

— **Hoe kan bewonersparticipatie in buurtrehabilitatie in stedelijk China worden verbeterd?**

Voortbouwend op bestaand onderzoek in publieke participatie en de unieke kenmerken van buurtrehabilitatie, ontwikkelt deze scriptie een conceptueel kader dat zich concentreert op drie cruciale elementen van publieke participatie: zorgen van belanghebbenden, machtsdynamiek en informatie-uitwisseling. Bovendien verbetert het de begripsvorming door de mechanismen te onderzoeken die de voortdurende betrokkenheid van bewoners bij stedelijke vernieuwingsprocessen stimuleren.
Het conceptuele kader wordt vertaald naar vier onderzoeksvragen en behandeld in hoofdstukken 3-5 van de scriptie: Gegeven de context van post-pandemisch China, 1) Wat zijn de zorgen van verschillende belanghebbenden met betrekking tot bewonersparticipatie in buurtrehabilitatie? 2) Hoe beïnvloeden machtsdynamieken de bewonersparticipatie in buurtrehabilitatie? 3) Hoe beïnvloedt informatie-uitwisseling tussen belanghebbenden de bewonersparticipatie in buurtrehabilitatie? 4) Hoe kan de voortdurende participatie van bewoners in buurtrehabilitatie worden bevorderd?

Gegevens en methoden

Deze scriptie maakte gebruik van een casestudy-benadering om de overkoepelende onderzoeksvraag te beantwoorden. Deze benadering is te verkiezen aangezien dit doctoraal onderzoek “hoe”-vragen wil aanpakken, minimale onderzoekersinterventie in de verschijnselen vereist en zich richt op voortdurende gebeurtenissen in het echte leven. Het biedt een “diepgaande beschrijving” die een uitgebreid begrip van complexe en evoluerende sociale fenomenen faciliteert.

Wuhan werd geselecteerd als de casestudy-locatie voor deze scriptie. Naast de beschikbaarheid van gegevens, werd Wuhan gekozen vanwege zijn proactieve rol in buurtrehabilitatie en nadruk op bewonersparticipatie. Belangrijker nog, Wuhan dient als een overtuigende casestudy vanwege de relevantie voor zowel ontwikkelende als ontwikkelde stedelijke contexten. Inzichten uit Wuhan zijn instrumenteel bij het kalibreren en contextualiseren van bevindingen uit meer ontwikkelde regio’s en bieden waardevolle lessen voor andere ontwikkelingsgebieden die worden gekenmerkt door relatief gecentraliseerde administratieve structuren en conservatieve sociaal-culturele instellingen. Bovendien weerspiegelen Wuhan’s ervaringen met fiscale beperkingen in het post-COVID-19-tijdperk de financiële uitdagingen die westerse landen tegenkwamen na de economische crisis van 2008. Deze parallel maakt Wuhan een onschatbare casus voor het bestuderen van het beheer van fiscale druk in stedelijke ontwikkeling, en biedt kritische inzichten voor westerse landen die vergelijkbare aanhoudende fiscale uitdagingen het hoofd bieden.

De vier onderzoeksvragen werden allemaal aangepakt met behulp van een gemengde methodenbenadering, waarbij kwalitatieve en kwantitatieve gegevens werden geïntegreerd om een uitgebreide analyse te bieden. Hoofdstukken 2 en 5 zijn cross-sectionele studies. Hoofdstuk 2 vergeleek perceptuele verschillen tussen zes belangrijke belanghebbendengroepen in buurtrehabilitatie: **lokale overheid**, **op de gemeenschap gebaseerde organisaties**, **professionals in planning en ontwerp**, **uitvoerings- en bouweenheden**, **adviesgroepen en buurtbewoners**. Hoofdstuk 5 onderzocht de dynamiek binnen de groep bewoners. Hoofdstukken 3 en 4 zijn longitudinale studies die de evolutie van het gedrag van de zes belangrijkste belanghebbendengroepen in verschillende fasen van de levenscyclus van het buurtrehabilitatieproject volgden.

In specifieke hoofdstukken volgend op de Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020, begon Hoofdstuk 2 met een systematische review om een uitgebreide lijst van zorgen van belanghebbenden te ontwikkelen. Om de primaire zorgen van elke belanghebbendengroep te identificeren, werden 30 semi-gestructureerde interviews en 255 vragenlijstonderzoeken

uitgevoerd in de zeven centrale districten van Wuhan. Daarnaast werd de Analysis of Variations (ANOVA) gebruikt om de overeenkomsten en verschillen in deze zorgen te verkennen, die variëren volgens de rollen van de belanghebbenden in buurtrehabilitatie en hun ervaringsniveaus met dergelijke projecten.

Hoofdstuk 3 maakte gebruik van bureauonderzoek, 44 semi-gestructureerde interviews en vier maanden van matige deelnemersobservatie in zowel gerehabiliteerde als lopende rehabilitatieprojecten in de zeven centrale districten van Wuhan om de machtsdynamiek onder belanghebbenden te onderzoeken. Het onderzocht ook de invloedsstrategieën van belanghebbenden op bewonersparticipatie en hoe deze strategieën zich ontwikkelen gedurende de verschillende fasen van de projectlevenscyclus.

In Hoofdstuk 4 werden Social Network Analysis (SNA) en Ecological Network Anslysis (ENA) geïntegreerd om het gedrag en de onderlinge relaties van belanghebbenden met betrekking tot informatiedeling te analyseren. Een representatief project voor buurtrehabilitatie in Wuhan diende als de studiecase, met gegevens afgeleid uit 10 interviews, 35 vragenlijsten en 3 focusgroepen. Dit verbeterde het begrip van hoe deze dynamieken de bewonersparticipatie beïnvloeden gedurende verschillende fasen van buurtrehabilitatie. UCINET, NetDraw en Python software werden gebruikt voor gegevensverwerking en visualisatie.

Hoofdstuk 5 begon met een literatuuroverzicht van publieke participatie en de Expectation-Confirmation Theory om de onderliggende mechanismen en determinanten van de intentie van bewoners om opnieuw deel te nemen te begrijpen. Deze determinanten werden gevalideerd door middel van 22 semi-gestructureerde interviews en 367 bewonersenquêtes uitgevoerd in gerehabiliteerde wijken in de zeven centrale districten van Wuhan. Padanalyse werd gebruikt om deze mechanismen en determinanten te onderzoeken.

Samenvatting van de onderzoeksresultaten

In Hoofdstuk 2 werden in totaal zevenendertig zorgen van belanghebbenden geïdentificeerd en gegroepeerd in acht categorieën: A. Externe omgeving; B. Projectvoordeel en -impact; C. Deelnameschema en -aanpak; D. Bronnen en ondersteuning; E. Informatie en communicatie; F. Verdeling van macht en relaties; G. Leiderschap en teamorganisatie; H. Lokale percepties en verwachtingen. Hoewel al deze zorgen als belangrijk werden beschouwd door de belanghebbenden, is de meest kritieke zorg de financiële stimulans (voor de organisatoren van de participatie), gevolgd door informatiedisclosure en transparantie, en vertrouwen

(van de bewoners). Bovendien hebben verschillende belanghebbendengroepen hun specifieke idee over de meest kritieke zorg voor effectieve bewonersparticipatie in buurtrehabilitatie:

- Lokale overheid - Informatiedisclosure en transparantie
- Op de gemeenschap gebaseerde organisatie - Financiële stimulans (voor de organisatoren van de participatie)
- Planning en ontwerpprofessional - Financiële stimulans (voor de organisatoren van de participatie)
- Uitvoerings- en bouweenheid - Vertrouwen (van de bewoners)
- Adviserende partij - Beloning en straf (voor bewoners)
- Bewoners - Gelijkheid en rechtvaardigheid

ANOVA-resultaten toonden significante verschillen aan tussen de zes groepen in hun prioritering van de meeste zorgen (25 uit 37), met name in deelnemerseducatie en vooroordelen tegen de werkgroep. Bovendien, naarmate belanghebbenden meer ervaring opdeden in rehabilitatie, zagen ze steeds vaker eigenschappen en capaciteiten (van de werkgroep) en participatie-ondersteunende technologieën als cruciaal. Uit de synthese van de bevindingen bleek dat, hoewel bijna alle belanghebbendengroepen consensus wilden bereiken in bewonersparticipatie, conflicterende belangen vaak leidden tot het negeren van tegenovergestelde standpunten en schadelijke acties jegens andere partijen. Deze conflicterende zorgen en onverantwoordelijke gedragingen introduceerden verder drie significante uitdagingen in participatiepraktijken: geografische verschillen in participatiekansen, gerationaliseerde apathie onder bewoners, en een exclusief participatieproces.

Door gebruik te maken van de stakeholdertheorie, werd in Hoofdstuk 4 het Stakeholder Influence Model (SIM) geïntroduceerd, bestaande uit vier directe (Activa, Kennis, Eigenschappen, Positie) en zeven indirecte invloedsstrategieën (Directe inhouding/gebruik, Indirecte inhouding/gebruik, Opbouw van middelen, Coalitievorming, Escalatie van conflicten, Communicatie en opbouw van geloofwaardigheid, Directe actie). Resultaten van deductieve inhoudsanalyse tonen aan dat het SIM effectief de verschillende invloedsstrategieën van belanghebbenden vastlegt en categoriseert. Opvallend is dat het geval van Wuhan aangeeft dat Activaverdeling de meest voorkomende directe methode is om bewonersparticipatie te vormen, gevolgd door Kennis, Eigenschappen en Positie. Opbouw van middelen kwam naar voren als de meest geprefereerde indirecte strategie, terwijl Directe actie het minst werd gebruikt. Slechts weinig belanghebbenden oefenen alle soorten directe invloed uit. In plaats daarvan beïnvloedden ze bewonersparticipatie meestal indirect via tussenpersonen—gewoonlijk buurtcomités of hun aangewezen vertegenwoordigers van bewoners. Desalniettemin toont de casestudy van Wuhan

enkele kritieke uitdagingen: de indirecte betrokkenheid van de lokale overheid, de overmatige overdracht van verantwoordelijkheden en autoriteiten aan het buurtcomité, en een irrationele, ongelijke verdeling van macht onder bewoners hebben gezamenlijk de gelijkheid en inclusiviteit van het participatieproces in gevaar gebracht. Deze dynamieken daagden ook de langetermijnhoudbaarheid van buurtrehabilitatie-initiatieven uit.

In Hoofdstuk 4 toont de casestudie aan dat SNA en ENA complementair en competent zijn in het identificeren van kritieke belanghebbenden, terwijl ze ongewenste gedragingen zoals manipulatie en monopolisatie onthullen, en ongezonde relaties zoals uitbuiting en concurrentie benadrukken. De resultaten van de SNA duiden op de cruciale rol van op de gemeenschap gebaseerde organisaties bij het verspreiden van informatie, waarbij een significante autonomie en controle wordt aangetoond. Daarentegen toonden huiseigenaren een opvallende afhankelijkheid en gebrek aan controle, vooral in de plannings- en ontwerpfase. De bevindingen van de ENA benadrukken de aanhoudende strijd van op de gemeenschap gebaseerde organisaties met informatie-uitbuiting, terwijl huiseigenaren hun discoursmacht progressief versterkten, verschuivend van passieve ontvangers naar actieve besluitvormers. Hoewel op de gemeenschap gebaseerde organisaties en lokale media de participatie van bewoners faciliteerden, werd hun effectiviteit gecompromitteerd door de overmatige afhankelijkheid van belanghebbenden van de op de gemeenschap gebaseerde organisatie voor informatie. Deze overmatige afhankelijkheid creëerde een fragiel informatienetwerk en leidde tot de marginalisatie van lokale media, ondermijnd door afnemend vertrouwen en autonomie. Innovaties in communicatiemethoden bevorderden participatie onder bewoners. Desalniettemin monopoliseerden goed geïnformeerde bewoners de informatiedeling, waarbij ze bewust anderen met conflicterende belangen uitsloten, waardoor problemen van ongelijkheid en ondoorzichtigheid werden versterkt.

In Hoofdstuk 5 onthullen de resultaten van de padanalyse de onderliggende mechanismen die herhaalde betrokkenheid bevorderen: Waargenomen Nuttigheid kwam naar voren als de meest kritieke determinant, gevolgd door Participatietevredenheid, beide hebben direct en positief invloed op de Intenties van Bewoners om opnieuw deel te nemen. De initiële participatie-ervaringen van bewoners hadden een indirect effect op hun intenties om opnieuw deel te nemen. Specifiek versterkten eenvoudigere participatieactiviteiten, eerdere betrokkenheid in het proces en grotere invloed op besluitvorming allemaal de bereidheid van bewoners om opnieuw deel te nemen. Echter, het Aantal Activiteiten en het Aantal Stadia hadden geen significante invloed op de intentie van bewoners om opnieuw deel te nemen. Wat persoonlijke kenmerken betreft, waren jongere bewoners, huiseigenaren, vrouwen, en die met hogere inkomens, flexibele werktypen en een

langere verblijfsduur in de buurt meer geneigd om opnieuw deel te nemen. Het opleidingsniveau had echter geen significante invloed op de intenties om opnieuw deel te nemen. Onder de projectgerelateerde factoren verdient het niveau van investering extra aandacht. Hogere investeringen in rehabilitatieprojecten kunnen haalbaar de herhaalde betrokkenheid bevorderen, aangezien het bewoners bij meer activiteiten en in eerdere fasen betrekt, wat leidt tot grotere participatietevredenheid en bijgevolg een sterkere intentie om opnieuw deel te nemen.

Algemene conclusie

Het overkoepelende doel van deze scriptie was om een beter begrip te krijgen van en de bewonersparticipatie in buurtrehabilitatie in het post-pandemische China te verbeteren. Deze vier studies boden inzichten in de aard van publieke participatie en de unieke uitdagingen waarmee China wordt geconfronteerd. De eerste uitdaging geïdentificeerd voor de initiële participatie van bewoners is een ontoereikend begrip en interventie in de conflicterende belangen en verwachtingen onder belanghebbenden. Het tweede significante probleem is de overmatige delegatie van autoriteit en verantwoordelijkheid van lokale overheden naar op de gemeenschap gebaseerde organisaties, met name het buurtcomité. Dit heeft geleid tot significante verschillen in de bereidheid en kansen van bewoners om deel te nemen, waardoor de gelijkheid en inclusiviteit van de participatie in gevaar komen. De derde uitdaging betreft de overmatige afhankelijkheid van en exploitatie door belanghebbenden van het buurtcomité om informatie te verkrijgen en te verspreiden. Deze afhankelijkheid heeft sociale entiteiten gemarginaliseerd, met name de lokale media, wat leidt tot kwetsbaarheden in het informatienetwerk en homogenisatie van de inhoud ervan. Opmerkelijk is dat om de voortdurende participatie van bewoners te induceren, het overbruggen van de substantiële kloven tussen theoretische aannames en daadwerkelijke praktijken cruciaal is. Dit omvat het aanpakken van de discrepanties tussen wetenschappelijke verwachtingen van empowermentniveaus en procesverfijning en de daadwerkelijke voorkeuren van bewoners.

Voortbouwend op deze inzichten betoogt deze scriptie dat effectieve bewonersparticipatie afhankelijk is van de strategische orkestratie van organisatoren en, in mindere mate, van de actieve participatie van bewoners. Dienovereenkomstig werden aanbevelingen geformuleerd om organisatoren te helpen bij het beter voorstellen, ontwerpen, organiseren en besturen van het participatieproces. In de post-pandemische context van China omvatten deze belangrijke organisatoren overheidsinstanties, op de gemeenschap gebaseerde organisaties, ontwerp- en bouwpraktijken, en adviserende partijen. De voorgestelde suggesties omvatten zowel kortetermijnmaatregelen als langetermijnstrategieën. De kortetermijntactieken

focussen op het verfijnen en verbeteren van bestaande systemen om de effectiviteit van de initiële participatie-ervaringen van bewoners te verbeteren. Specifieke maatregelen omvatten het aanbieden van economische incentives voor organisatoren, het verfijnen van systemen voor gemeenschapsplanners, en het reguleren van de acties van buurtcomité en huiseigenarencomité. Daarentegen gaan de langetermijnstrategieën verder dan de Chinese context en proberen ze de "acceptatie-verstoring anomalie" aan te pakken die in de internationale praktijk wordt waargenomen. Om deze anomalie te doorbreken, is over het algemeen een uitgebreide en radicale verandering van overtuigingen en mechanismen noodzakelijk. Dit vereist een paradigma paradigmaverschuiving in de doelstellingen van publieke participatie van een inhoudelijke naar een normatieve rationale, waarbij sociale leer en burgerschapsontwikkeling boven projectsucces worden benadrukt. Het vraagt ook om een overgang in het evalueren van participatie van kwantitatieve naar kwalitatieve maatstaven, waarbij subjectieve criteria zoals tevredenheid, toegankelijkheid en inclusiviteit in het beoordelingskader worden opgenomen. Een dergelijk verbeterde publieke participatie, zoals voorzien in deze scriptie, wordt verwacht de stedelijke ontwikkelingsprocessen te verbeteren, waardoor ze rechtvaardiger, eerlijker, transparanter, inclusiever en veerkrachtiger worden.

Relevantie van onderzoek

De synthese benadrukt ook de wetenschappelijke en maatschappelijke relevantie van de scriptie. Wetenschappelijke relevantie: Ten eerste biedt dit onderzoek een duidelijke definitie van "effectieve participatie", waarmee een aanzienlijke lacune in duidelijkheid en precisie wordt aangepakt, met name binnen de Chinese context. Ten tweede stelt de scriptie verschillende theoretische kaders voor en valideert deze, die ons begrip van publieke participatie vergroten. Bijvoorbeeld, de uitgebreide lijst van zorgen van belanghebbenden met betrekking tot bewonersparticipatie, uiteengezet in Hoofdstuk 2, legt een solide basis voor verdere verkenning van de dynamiek die participatie-uitkomsten beïnvloedt. Het Participation Description Framework (PDF) voorgesteld in Hoofdstuk 5 adresseert een aanzienlijke lacune waar participatie historisch moeilijk te kwantificeren en te beoordelen is geweest, en biedt een methodologische vooruitgang die in verschillende studies kan worden gebruikt. Het Acceptance-Continuance Model (ACM), ontwikkeld en gevalideerd in Hoofdstuk 5, biedt aanzienlijke waarde voor onderzoekers die gericht zijn op het begrijpen van factoren die aanhoudende betrokkenheid bij sociale en milieugerichte initiatieven stimuleren. Dit model is bijzonder innovatief, omdat het de dynamiek van herhaalde betrokkenheid omvat, een relatief onderbelichte kwestie in participatieonderzoek.

Maatschappelijke relevantie: Dit onderzoek levert een essentiële maatschappelijke bijdrage door zijn vergelijkende studie van verschillende belanghebbenden betrokken bij stedelijke vernieuwing. Door deze diverse perspectieven en gedragingen te begrijpen, zijn belanghebbenden beter in staat de impact van hun acties te evalueren, wat onderhandelingen en beslissingen faciliteert die leiden tot wederzijds voordelige uitkomsten. Bovendien schetst het onderzoek verschillende robuuste paden voor het in stand houden van bewonersbetrokkenheid. Deze inzichten stellen overheden en praktijkmensen in staat hun strategieën voor doelstelling, procesontwerp en middelentoewijzing te verfijnen. Zo'n verfijnde aanpak verbetert niet alleen de initiële participatie-ervaring voor bewoners, maar cultiveert ook hun langetermijnbetrokkenheid, waarbij wordt verzekerd dat rehabilitatieve initiatieven momentum en relevantie behouden over tijd. Verder biedt deze scriptie uitvoerbare strategieën die geïmplementeerd kunnen worden om bewonersparticipatie te verzekeren, waardoor omgevingen worden bevorderd waarin bewoners niet alleen bijdragen aan, maar ook aanzienlijk profiteren van vernieuwingsprojecten. Deze samenwerkende benadering van stedelijke planning en vernieuwing is essentieel voor de ontwikkeling van steden die niet alleen fysiek worden opgewaardeerd, maar ook sociaal levendig en rechtvaardig zijn.

Toekomstig onderzoek

Deze scriptie presenteert verschillende beperkingen die mogelijkheden openen voor toekomstig onderzoek. Allereerst, hoewel de casestudie methode effectief is voor het valideren van theoretische kaders en het verkrijgen van diepgaande inzichten, heeft het wel beperkingen met betrekking tot de generaliseerbaarheid en extrapolatie van onderzoeksresultaten. Om de robuustheid en toepasbaarheid van de onderzoeksuitkomsten te verbeteren, wordt toekomstig onderzoek aangeraden om meerdere casestudies te adopteren in diverse politieke, economische en sociale contexten. Ten tweede wijzen bestaande studies en de bevindingen van dit onderzoek erop dat zorgen van belanghebbenden vaak onderlinge afhankelijkheden en causale relaties vertonen die de dynamiek van bewonersparticipatie kunnen beïnvloeden. Om deze complexiteit aan te pakken, zou toekomstig onderzoek een holistisch analytisch kader kunnen adopteren dat een systematische verkenning van de interacties en wederzijdse invloeden tussen deze zorgen mogelijk maakt. De derde beperking betreft de diepgang van het onderzoek naar de huurdersgroep. Met een beperkte steekproefgrootte kon de scriptie geen afzonderlijke analyse uitvoeren om de cognitieve processen te onderzoeken die de aanhoudende participatie van huurders aansturen. Aangezien huurders een aanzienlijke demografische groep vertegenwoordigen in oude wijken in China en wereldwijd, zou toekomstig onderzoek zich op deze groep kunnen richten om diepere inzichten te verkrijgen. Ten slotte

richt deze scriptie zich op de intenties van bewoners om opnieuw deel te nemen aan vernieuwingsinitiatieven, in plaats van op hun daadwerkelijke gedrag. Hoewel sterk bewezen voorspellers van gedrag zijn bewezen, bestaat er vaak een opmerkelijke kloof tussen intentie en gedrag—wat mensen van plan zijn te doen verschilt van wat ze daadwerkelijk doen. Daarom worden longitudinale en vervolgstudies ten zeerste aanbevolen om deze kloof te dichten.

Authorship Contribution Statement

This doctoral research was undertaken by Yu Li to fulfill the requirements for a doctoral degree. Yu Li served as the principal investigator and lead author, proposing the research concept, designing overarching framework, reviewing existing literature, identifying gaps, selecting guiding theories, developing analytical frameworks, and choosing research methods. Yu Li also designed the interview and questionnaire protocols, obtained ethical approval, coordinated resources, collected research data (interviews, questionnaires, focus groups, and participant observations), organized and maintained these data, conducted analyses, created visualizations, secured research funding, and drafted and revised the manuscript. The supervisory team provided guidance on theoretical refinement, methodological design, manuscript enhancement, and resource coordination.

During the process of converting the four core chapters into academic papers and undergoing peer review, three co-authors contributed. For Chapter 2, Dr. Yinhua TAO reviewed the manuscript, reinforced the epistemological underpinnings of the case study approach and case selection, and performed statistical replications to ensure robust analysis. For Chapters 3 and 4, Dr. Penglin ZHU provided local resources in Wuhan, enabled contact with interviewees and questionnaire respondents, assisted with data collection, and conducted content analysis to support investigator triangulation. For Chapter 5, Dr. Taozhi ZHUANG reviewed the manuscript to improve clarity and coherence, and offered suggestions for designing interview and questionnaire protocols.

1 Introduction

1.1 Urban Renewal

The year 2008 marked a watershed in global development: for the first time, the urban population exceeded the rural population, heralding a new urban millennium (UNFPA, 2007). Urbanization is widely recognized for its potential to catalyze economic growth, boost productivity, and elevate living standards. Yet, it also poses formidable challenges, particularly when it unfolds in an unplanned, disparate, and resource-inefficient manner. Such challenges encompass pollution, environmental degradation, heightened social segregation, and reduced urban vitality. Collectively, these issues lead to escalating crises in resources, health, and safety (Hobsbawm, 2010). These crises can diminish a city's appeal to residents and investors alike, even triggering a decay in urban areas.

In response, developed countries in Europe and North America initiated urban renewal programs as early as the late 19th century to combat the decay. The early urban renewal model, often referred to as redevelopment, is a process of razing all the built-up structures in an area, reorganizing functions, and constructing new buildings and infrastructure (Ho, Yau et al., 2012). While redevelopment stimulates economic growth and significantly improves the environment of the target areas, it also leads to considerable resource wastage, displacement of residents, disruption of social networks, and loss of local cultural identity (Carmon and Hill, 1988; Hemphill, Berry et al., 2004). Consequently, rehabilitation emerges as an alternative in recent renewal efforts, focusing on preserving and enhancing the existing fabric through selective improvements (Zhuang, Qian et al., 2017). This paradigm aims to minimize negative impacts such as displacement and cultural erosion, thus providing a more sustainable and socially responsible model for urban renewal.

Concurrently, urban neighborhoods are increasingly recognized as the suitable geographic scale for rehabilitation efforts. Their suitability stems from the ability to align with broader regional visions while specifically addressing local needs.

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Neighborhood rehabilitation *encompasses the restoration and enhancement of buildings, communal spaces, and infrastructure to comply with the current standards and inhabitant needs* (Ho, Yau et al., 2012). Additionally, with a growing appeal for the reconstruction of civil society, neighborhood rehabilitation is progressing from an economic stimulus to a social movement (Aitken, 2017; Clark and Wise, 2022; Dempsey, Bramley et al., 2011; Shen, Yao et al., 2021). This shift reflects a broader transformation in the mechanisms driving urban renewal. Initially, these initiatives were characterized by government-led, top-down approaches that relied heavily on public investment (Liu, Fu et al., 2021; Zhang and Fang, 2004). Over time, there was a strategic shift towards models incorporating private capital, which was still under government supervision but increasingly leveraging the strengths and resources of the private sector (Zhang and Fang, 2004). More recently, renewal efforts further evolved into multi-lateral collaborations. These collaborative efforts now prominently include a variety of social actors, particularly neighborhood residents (Clark and Wise, 2022).

1.2 Public Participation

Public participation as a crucial component of sustainable development has gained significant global traction, particularly following the Rio Declaration 1992 (Declaration, 1992). Rio declaration enshrines public participation as one of its 27 principles, asserting that "*Environmental issues are best handled with the participation of all concerned citizens…each individual shall have appropriate access to information concerning the environment…including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes.*" Building on this foundational principle, the 2030 Agenda for Sustainable Development, adopted in 2015, further underscores the importance of multi-stakeholder collaboration (UN, 2015b). Specifically, Sustainable Development Goal (SDG) 11 - Sustainable Cities and Human Settlements - advocates for a bottom-up, inclusive approach to urban development. Additionally, SDG 17 - Revitalize the global partnership for sustainable development, emphasizing collaboration among public, private, and societal actors to achieve sustainable outcomes (UN, 2015a). Meanwhile, governments worldwide are proactively enhancing the transparency and accessibility of information, ensuring public access to judicial and administrative proceedings, and continually updating working models to increase public awareness and engagement in renewal decisions. Notable initiatives include the *Housing and Community*

Development (HCD) Act in the U.S., the *New Deals for Communities* in the U.K., the *Big Cities Policy* in the Netherlands, *Machizukuri* in Japan, and the *Co-Creation for Better Environment and Well-being (美好环境与幸福生活共同缔造)* in recent China. Furthermore, amid frequent extreme weather events and the COVID-19 pandemic, the significance of urban resilience has risen to unprecedented levels (UN-Habitat, 2022). Developing neighborhoods capable of withstanding and rapidly recovering from such crises necessitates extensive public participation, as effective response strategies crucially hinge on behavioral changes at both the community and individual levels.

Similarly, public participation is a focal point in academic discourse, yet its definition varies widely among scholars. The definition provided by the International Association of Public Participation (IAP2) is among the most recognized and utilized by practitioners. According to IAP2, public participation is "*any process that involves the public in problem-solving or decision-making and that uses public input to make better decisions.*" This concept is broadly applied across different sectors, including urban renewal. For urban renewal, the anticipated benefits of public participation include cultivating local insights and shared values (Uittenbroek, Mees et al., 2019). It reduces superfluous expenditure and delay (Creighton, 2005), thus enhancing the project's efficiency, effectiveness, and overall satisfaction (Suschek-Berger and Ornetzeder, 2010). For the public, participation acts as a channel for social learning, fostering the acquisition of knowledge and skills, and nurturing self-identity and confidence (Nienhuis, Van Dijk et al., 2011). It also bolsters neighborhood cohesion (Dickens, 2013) and subjective well-being (Orchowska, 2019).

However, public participation often encounters significant challenges in practice. Practices are criticized as paternalistic and top-down, with uneven public representation, engagement only after key decisions have been made, and a general inability of the public to influence decisions (Botes and Van Rensburg, 2000; Nienhuis, Van Dijk et al., 2011; Yang and Callahan, 2007). Moreover, residents lack access to information and channels for participation, and their concerns are not addressed promptly (Wilcox, 1994). The prevalence of bogus participation not only shatters academic optimism but also exacerbates injustice and conflict, resulting in a widespread loss of faith among the public and disillusionment among policymakers (Lowndes, Pratchett et al., 2001a, 2001b).

In response, academic research shifts the focus from questions of "what" and "why" to considerations of "how" effective participation can be achieved. A critical aspect of this discussion is "who" should be involved in the decision-making. This debate is broadly split into two camps: those advocating for the participation of all and those favoring representation through representatives (Fung, 2006; Lowndes,

Pratchett et al., 2001b; Swapan, 2014). Meanwhile, effective participation in urban renewal projects involves more than merely the active involvement of the public. It also requires adept organization. The organizers possess the resources, authority, and competence not only to carry out rehabilitation activities, but also to curtail any unnecessary actions, such as public participation. As noted by Freeman (1984), these organizers, like residents, are critical stakeholders of public participation, thus warranting careful management to achieve desired results. Despite their significant influences, participation research predominantly focuses on the public and government bodies, with minimal attention given to the impact of other stakeholders such as community workers, designers, implementers, and social actors.

The research on "when" delves into understanding the timing and continuity of public participation (Serrao-Neumann, Harman et al., 2014; Uittenbroek, Mees et al., 2019). Yet, much of the "how" research focuses on assessing the "extent" of participation. Various models are developed to grade the levels of public participation, including Arnstein (1969)'s renowned citizen participation ladder, which categorizes public participation into eight rungs. Grounded on her provoking framework, IAP2 offers a concise version, categorizing participation into five modes based on the degree of influence granted to participants: Inform, Consult, Involve, Collaborate, and Empower. Fung (2006) introduced the Democracy Cube, a three-dimensional model that considers the level of empowerment, communication style, and types of participants involved.

Beyond participation models, scholars also explore how contextual factors such as forms of government, political frameworks, institutional arrangements, and socio-cultural environments shape resident behavior (Dekker and Van Kempen, 2008; Fahmi, Prawira et al., 2016; Uslaner and Badescu, 2004). More recently, individual-level differences have increasingly been recognized in shaping participation. This acknowledgment prompts scholars to integrate economic, sociological, and psychological theories to elucidate and address the nuanced behavioral variations among individuals. Research by Bamberg, Rees et al. (2015), and more recent studies by Nixon, Carlton et al. (2023), and B. Liu, S. Lin et al. (2023) exemplify this trend.

Despite the ongoing efforts, there remains a significant gap in understanding how to achieve effective public participation in academic research and practical implementation. This issue is particularly pronounced in countries like China, where public participation is a relatively new concept and lacks a foundation in democratic traditions.

1.3 Neighborhood Rehabilitation and Resident Participation in China

1.3.1 Progresses and Policies

Since the launch of economic reforms in 1978, China has undergone rapid urbanization, with the urbanization rate escalating from 17.92% in 1978 to 36.9% by 2000 (NBS, 2002). By 2023, this rate had increased further to 66.16%, with an urban population of approximately 932.67 million residing in about 551,000 neighborhoods (NBS, 2020, 2023). This rapid yet uneven urban growth has led to various challenges, particularly in neighborhoods constructed during the early stages of urban expansion.

In China, the term neighborhood (**居住区**) refers to *an urban area with clearly demarcated geographical boundaries, typically enclosed by gates and fences, primarily designated for residential use* (CSUS, 2019; MOHURD, 2007). A typical neighborhood houses between 1,000 and 3,000 people, contains 300 to 1,000 apartments, and spans 2 to 4 square hectares (MOHURD, 2018). Those constructed before 2000 are domestically referred to as old neighborhoods (**老旧小区**). Considering the construction time, the developer, and ownership type, old neighborhoods in China can be generally classified into three types (Li, Zhu et al., 2012): 1) old town neighborhoods; 2) work-unit compound neighborhoods; and 3) commodity-housing neighborhoods. FIG. 1.1 illustrates these prevalent types of residential neighborhoods in China.

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1. Old-town neighborhoods; 2. Work-unit compound neighborhoods; and 3. Commodity-housing neighborhoods, 3(a) are old ones, 3(b) are more recently built.

FIG. 1.1 Residential neighborhoods in urban China

— **Old-town neighborhoods** were constructed between 1949 and 1958. Unlike later developments, these neighborhoods were planned and built by the residents, who either individually or collectively own the land and property without any limitation on duration. Nevertheless, due to the absence of professional planning and maintenance, old-town neighborhoods feature high housing densities and narrow streets, which complicate accessibility and limit available space for public activities. The buildings frequently suffer from severe dilapidation, exacerbating their vulnerability to structural failures and safety hazards.

— **Work-unit compound neighborhoods**, constructed between 1958 and 1990 during China's planned economy era. They were developed to address the housing shortages faced by employees of state-owned enterprises (i.e., work units, 单位). The state and work units provided land, financed, and built these neighborhoods (Wu, 1996). Housing in these neighborhoods often consisted of dormitories where several tenants shared bathrooms and kitchens. Housing was provided free of charge as a welfare benefit or rented to employees at rates significantly below market price (Wu, 1996). With the onset of housing reform in the early 1990s, public housing was privatized and sold to employees at subsidized welfare prices, transforming them into

property owners. The reform also led to the disintegration of work units, which had previously played a crucial role in maintaining and managing these neighborhoods. The situation was exacerbated by the out-migration of original residents and the influx of new tenants from diverse backgrounds, which disrupted the strong ties maintained by the employees (Granovetter, 1973). This influx, combined with a lack of adequate maintenance, accelerated the decline of the neighborhoods and led to the disintegration of the once orderly social and spatial structures.

The economic reforms also transformed China's housing market by attracting foreign and private investment. Work units were privatized and outsourced, shifting away from their role of providing housing for their employees. Consequently, housing was no longer distributed as a welfare benefit but was commoditized and made available to all urban residents at market prices (Wu, 1996).

— Constructed between 1978 and 2000, **old commodity-housing neighborhoods** represent this new phase of housing policy. In these developments, the state retains ownership of the land, while developers are responsible for financing, planning, and constructing commercial housing units, which are then sold to individuals (Li, Zhu et al., 2012). Like the work-unit compounds, old commodity-housing neighborhoods suffer from inadequate greenery and parking facilities. Most buildings are 5 to 8 stories high but lack elevators, posing significant accessibility challenges. Despite some improvements over work-unit compounds, such as each apartment having its private bathroom and kitchen, which allows for independent living, old commodity-housing neighborhoods still face issues related to insufficient natural lighting, high energy consumption, and poor thermal comfort.

While the three types of old neighborhoods—old town, work-unit compound, and commodity-housing—each have distinct characteristics and face unique challenges, they also share common social issues, revolving around alienation, conflict, and apathy. Old neighborhoods now house residents from various backgrounds, cultures, and traditions. While a potential source of vibrancy, this diversity can also foster poor communication and feelings of alienation. According to Granovetter (1973), these neighborhoods are often characterized by "weak ties" or even a complete absence of meaningful social connections, resulting in a "stranger society." Meanwhile, the clash of diverse needs and lifestyles in shared spaces triggers friction and conflicts among the residents, further complicating the management of common areas. Notably, a growing awareness of the distinctions between public and private spaces is noticed, resulting in a diminished sense of responsibility among residents and a lack of motivation to actively engage in neighborhood affairs.

To tackle the issues, the Chinese government launched neighborhood rehabilitation initiatives in 2007. Nevertheless, it was only in 2019, as the redevelopment work of shantytowns and urban villages came to an end, neighborhood rehabilitation took over as the primary renewal strategy. As shown in FIG. 1.2, government-initiated rehabilitation mainly aims to: 1) restore building structures and façades; 2) improve the communal environment and facilities; and most importantly, 3) boost resident participation and grassroots governance (SC, 2020a; Tang, Gong et al., 2022; Zhu, Li et al., 2020). Based on these, in this thesis, neighborhood rehabilitation is defined as *a comprehensive and systematic improvement of the performance and quality of the neighborhood and the well-being of its inhabitants*. Similar concepts, such as neighborhood revitalization, community renovation, community (micro-)renewal, and housing renovation, are used interchangeably in global research. This thesis employs neighborhood rehabilitation as the umbrella term to encompass these initiatives. Development strategies centered on mass demolition and reconstruction are outside the ambit of this concept and, thus, beyond the scope of this research.

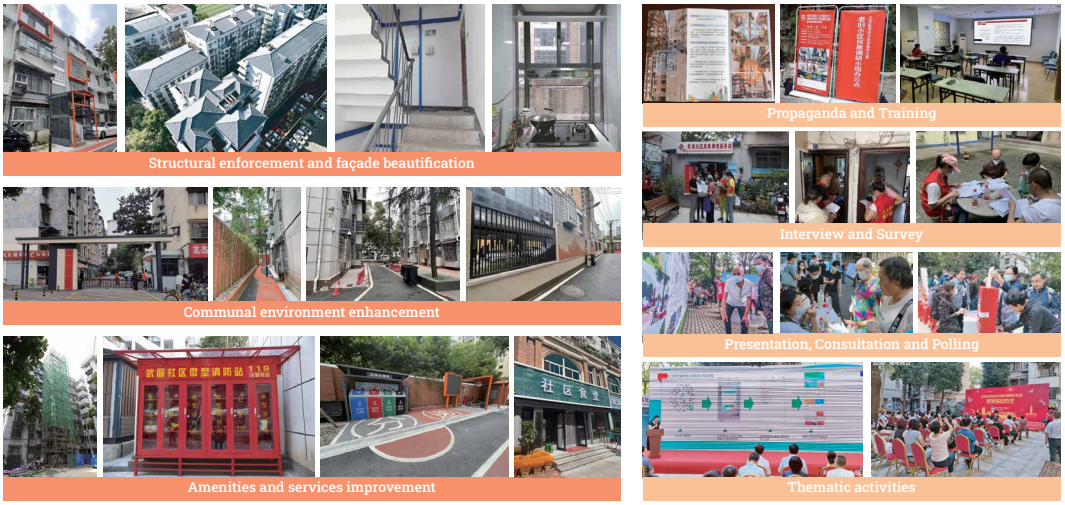

FIG. 1.2 Neighborhood rehabilitation projects in China

By the end of the 14th Five-Year Plan period (2025), 220,000 old neighborhoods will be rehabilitated to improve the living environment of 100 million residents (SC, 2020b). Excluding delays caused by the COVID-19 pandemic, the short-term progress of the rehabilitation work falls behind schedule. Take Wuhan as an example. Its annual target for 2019 was to rehabilitate 171 neighborhoods. However, by the end of 2020, only 73 neighborhoods finished the rehabilitation, with a completion

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rate of 42.69%. One of the significant causes of project delays is the lack of understanding, support, and cooperation of residents in the rehabilitation process (HBHURD, 2021). Cases from other Chinese cities demonstrate that insufficient and ineffective resident participation in neighborhood rehabilitation can result in poor understanding among residents, compromising the rehabilitation outcomes' effectiveness (Liu, Zhang et al., 2015). In some instances, strategies were shelved or even reversed by residents during the operational phase (Gu, 2019; Li, Gu et al., 2020). Additionally, superficial participation led to complaints and mass protests against the design plans, with the renewal of the Enning Road in Guangzhou being one of the most notorious examples (Si, 2012). Furthermore, the failure of public participation in the Hongshan Square renovation in Wuhan not only hindered the project's progress but also led to a credibility crisis for the local government (Legaldaily, 2008).

As a conflict mitigation and consensus-building approach, resident participation has gained increasing attention in the last decade in urban China. The *Symposium on the Pilot Programme of Old Neighborhood Rehabilitation* in 2017 marked the inception of the resident participation concept in China's urban renewal domain, which is now articulated as Co-Creation (**共同缔造**) in policy frameworks. Using urban neighborhoods as the foundational unit, the Co-Creation initiative prioritizes enhancing residents' living environments and actively involves residents throughout the process (MOHURD, 2017). Residents are expected to collaborate with public, private and other social actors to plan, construct, manage and evaluate rehabilitation activities and subsequent neighborhood affairs, and share the benefits brought by the improvements (MOHURD, 2019). In recent rehabilitation, prevailing participation approaches include policy advocacy, door-to-door information campaigns, public notices, group meetings, workshops, interviews, surveys, public polling, and thematic sessions (MOHURD, 2019, 2021b).

Recent changes in government administration and grassroots governance further indicate residents' integral role in neighborhood (re)development. Aligning with the "Mass line" (**群众路线**)[3] and "People-centered" (**以人民为中心**)[4] development philosophies, the Chinese government is transitioning from a management-

3 Mass line refers to doing everything for the masses (people), relying on the masses for everything, coming from the masses and going to the masses, and turning the propositions of the Party into the conscious actions of the masses (Yuejin, 2004).

4 People-centered denotes that the people are the creators of history and the fundamental force that determines the future and destiny of the Party and the country. The country takes the people's aspiration for a better life as the ultimate goal of endeavor, and relies on the people to create historical greatness (CCoCPC, 2017).

centric to a service-centric approach. This shift is mirrored at the grassroots level, where governance evolves from management-based to collaborative, sharing responsibilities, authority and resources with other actors, especially the local community. The COVID-19 pandemic and subsequent lockdowns further underscore residents' emergent role and growing capabilities in grassroots governance (Liu, Lin et al., 2021). Prompted by these changes, the Chinese government views recent neighborhood rehabilitation initiatives as an opportunity to foster habitual participation among residents, ensuring their sustained engagement in future neighborhood (re)development (MOHURD, 2019; SC, 2020a).

1.3.2 Stakeholders and Phases

These initiatives paved the way for subsequent policies, regulations, initiatives and technical standards that not only define the rehabilitation process in detail but also clarify the roles and responsibilities of involved actors. These actors are the stakeholders of neighborhood rehabilitation who possess the information, resources, and competencies necessary to conduct rehabilitation activities or halt unnecessary actions, including resident participation (Freeman, 1984). Besides residents, recent cases indicate that five stakeholder groups are most relevant to resident participation in neighborhood rehabilitation in China (Li, Tao et al., 2024; Lu and Lange, 2021; SC, 2020a): local government, neighborhood committee, design professional, implementation and construction unit, and consulting party.

Recognizing neighborhood rehabilitation's significant political and social advantages, the government finances and spearheads these initiatives through a top-down approach (SC, 2020a). The local governance structure in China encompasses three hierarchical levels: Municipality, District Government, and Sub-district Administrative Office. The municipality crafts overarching policies for neighborhood rehabilitation, monitors project progression, and evaluates outcomes (SC, 2020a). The district government's responsibilities include funding allocation, project approval, and recruiting and coordinating essential personnel such as designers, implementers, and consultants (SC, 2020a). The sub-district office implements these projects at the grassroots, handling policy training, task delegation, staff management, and site supervision. Despite the differentiated roles, all three levels are united in the commitment to urban development and social stability (SC, 2020a).

Yet, promoting participatory neighborhood rehabilitation would be challenging for the subdistrict office without the assistance of the neighborhood committee **(居民委员会)**. In China, the neighborhood committee is a grassroots organization encouraging self-management, self-education, and self-service among residents (NPCSC, 2018). Committee members, often non-residents, are elected by residents while are supported and empowered by the local government. The significance of neighborhood committees in fostering civic participation has been highlighted, especially after the COVID-19 pandemic (Z. Liu, S. Lin et al., 2023). They act as liaisons for the government, disseminating laws and policies to residents. They also play the pivotal role of the family head, engaging in resident education, conflict resolution, and feedback collection (SC, 2020a). Besides neighborhood committees, residents may spontaneously form other community-based organizations, including homeowner committees, clan organizations, self-management groups, and interest groups (Li, Tao et al., 2024; Lu and Lange, 2021; SC, 2020a). The presence, roles, and impact of these groups vary widely across neighborhoods (Lu and Lange, 2021).

Other stakeholders involved in neighborhood rehabilitation include implementation units, designers, constructors and property management companies, tasked with coordination, design, construction, and ongoing maintenance, respectively (Li, Tao et al., 2024). Meanwhile, some projects engage enterprises, scholars, experts, and non-governmental organizations (NGOs) to foster innovative resident participation in rehabilitation (SC, 2020a). Prominent examples include the co-governance and sharing program in Wuhan (Luo, Wu et al., 2020), the urban regeneration engine model in Beijing (Shen, Yao et al., 2021), and the community planner scheme in Guangzhou (Zhao, Liu et al., 2023). Additionally, the rise of ICTs and social media has amplified the role of media in rehabilitation efforts. These platforms enable quick dissemination of policies and success stories, and provide a venue for residents to voice opinions or dissent (SC, 2020a).

For residents, unlike redevelopment projects that require intensive, one-time involvement, neighborhood rehabilitation emphasizes continuous participation throughout the project's lifecycle (SC, 2020a). Residents are engaged to determine (SC, 2020a, 2020b): 1) the necessity of rehabilitation; 2) rehabilitation scope and content; 3) design plans and strategies; 4) the construction schedule; and 5) management mode and responsible parties. In turn, these critical decision points segment the project lifecycle into five iterative phases (MOHURD, 2021a): Phase I - Intention and Setup; Phase II - Mapping and Assessment; Phase III - Planning and Design; Phase IV - Construction and Acceptance; and Phase V - Operation and Maintenance.

1.4 Problem Statement

Despite policy improvements and the advent of Co-Creation have boosted resident participation in China, its quality and effectiveness remain largely uncertain. Compared to Western and other developed counterparts, resident participation in China is marked by low awareness, confined power, limited participation channels, and general disorganization (Hu, de Roo et al., 2013; Li, Zhang et al., 2019; Li, Krishnamurthy et al., 2020). The foremost issue is the criteria for qualifying effective resident participation in the unique context of China. Characterized by a brief renewal history and a nascent interest in resident participation, urban redevelopment and rehabilitation in China often fail to account for variations in participation objectives and degrees, influenced by specific project characteristics, including size, environmental and social sensitivities (Liu, Wang et al., 2018). Meanwhile, while established studies have emphasized the importance of exchanging concerns, power, and information for effective participation (Enserink and Koppenjan, 2007; Pawson, Bright et al., 2012; Reed, Graves et al., 2009), few of them have provided an in-depth analysis of these three aspects from a comprehensive and synergetic perspective.

Additionally, since the outbreak of COVID-19, many new challenges have appeared in stakeholders' perceptions of and behaviors toward resident participation (Z. Liu, S. Lin et al., 2023; Liu, Lin et al., 2021). These challenges stem from changes in residents' perceptions of and attitudes towards their living environments, stakeholders' roles and public images, the rationale for access to and distribution of resources, interaction patterns, and underlying power structures (Han, Zheng et al., 2023; Liu, Lin et al., 2021). Consequently, these shifts may affect stakeholders' views on the usefulness, feasibility, and validity of participation activities and, thereby, their perceived necessity of resident involvement in the rehabilitation process (Han, Zheng et al., 2023; Z. Liu, S. Lin et al., 2023; Tao, Chai et al., 2021). For these considerations, an updated assessment and management of stakeholders in the post-pandemic context is imperative.

Concurrently, this perceptual change is also observed in the resident group. A growing number of cases show that residents' intention to re-engage can be influenced by their earlier participation experience, resulting in a virtuous or vicious cycle of participation. Moreover, most of the cases fall into the latter, whereby previous participation prevents residents from re-engagement (Li, Feng et al., 2020; Webler, Tuler et al., 2001) or causes a constant loss of participants in the rehabilitation process (Brown, Bos et al., 2016; Uittenbroek, Mees et al., 2019). This issue, which Bhattacherjee (2001) refers to as an "acceptance-discontinuance

anomaly," is evident both in China and globally. However, extant research primarily concentrates on the initial engagement of residents, neglecting the dynamics of continued participation and the factors that influence it.

1.5 Research Approach

1.5.1 Research Aim

To address existing challenges and bridge identified gaps, a thorough evaluation of resident participation in neighborhood rehabilitation is imperative. Such an evaluation is crucial not only to ensure the immediate success of the project but also to secure the long-term sustainability of rehabilitation efforts. Consequently, this doctoral research aims to **better understand and improve resident participation for neighborhood rehabilitation in post-pandemic China**. It posits the central research question: **How to improve resident participation for neighborhood rehabilitation in post-pandemic China?** Before delving into the specific sub-questions of this research, it is essential to delineate the scope and establish the conceptual framework of this thesis.

1.5.2 Theoretical Backdrop

The conceptual framework of this thesis is developed through definitions of public participation alongside an exploration of the enduring characteristics of neighborhood rehabilitation.

From the definition of public participation

Since the advent of participatory democracy in 1960, the definition of public participation has consistently been a subject of scholarly contention. Researchers endow this term with diverse meanings, influenced by their academic disciplines, national contexts, and personal experiences. In the context of urban planning, through

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the analysis of urban renewal projects in the United States in the 1960s, Arnstein (1969) posits that "…*citizen participation is a categorical term for citizen power*." The emphasis is on redistributing power to the "have-nots," enabling them to share in "*the benefits of the affluent society*." Concurrently, Davidoff (1965) argues for a pluralistic approach to local planning, advocating for the representation of varied social group interests. Here, citizen participation transcends mere responses to agency programs, encouraging citizens to articulate their visions for future goals and actions. In architectural design, participation is construed broadly as "*a general concept covering different forms of decision making by a number of involved parties*" (Wulz, 1986). The term "participatory design" within this field aptly describes a process distinct from traditional methods. Participatory design is characterized by its flexibility and openness, which not only permits but encourages user interaction with the design process, thereby enhancing sustainability and efficiency (Luck, 2018; Smith and Iversen, 2018).

Considering the definitions and challenges previously discussed, this thesis conceptualizes resident participation as *a dynamic power-sharing process, through which resident concerns, information, and values are integral to decision-making processes and are reflected in the outcomes of neighborhood rehabilitation*. Based on this conceptualization, it becomes evident that effective resident participation is contingent upon the appropriate sharing of three critical elements among neighborhood rehabilitation stakeholders: **concerns**, **power**, and **information**.

According to Freeman (1984) and the Project Management Institute (PMI, 2008), stakeholders are *individuals or groups with direct or indirect stakes in a project, capable of influencing or being impacted by the project's operations or outcomes*. In neighborhood rehabilitation, stakeholders encompass government agencies, community-based organizations, designers, constructors, consulting parties, and social entities. Together with neighborhood residents, these stakeholders possess the necessary resources, authority, and competence to not only facilitate rehabilitation efforts but also to curtail any unnecessary actions, such as resident participation.

Concerns represent *stakeholders' specific issues or vested interests in a project*, which may be positively or negatively influenced by the project's execution or completion (Li, Ng et al., 2012; Mok, Shen et al., 2017). Stakeholders articulate concerns to identify, safeguard, and enhance individual or organizational interests through the process (Li, Ng et al., 2012; Olander and Landin, 2008).

Power, as defined by Etzioni (1964), is "*an actor's ability to induce or influence another actor to carry out his directives or any other norms he supports*." Power sharing, therefore, involves a redistribution of power accompanied by collaborative action and a transformation of roles (Kensing and Blomberg, 1998).

Information, as delineated by the Oxford English Dictionary (OED), refers to "*knowledge communicated concerning some particular fact, subject, or event; that of which one is apprised or told; intelligence, news.*" Information sharing constitutes a process whereby relevant expertise or experience is located within a given environment (Karing'u, Isaboke et al., 2020).

Towards the enduring nature of neighborhood rehabilitation

Crucially, neighborhood rehabilitation differs from typical renewal paradigms such as demolition-and-rebuild and adaptive reuse, characterized as one-off interventions. Instead, it represents a continuous, incremental endeavor (Ginsburg, 1999; Shen, Yao et al., 2021). This necessitates a shift from passive, one-time involvement to proactive, sustained participation—a transformation particularly relevant in contemporary China (Hindhede, 2016; Zheng, Fu et al., 2023). Within the Chinese context, governmental entities remain neighborhood rehabilitation's primary initiators and financiers. The limited profit margins and prolonged return on investment discourage private sector participation (Zheng, Fu et al., 2023). Considering the vast array of aging neighborhoods and the prolonged nature of rehabilitation efforts, exclusive reliance on government funding is neither practical nor economically feasible (Zheng, Fu et al., 2023). Additionally, government-led rehabilitation initiatives frequently face governance challenges, notably resident disengagement from decision-making processes (Liu, Wang et al., 2018). Such disengagement often results in a misalignment between resident expectations and the actual decisions enacted. This leads to resident apathy and subsequent neglect in maintaining the rehabilitated areas, thereby precipitating their decline (Liu, Zhang et al., 2015; Yau, 2010).

Given this backdrop, the ongoing participation of residents is essential and irreplaceable for addressing the diverse needs, funding deficiencies, and governance challenges in neighborhood rehabilitation initiatives. Consequently, exploring the mechanisms and factors that foster sustained resident participation is crucial. This thesis denotes the initial participatory behaviors and experiences of residents as **Initiation Participation**, while **Continuation Participation** refers to residents maintaining their involvement over time. Specifically, this study concentrates on the behaviors linked to acceptance participation and the intentions underlying continuance participation, while actual re-engagement behavior is beyond the research's scope.

Collectively, these four elements—concern, power, information, and sustained participation—form the conceptual framework of this thesis.

1.5.3 Research Sub-questions

Within the established conceptual framework, four research sub-questions are formulated, each corresponding to one of the key elements. Addressing these sub-questions is anticipated to resolve the overarching question of the thesis: **How to improve resident participation for neighborhood rehabilitation in post-pandemic China?** FIG. 1.3 illustrates the conceptual framework and the associated sub-questions (SQs).

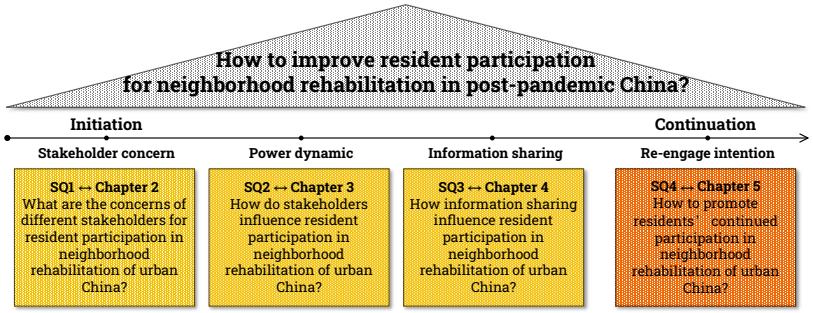

FIG. 1.3 Conceptual framework of the thesis

The first sub-question of this thesis is: **What are the concerns of different stakeholders for resident participation in neighborhood rehabilitation of urban China?** To tackle this question, Chapter 2 undertakes a systematic literature review to compile a comprehensive list of stakeholder concerns regarding resident participation in neighborhood rehabilitation projects. Recognizing that stakeholder groups may perceive the importance of concerns differently, this chapter also explores the varying degrees of importance attributed to each concern by different stakeholder groups. These variations are influenced by stakeholders' distinct roles in the rehabilitation process and their rehabilitation experiences, which can shift their perspectives and understanding over time.

The second sub-question is: **How do stakeholders influence resident participation in neighborhood rehabilitation of urban China?** The question is investigated in Chapter 3 to understand the power distribution among stakeholders during resident participation. It identifies various stakeholders' power bases and strategies and examines how they exercise their power. It also analyzes the intentions behind stakeholders' use of power, the outcomes they aim to achieve, and the impact of these power dynamics on resident participation. Most importantly, the chapter provides a detailed examination of how power distribution and influence strategies evolve throughout different phases of the rehabilitation lifecycle.

The third sub-question is: **How does stakeholder information sharing influence resident participation in neighborhood rehabilitation of urban China?** Chapter 4 addresses this question by initially conducting a thorough review to determine the types of information stakeholders share during resident participation. Stakeholders' levels of familiarity with different kinds of information are also explored. The roles and positions of stakeholders within the information network and their impacts on the information flow are examined to identify undesirable stakeholder behaviors. Additionally, the interrelationships between pairs of stakeholders are scrutinized to identify detrimental dynamics. Chapter 4 provides a detailed examination of how stakeholder information sharing behaviors and their interrelationships evolve across different phases of the rehabilitation lifecycle.

Chapter 5 of the thesis addresses the fourth sub-question: **How to promote residents' continued participation in neighborhood rehabilitation of urban China?** Compared to the first three research questions, which consider all stakeholders involved in resident participation, the investigation in Chapter 5 specifically targets experienced residents. Before delving into mechanisms underlying sustained participation, Chapter 5 first addresses two foundational questions: 1) How can a participation experience be described? and 2) What are the underlying mechanisms that influence residents' intentions to re-engage? To tackle these preliminary questions, the chapter draws upon psychological theories to develop frameworks and hypotheses that describe the participation experience and explore the factors driving residents' re-engagement intentions. Empirical evidence is applied to validate these proposed frameworks.

1.5.4 Methodology

Case selection

Wuhan, China, is selected as the case study area of this thesis. Beyond the scope of data availability, Wuhan is chosen due to its proactive role in neighborhood rehabilitation and emphasis on resident participation. From 2020 to 2023, Wuhan has rehabilitated 1,459 aging neighborhoods.[5] Public participation practices emerged in 2008 and were institutionalized into urban renewal policies by 2020. Such extensive endeavors furnish public, private and societal stakeholders in Wuhan with invaluable experience and insights to answer the research questions.

5 Calculated from government annual reports.

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Wuhan's selection as the study area is also informed by its distinctive role within domestic and global urban hierarchies. Its status as a representative second-tier[6] and Beta city[7] creates a valuable context for examining stakeholder influence on RP. On the one hand, while first-tier cities exert significant domestic and global impact, second-tier cities host more old neighborhoods and larger populations. Specifically, first-tier cities accounted for 24,617 old neighborhoods, whereas second-tier cities exceeded 33,749 (Wei, 2020). Additionally, as of January 2023, the NBS reported 88 million people in first-tier cities, compared to 292 million in second-tier ones. Recent demographic trends further highlight a migration towards second-tier cities. These dynamics make second-tier cities, particularly Wuhan, crucial areas for studying urban renewal and the effective engagement of residents in urban development.

On the other hand, second-tier cities usually operate on tighter fiscal budgets, rely more on the central government, and adopt a conservative governance stance (Liu, Lin et al., 2021). The COVID-19 pandemic further exacerbates these challenges for developing cities, such as Wuhan, leading to marked financial pressures stemming from central government budget reductions, decreased local fiscal revenues, personnel shortfalls, and heightened service demands. Such fiscal austerity mirrors the trends witnessed in Western countries following the 2008 economic crisis. Given this parallel fiscal context, Wuhan can offer nuanced insights for Western countries navigating persistent budgetary challenges.

Study area

Located in the central region of China, Wuhan is the capital of Hubei Province and serves as the only sub-provincial city in the area. Its geographical coordinates span from 113°41' to 115°05' east longitude and from 29°58' to 31°22' north latitude. The city extends up to 134 kilometers from east to west and 155 kilometers from north to south, covering a total area of 8,569.15 square kilometers. By the end of 2023, Wuhan's estimated permanent population reached approximately 13.774 million, with an annual regional GDP of 20011.65 billion yuan.

6 The National Bureau of Statistics (NBS) categorizes Chinese cities into three tiers based on political status, administrative level, economic volume, and population size. Currently, there are 4 first-tier cities (Beijing, Shanghai, Guangzhou, Shenzhen), 31 second-tier cities, and 35 third-tier cities. Most of the second-tier cities are provincial capitals. Wuhan, as the capital of Hubei province, is among the middle level of provincial capitals in terms of economic size and population, and is thus a widely accepted second-tier city. For cities included in each tier, please see https://www.gov.cn/lianbo/bumen/202401/content_6926526.

7 Globalization and World Rankings Research Institute (GaWC) classifies second-tier cities in China from Beta to Gamma- cities. Wuhan is designated as a Beta city, indicating moderate connections with the global economy. See https://www.lboro.ac.uk/microsites/geography/gawc/world2020t.html for a detailed list.

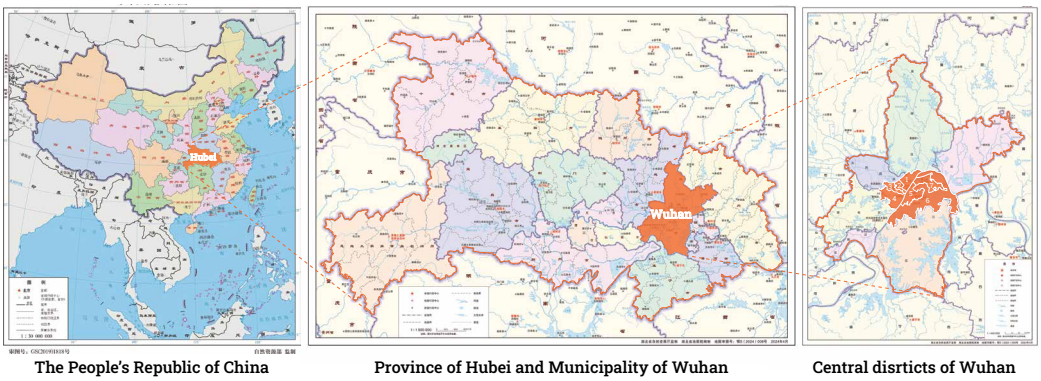

FIG. 1.4 Location of Wuhan

As shown in FIG. 1.4, Wuhan is administratively divided into 13 districts, comprising 7 central districts and 6 new districts. The central districts—Jiangan, Jianghan, Qiaokou, Hanyang, Wuchang, Qingshan, and Hongshan— are pivotal to the city's initial urbanization efforts and host most of its old neighborhoods. Conversely, the six new districts—Dongxihu, Hannan, Caidian, Jiangxia, Huangpi, and Xinzhou—represent areas of more recent development. In January 2020, the municipality of Wuhan implemented the *Three-Year Action Plan for the Renovation of Old Neighborhoods (2019-2021)*, initiating the latest round of old neighborhood rehabilitation initiatives. Between 2020 and 2023, the city rehabilitated 286, 455, 426, and 292 old neighborhoods annually in these central districts. Given this context, these seven central districts are selected as the primary focus for data collection in this thesis. Chapters 2, 3, and 5 explore the general context of these central districts, while Chapter 4 concentrates on a single case study of a representative neighborhood rehabilitation project in the Jianghan district.

Data and Methods

Given the diversity of research subjects and topics addressed in this thesis, the mixed-method approach is employed in all four sub-studies, integrating qualitative and quantitative data to provide a comprehensive analysis. Chapters 1 and 4 of the thesis are structured as cross-sectional studies. Chapter 1 compares perceptual differences among various stakeholder groups, while Chapter 4 examines differences within the resident group. Chapters 3 and 4 are designed as longitudinal studies that track the evolution of stakeholder behaviors through different phases of the neighborhood rehabilitation project lifecycle. Furthermore, the research design of this thesis is iterative. Findings from each phase of the study inform subsequent phases' design and analytical approach.

Specifically, in Chapter 2, followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020, a systematic review was first conducted to compile an exhaustive list of stakeholder concerns related to resident participation in neighborhood rehabilitation. Interviews with different stakeholders were conducted to tailor the initial concern list to the Chinese context. Government, community-based organization, and constructor interviewees were reached through publicly accessible project information (e.g., phone numbers, email addresses, organization names, and contact personnel). Designers and consultants were accessed via snowball sampling through the key informants. Residents were randomly approached in the rehabilitated neighborhoods. Participants were included in the analysis if they 1) aligned with one of the identified six stakeholder groups; 2) possessed experience in neighborhood rehabilitation; and 3) interacted with residents directly in neighborhood rehabilitation. Consequently, 30 semi-structured interviewees were approached, with their profiles detailed in Appendix A. Questionnaire surveys were administered across these six groups to identify their perceived importance of the 37 concerns. The questionnaires were sent in print and digital versions and resulted in 255 valid questionnaires, with participants covering all seven central districts of Wuhan. Mean scores were calculated to prioritize stakeholder concerns based on their perceived importance. To further understand the similarities and discrepancies in stakeholder concerns, one-way and two-way analyses of variance (ANOVAs) were employed. SPSS software was used for data processing.

Through a review of stakeholder research, Chapter 3 first introduced an analytical framework termed the Stakeholder Influence Model (SIM) to understand stakeholders' influence on resident participation and its evolution through various phases of the neighborhood rehabilitation project lifecycle. Data collection began with desk research of policy documents, project records, and newspaper articles to create a database of neighborhood rehabilitation projects in Wuhan. Utilizing this database, initial contacts were made with government agencies and implementation units, who facilitated further connections with neighborhood committee members, design professionals, and consultants. Government interviewees were purposively selected from all three levels of local government across seven central districts, focusing on departments involved in neighborhood rehabilitation. Representatives from neighborhood committees were carefully selected to cover each central district, and design and construction firms were chosen to ensure representation of projects across Wuhan. For these non-resident stakeholders, leaders and managers were targeted for their deep insights into urban renewal and their ability to articulate institutional perspectives. Resident respondents were recruited through two approaches: a random selection from the public and a stratified method based on project locations from the database. This approach aimed to

collect diverse viewpoints, representing various ages, educational levels, income brackets, and residential backgrounds. Moderate participant observation was utilized to align subjective perceptions with objective data, fortifying the validity of the findings. In the end, Chapter 3 compiled a dataset including 44 audio recordings, 3 videos, 65 interview transcripts (44 from semi-structured and 21 from impromptu interviews during participant observations), 218 photographs, 56 field notes, 23 project reports, 53 policy documents, and 43 news articles. The data was triangulated and synthesized using the software ALTAS.ti.

Chapter 4 combined Social Network Analysis (SNA) and Ecological Network Analysis (ENA) to delve into the intricate information sharing behaviors and interrelationships, and how these dynamics influence resident participation in neighborhood rehabilitation. A representative neighborhood rehabilitation project in Wuhan served as the single study case. Data collection began with desk research of government documents, project logs and newspaper articles, to develop an initial list of organizations (stakeholders) that affected or were affected by the study case. Semi-structured interviews followed to validate and finalize the stakeholder list. Through 10 interviews, 31 stakeholders were identified, comprising 28 non-resident stakeholders and 3 resident stakeholders. Based on the stakeholder list, in-person surveys were conducted with leaders or management-level personnel of non-resident organizations, yielding 35 valid questionnaires encompassing all 28 identified non-resident stakeholders. For resident stakeholders, three focus groups were organized: one with 8 general population representatives, one with 10 neighborhood homeowners, and another with 6 neighborhood tenants. The qualitative data were collated and analyzed using the ATLAS.ti software. SNA was performed using UCINET 6, with visualization facilitated by NetDraw. ENA was executed in Python using the NumPy library and was visualized in Excel.

Chapter 5 began with a literature review that led to develop a theoretical framework, termed the Participation Description Framework (PDF). This framework integrates with the Expectation-Confirmation Model (ECM) to form an analytical model—the Acceptance-Continuance Model (ACM) for Resident Participation. The ACM is designed to predict how initial participation experiences affect residents' intentions to re-engage in neighborhood rehabilitation. To validate the PDF and ACM, semi-structured interviews were carried out with individuals who had direct involvement in neighborhood rehabilitation and had interacted with residents during these projects. Through snowball sampling, 22 respondents representing six stakeholder groups were recruited. Detailed profiles of these respondents are included in Appendix A. Informed by the ACM and insights from the interviews, a questionnaire was developed to delve deeper into residents' initial participation experiences and their subsequent influence on re-engagement intentions. These questionnaires were disseminated in both print and digital formats across the seven central districts of

Wuhan. Residents eligible for the survey were those who: 1) lived in neighborhoods that had completed rehabilitation, 2) had participated in at least one related activity, and 3) had resided in the neighborhood prior to its rehabilitation. A total of 367 valid questionnaires were collected. Path analysis was utilized to process the survey data, employing AMOS 25 within the SPSS to analyze the path model.

1.6 Outline of the Thesis

After Chapter 1 Introduction, the rest of the thesis is structured as follows. Chapter 2 focuses on identifying and understanding the **Concerns** shared among stakeholders about resident participation. Chapter 3 shifts focus to **Power** dynamics within the participation process. Chapter 4 investigates the influence of **Information** sharing on resident participation. Building upon the insights from these investigations, Chapter 5 addresses the mechanisms underlying residents' **continued participation**. Finally, Chapter 6 concludes the thesis by synthesizing research findings. It also provides recommendations for policy and future research to enhance residents' acceptance participation and induce their continued engagement. The thesis outline is illustrated in FIG. 1.5.

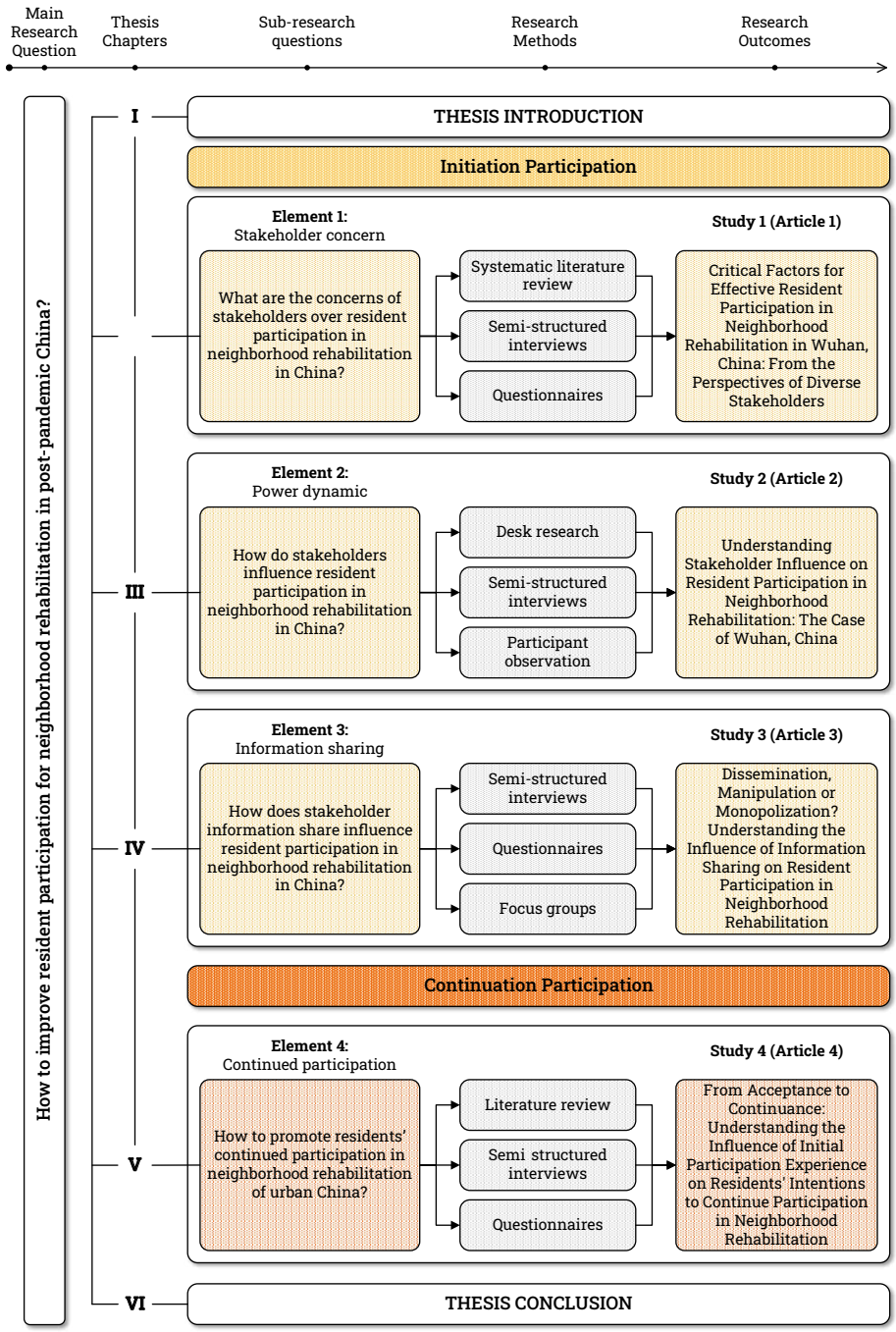

FIG. 1.5 Thesis outline

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References

Aitken, D. (2017). The Influence Fallacy: Resident Motivations for Participation in an English Housing Regeneration Project. *Planning theory & practice*, *18*(4), 549-565.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of planners*, *35*(4), 216-224.

Bamberg, S., Rees, J., & Seebauer, S. (2015). Collective climate action: Determinants of participation intention in community-based pro-environmental initiatives. *Journal of Environmental Psychology*, *43*, 155-165. https://doi.org/https://doi.org/10.1016/j.jenvp.2015.06.006

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS quarterly*, 351-370.

Botes, L., & Van Rensburg, D. (2000). Community participation in development: nine plagues and twelve commandments. *Community development journal*, *35*(1), 41-58.

Brown, H. L., Bos, D. G., Walsh, C. J., Fletcher, T. D., & RossRakesh, S. (2016). More than money: how multiple factors influence householder participation in at-source stormwater management. *Journal of Environmental Planning and Management*, *59*(1), 79-97.

Carmon, N., & Hill, M. (1988). Neighborhood rehabilitation without relocation or gentrification. *Journal of the American Planning Association*, *54*(4), 470-481.

CCoCPC. (2017). **十九大报告** *(Report of the 19th National Congress of the Chinese Communist Party)*. Retrieved from https://www.spp.gov.cn/tt/201710/t20171018_202773.shtml

Clark, J., & Wise, N. (2022). *Urban renewal, community and participation*. Springer.

Creighton, J. L. (2005). *The public participation handbook: Making better decisions through citizen involvement*. John Wiley & Sons.

CSUS. (2019). **城市旧居住区综合改造技术标准***(TCSUS 04-2019) (Technical Standard for Comprehensive Renovation of Old Urban Residential Area (T/CSUS 04-2019))*. Beijing

Davidoff, P. (1965). Advocacy and pluralism in planning. *Journal of the American Institute of planners*, *31*(4), 331-338.

Declaration, R. (1992). Rio declaration on environment and development. In.

Dekker, K., & Van Kempen, R. (2008). Places and participation: comparing resident participation in post-WWII neighborhoods in Northwest, Central and Southern Europe. *Journal of Urban Affairs*, *30*(1), 63-86.

Dempsey, N., Bramley, G., Power, S., & Brown, C. (2011). The social dimension of sustainable development: Defining urban social sustainability. *Sustainable development*, *19*(5), 289-300.

Dickens, B. (2013). ENGAGING TO HARNESS COMMUNITY CREATIVITY FOR SUSTAINABLE URBAN PLANNING. Proceedings of the 57th Annual Meeting of the ISSS-2013 HaiPhong, Vietnam,

Enserink, B., & Koppenjan, J. (2007). Public participation in China: sustainable urbanization and governance. *Management of Environmental Quality: An International Journal*.

Etzioni, A. (1964). Modern Organizations Englewood Cliffs. *NJ Prentice-Hall, Inc*, *964*, 58-59.

Fahmi, F. Z., Prawira, M. I., Hudalah, D., & Firman, T. (2016). Leadership and collaborative planning: The case of Surakarta, Indonesia. *Planning Theory*, *15*(3), 294-315.

Freeman, R. E. (1984). *Strategic management : a stakeholder approach*. Pitman.

Fung, A. (2006). Varieties of participation in complex governance. *Public administration review*, *66*, 66-75.

Ginsburg, N. (1999). Putting the social into urban regeneration policy. *Local Economy*, *14*(1), 55-71.

Granovetter, M. S. (1973). The strength of weak ties. *American journal of sociology*, *78*(6), 1360-1380.

Gu, T. (2019). *Research on Residents' Engagement in Governance of Sponge-style Old Community Renewal: Taking Spone Cities in Yangtze River Delta as An Example* Southeast University].

Han, Q., Zheng, B., Cristea, M., Agostini, M., Bélanger, J. J., Gützkow, B., Kreienkamp, J., & Leander, N. P. (2023). Trust in government regarding COVID-19 and its associations with preventive health behaviour and prosocial behaviour during the pandemic: a cross-sectional and longitudinal study. *Psychological Medicine*, *53*(1), 149-159. https://doi.org/10.1017/S0033291721001306

HBHURD. (2021). **关于防范城镇老旧小区改造工作腐败和作风问题的八条措施** *(Eight measures to prevent corruption and problems in the renovation of old residential communities)*. (01104325X/2021-05579). Retrieved from http://zjt.hubei.gov.cn/zfxxgk/zc/gfxwj/202102/t20210207_3340333.shtml

Hemphill, L., Berry, J., & McGreal, S. (2004). An indicator-based approach to measuring sustainable urban regeneration performance: Part 1, conceptual foundations and methodological framework. *Urban Studies*, *41*(4), 725-755.

Hindhede, A. L. (2016). Neighbourhood renewal, participation, and social capital in deprived areas: unintended consequences in a Nordic context. *European Societies*, *18*(5), 535-559. https://doi.org/10.1080/14616696.2016.1226375

Ho, D. C. W., Yau, Y., Poon, S. W., & Liusman, E. (2012). Achieving sustainable urban renewal in Hong Kong: Strategy for dilapidation assessment of high rises. *Journal of Urban Planning and Development*, *138*(2), 153-165.

Hobsbawm, E. (2010). *Age of revolution: 1789-1848*. Hachette UK.

Hu, Y., de Roo, G., & Lu, B. (2013). 'Communicative turn' in Chinese spatial planning? Exploring possibilities in Chinese contexts. *Cities*, *35*, 42-50. https://doi.org/https://doi.org/10.1016/j.cities.2013.05.001

IAP2. *IAP2 Code of Ethics for Public Participation Practitioners*. https://www.iap2.org/page/ethics#:~:text=We%20define%20public%20participation%20as,of%20the%20public%20participation%20process.

Karing'u, K. N., Isaboke, H. N., & Ndirangu, S. N. (2020). Transaction costs and participation in avocado export marketing in Murang'a County, Kenya. *Journal of Agribusiness in Developing and Emerging Economies*.

Kensing, F., & Blomberg, J. (1998). Participatory design: Issues and concerns. *Computer supported cooperative work (CSCW)*, *7*(3), 167-185.

Legaldaily. (2008). 拆除上亿元的建设项目谁说了算(Who's Responsible for Razing Projects Worth Hundreds of Millions?). *Legaldaily*. http://news.sohu.com/20081013/n260002879.shtml

Li, D., Gu, T., & Zhu, S. (2020). Research on the Influencing Factors of Residents' Participation in Old Community Renewal：A Case Study of Nanjing. *Modern Urban Research*(02), 19. https://doi.org/10.3969

Li, D., Zhang, M., Guan, N., Zhang, L., & Gu, T. (2019). Research on the Influencing Factors of Residents' Participation in Old Community Renewal: A Case Study of Nanjing. *Construction Economy*, *40*(3), 93-99. https://doi.org/10.14181/j.cnki.1002-851x.201903093

Li, J., Krishnamurthy, S., Pereira Roders, A., & van Wesemael, P. (2020). Community participation in cultural heritage management: A systematic literature review comparing Chinese and international practices. *Cities*, *96*, 102476. https://doi.org/https://doi.org/10.1016/j.cities.2019.102476

Li, S.-m., Zhu, Y., & Li, L. (2012). Neighborhood type, gatedness, and residential experiences in Chinese cities: A study of Guangzhou. *Urban Geography*, *33*(2), 237-255.

Li, T. H., Ng, S. T., & Skitmore, M. (2012). Conflict or consensus: An investigation of stakeholder concerns during the participation process of major infrastructure and construction projects in Hong Kong. *Habitat International*, *36*(2), 333-342.

Li, W., Feng, T., Timmermans, H. J., Li, Z., Zhang, M., & Li, B. (2020). Analysis of citizens' motivation and participation intention in urban planning. *Cities*, *106*, 102921.

Li, Y., Tao, Y., Qian, Q. K., Mlecnik, E., & Visscher, H. J. (2024). Critical factors for effective resident participation in neighborhood rehabilitation in Wuhan, China: From the perspectives of diverse stakeholders. *Landscape and Urban Planning*, *244*, 105000. https://doi.org/https://doi.org/10.1016/j.landurbplan.2023.105000

Liu, B., Lin, S., Yuan, X., He, S., & Zhang, J. (2023). Nudge citizen participation by framing mobilization information: a survey experiment in China. *Journal of Chinese Governance*, 1-26.

Liu, B., Wang, X., Xia, N., & Ni, W. (2018). Critical success factors for the management of public participation in urban renewal projects: Perspectives from governments and the public in China. *Journal of Urban Planning and Development*, *144*(3), 04018026.

Liu, G., Fu, X., Han, Q., Huang, R., & Zhuang, T. (2021). Research on the collaborative governance of urban regeneration based on a Bayesian network: The case of Chongqing. *Land Use Policy*, *109*, 105640.

Liu, W., Zhang, J., Bluemling, B., Mol, A. P. J., & Wang, C. (2015). Public participation in energy saving retrofitting of residential buildings in China. *Applied Energy*, *147*, 287-296.

Liu, Z., Lin, S., Lu, T., Shen, Y., & Liang, S. (2023). Towards a constructed order of co-governance: Understanding the state–society dynamics of neighbourhood collaborative responses to COVID-19 in urban China. *Urban Studies*, *60*(9), 1730-1749.

Liu, Z., Lin, S., Shen, Y., & Lu, T. (2021). Collaborative neighborhood governance and its effectiveness in community mitigation to COVID-19 pandemic: From the perspective of community workers in six Chinese cities. *Cities*, *116*, 103274. https://doi.org/https://doi.org/10.1016/j.cities.2021.103274

Lowndes, V., Pratchett, L., & Stoker, G. (2001a). Trends in public participation: part 1-local government perspectives. *Public administration*, *79*(1), 205-222.

Lowndes, V., Pratchett, L., & Stoker, G. (2001b). Trends in public participation: Part 2-Citizens' perspectives. *Public administration*, *79*(2), 445-455.

Lu, X., & Lange, E. (2021). Stakeholder Characteristics and Interactions in a Participatory Community Renewal Project: A Case Study of Pun Tong Wuyue Village, Guangzhou. *Landscape Architecture*, *28*(9), 24-30. https://doi.org/10.14085/j.fjyl.2021.09.0024.07

Luck, R. (2018). What is it that makes participation in design participatory design? *Design Studies*, *59*, 1-8.

Luo, J., Wu, H., & Peng, Y. (2020). Research on Community Planning under the Concept of Co-Governance and Sharing - A Case of the Micro-Reconstruction of Shuilu Community in Wuhan. *Urbanism and Architecture*, *17*, 52-59.

MOHURD. (2007). *Guidance on the remediation and renovation of old residential communities (in Chinese)*. Retrieved from http://zjt.fujian.gov.cn/ztzl/fjsbzxzfxxgkzt/zcfg_2347/201406/t20140625_2649797.htm

MOHURD. (2017). *Making full use of the concept of "Co-Creation" to promote the renovation of old communities*. Retrieved from http://www.mohurd.gov.cn/jsbfld/201712/t20171204_234246.html

MOHURD. (2018). **城市居住区规划设计标准** *(Standard for urban residential area planning and design)*. Beijing Retrieved from https://www.mohurd.gov.cn/gongkai/zhengce/zhengcefilelib/201811/20181130_238590.html

MOHURD. (2019). **关于在城乡人居环境建设和整治中开展美好环境与幸福生活共同缔造活动的指导意见** *(Guiding Opinions on Activities for the Co-Creation for a Quality Environment and a Better Life in the Construction and Improvement of the Urban and Rural Habitat Environment)*. Retrieved from https://www.gov.cn/zhengce/zhengceku/2019-09/29/content_5434580.htm

MOHURD. (2021a). *Notification on Clarifying the Requirements for the Rehabilitation of Old Urban Neighborhoods*. Retrieved from https://www.gov.cn/zhengce/zhengceku/2021-12/31/content_5665762.htm

MOHURD. (2021b). **城镇老旧小区改造可复制政策机制清单（第三批）** *(List of replicable policy mechanisms for the renovation of old urban communities (third batch))*. Retrieved from http://www.gov.cn/zhengce/zhengceku/2021-05/28/content_5613694.htm

Mok, K. Y., Shen, G. Q., Yang, R. J., & Li, C. Z. (2017). Investigating key challenges in major public engineering projects by a network-theory based analysis of stakeholder concerns: A case study. *International Journal of Project Management*, *35*(1), 78-94.

NBS. (2002). Statistical Communique of the People's Republic of China on the 2001 National Economic and Social Development. http://english.mofcom.gov.cn/article/topic/bizchina/macroeconomy/200603/20060301776148.shtml

NBS. (2020). Statistical Communique of the People's Republic of China on the 2019 National Economic and Social Development. In N. B. o. S. o. China (Ed.), (pp. 74): China Statistics Press.

NBS. (2023). *China Statistical Yearbook 2023* https://www.stats.gov.cn/sj/ndsj/2023/indexch.htm

Nienhuis, I., Van Dijk, T., & De Roo, G. (2011). Let's collaborate! But who's really collaborating? Individual interests as a leitmotiv for urban renewal and regeneration strategies. *Planning theory & practice*, *12*(1), 95-109.

Nixon, R., Carlton, J. S., & Ma, Z. (2023). Trust and collaboration connect remediation and restoration to community revitalization. *Landscape and Urban Planning*, *233*, 104710. https://doi.org/https://doi.org/10.1016/j.landurbplan.2023.104710

Organic Law of the People's Republic of China on Urban Neighbourhood Committee (Amendment), (2018).

Olander, S., & Landin, A. (2008). A comparative study of factors affecting the external stakeholder management process. *Construction management and economics*, *26*(6), 553-561.

Orchowska, A. (2019). The Human Factor in the Revitalization of the Housing Estates. IOP Conference Series: Materials Science and Engineering,

Pawson, H., Bright, J., Engberg, L., van Bortel, G., McCormack, L., & Sosenko, F. (2012). Resident involvement in social housing in the UK and Europe.

PMI. (2008). A guide to the project management body of knowledge.

Reed, M. S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., Prell, C., Quinn, C. H., & Stringer, L. C. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of environmental management*, *90*(5), 1933-1949.

SC. (2020a). *Guiding Opinions on Comprehensively Promoting Neighborhood Rehabilitation.* (000014349/2020-00061). Retrieved from https://www.gov.cn/zhengce/content/2020-07/20/content_5528320.htm

SC. (2020b). *Policy Briefing of the State Council on July 21, 2020 — Urban renovations to aid economic growth.* Retrieved from http://www.gov.cn/xinwen/2020zccfh/15/wzsl.htm

Serrao-Neumann, S., Harman, B., Leitch, A., & Low Choy, D. (2014). Public engagement and climate adaptation: insights from three local governments in Australia. *Journal of Environmental Planning and Management*, *58*, 1-21. https://doi.org/10.1080/09640568.2014.920306

Shen, T., Yao, X., & Wen, F. (2021). The Urban Regeneration Engine Model: An analytical framework and case study of the renewal of old communities. *Land Use Policy*, *108*, 105571.

Si, D. (2012). **廣州恩寧路騎樓的生與死** (The Life and Death of the Veranda on Enning Road, Guangzhou). *Hong Kong Inmedia.* https://www.inmediahk.net/node/1014614

Smith, R. C., & Iversen, O. S. (2018). Participatory design for sustainable social change. *Design Studies*, *59*, 9-36.

Suschek-Berger, J., & Ornetzeder, M. (2010). Cooperative Refurbishment Inclusion of Occupants and other Stakeholders in Sustainable Refurbishment Processes in Multi-Floor Residential Buildings. *open house international*, *35*(2), 33-38.

Swapan, M. S. H. (2014). Realities of community participation in metropolitan planning in Bangladesh: A comparative study of citizens and planning practitioners' perceptions. *Habitat International*, *43*, 191-197.

Tang, D., Gong, X., & Liu, M. (2022). Residents' behavioral intention to participate in neighborhood micro-renewal based on an extended theory of planned behavior: A case study in Shanghai, China. *Habitat International*, *129*, 102672.

Tao, Y., Chai, Y., Zhang, X., Yang, J., & Kwan, M.-P. (2021). Mobility-based environmental justice: Understanding housing disparity in real-time exposure to air pollution and momentary psychological stress in Beijing, China. *Social Science & Medicine*, *287*, 114372.

Uittenbroek, C. J., Mees, H. L., Hegger, D. L., & Driessen, P. P. (2019). The design of public participation: who participates, when and how? Insights in climate adaptation planning from the Netherlands. *Journal of Environmental Planning and Management*, *62*(14), 2529-2547.

UN-Habitat. (2022). *World Cities Report 2022: Envisaging the Future of Cities.* UN-Habitat. https://unhabitat.org/world-cities-report-2022-envisaging-the-future-of-cities

UN. (2015a). *17 Sustainable Development Goals (SDGs).* https://www.un.org/sustainabledevelopment/sustainable-development-goals/

UN. (2015b). *Transforming Our World: the 2030 Agenda for Sustainable Development.* https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf?_gl=1*g351bo*_ga*MTA4NzU4NjYzOS4xNzI3MjY4MjEx*_ga_TK9BQL5X7Z*MTcyNzI2ODM1MS4xLjEuMTcyNzI2ODM4NS4wLjAuMA..

UNFPA, U. (2007). State of world population 2007: Unleashing the potential of urban growth. *United Nations Population Fund.*

Uslaner, E. M., & Badescu, G. (2004). Legacies and conflicts: The challenges to social capital in the democratic transition. In *Social Capital and the Transition to Democracy* (pp. 233-246). Routledge.

Webler, T., Tuler, S., & Krueger, R. (2001). What is a good public participation process? Five perspectives from the public. *Environmental management*, *27*(3), 435-450.

Wei, Y. (2020). **新万亿蓝海，或掀起住房领域的二次革命（** *New trillion blue ocean, or set off a second revolution in the housing sector* **）**. https://research.ke.com/121/ArticleDetail?id=274

Wilcox, D. (1994). *The guide to effective participation.* Partnership Brighton.

Wu, F. (1996). Changes in the structure of public housing provision in urban China. *Urban Studies*, *33*(9), 1601-1627.

Wulz, F. (1986). The concept of participation. *Design Studies*, *7*(3), 153-162.

Yang, K., & Callahan, K. (2007). Citizen involvement efforts and bureaucratic responsiveness: Participatory values, stakeholder pressures, and administrative practicality. *Public administration review*, *67*(2), 249-264.

Yau, Y. (2010). Sense of community and homeowner participation in housing management
A study of Hong Kong. *Urbani Izziv*, *21*(1), 126-135. http://www.jstor.org/stable/24920518
Yuejin, J. (2004). “群众路线”与当代中国政治发展:内涵、结构与实践 (The "Mass Line” and Political Development in Contemporary China: Connotation, Structure and Practice). *Journal of Hunan University of Science and Technology (Social Science Edition)*, *06*, 5-14. https://chn.oversea.cnki.net/KCMS/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2004&filename=XTGS200406001&uniplatform=OVERSEA&v=52lrJF_6AOsuQuF0Cf8YoUFTDCeeXsCP0zx58GLQX95WhriPxokJoxSXw0VbF0tq
Zhang, Y., & Fang, K. (2004). Is History Repeating Itself?:From Urban Renewal in the United States to Inner-City Redevelopment in China. *Journal of Planning Education and Research*, *23*(3), 286-298. https://doi.org/10.1177/0739456x03261287
Zhao, N., Liu, Y., & Wang, J. (2023). “Co-production” as an alternative in post-political China? Conceptualizing the legitimate power over participation in neighborhood regeneration practices. *Cities*, *141*, 104462.
Zheng, S., Fu, X., Zhuang, T., & Wu, W. (2023). Exit, voice, loyalty, and neglect framework of residents’ responses to urban neighborhood regeneration: The case of Shanghai, China. *Environmental Impact Assessment Review*, *100*, 107087.
Zhu, S., Li, D., & Jiang, Y. (2020). The impacts of relationships between critical barriers on sustainable old residential neighborhood renewal in China. *Habitat International*, *103*, 102232.
Zhuang, T., Qian, Q. K., Visscher, H. J., & Elsinga, M. G. (2017). Stakeholders’ expectations in urban renewal projects in China: A key step towards sustainability. *Sustainability*, *9*(9), 1640.

2 Critical Factors for Effective Resident Participation in Neighborhood Rehabilitation in Wuhan, China

From the Perspectives of Diverse Stakeholders

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ABSTRACT Resident participation is essential for neighborhood rehabilitation. It requires the active involvement of residents and efficient management by organizers. To improve the effectiveness of resident participation, it is necessary to understand the critical success factors (CSFs) underlying it. However, previous research has examined the critical factors from a single-stakeholder perspective, overlooking potential differences in perceptions among stakeholders with diverse roles and rehabilitation experiences. Based on 30 interviews and 255 questionnaires from six stakeholder groups in Wuhan, China, this study explores how the perception of critical factors for effective resident participation varies among local government, community-based

organization, designer, contractor, consulting party, and resident. Thirty-seven factors were identified and compared among the stakeholders. Financial Incentive (for participation organizers) was identified as the most critical factor for effective resident participation, followed by Information Disclosure and Transparency, and Trust. Results from the analysis of variance (ANOVA) show that the six groups differed significantly in the importance of most factors (25/37), especially in Participant Education and Prejudice against the Working Group. Interview results indicate that the COVID-19 pandemic and rehabilitation experience changed stakeholders' perceived importance of some factors. Specifically, extra emphasis could be placed on Trait and Capacity (of the working group) and Participation-assistance Technologies in future RP initiatives. Stakeholders regarded these two factors as more critical as their rehabilitation experience accumulated. By understanding stakeholders' conflicting and changing perceptions of effective resident participation, suggestions were proposed to each stakeholder group to fulfill their distinct participation objectives and improve the overall effectiveness of participation practices.

KEYWORDS resident participation; neighborhood rehabilitation; critical success factor (CSF); stakeholder perception; COVID-19 pandemic; China

2.1 Introduction

After witnessing the gentrification and displacement brought about by brutal demolition and reconstruction, rehabilitation is emerging as a prevalent paradigm for urban renewal efforts. (Jagarajan, Abdullah Mohd Asmoni et al., 2017; Nixon, Carlton et al., 2023). In the process of urban rehabilitation, the residential neighborhood is often considered the most modifiable geographic scale (Pérez, Laprise et al., 2018). Unlike the knock-down-and-rebuild approach for redevelopment, neighborhood rehabilitation is the restoration and enhancement of residential buildings, infrastructure, and communal environment (Ma, Ye et al., 2023). Beyond significantly improving the living environment, neighborhood rehabilitation also supports the continued residence of local inhabitants. This, in turn, contributes to the preservation and transmission of local collective memories and social networks (Ma, Ye et al., 2023; Nixon, Carlton et al., 2023). Notably, with a growing appeal for social sustainability and reconstruction of citizenship, neighborhood rehabilitation is changing from a top-down economic stimulus to a bottom-up social movement, thereby advocating resident participation (Fors, Wiström et al., 2019; Puskás, Abunnasr et al., 2021).

For neighborhood rehabilitation, resident participation (RP) is any process that involves neighborhood residents in problem-identifying, decision-making, and issue-solving to enable public input to be manifested in rehabilitation decisions and outcomes (IAP2). Besides offering economic and environmental benefits, RP also holds significant value in generating lasting and meaningful social impacts. As Beierle and Cayford (2002) concluded, "…involving the public not only frequently produces decisions that are responsive to public values and substantively robust, but it also helps to resolve conflict, build trust, and educate and inform the public about the environment." Given these benefits, countries and regions are incorporating participation initiatives into renewal policies, such as the Housing and Community Development Act in the U.S., New Deals for Communities in the U.K., Big Cities Policy in the Netherlands, and Co-Creation for Better Environment and Well-being in China. These updated policies aim to promote not only economically viable, environmentally sound, but also socially acceptable urban renewal and environmental management.

However, participation practice is not always effective in fulfilling its good intentions. In some cases, it can even exacerbate problems, such as project delays and reversals, inefficient technology operations, diminished trust in government, and heightened social tensions (Petts, 1999; Uittenbroek, Mees et al., 2019). To ensure intended benefits, scholars shift the research focus from 'why' to 'how', exploring the prerequisites and feasible ways for effective RP. In the last two decades, participation studies have investigated the connotation of effective participation (Del Furia and Wallace-Jones, 2000; Rowe, Marsh et al., 2004), the appropriate design of participation (Bobbio, 2019; Uittenbroek, Mees et al., 2019), the influencing factors and impact paths (Brown, Bos et al., 2016; Li, Gu et al., 2020a), and the interactive methods for more accessible participation (Brown, Sanders et al., 2018). Established studies focus on the single stakeholder of government or the public, leaving the impact of other stakeholder groups understudied. For urban renewal, other stakeholders, including community-based organizations, designers, constructors, and consulting parties, may also play a major role (Arnstein, 1969; Fahmi, Prawira et al., 2016; Uittenbroek, Mees et al., 2019). They hold resources, power and competence that enable them to carry out neighborhood rehabilitation and even call off any unnecessary actions, such as resident participation (Freeman, 1984).

Another issue is the criteria for qualifying effective RP in urban renewal (Rowe and Frewer, 2000; Webler, Tuler et al., 2001). This is particularly the case in less developed areas, characterized by a brief renewal history and a nascent interest in resident participation. In China, for example, urban redevelopment and rehabilitation often fail to account for variations in RP objectives and degrees, influenced by specific project characteristics, including size, environmental and social sensitivities (Liu, Wang et al., 2018). Stakeholders, due to their diverse roles and experiences,

may also hold different perspectives on effective RP (Li, Gu et al., 2020a; Liu, Hu et al., 2018). Additionally, since the outbreak of COVID-19, many new challenges appear in evaluating stakeholders' perceptions of critical factors for RP. This relates to changes in underlying power structure across stakeholder groups, such as government levels and the relationships between community workers and residents (Liu, Lin et al., 2021). These power changes may further alter stakeholders' views on factors like transparency, justice, and trust (Han, Zheng et al., 2023; Z. Liu, S. Lin et al., 2023; Tao, Chai et al., 2021), thereby their perceived importance of these factors for effective RP. For these considerations, an updated assessment of stakeholder perspectives in the post-pandemic context is imperative to ensure effective RP in neighborhood rehabilitation.

Against the backdrop of the post-pandemic society, this study aims to identify critical factors for effective RP by comparing the perceptions among six major stakeholder groups. Specifically, the research intends to address the following four questions:

1 What are the objectives for stakeholders to involve residents in neighborhood rehabilitation?

2 What are the critical factors of effective resident participation?

3 How do stakeholder groups differ in their perceptions of critical factors?

4 How does the perception of critical factors evolve as stakeholders become more experienced in neighborhood rehabilitation?

2.2 Literature Review

2.2.1 Effective Resident Participation

Despite challenges in defining effective RP, scholars have been striving to differentiate effective and ineffective practices using various criteria. Arnstein (1969)'s *Ladder of Citizen Participation* stands out in this regard, emphasizing that genuine public participation involves empowering the "have-nots" in influencing planning decisions. Other theoretical criteria, such as transparency, fairness, and equality are frequently used as proxies to gauge effectiveness (Bobbio, 2019; Niitamo, 2021; Tao, Chai et al., 2021). Meanwhile, a significant number of scholars prioritize the practical aspects of RP, delineating its effectiveness based on the process or outcome features. Effective RP often showcases a broad public representation, inclusion of vulnerable minorities, high frequency, diversified measures, early involvement, and cost-efficiency (Liu, Wang et al., 2018; Orchowska, 2019; Uittenbroek, Mees et al., 2019). However, these approaches tend to treat evaluators as homogeneous, overlooking the varying perceptions that stem from their different social roles and experiences. In this regard, Rowe, Marsh et al. (2004) provide a more nuanced perspective: "…*it may have variable success on the different criteria within any one (RP) framework*." This perspective recognizes the differences in subjective perceptions among evaluators. An effective participatory activity is the one that *fulfills the objectives of all involved parties*.

For the effectiveness of RP, it is essential to start with the question of what stakeholders intend to achieve by involving residents. Based on the established observations (Arnstein, 1969; Creighton, 2005; Uittenbroek, Mees et al., 2019) and Glucker, Driessen et al. (2013)'s precise and concise classification, this study identifies eleven objectives of RP (Table 2.1), backed by three underlying rationales: normative, substantive and instrumental rationales. Normative rationale pertains to the ethical, moral, or philosophical underpinnings of participation. Substantive rationale centers on the material objectives directly related to the content and outcomes of RP, whereas instrumental rationale perceives RP as an instrumental tool, emphasizing its practical impacts and efficiency.

TABLE 2.1 RP Objectives (Adapted from Glucker, Driessen et al. (2013))

Objectives	Implications for neighborhood rehabilitation
Normative rationale	
Empowerment	To empower residents to influence rehabilitation decisions and results.
Develop citizenship	To equip residents with citizen skills (e.g., critical thinking, problem-solving, collaboration, teamwork) and the testing ground to exercise the skills.
Neighborhood development	To enhance neighborhood cohesion and residents' attachment, similarity, and interdependence with others, promoting their commitment to neighborhood issues.
Substantive rationale	
Reach consensus	To reach a consensus among residents, and between residents and non-resident stakeholders on whether, what, and how to rehabilitate the neighborhood.
Minimize cost and delay	To avoid unnecessary shutdown and turnover.
Easier implementation	To give residents a sense of ownership of rehabilitation decisions and to motivate their assistance and enthusiasm in implementation.
Reasoning	To make residents acknowledge the reasons behind decisions and plans.
Leverage local information and knowledge	To harvest residents' 1) environmentally and socially relevant information and knowledge; and 2) empirical and value-based knowledge specific to the neighborhood.
Identify expectation and concern	To make the work group sensitive to residents' requirements and predict residents' behaviors.
Instrumental rationale	
Generate credibility and legitimacy	To legitimate the decision-making process and decision, build up the credibility of non-resident stakeholders and rehabilitation projects among the residents.
Avoid confrontation and conflict	To circular residents' interests and concerns for conflict prevention, identification, reduction, and resolution.

As Rowe, Marsh et al. (2004) point out, stakeholders may have divergent objectives for a single RP approach, leading to varying perceptions of its effectiveness. For instance, during neighborhood rehabilitation, local governments often collaborate with consultants to hold neighborhood meetings with residents to brainstorm improvement strategies, such as the renovation plan for the parking shed. Governments aim to resolve resident conflicts and enhance credibility, while consultants focus on equipping residents with design and legal knowledge for effective presentation of ideas and negotiation. Although the civic skills of residents are improved, these meetings may not address the interests of tenants and violators of unauthorized building work (UBWs), potentially exacerbating conflicts between them and homeowners and eroding government credibility. This leads to a differing image of RP effectiveness: Consultants might see the neighborhood meeting as a success, whereas government officials may perceive it as less effective due to increased confrontations.

Additionally, specific approaches for RP are relevant to the objectives set by stakeholders. For instance, in the flood management project in Kockengen, Netherlands, the government held workshops for collaborative brainstorming

between residents and experts (leverage local knowledge), with updates communicated via newspapers and a site office established to ease tensions (avoid conflict) (Uittenbroek, Mees et al., 2019). In Luo, Wu et al. (2020)'s case of Wuhan, China, the RP activities were designed and organized by a local NGO. They applied roadshows, surveys, and workshops to acknowledge residents' expectations, followed by thematic training sessions for child volunteers (develop citizenship). Interestingly, in both cases of Kockengen and Wuhan, similar RP strategies produced divergent objectives and outcomes among stakeholders. Kockengen's residents perceived the RP process as ineffective due to a lack of integration of their feedback into final designs. In contrast, Wuhan's approach enhanced residents' planning knowledge and resolved conflicts between homeowners and tenants, thereby resulting in more satisfying RP experiences.

2.2.2 Influencing Factors for Effective Resident Participation

According to Rockart (1979), critical success factors (CSFs) for effective RP are *the few key areas in which results, if they are satisfactory, will ensure effective RP*. Compared to new construction, the renovation project, especially neighborhood rehabilitation, is one of the riskiest, most complex, and uncertain projects to manage. This arises from the involvement of residents with diverse and often conflicting interests, making it challenging to strike a balance between them and effectively manage the project. Consequently, identifying CSFs is crucial for stakeholders. Recent studies list CSFs to improve public participation in various construction-related fields, including community settlement (Serrao-Neumann, Harman et al., 2015), heritage rehabilitation (Benedjma and Mahimoud, 2020), sustainable energy projects (Liu, Hu et al., 2018), and urban redevelopment (Liu, Wang et al., 2018). For urban redevelopment, residents are involved in determining compensation plans, which requires focused but singular participation. However, since residents are the end-users of neighborhood rehabilitation, their participation is anticipated throughout the process, necessitating consistent and ongoing involvement. The specificity of neighborhood rehabilitation requires examining CSFs for a more extended period after incorporating the views of diverse stakeholders involved in the rehabilitation project.

Moreover, the implementation of RP is specific to the region and neighborhood with unique contexts and traditions. Uslaner and Badescu (2004)'s comparative analysis of Western and Eastern Europe reveals how the form of government and its stability can influence citizen participation. Citizens in countries with a longstanding democratic tradition often exhibit greater proactivity in public affairs (Uslaner and

Badescu, 2004). The political environment also shapes local social customs and culture. A case in point is that Chinese citizens are less willing to participate than their Western counterparts, given the influence of Confucianism, top-down policies, and the legacy of a planned economy (Li, Ng et al., 2012b). Residents from neighborhoods with close social networks and participation traditions are more active in neighborhood affairs (Pradhananga and Davenport, 2017). Notably, the prolonged government-led lockdowns during the COVID-19 pandemic have prompted shifts in political strategies, administrative structures, and societal norms in Chinese cities, which could significantly impact the implementation of RP and neighborhood rehabilitation. In light of these studies, three contextual factors are identified as crucial for effective RP: *Policy environment*, *Administrative environment*, and *Socio-cultural environment*.

Besides the context-related factors, cognitive factors can also shape residents' participation decisions (Dekker and Van Kempen, 2008; Plummer and Taylor, 2013). Established studies identify four cognitive factors: 1) *Previous experience*, refers to residents' perceptions built from their prior participation experience. Pleasant past experiences can motivate residents to stay involved (Brown, Bos et al., 2016); 2) *Practical constraints*, refer to the hassles the residents perceive for participation. Lack of money, space, and time may hesitate potential participants (Aitken, 2017; Fors, Wiström et al., 2019); 3) *Perceived benefits*, refer to foreseeable advantages from RP, including increased income, comfort, and convenience, acting as a driver for RP (Aitken, 2017); and 4) *Consistency with self-identity*, refers to the extent to which the rehabilitation measure is consistent with residents' wishes, identity and personal values. As the consistency increases, residents are more likely to engage in participation (Fors, Wiström et al., 2019).

Equally important as the residents, the organizers bear significant responsibility for effective RP. Organizer-related factors are collectively referred to as Leadership and team organization, encompassing three aspects: 1) *Trait and capacity*. Organizers who possess traits like charisma, accountability, and vitality can build deep emotional connections, thus establishing leadership with the residents (Fahmi, Prawira et al., 2016; Purdue, 2001). Especially under the circumstance of an emergency (e.g., the COVID-19 pandemic), organizers with leadership are more effective in mobilizing and convincing residents to participate (e.g., cooperation with the lockdown policy) (Blofield, Hoffmann et al., 2020). Capacity refers to the organizer's expertise and skills, including goal-setting, problem-solving, resource-building, and networking. 2) *Attitude*. Friendly, helpful, and courteous attitudes can alleviate residents' doubts about participation (Brown, Bos et al., 2016). 3) *Credibility* is the general image of organizers. Low credibility can expel certain social groups. For example, Lowndes, Pratchett et al. (2001b)'s policy census in the U.K. shows that the diminished credibility of local governments led to the deliberate disengagement of single mothers in the renewal programmes.

Building upon these studies, we come to an initial list of influencing factors for effective RP (Table 2.2), including: A. External environment; B. Project benefit and impact; C. Participation scheme and approach; D. Resource and support; E. Information and communication; F. Power distribution and relationship; G. Leadership and team organization; H. Local perceptions and expectation.

TABLE 2.2 Influencing factors for effective RP in neighborhood rehabilitation

Component	Cd.	Factors	Description	Source
A. External environment	A1	Policy environment	Laws, regulations and policy mechanisms that are currently in force.	(Uslaner and Badescu, 2004; Webler, Tuler et al., 2001)
	A2	Administration environment	Institutional structure and bureaucratic procedures that are currently in force.	(Magigi and Majani, 2006; Webler and Tuler, 2006)
	A3	Socio-cultural environment	Beliefs, norms, customs and values that are prevailing in the area.	(Fors, Wiström et al., 2019; Li, Ng et al., 2012b; Pradhananga and Davenport, 2017)
B. Project benefit and impact	B1	Appearance change	Changes in the appearance of residential buildings and neighborhood public spaces.	(Brown, Bos et al., 2016; Liu, Hu et al., 2018)
	B2	Economic impact	Job creation, new revenue, changes in real estate value, etc.	(Liu, Hu et al., 2018)
	B3	Environmental and ecology impact	Influence on safety, health, natural environment, and ecosystems.	(Brown, Bos et al., 2016)
	B4	Socio-cultural impact	Influence on local beliefs, norms, customs and values.	(Aitken, 2017)
C. Participation scheme and approach	C1	Goal setting	Clearly defined and agreed RP goals.	(Dickens, 2013)
	C2	Task allocation	Roles and tasks are allocated based on residents' characteristics.	(Liu, Wang et al., 2018)
	C3	Participation timing	Earlier involvement of residents and continuity of RP.	(Orchowska, 2019; Uittenbroek, Mees et al., 2019)
	C4	Participation approach	Diverse, specific and appropriate RP methods are used, e.g., polling, survey, exhibition, briefing, workshop, visit demonstration project.	(Uittenbroek, Mees et al., 2019)
	C5	Participant representativeness	Participants cover a wide range of traditional, marginalized and disadvantaged residents.	(Liu, Wang et al., 2018)

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TABLE 2.2 Influencing factors for effective RP in neighborhood rehabilitation

Component	Cd.	Factors	Description	Source
D. Resource and support	D1	Financial incentives	Financial support for organizing RP.	(Dekker and Van Kempen, 2008)
	D2	Rewards and punishments	Rewards, compensations or even punishments to motivate residents to participate.	(Geidne, Fröding et al., 2012)
	D3	Equipment and infrastructure	Venues, equipment, materials necessary for RP.	(Liu, Wang et al., 2018)
	D4	Human inputs	Staffing, knowledge and services from external experts attributed to diverse disciplines and skillsets.	(Benedjma and Mahimoud, 2020; Boyle and Michell, 2020)
	D5	Participation-assistance technologies	Technologies and services developed for easier and better RP, e.g., more accessible smartphone applications, VR, and AR.	(Brown, Sanders et al., 2018; Li, Feng et al., 2020; Urbanowicz and Nyka, 2016)
	D6	Participant education	Education and training for raising RP awareness, knowledge, and skills among residents.	(Dekker and Van Kempen, 2008)
	D7	Time allowance	Time set aside specifically for RP.	(Webler, Tuler et al., 2001)
E. Information and communication	E1	Information disclosure and transparency	Complete and transparent disclosure of information, and timely responses to resident inquiries.	(Bobbio, 2019; Orchowska, 2019)
	E2	Intra-group communication	Stable and honest communication between actors working in the same organization.	(Boyle and Michell, 2020)
	E3	Inter-group communication	Stable and honest communication between actors working for different organizations.	(Webler and Tuler, 2006; Webler, Tuler et al., 2001)
	E4	Evaluation criteria	Criteria established for evaluating RP.	(Serrao-Neumann, Harman et al., 2015)
F. Power distribution and relationship	F1	Trust	Degree of reciprocal commitment and trust between residents and other stakeholders.	(Boyle and Michell, 2020; Dickens, 2013)
	F2	Empowerment	The level of power devolved to the residents to affect rehabilitation.	(Arnstein, 1969)
	F3	Equity and justice	Residents in different conditions and from various backgrounds have equal rights in RP.	(Dickens, 2013; Niitamo, 2021; Tao, Chai et al., 2021)
G. Leadership and team organization	G1	Traits and capacity	Personal traits and capacity to successfully carry out RP.	(Blofield, Hoffmann et al., 2020; Fahmi, Prawira et al., 2016; Purdue, 2001)
	G2	Attitude	Recognize and embrace resident input and the value of RP.	(Niitamo, 2021; Uittenbroek, Mees et al., 2019)
	G3	Credibility	General perception and image of stakeholders.	(Aitken, 2017; Serrao-Neumann, Harman et al., 2015)

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TABLE 2.2 Influencing factors for effective RP in neighborhood rehabilitation

Component	Cd.	Factors	Description	Source
H. Local perceptions and expectations	H1	Prejudice against the working group	Residents' grievances or unpleasant experiences against certain members of stakeholders.	Interview with CP 1
	H2	Previous experience	Perceptions residents built from their previous experience in RP, e.g., hard/easy, laboring/effortless.	(Dickens, 2013; Uittenbroek, Mees et al., 2019)
	H3	Perceived constraints	Practical constraints perceived by the residents, e.g., lack of money, space and time.	(Dekker and Van Kempen, 2008; Plummer and Taylor, 2013)
	H4	Perceived benefits	Personal benefits from RP are perceived by the residents, e.g., monetary gain, convenience, comfort, and safety.	(Benedjma and Mahimoud, 2020)
	H5	Consistency with self-identity	The extent to which the rehabilitation is consistent with residents' wishes, identity, and personal values.	(Aitken, 2017; Brown, Bos et al., 2016)
	H6	Participation-related knowledge and skills	Resident's skills and knowledge about participation, e.g., articulation, negotiation and confidence.	(Plummer and Taylor, 2013; Serrao-Neumann, Harman et al., 2015)
	H7	Community attachment	The extent to which residents are socially and mentally connected to the neighborhood.	(Benedjma and Mahimoud, 2020; Dekker and Van Kempen, 2008)
	H8	Resident characteristics	Attributes of residents, e.g., gender, age, education level, type of residence, occupation, etc.	(Brown, Bos et al., 2016; Fahmi, Prawira et al., 2016)

2.2.3 Neighborhood Rehabilitation and Resident Participation in China

The term neighborhood (*Juzhuqu*) in China is *a district with clear geographical boundaries where the primary purpose of land use is housing*. Those constructed before 2000 are often referred to as old neighborhoods (*Laojiuxiaoqu*) and are the focus of recent rehabilitation initiatives (SC, 2020a). Given extensive socio-political benefits, local governments remain the initiator and the primary financier of neighborhood rehabilitation. Government-initiated neighborhood rehabilitation mainly aims to: 1) restore building structures and façades; 2) improve the communal environment and facilities; and 3) boost resident participation and grassroots governance (Tang, Gong et al., 2022). The *Symposium on the Pilot Programme of Old Neighborhood Rehabilitation* in 2017 marked the inception of the RP concept

in China's planning domain, which is now articulated as Co-Creation (*Gongtong Dizao*) in policy frameworks. To achieve the Co-Creation, established policies outline the responsibilities and roles of involved parties. Besides residents, there are five stakeholder groups for RP in China (SC, 2020a): Local government, Community-based organization, Planning and design professional, Implementation and construction unit, and Consulting party.

Residents play a tripartite role in neighborhood rehabilitation, that is, 1) investment, 2) decision-making, and 3) reflection. Participation via investment entails residents sharing costs, dedicating time and effort to monitoring construction activities, demolishing UBWs and maintenance (Li, Krishnamurthy et al., 2020). Like practices in various countries, decision-making is the crux of RP in China's neighborhood rehabilitation. Here, residents have a say in determining: 1) the need for rehabilitation, 2) rehabilitation scope and content, 3) design plan and technology, 4) order and content of construction, and 5) management mode and responsible entities (SC, 2020a). Reflection participation encourages residents to provide feedback on stakeholders, decision-making process, operational progression, and outcomes.

Local governments in China are structured into three tiers: Municipality, District governments, and Sub-district administrative offices. The municipality is tasked with formulating rehabilitation regulations and technical standards, and devising regional rehabilitation strategies (SC, 2020a). For neighborhood rehabilitation, the district government holds a higher decision-making power than the municipality and sub-district administrations (Zhuang, Qian et al., 2019). They oversee the rehabilitation process and determine the initiation of the rehabilitation programme. The district government is also in charge of securing and allocating funds, approving projects, and selecting and vetting stakeholders, such as designers, constructors, and consultants (Lu and Lange, 2021). Sub-district administrative offices focus on implementation, offering training and oversight to community-based organizations (Zhao, Liu et al., 2023). Despite having less decision-making power compared to municipal and district governments in rehabilitation, these offices are responsible for allocating funds, staff, and venues for RP implementation, making them highly relevant to the practical aspects of RP initiatives (Li, Krishnamurthy et al., 2020; Z. Liu, S. Lin et al., 2023).

In China, community-based organizations primarily consist of Neighborhood Committees (*Juweihui*) and Homeowner Committees (*Yeweihui*). These entities function as mass autonomous organizations, facilitating residents' self-management, self-education, and self-service. Unlike the Homeowner Committee, which exclusively consists of neighborhood homeowners, the lead and members of the Neighborhood

Committee are often non-local residents. They are sponsored and empowered by local government (Z. Liu, S. Lin et al., 2023). In neighborhood rehabilitation, the Homeowner Committee is responsible for collecting and harmonizing views within the residents, as well as communicating and negotiating such opinions with the Neighborhood Committee (Lu and Lange, 2021). The neighborhood committee, on the other hand, acts as the information broker, communicating the latest policies to residents and making the residents heard to the outside world (Li, Krishnamurthy et al., 2020; Z. Liu, S. Lin et al., 2023). It also has the task of coordinating and organizing RP to defend residents' interests and power against external stakeholders (Wu, Jia et al., 2019; Zhao, Liu et al., 2023; Zhuang, Qian et al., 2019). Their commonly used RP approaches include information campaigns, neighborhood meetings, thematic gatherings, and private dialogues with residents (Z. Liu, S. Lin et al., 2023).

Designers, implementers, and constructors are responsible for the design and construction processes of neighborhood rehabilitation. Sometimes, they act as surveyors for gathering residents' demands and concerns through door-to-door campaigns, interviews, and questionnaire surveys (Luo, Wu et al., 2020; Zhu, 2023). Consulting parties, including research institutes, NGOs, and media, provide expert insights to facilitate a smooth rehabilitation process or impactful RP. Led by the consulting parties, a variety of participatory models are experimented in China, such as collaborative workshop in Guangzhou (Li, Zhang et al., 2020), co-governance in Wuhan (Luo, Wu et al., 2020), and participatory planning in Xiamen (Hui, Chen et al., 2021). Consultants in these cities often assume multifaceted roles, such as aggregating resources and information, creating participation platforms, recruiting and training participants, suggesting solutions, and even engaging in policymaking (Li, Krishnamurthy et al., 2020; Li, Zhang et al., 2020; Zhao, Liu et al., 2023).

2.3 Methodology

This study followed an iterative analysis process where prior research questions and findings shaped the approach to the subsequent research question. Subsequently, results were synthesized narratively to identify the critical factors that influence effective RP. This provided insights into the significance of these factors for each stakeholder group and explored the reasons for consensus and disagreement among stakeholder groups. As FIG. 2.1 illustrates, the research began with semi-structured interviews to validate the objective list and the initial factor list in the context of urban China (Research Question, RQ 1). Then, the pilot interview findings directed the design of questionnaire surveys and interviews of stakeholder groups. This step investigated stakeholders' RP objectives and the importance level of influencing factors for effective RP (RQ 2). Third, the analysis of mixed data was conducted to rank the factors and narrative of the similarities and discrepancies in stakeholders' perceptions of critical factors (RQs 3 and 4). Finally, suggestions were proposed to each group based on the results from the four research questions and groups' specific role in neighborhood rehabilitation.

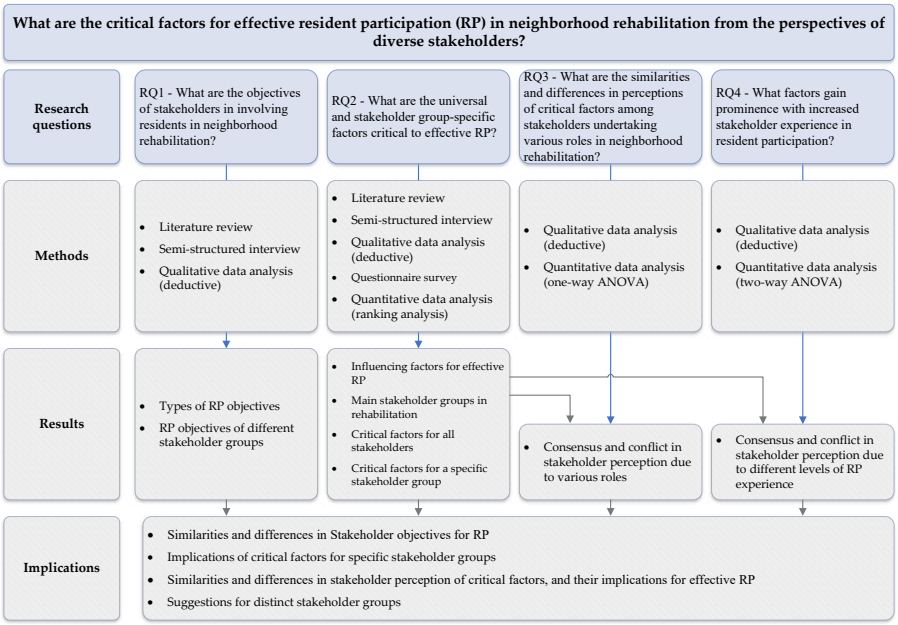

FIG. 2.1 Overview of the Research Process

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2.3.1 Case Selection

This study selected Wuhan, China, as the case area. The abundance of rehabilitation projects and the rich diversity in participation practices provide authors with a wealth of cases for detailed examination. More importantly, Wuhan represents an intriguing case to study resident participation considering its relevance to other cities in developing countries as well as developed cities and regions.

In China, while first-tier cities exert significant domestic and global influence, second-tier cities like Wuhan often face more significant challenges with a larger volume of aging neighborhoods and a more extensive urban population. Despite this, current research on urban renewal and resident participation largely centers on first-tier cities, leaving the experiences of less-developed areas underrepresented. Given the distinct economic, administrative, and social contexts of these regions, insights from developed cities may not be directly applicable. Wuhan, as a typical second-tier city, is crucial for providing a more representative understanding of neighborhood rehabilitation and resident participation in China's developing areas. The findings of this thesis indicates that insights from Wuhan calibrate and contextualize findings from developed regions and brings lessons for other developing cities navigating similar challenges.

Besides, local governments in second-tier cities like Wuhan typically grapple with financial constraints. The COVID-19 pandemic further exacerbates these challenges for Wuhan, leading to marked financial pressures stemming from central government budget reductions, decreased local fiscal revenues, personnel shortfalls, and heightened service demands. Such fiscal austerity mirrors the trends witnessed in Western countries following the 2008 economic crisis. Given this parallel fiscal context, observations from Wuhan offer a nuanced understanding of Western countries navigating persistent fiscal challenges.

2.3.2 Study Area

In 2008, Wuhan first introduced public participation through a public poll on the renewal of Hongshan Square. Although the public voiced their preference for renovation, the government proceeded with its initial redevelopment plan. This "pseudo-participation" resulted in a trust crisis for the municipality and public skepticism toward participation (Legaldaily, 2008). Recognizing the need for enhanced resident engagement in urban development, Wuhan Municipal Bureau of Natural Resources and Planning (WMBNRP), in collaboration with Wuhan Urban

Planning Research Institute, introduced the Public Planning Wuhan platform (https://www.wpdi.cn/project-5-i_11322.htm) in 2015. This digital platform offers up-to-date planning information to citizens, encouraging active public participation through avenues like plan voting and incentivized surveys. From 2017 to 2019, Wuhan revisited its RP strategies within the context of neighborhood micro-renewal. Gleaning insights from this pilot, the WMBNRP partnered with local design entities and research institutes and unveiled the *Guidelines for the Micro Reconstruction Planning of Communities in Wuhan*, proposing recommendations on the scope, measures, and degree of RP (WBNRP, 2021).

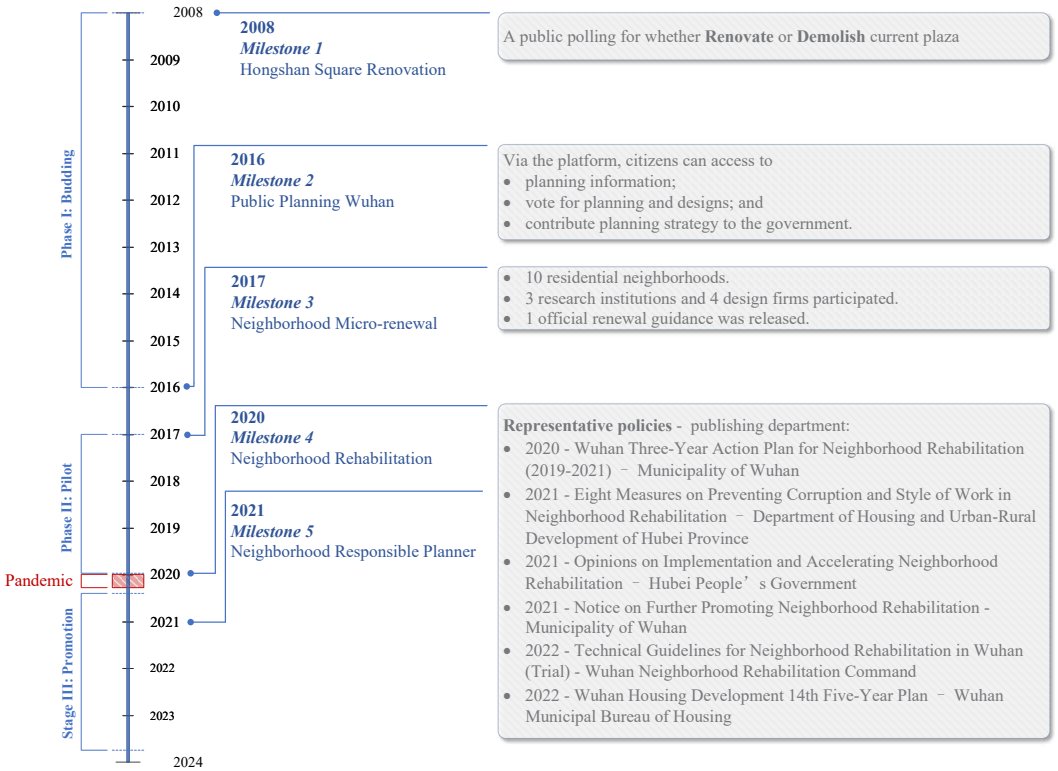

FIG. 2.2 The Timeline Roadmap of Resident Participation in Wuhan's Urban Renewal

In June 2020, Wuhan formulated the standardized procedure for neighborhood rehabilitation programme. RP therefore became an integral and institutionalized aspect of Wuhan's rehabilitation initiatives. In this procedure, a questionnaire survey among residents of aging neighborhoods is a prerequisite before launching rehabilitation

TOC

projects (MW, 2020). Eligibility for rehabilitation requires a minimum resident participation rate of 80% and two-thirds of agreement from participated residents (HBHURD, 2018). The rehabilitation and design plans must be publicly displayed for a minimum of five days, allowing for public inquiries and potential modifications. Additionally, these plans can only proceed to the construction phase if they receive approval from a specified percentage of the resident community (HBHURD, 2018). Participation and approval of resident representatives are essential for project acceptance. Their satisfaction with RP is a crucial metric of the program evaluation (HBHURD, 2018; MW, 2020). In 2021, the WMBNRP introduced the *Neighborhood Responsible Planner* programme, encouraging volunteer engagement in grassroots administrative support. Residents can also participate via informal channels, such as contacting the *Mayor's Hotline* or sharing their RP experiences on social media. FIG. 2.2 overviews the timeline for RP and the associated policies in Wuhan.

2.3.3 Data Collection

Semi-structured Interview

Interviews with different stakeholders were conducted to tailor the initial factor list to the context of urban China. Government, community-based organization, and constructor interviewees were reached through publicly accessible project information (such as phone numbers, email addresses, organization names, and contact personnel). Designers and consultants were accessed via snowball sampling through the key informants. Residents were randomly approached in the rehabilitated neighborhoods. Participants were included in the analysis if they 1) aligned with one of the identified six stakeholder groups; 2) possessed experience in neighborhood rehabilitation; and 3) interacted with residents directly in neighborhood rehabilitation. Consequently, 30 interviewees were recruited, including 6 government officials, 4 community-based organization directors, 4 designers, 4 construction professionals, 5 consultant representatives, and 7 residents. Appendix A details the interviewee profiles.

During the interviews, participants were prompted to: 1) name influencing factors for effective RP; 2) evaluate and justify the significance of each factor; and 3) elucidate factors using examples. Between April 15 and June 3, 2022, one of the authors conducted face-to-face interviews, each of which lasted between 45 to 60 minutes. From the interview with a local university professor (consulting party, CP 1), a new factor not included in the original factor list emerged. It was labeled *Prejudice against the working group* (H1), stemming from residents' adverse personal

experiences with team members. Consequently, a finalized list of 37 influential factors was compiled. The interview protocol was reviewed and approved by the Human Research Ethics Committee (HERC) of the authors' institution. All interviews were recorded, noted, and transcribed with the interviewees' agreement.

Questionnaire survey

Based on the factor list aggregated from semi-structured interviews, this study designed the questionnaire with two sections. The first section was for non-resident stakeholders, investigating their roles and working experience in neighborhood rehabilitation, and their top three objectives for RP. The second section was for all six stakeholder groups, incorporating 37 items in the final factor list. These survey items were measured on a 5-point Likert scale, ranging from 1 (extremely unimportant) to 5 (extremely important). Four trap questions were strategically interspersed throughout the questionnaire to discern respondents who might answer carelessly. Besides, the questionnaire questions were reviewed and refined by ten experts specialized in neighborhood rehabilitation and RP, and later received an endorsement from the HERC.

The questionnaires were sent in print and digital versions based on the stakeholder groups. For residents, paper questionnaires were randomly handed out in the rehabilitated neighborhoods in the following hours when residents often spend time in the neighborhoods: weekdays from 5 pm to 9 pm, and weekends from 9 am to 9 pm. The digital questionnaires were disseminated with the help of Neighborhood Committees. For other stakeholders, the print and digital questionnaires were first delivered to the key informants and then circulated within their respective networks. The platform for filling out the digital questionnaires is *Wenjuan* (https://www.wenjuan.com/), a widely used anonymous questionnaire platform in China.

Between June 24 and August 15, 2022, 144 paper-based and 263 digital questionnaires were filled and returned. Due to inadequate completion time (under 5 minutes) or incorrect answers to the trap questions, 152 questionnaires were discarded. This resulted in 255 valid questionnaires used in this study (validity rate 62.7%, 255/407).

As Table 2.3 shows, there was a roughly even distribution of the six stakeholder groups in the research sample: 33 respondents originated from government officials, 35 from community-based organizations, 48 from planners/designers, 52 from implementers/constructors, 33 from consultants, and 54 from residents. Besides, most respondents had 1-3 years of rehabilitation experience. This result aligns with the progress of neighborhood rehabilitation practice in Wuhan,

where all government-led neighborhood programs commenced in June 2020. As a result, the studied respondents did not have a long-term rehabilitation experience during the data collection in June-August 2022. Even so, about 58.9% (99/168) had participated in 2-5 rehabilitation projects, indicating their active involvement. Notably, 93.9% (31/33) of government respondents had less than three years of rehabilitation experience, while 48.5% (16/33) took part in over 20 projects, reflecting their supervisory role in neighborhood rehabilitation.

TABLE 2.3 Sample characteristics

		Local government	Community-based organization	Planning and design professional	Implementation and construction unit	Consulting party	Neighborhood resident
Years in neighborhood rehabilitation	<1	14	7	11	8	8	-
	1-3	17	21	22	36	23	-
	4-6	2	3	10	7	1	-
	7-9	0	2	2	0	0	-
	>10	0	2	3	1	1	-
Number of rehabilitation projects	1	6	17	10	11	8	-
	2-5	6	14	30	31	24	-
	6-10	3	4	3	8	0	-
	11-15	2	0	0	0	0	-
	>20	16	0	5	2	1	-
Total	Frequency	33	35	48	52	33	54

Note: Residents' work experience was not collected.

2.4 Results

2.4.1 Objectives for Resident Participation

As FIG. 2.3 shows, in general, stakeholders involved residents in reaching a consensus, identifying residents' needs and concerns, and generating the legitimacy and credibility of the decisions. Few stakeholder groups considered RP a chance to increase residents' influence over the decisions or equip residents with citizen skills. Specifically, local government, community-based organizations, and consulting parties were concerned about consensus reaching the most:v

'…elders in our neighborhood asked for a place to hang out. My first thought was to set up a hearing, to see whether other residents agree on it'. (community-based organization, CO 1, interview, April 21, 2022)

As for designers and contractors, their primary goals were to acknowledge residents' needs and concerns and to smooth implementation, respectively. This is reasonable considering their primary roles in neighborhood rehabilitation: developing qualified designs and completing construction within the given timeframe.

'…we sweet-talked the residents and gave them little gifts, just wishing they could let us do the construction… and it did work! With the residents' assistance, we cut the roadwork by a month'. (implementation and construction unit, DC 3, interview, May 15, 2022)

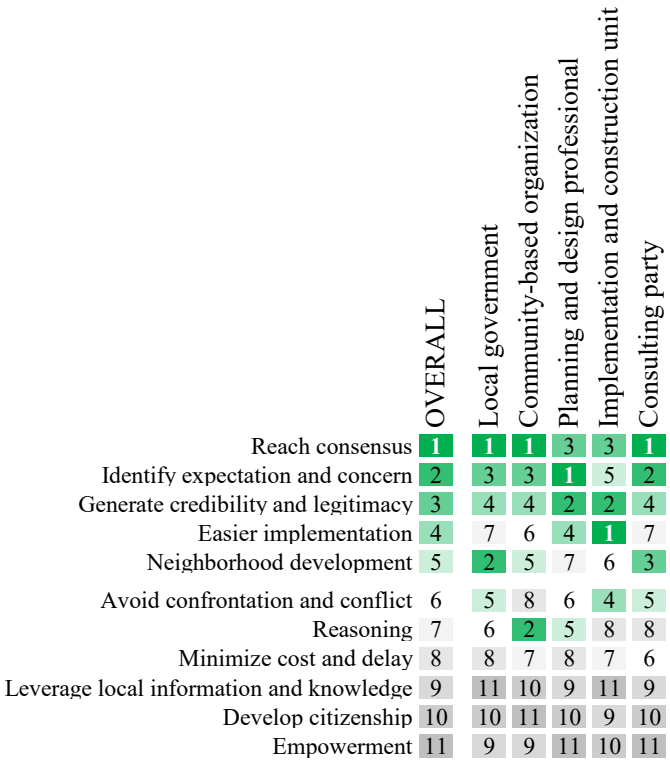

FIG. 2.3 Ranking of RP Objectives

2.4.2 Critical Factors for Effective Resident Participation

To identify the critical factors, the mean scores of each influencing factor were calculated and ranked as a whole, and by each stakeholder group. The left segment of FIG. 2.4 presents the general ranking, and the right illustrates the ranking specific to each stakeholder group. For data results, please refer to Appendix A.

		OVERALL	Local government	Community-based organization	Planning and design professional	Implementation and construction unit	Consulting party	Neighborhood resident
D1	Financial incentives	1	5	1	1	6	12	3
E1	Information disclosure and transparency	2	1	5	7	2	5	10
F1	Trust	3	9	6	4	1	9	14
D2	Rewards and punishments	4	8	18	2	5	1	8
G3	Credibility of the working team	5	12	11	6	9	4	4
E2	Intra-group communication	6	3	4	8	10	16	19
G2	Attitude of the working team	7	11	17	5	14	10	2
G1	Traits and ability of the working team	8	14	8	11	13	3	6
B1	Appearance change	9	2	25	19	7	15	22
E3	Inter-group communication	10	4	3	12	11	17	26
B3	Environmental and ecology impact	11	6	15	13	8	29	16
F3	Equity and justice	12	26	7	17	26	7	1
H7	Community attachment	13	16	9	25	16	6	11
H4	Perceived benefits from participation	14	10	14	3	4	2	35
F2	Empowerment	15	27	16	17	17	11	27
D4	Human inputs	16	30	22	15	21	20	12
D3	Equipment and infrastructure	17	15	2	13	32	18	13
B2	Economic impact	18	21	34	10	20	28	20
B4	Socio-cultural impact	19	19	13	22	23	32	24
D7	Time allowance	20	33	9	24	29	12	15
C1	Goal setting	21	12	33	28	25	24	7
C5	Representation of the participant	22	25	31	31	12	34	17
E4	Evaluation criteria	23	22	19	22	28	30	18
C4	Participation approach	24	24	28	33	27	8	25
H6	Participation-related knowledge and skills	25	28	23	32	24	33	22
H2	Previous experience	26	7	32	25	22	21	31
H8	Characteristics of the resident	27	18	20	21	19	30	32
H5	Consistency with resident's self-identity	28	31	26	34	18	26	30
H3	Perceived practical constraints	29	17	20	9	15	18	36
H1	Prejudice against the working team	30	28	28	25	3	12	37
A1	Policy environment	31	23	27	20	33	23	29
D5	Participation-assistance technologies	32	37	12	35	30	35	9
D6	Participant education	33	34	23	37	35	25	5
C3	Timing to participate	34	19	34	30	36	22	28
C2	Task allocation	35	36	36	36	34	36	21
A2	Administration arrangement	36	32	30	15	31	37	34
A3	Socio-cultural environment	37	35	37	29	37	26	33

FIG. 2.4 Rankings of Influencing Factors for Effective RP in Neighborhood Rehabilitation

General Ranking

The survey results indicate that respondents regarded all 37 identified factors as significant, the lowest of which had a mean score of 3.13 (where 3 signifies neutral importance). Notably, five factors are critically important for efficient RP in neighborhood rehabilitation:

1. *Financial incentive* (mean score = 4.13; 45.1% of the respondents rated it 5-extremely important)
2. *nformation disclosure and transparency* (4.11; 41.2%)
3. *Trust* (4.10; 39.6%)
4. *Rewards and punishments* (4.06; 41.2%)
5. *Credibility of the working group* (4.02; 31.0%)

Local government

Government respondents regarded nearly all factors as significant (≥3.21), except for D5 (*participant-assistance technology*, 2.85). E1 (*Information disclosure and transparency*, 4.09) was rated as the most influential, followed by B1 (*Appearance change*, 4.06) and E2 (*Intra-group communication*, 3.94). This accords with the government practices in setting up special governmental sections for public participation. These sections take charge of disseminating RP information by multiple channels:

'…every level of government has established its specialized department. Residents can visit in person, through mail, and phone calls. We have also set up official accounts on social platforms like WeChat, Weibo, and TikTok, where we post the latest policies, collect residents' feedback, and respond to their comments.' (local government, LG 2, interview, June 3, 2022)

However, government interviewees also expressed their concerns about the communication cost between various governmental departments and the hierarchical levels within the administrative system (E2):

'… for this sub-district office, the person in charge of resident affairs keeps changing. They have three different heads this year alone, which is really annoying. Every time there is a change, I have to go over the district's requirements all over again.' (LG 4, interview, May 10, 2022)

Community-based Organization

Community workers regarded all 37 factors as significant (≥3.29). The three most important factors were D1 (*Financial incentive*, 4.31), D3 (*Equipment and infrastructure*, 4.17), and E3 (*Inter-group communication*, 4.14). For D1, 82.9% of respondents assigned a score exceeding 4, and 80.0% rated a score of 4 or 5 to D3. This underscores the influence of monetary and material resources on effective RP:

'…we only had the 'open market' once and ran out of money. We had no venues to host it either. After the construction started, neighborhood open spaces were all covered with building materials. It is like when you are renovating your house - it is a total mess, with no space to entertain guests at all!' (CO 2, interview, April 22, 2022)

Additionally, the COVID-19 pandemic made the local government more cautious in allocating administrative funds because of their tighter fiscal budgets:

'…after COVID-19, the government's finances are not as abundant as before… every single penny and every transaction is scrutinized very strictly… when residents come, I can give them a bottle of water. But handing out a bar of soap? That is absolutely not allowed.' (CO 3, interview, April 22, 2022)

Planning and Design Professional

Designers identified D1 (*Financial incentive*, 4.02) and E1 (*Information disclosure and transparency*, 3.96) as the two most critical factors. Also, they suggested that residents' motivation could be enhanced by presenting H4 (*Perceived benefits*, 3.92, ranked third):

'…we told the residents, 'Just come over and you can get small gifts.' The atmosphere was electric even during the setup – neighbors, elders, even kids, all eager to share their thoughts.' (planning and design professional, PD 2, interview, April 19, 2022)

Implementation and Construction Unit

F1 (*Trust*, 4.44), E1 (*Financial incentive*, 4.17), and H1 (*Prejudice against the working group*, 4.17) are the most crucial factors for construction practitioners. During neighborhood rehabilitation, constructors are more engaged with residents than most other stakeholders. As a result, they took personal relations with residents more seriously to prevent potential distrust or miscommunication and to guarantee the smooth implementation of site construction works:

'...I heard residents murmuring, 'This is just another vanity project,' and 'If we band together, we can easily halt their construction.' When I heard these whispers, it was clear to me that something was not right.' (DC 1, interview, April 23, 2022)

Moreover, construction respondents noted that their ability to progress in construction depends on the previous experience of neighborhood rehabilitation. They often had to address the issues caused by other stakeholders, especially the previous constructors:

'…some past projects, to be honest, were just for show. It is common for residents to have strong doubts about us. Our façade replacement work got delayed by two months as the residents were not on board.' (DC 3, interview, May 15, 2022)

Consulting Party

Consultants identified D2 (*Rewards and punishments*), H4 (*Perceived benefits*), and G1 (*Traits and capacity*) as the most influential factors for RP. The mean score for these three factors is 4.36. In addition to the recurrently mentioned D2 and H4 by other stakeholders, the consultant party emphasized the importance of *Traits and capacity* of the working group for effective RP:

'...the B Neighborhood Committee is really enthusiastic about RP, especially because their director is skilled in managing residents and eager to experiment with innovative RP methods. Frankly, sometimes their ideas are more well-developed and refined than even ours!' (CP 2, interview, April 16, 2022)

Resident

Residents prioritized F3 (*Equity and justice*) and assigned a mean score of 4.52. Specifically, 63.0% of participants rated 5. They considered G2 (*Attitude*) the second most critical factor, with a mean score of 4.43, and half of the respondents gave it a score of 5. For these two factors, resident interviewees explained:

'…yes, I am only a tenant, but I also need a place to park when they redo the roads. If I cannot get my two cars parked next door for a discounted ¥400, everyone should not park there!' (NR 4, interview, May 27, 2022)

'…they came over a dozen times to fix my leaky roof, even apologizing for making a mess in my place. They are good listeners, too, always up for feedback. So, for future construction stuff, I am totally backing them up.' (NR 1, interview, May 22, 2022)

2.4.3 Consensus and Conflict in Stakeholder Perceptions of Critical Factors

Consensus and Conflict between Stakeholder Groups

The results of one-way ANOVA (Table 2.4, Table 2.5) show that six stakeholder groups agreed on 12 out of 37 factors (for Levene's test results, check Appendix A). Stakeholders agreed on the significant impact of D1 (*Financial incentive*) and D2 (*Rewards and punishments*) on effective RP. Besides, they had a unified understanding regarding *Information* and *Communication* relevant factors (E1, E2, E3 with the lowest F values). They also agreed that the influence of H2 (*Previous experience*) and H8 (*Resident characteristics*) on effective RP was limited.

By contrast, D6 (*Participation education*) has the highest F value, indicating it is the most conflicting factor. The government, residents, community-based organizations, and consultants attributed more importance to D6 than the designers and constructors. Additionally, most pairs of stakeholders (8/15) exhibited significant variances in their comprehension of H1 (*Prejudice on the working team*). Resident interviewee NR 2 (interview, May 22, 2022) declared: *'…I judge things based on facts…grudges do not affect my judgment.'* However, the contractors and community workers agreed with the consultants: *'…some residents use participation as an opportunity to vent their frustration on some of us.'* (CP 1, interview, April 15, 2022)

TABLE 2.4 Analysis result of one-way ANOVA and Post-hoc test

Factors	Between Groups		Within Groups		F	Sig.	Post-hoc test	
	Sum of Squares	df.	Sum of Squares	df.			Group	Bonferroni ($p < 0.05$)
A1	30.198	5	285.434	249	5.269	0.000	4	CO > DC; PD > DC; NR > DC; CP > DC
A2	16.812	5	281.713	249	2.972	0.013	1	LG > DC; CO > DC; PD > DC;
B3	7.815	5	197.417	249	1.971	0.083*		
B4	12.834	5	221.692	249	2.883	0.015		
C1	30.050	5	187.582	249	7.978	0.000	3	NR > CO; NR > PD; NR > DC
C3	46.837	5	272.301	249	8.566	0.000	5	LG > DC; CO > DC; PD > DC; NR > DC; CP > DC
C4	28.800	5	169.765	249	8.448	0.000	5	LG > CP; NR > PD; CP > PD; NR > DC; CP > DC
C5	16.801	5	238.195	249	3.513	0.004	2	NR > LG; NR < PD
D3	48.496	5	212.422	249	11.369	0.000	5	LG > DC; CO > DC; PD > DC; NR > DC; CP > DC
D4	19.177	5	203.749	249	4.687	0.000	2	NR > LG; NR < DC
D6	81.152	5	200.480	249	20.158	0.000	7	NR > LG; CO > PD; CO > DC; NR > PD; CP > PD; NR > DC; CP > DC
D7	41.374	5	216.257	249	9.528	0.000	7	CO > LG; NR > LG; LG > CP; CO > DC; NR > PD; NR > DC; CP > DC

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TABLE 2.4 Analysis result of one-way ANOVA and Post-hoc test

Factors	Between Groups		Within Groups		F	Sig.	Post-hoc test	
	Sum of Squares	df.	Sum of Squares	df.			Group	Bonferroni ($p < 0.05$)
E1	3.721	5	219.205	249	0.845	0.519*		
E2	2.408	5	180.274	249	0.665	0.650*		
E3	5.913	5	175.789	249	1.675	0.141*		
E4	23.969	5	209.662	249	5.693	0.000	1	NR > DC
F1	11.710	5	207.639	249	2.808	0.017	1	DC > LG
F2	12.040	5	187.309	249	3.201	0.008	1	CP > LG;
G1	21.526	5	182.999	249	5.858	0.000	6	NR > LG; CP > LG; NR > PD; CP > PD; NR > DC; CP > DC
G2	19.215	5	165.468	249	5.783	0.000	3	NR > LG; NR > PD; NR > DC
G3	14.016	5	177.843	249	3.925	0.002	2	NR > LG; NR > DC
H2	6.101	5	199.295	249	1.524	0.183*		
H5	9.714	5	202.545	249	2.388	0.039		
H7	20.419	5	165.306	249	6.152	0.000	5	NR > LG; NR > PD; CP > PD; NR > DC; CP > DC
H8	4.272	5	267.492	249	0.795	0.554*		

** = $p > 0.05$*

TABLE 2.5 Analysis result of Games-Howell and Post-hoc test

Factors	Statistica	df1	df2	Sig.	Post-hoc test	
					Group	Pairwise comparison
A3	9.863	5.000	109.299	0.000	5	DC > LG; CO > DC; PD > DC; NR < DC; CP < DC
B1	1.728	5.000	108.492	0.134*		
B2	2.109	5.000	108.400	0.070*		
C2	17.085	5.000	105.901	0.000	5	NR > LG; DC > CO; NR > CO; NR > DC; NR > CP
D1	2.413	5.000	106.322	0.041		
D2	2.262	5.000	109.076	0.053*		
D5	13.715	5.000	106.852	0.000	7	CO > LG; NR > LG; CO > PD; CO > DC; NR > PD; NR > DC; NR > CP
F3	15.534	5.000	106.852	0.000	5	NR > LG; CO > DC; DC < PD; NR > DC; CP > DC
H1	12.707	5.000	109.635	0.000	8	DC < LG; NR > LG; CP > LG; CO > NR; NR > PD; PD > CP; DC > NR; CP < NR
H3	6.122	5.000	109.192	0.000	5	LG > NR; CO > NR; PD > NR; DC > NR; CP < NR
H4	7.417	5.000	111.126	0.000	5	CP > LG; NR > CO; PD > NR; DC > NR; CP < NR
H6	5.017	5.000	106.588	0.000	2	NR > PD; NR > DC

** = $p > 0.05$*

Among the top 5 factors in the general ranking, a conflict appears in F1 (*Trust*) among stakeholder groups. The constructors ascribed a higher significance to F1 compared to the government, and this difference is statistically significant. Interview with NR 3 (May 27, 2022) implies that residents' trust in the government and the constructors lie at opposite extremes: '*…honestly, I am not fully aware of*

the government's specific actions, but I do believe they are committed to 'serving the people'…' and *'…our neighborhood has not seen a single theft in the last twenty years. But, ever since the construction crew showed up, three households have had their belongings stolen, all within just a month!'*

Interestingly, the degree of residents' (dis)trust changed after the rehabilitation. They shifted from distrust to trust for constructors, while losing their trust in designers:

'…construction guys work super hard. Regarding the technical stuff, we are clueless, but I believe they know what they are doing and will not mess things up.' (NR 1, interview, May 22, 2022)

'…any fool knows an awning needs a slant to shed water, but these designers wanted it flat. At least I can find community workers and constructors around the neighborhood, but the designers? Nowhere to be found. When I did track them down, they just said 'it could not be changed'. After that, I stopped bothering with feedback!' (NR 3, interview, May 27, 2022)

After the outbreak of the COVID-19 pandemic, residents became more trusting in Neighborhood Committees, leading to a greater endorsement of the government. This made the rehabilitation process move forward more smoothly. As NR 3 (interview, May 27, 2022) and NR 4 (interview, May 27, 2022) explained:

'…I bet 80%, even 90%, of the residents back what the Neighborhood Committee's doing. Why? Cause what they are doing really hits you in the feels.'

'…during the rehabilitation, I often found myself calling them in the middle of the night due to the noise. Despite being just a tenant, they always took my concerns seriously. That is why I know, when I approach the Neighborhood Committee with a problem, they may not always have a quick solution, but I trust that they will do their utmost to find a way to help me.'

Consensus and Conflict due to Rehabilitation Experience

The results of two-way ANOVA (Table 2.6) show that the importance of H1 (*Prejudice against the working team*) and H5 (*Consistency with self-identity*) depends on the level of rehabilitation experience ($P < 0.05$). Nevertheless, this interaction effect is insignificant for the remaining 31 factors. In addition, rehabilitation experience is significantly associated with stakeholders' perception of D5 (*Participation-assistance technologies*) and G1 (*Traits and capacity* of the working group).

TABLE 2.6 Analysis results of two-way ANOVA

Cd.	Main effects						Interaction effect		
	Stakeholder group			Rehabilitation experience			Stakeholder group* Rehabilitation experience		
	F (4,191)	Sig.	Partial η2	F (1,191)	Sig.	Partial η2	F (4,191)	Sig.	Partial η2
A1	1.885	0.115	0.038	0.907	0.342	0.005	0.347	0.846	0.007
A2	2.983	0.020*	0.059	0.355	0.552	0.002	1.073	0.371	0.022
A3	4.512	0.002*	0.086	0.373	0.542	0.002	1.849	0.119	0.037
B3	0.363	0.835	0.008	0.202	0.654	0.001	0.569	0.685	0.012
B4	0.652	0.626	0.012	0.046	0.830	0.000	0.554	0.697	0.011
C1	1.917	0.109	0.039	3.557	0.061	0.018	0.922	0.452	0.019
C2	3.653	0.007*	0.071	0.975	0.325	0.005	2.163	0.075	0.043
C3	4.583	0.002*	0.084	1.564	0.213	0.008	0.706	0.589	0.015
C4	3.470	0.009*	0.068	2.384	0.124	0.012	1.078	0.369	0.022
C5	0.565	0.688	0.012	0.041	0.841	0.000	1.172	0.324	0.024
D1	1.033	0.391	0.021	0.349	0.556	0.002	1.067	0.374	0.022
D2	0.313	0.869	0.007	0.070	0.791	0.000	1.230	0.300	0.025
D3	4.110	0.003*	0.079	2.658	0.105	0.014	1.617	0.171	0.033
D4	2.319	0.059	0.046	0.024	0.877	0.000	1.350	0.253	0.027
D5	4.266	0.002*	0.082	4.608	0.033*	0.024	0.959	0.426	0.020
D6	4.537	0.002*	0.087	1.666	0.198	0.009	2.080	0.085	0.042
D7	3.967	0.004*	0.077	3.902	0.050	0.020	0.306	0.874	0.006
E1	0.230	0.922	0.005	0.072	0.789	0.000	0.406	0.804	0.008
E2	0.663	0.618	0.014	1.822	0.179	0.009	0.257	0.905	0.005
E3	1.331	0.260	0.027	0.114	0.736	0.001	0.369	0.811	0.008
E4	2.651	0.035*	0.053	2.749	0.099	0.014	0.826	0.510	0.017
F2	2.734	0.030*	0.054	2.720	0.101	0.014	0.652	0.626	0.013
F3	2.810	0.027*	0.056	0.193	0.661	0.001	0.500	0.736	0.010
G1	2.200	0.071	0.044	4.019	0.046*	0.021	0.092	0.985	0.002
G2	0.874	0.481	0.018	0.730	0.394	0.004	0.071	0.991	0.001
G3	1.371	0.245	0.028	2.411	0.122	0.012	0.253	0.907	0.005
H1	2.698	0.032*	0.053	0.012	0.912	0.000	2.582	0.039*	0.051
H2	1.230	0.300	0.025	3.488	0.063	0.018	0.840	0.501	0.017
H3	1.236	0.297	0.025	0.009	0.925	0.000	0.853	0.493	0.018
H4	1.136	0.341	0.023	0.597	0.441	0.003	1.384	0.241	0.028
H5	2.975	0.021*	0.059	0.295	0.587	0.002	2.572	0.039*	0.051
H6	2.036	0.091	0.041	1.223	0.270	0.006	1.210	0.308	0.025
H7	4.183	0.003*	0.081	2.884	0.091	0.015	1.390	0.239	0.028

* = $p < 0.05$

Table 2.7 indicates a significant difference in the perception of D5 between stakeholders involved in 'below 5 projects' and those in 'above 5 projects'. The latter group rated D5 an average of 0.618 points higher than the former at $p < 0.05$. The positive interaction effects of rehabilitation experience are also significant for G1. As FIG. 2.5 depicts, irrespective of their groups, stakeholders regarded these two factors as more critical as their rehabilitation experience accumulated.

TABLE 2.7 Pairwise Comparisons in D5 and G1 factors stratified by rehabilitation experience

	Rehabilitation experience		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence	
						Lower Bound	Upper Bound
D5 (Participation-assistance technologies)	Below 5 projects	Above 5 projects	-.618*	0.288	0.033*	-1.186	-0.050
	Above 5 projects	Below 5 projects	.618*	0.288	0.033*	0.050	1.186
G1 (Traits and capacity of the working group)	Below 5 projects	Above 5 projects	-.449*	0.224	0.046	-0.891	-0.007
	Above 5 projects	Below 5 projects	.449*	0.224	0.046	0.007	0.891

* = $p < 0.05$

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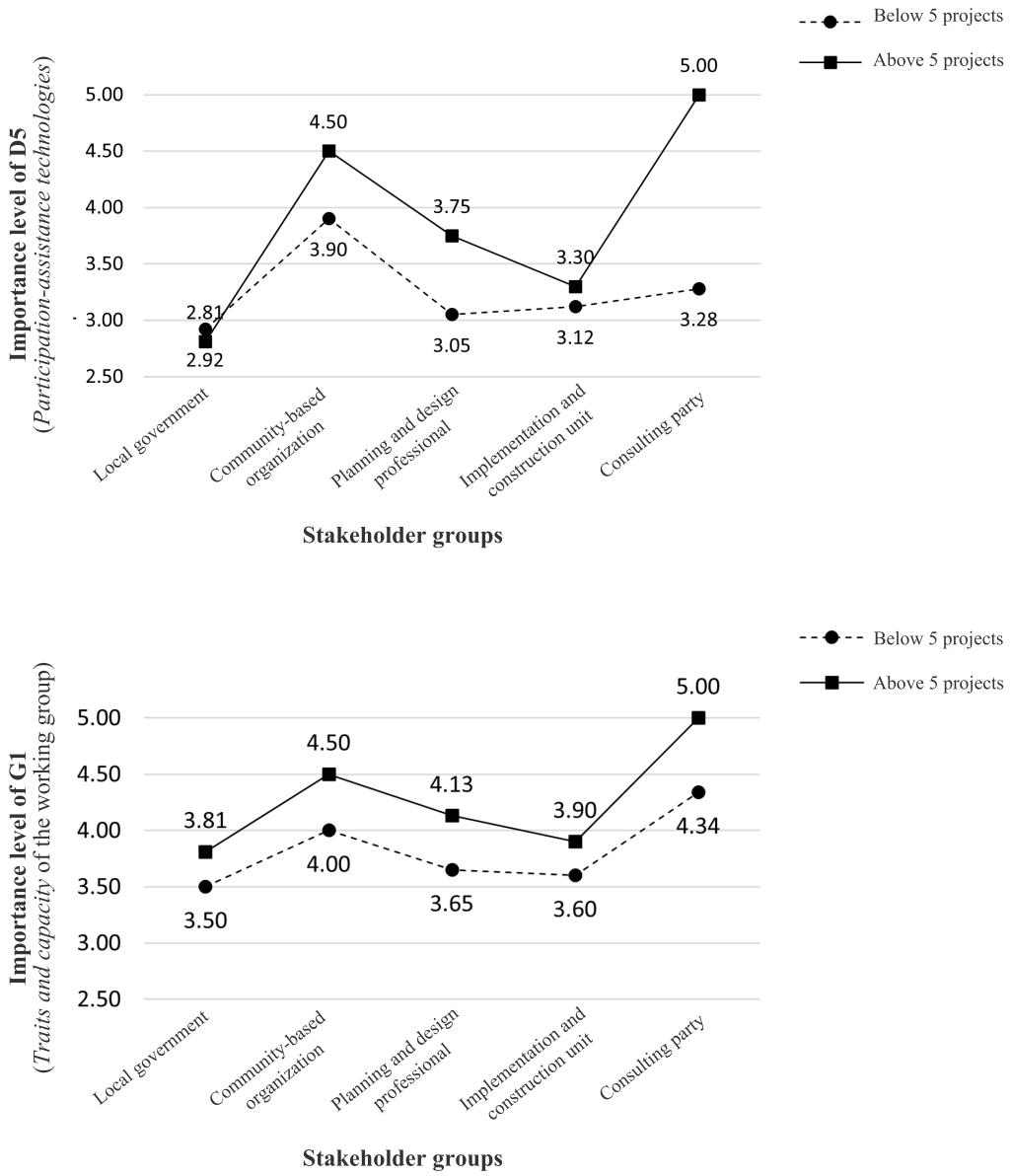

FIG. 2.5 The Interaction Effects of Rehabilitation Experience and Stakeholder Group on the Rating of Factors D5 and G1

2.5 Discussion

2.5.1 Objectives for Resident Participation

The case of Wuhan shows that stakeholders involved residents in neighborhood rehabilitation primarily for substantive rationales, i.e., collecting all relevant information for well-informed and considered decisions, mirroring the findings in developing (Fahmi, Prawira et al., 2016) and developed cities (Niitamo, 2021; Uittenbroek, Mees et al., 2019). Zhou, Hou et al. (2019)'s research in urban China shows a shift in RP objectives toward empowerment and citizenship among higher-educated stakeholders. However, these democratic ideals were not appreciated in our research samples. Specifically, the phenomenon of "lack of a shared vision" appeared between stakeholder groups. Although the central government regarded RP as a process of education and awareness building, these objectives were recognized by neither the local government nor the design and construction industry. In addition, designers and contractors involved residents in a one-off and problem-centric manner, with the aim of searching for personal and institutional interests.

2.5.2 Critical Factors for Effective Resident Participation in the Post-COVID-19 Era

Financial Incentive – Limited and Unevenly Distributed

Financial incentive (for participation organizers) is identified as the most critical factor for effective RP in post-COVID-19 China, consistent with pre-COVID-19 studies in first-tier cities in China (Liu, Wang et al., 2018), Indonesia (Fahmi, Prawira et al., 2016), and Europe (Dekker and Van Kempen, 2008; Niitamo, 2021). The case of Wuhan suggests that there were few financial incentives for organizing RP. Moreover, the limited incentives were unevenly distributed among different Neighborhood Committees.

The prolonged effort for pandemic control placed considerable financial burdens on the governments of Wuhan. In the projects of neighborhood rehabilitations, specifically, there is a noticeable cut in governmental investments from ¥70,000 per

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household in early 2020 to less than ¥20,000 at the end of 2022. Because of increasingly limited financial budgets, the governments strategically target financial resources to selected Neighborhood Committees based on the Committee's reputation and personal networks between Committee directors and government leaders. The frequent contact with government leaders, either in public or private, makes Committee directors more aware of fund allocation and thus proactive in applying for special funds. With additional financial support, residents are more actively involved in neighborhood affairs, such as neighborhood rehabilitation. In contrast, neighborhoods that initially show poor participation results may find it increasingly challenging to secure the necessary funds and resources to rectify ineffectiveness. This is consistent with Gray and Barford (2018)'s observations on the impact of the 2008 economic crisis on the UK government. The unequal allocation of national funding intensified disparities among local governments, resulting in geographic inequalities in the UK. In the post-pandemic era of China, austerity might emerge as a reality for local governments in second- and third-tier cities. Under this circumstance, the local government is warranted to prioritize more even *Financial incentive* distribution and preempt potential geographically inequitable participation.

Information Sharing and Communication – Precise and Avoid Excess

Information and *Communication*-relevant factors are also crucial for effective RP. As indicated by previous studies (Beierle and Cayford, 2002; Bobbio, 2019; Orchowska, 2019), the value of information and communication is to mitigate skepticism and unfavorable perceptions, foster mutual learning, engender trust, and ultimately pave the way for enhanced cooperation. Despite this, aligning with Yu and Leung (2015)'s observations, our study shows that the specialized jargon employed in neighborhood rehabilitation elevated the threshold of information sharing and curtailed residents' willingness to communicate. Thus, as Dickens (2013) and Li, Feng et al. (2020) advocate, practitioners are advised to employ straightforward language and leverage information and communication tools (ICTs), such as social platforms, to increase inclusivity and broaden public engagement.

Besides, the COVID-19 pandemic and subsequent lockdowns reconfigured the mode of information exchange. To mitigate virus transmission, the government switched the way of RP from traditional face-to-face communication to digital platforms. The caveat was that previously active older participants gradually disengaged due to their inability to use these platforms. Therefore, it is imperative to devise more inclusive participatory channels that are convenient for the younger generation and

ensure the continued engagement of the senior population. Additionally, although social media platforms bolster information transparency, they introduce challenges related to information filtering and processing at the same time (Sun, 2015). On the official government platform, discussions related to neighborhood rehabilitation are often overshadowed by many other non-related issues. Stakeholders may perceive the ensuing flood of unstructured data as overwhelming, tedious, and burdensome, thus deterring active participation (Tang, Gong et al., 2022). Our interview results also show that excessive information misled residents, resulting in their unrealistic expectations of rehabilitation and consequently diminished participation satisfaction and perceived usefulness of RP.

Trust and Distrust – But not Over-trust

Effective RP requires mutual *Trust* among stakeholders (Benedjma and Mahimoud, 2020; Boyle and Michell, 2020). *Trust* and RP would further reinforce each other and lead to the accumulation of social capital (Dekker, 2007). Similarly, as Nathansohn and Lahat (2022) conclude in the Israeli context, distrust can also be a salient catalyst for bottom-up RP approaches. In Wuhan, such distrust manifested in resident-initiated participation, such as the demand for renovation information, monitoring of construction materials and outcomes, and lucidity in the methodologies and pricing models for parking space allocation. Thus, while fostering *Trust* is required, strategically channeling residents' distrust is equally crucial.

Contractors prioritized trust more than the governmental bodies, possibly due to residents' inherent distrust towards them and over-trust in government. As Brown, Bos et al. (2016) highlight, the distrust of contractors results from a mixture of inherent negative impressions and the absence of power for residents to choose contractors. Our results show that neighborhood rehabilitation provided a conducive environment for residents to increase their trust in contractors. Possible strategies to promote mutual trust include frequent communication, timely information disclosure, efficient problem-solving, empathetic engagement, and unwavering commitment.

In the post-COVID-19 era, however, over-reliance on a single stakeholder group can be a barrier to effective RP in the long term. Liu, Lin et al. (2021)'s study of six Chinese cities and Han, Zheng et al. (2023)'s cross-country observations suggest that the lockdown promotes the political trust among the public. While our case of Wuhan shows that it also led to residents' undue dependency on a particular stakeholder – the Neighborhood Committee. Many residents started to view rehabilitation as the responsibility of the Committee, thereby adopting a passive stance towards rehabilitation activities—a sentiment also emphasized by

Nathansohn and Lahat (2022). Additionally, our results suggest that excessive trust inadvertently justified residents' apathy and made their non-involvement seem reasonable. As NR3 remarked in our interview on May 27, 2022: '*…I trust them, so I leave all decisions to them…*' In this sense, maintaining a delicate balance between trust and distrust is crucial for effective RP, with a need to actively address and counteract unwarranted trust between stakeholder groups.

Capacity of the Working Group – Especially Soft Skills

Trait and capacity (of the working group) are prerequisites for inducing and maintaining trust and contributing to more effective RP. Additionally, our case of Wuhan shows that, in future RP initiatives, extra emphasis could be placed on developing *Trait and Capacity* of the working group. Stakeholders became increasingly aware of the importance of it as they gained experience in rehabilitation projects (Fig. 2.5). Particularly, the ability to leverage external resources is vital after the COVID-19 pandemic. In the post-COVID-19 era, the Wuhan government is increasingly turning to the austerity measure, which are common for governments in Western cities since the 2008 financial crisis. The prolonged epidemic prevention efforts place significant economic burdens on local government, as evidenced by decreases in central government funding, declines in local tax revenues, and staffing shortages. This further results in the diminishing capacity of the government to maintain pre-pandemic levels of public service delivery. Closely related, leadership, networking, and communication skills are also crucial for RP. These capacities enable community workers to navigate projects better and thus contribute to securing government funding and resources. Echoing Purdue (2001)'s research in the U.K., the Wuhan case indicates that the rehabilitation projects overseen by adept community workers produced more promising and enduring outputs, such as residents' high levels of participation satisfaction and their repeated participation in neighborhood issues.

2.5.3 Research Implications

Regarding limited financial and administrative resources, community-based organizations are suggested to actively reflect their challenges to governmental entities and consulting parties. For example, they can use social platforms to disseminate images of the declining neighborhood environment to the broader community, aiming to arouse government attention (Nathansohn and Lahat, 2022). In addition to fostering soft skills among the organization members (Brown, Bos et

al., 2016), they could pay more attention to the intricate relations among residents and facilitate the recognition of neighborhood leaders. By harnessing these neighborhood leaders' expertise, trust, and social capital, community workers are more likely to overcome internal obstacles without external resources (Z. Liu, S. Lin et al., 2023).

Designers are advised to use non-material rewards to promote RP. As Gneezy, Meier et al. (2011) note, intrinsic and social motivations yield enduring effects and genuine behavioral changes over financial incentives. Meanwhile, a streamlined participation process is suggested. For example, the overarching design blueprint can be decomposed into more manageable tasks, thus reducing barriers to entry. Furthermore, improving the participatory experience by making it a leisure activity to mitigate residents' negative perceptions of RP is viable.

In response to residents' distrust, constructors are advised to present official documentation of qualifications and credentials before construction. Besides the routine disclosure of work progress, the constructors could invite residents to monitor the construction activities. To achieve sustained mutual trust, it is also necessary to guarantee information transparency and communication throughout the construction process (Bobbio, 2019; Orchowska, 2019).

The consulting party needs to alleviate the knowledge, spatial, and temporal constraints of RP, and to reduce RP's dependence on financial and human resources. Proposed measures include enhancing ICTs (Li, Feng et al., 2020), and simplifying and visualizing information on social platforms. Alternatively, as exemplified by Nathansohn and Lahat (2022) in Israel, a machine learning-based platform can be established for parsing resident comments, therefore enabling their subconscious participation in sharing neighborhood issues.

When selecting Committee members, residents could emphasize candidates' interpersonal competencies, including leadership, problem-solving, and networking. Moreover, as shown in our results, an undue level of *Trust* resulted in an unwarranted transfer of power to the Neighborhood Committee. Suppose the Committee collaborates too closely with the local government. In that case, there is a risk of disregarding the factors of *Equality and Justice*, which were rated most critical for effective RP by residents. To circumvent such issues, residents may require Committees to disclose the details of collaborations and engagements with external stakeholders.

Finally, to address the issue of incentive shortage, the government is suggested to promote horizontal information and resource exchange among Neighborhood Committees. This can be achieved by establishing communication platforms that

enable community workers to build relational capital, expand their social networks, and secure support from the wider community. Moreover, RP could be mandated as a precondition for accessing government funding, as suggested by Uittenbroek, Mees et al. (2019). Additionally, local governments should establish clear funding criteria. It is crucial to prevent biases such as 'favoritism' or 'personal relationships' from skewing the allocation of incentives and resources.

2.6 Conclusions

Effective RP hinges on the active involvement of residents, as well as efficient management of the organizers. Using 30 interviews and 267 questionnaires collected in Wuhan, China, this study explores how the perception of critical factors for effective RP varies among six major stakeholder groups: local government, community-based organization, designer, contractor, consulting party, and resident. Thirty-seven factors were identified. While all these factors were perceived as important by stakeholders, the most critical five factors are *Financial incentive* (for participation organizers), *Information disclosure and transparency*, *Trust*, *Rewards and punishments* (for residents), and *Credibility* (of the working team). Moreover, different stakeholder groups have their specific idea on the most critical factors for effective RP:

- Local government—Information disclosure and transparency
- Community-based organization—*Financial incentive*
- Planning and design professional—*Financial incentive*
- Implementation and construction unit—*Trust*
- Consulting party—*Reward and punishment*
- Residents—*Equity and justice*

The ANOVA results highlight stakeholder consensus on 12 of the 37 factors, especially on the importance of *Financial incentive*, *Information* and *Communication*. In contrast, factors such as *Previous experience*, *Consistency with self-identity*, and *Resident characteristics* were perceived as least important. Notably, with the accumulation of rehabilitation experience, stakeholders attributed greater significance to the factors of *Participation-assistance technology* and *Trait and capacity* (of the working group).

There are some limitations of this study and promising directions for future research. First, this study focuses on identifying critical factors perceived by different stakeholder groups for effective RP. The mechanism underlying how these factors affect the effectiveness of RP at different levels requires further examination. Second, this study represents a step forward in identifying causal relationships between factors. For instance, *Credibility* and *Communication* can impact *Trust*. Future studies will benefit from exploring causal inferences regarding the interrelationship between these factors as well as their influence on RP experiences (e.g., the frequency, length and satisfaction of RP). Third, the research suggests that stakeholders' perceptions of critical factors evolved over time. As observed in Wuhan, the COVID-19 pandemic overturned stakeholder views on the factors of effective RP, such as *Financial incentive*, *Trust*, and *Information transparency*. The longitudinal analysis and cross-region comparisons are promising to shed light on changes in stakeholders' perception of effective RP over space and time.

References

Aitken, D. (2017). The Influence Fallacy: Resident Motivations for Participation in an English Housing Regeneration Project. *Planning theory & practice*, *18*(4), 549-565.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of planners*, *35*(4), 216-224.

Beierle, T. C., & Cayford, J. (2002). *Democracy in practice: public participation in environmental decisions*. Resources for the Future.

Benedjma, I., & Mahimoud, A. (2020). Applying the MOA (motivation-opportunity-ability) model for the evaluation of residents' participation in built heritage rehabilitation: the case of Constantine. *Journal of Cultural Heritage Management and Sustainable Development*.

Blofield, M., Hoffmann, B., & Llanos, M. (2020). Assessing the political and social impact of the COVID-19 crisis in Latin America.

Bobbio, L. (2019). Designing effective public participation. *Policy and Society*, *38*(1), 41-57.

Boyle, L., & Michell, K. (2020). Key ingredients for a collaborative urban regeneration strategy in the Global South. *Construction Economics and Building*, *20*(2), 150-164.

Brown, G., Sanders, S., & Reed, P. (2018). Using public participatory mapping to inform general land use planning and zoning. *Landscape and Urban Planning*, *177*, 64-74. https://doi.org/https://doi.org/10.1016/j.landurbplan.2018.04.011

Brown, H. L., Bos, D. G., Walsh, C. J., Fletcher, T. D., & RossRakesh, S. (2016). More than money: how multiple factors influence householder participation in at-source stormwater management. *Journal of Environmental Planning and Management*, *59*(1), 79-97.

Creighton, J. L. (2005). *The public participation handbook: Making better decisions through citizen involvement*. John Wiley & Sons.

Dekker, K. (2007). Social capital, neighbourhood attachment and participation in distressed urban areas. A case study in The Hague and Utrecht, the Netherlands. *Housing Studies*, *22*(3), 355-379.

Dekker, K., & Van Kempen, R. (2008). Places and participation: comparing resident participation in post-WWII neighborhoods in Northwest, Central and Southern Europe. *Journal of Urban Affairs*, *30*(1), 63-86.

Del Furia, L., & Wallace-Jones, J. (2000). The effectiveness of provisions and quality of practices concerning public participation in EIA in Italy. *Environmental Impact Assessment Review*, *20*(4), 457-479.

Dickens, B. (2013). ENGAGING TO HARNESS COMMUNITY CREATIVITY FOR SUSTAINABLE URBAN PLANNING. Proceedings of the 57th Annual Meeting of the ISSS-2013 HaiPhong, Vietnam,

Fahmi, F. Z., Prawira, M. I., Hudalah, D., & Firman, T. (2016). Leadership and collaborative planning: The case of Surakarta, Indonesia. *Planning Theory*, *15*(3), 294-315.

Fisher, R. A. S. (1970). *Statistical methods for research workers* (14th ed., rev. and enlarged. ed.). Oliver and Boyd.

Fors, H., Wiström, B., & Nielsen, A. B. (2019). Personal and environmental drivers of resident participation in urban public woodland management – A longitudinal study. *Landscape and Urban Planning*, *186*, 79-90. https://doi.org/https://doi.org/10.1016/j.landurbplan.2019.02.017

Freeman, R. E. (1984). *Strategic management : a stakeholder approach*. Pitman.

Geidne, J., Fröding, K., Montin, S., & Eriksson, C. (2012). Implementation structure and participation at neighbourhood level-a multiple case study of neighbourhood development in Sweden. *Systemic Practice and Action Research*, *25*(4), 305-322.

Glucker, A., Driessen, P. P. J., Kolhoff, A., & Runhaar, H. (2013). Public participation in environmental impact assessment: Why, who and how? *Environmental Impact Assessment Review*, *43*, 104–111. https://doi.org/10.1016/j.eiar.2013.06.003

Gneezy, U., Meier, S., & Rey-Biel, P. (2011). When and why incentives (don't) work to modify behavior. *Journal of economic perspectives*, *25*(4), 191-210.

Gray, M., & Barford, A. (2018). The depths of the cuts: the uneven geography of local government austerity. *Cambridge Journal of Regions, Economy and Society*, *11*(3), 541-563. https://doi.org/10.1093/cjres/rsy019

Han, Q., Zheng, B., Cristea, M., Agostini, M., Bélanger, J. J., Gützkow, B., Kreienkamp, J., & Leander, N. P. (2023). Trust in government regarding COVID-19 and its associations with preventive health behaviour and prosocial behaviour during the pandemic: a cross-sectional and longitudinal study. *Psychological Medicine*, *53*(1), 149-159. https://doi.org/10.1017/S0033291721001306

HBHURD. (2018). **湖北省老旧小区改造工作指南** *(Guidance on the Renovation of Old Urban Community in Hubei Province)*.

Hui, E. C.-m., Chen, T., Lang, W., & Ou, Y. (2021). Urban community regeneration and community vitality revitalization through participatory planning in China. *Cities*, *110*, 103072.

IAP2. *IAP2 Code of Ethics for Public Participation Practitioners*. https://www.iap2.org/page/ethics#:~:text=We%20define%20public%20participation%20as,of%20the%20public%20participation%20process.

Jagarajan, R., Abdullah Mohd Asmoni, M. N., Mohammed, A. H., Jaafar, M. N., Lee Yim Mei, J., & Baba, M. (2017). Green retrofitting - A review of current status, implementations and challenges. *Renewable and Sustainable Energy Reviews*, *67*, 1360-1368. https://doi.org/10.1016/j.rser.2016.09.091

Legaldaily. (2008). **拆除上亿元的建设项目谁说了算** (Who's Responsible for Razing Projects Worth Hundreds of Millions?). *Legaldaily*. http://news.sohu.com/20081013/n260002879.shtml

Li, D., Gu, T., & Zhu, S. (2020). Influencing Factors of Residents Intention to Participate in the Governance of Old Community Renewal: A Case Study of Nanjing. *Modern Urban Research*(02), 19. https://doi.org/10.3969

Li, J., Krishnamurthy, S., Pereira Roders, A., & van Wesemael, P. (2020). Community participation in cultural heritage management: A systematic literature review comparing Chinese and international practices. *Cities*, *96*, 102476. https://doi.org/https://doi.org/10.1016/j.cities.2019.102476

Li, T. H., Ng, S. T., & Skitmore, M. (2012). Public participation in infrastructure and construction projects in China: From an EIA-based to a whole-cycle process. *Habitat International*, *36*(1), 47-56.

Li, W., Feng, T., Timmermans, H. J., Li, Z., Zhang, M., & Li, B. (2020). Analysis of citizens' motivation and participation intention in urban planning. *Cities*, *106*, 102921.

Li, X., Zhang, F., Hui, E. C.-m., & Lang, W. (2020). Collaborative workshop and community participation: A new approach to urban regeneration in China. *Cities*, *102*, 102743. https://doi.org/https://doi.org/10.1016/j.cities.2020.102743

Liu, B., Hu, Y., Wu, X., Yu, J., Yu, Z., & Wang, A. (2018). Critical Factors of Effective Public Participation in Sustainable Energy Projects. *Journal of Management in Engineering*, *34*(5). https://doi.org/10.1061/(ASCE)ME.1943-5479.0000635

Liu, B., Wang, X., Xia, N., & Ni, W. (2018). Critical success factors for the management of public participation in urban renewal projects: Perspectives from governments and the public in China. *Journal of Urban Planning and Development*, *144*(3), 04018026.

Liu, Z., Lin, S., Lu, T., Shen, Y., & Liang, S. (2023). Towards a constructed order of co-governance: Understanding the state–society dynamics of neighbourhood collaborative responses to COVID-19 in urban China. *Urban Studies*, *60*(9), 1730-1749.

Liu, Z., Lin, S., Shen, Y., & Lu, T. (2021). Collaborative neighborhood governance and its effectiveness in community mitigation to COVID-19 pandemic: From the perspective of community workers in six Chinese cities. *Cities*, *116*, 103274. https://doi.org/https://doi.org/10.1016/j.cities.2021.103274

Lowndes, V., Pratchett, L., & Stoker, G. (2001). Trends in public participation: Part 2-Citizens' perspectives. *Public administration*, *79*(2), 445-455.

Lu, X., & Lange, E. (2021). 参与式社区更新中的利益相关方特征和互动研究—以广州泮塘五约为例 (Stakeholder Characteristics and Interactions in a Participatory Community Renewal Project: A Case Study of Pun Tong Wuyue Village, Guangzhou). 风景园林 *(Landscape Architecture)*, *28*(9), 24-30. https://doi.org/10.14085/j.fjyl.2021.09.0024.07

Luo, J., Wu, H., & Peng, Y. (2020). 共治共享理念下的社区规划探索——以武汉水陆社区微改造为例 (Research on Community Planning under the Concept of Co-Governance and Sharing —— A Case of the Micro-Reconstruction of Shuilu Community in Wuhan). 城市建筑 *(Urbanism and Architecture)*, *17*, 52-59.

Ma, L., Ye, R., Ettema, D., & van Lierop, D. (2023). Role of the neighborhood environment in psychological resilience. *Landscape and Urban Planning*, *235*, 104761. https://doi.org/https://doi.org/10.1016/j.landurbplan.2023.104761

Magigi, W., & Majani, B. (2006). Community involvement in land regularization for informal settlements in Tanzania: A strategy for enhancing security of tenure in residential neighborhoods. *Habitat International* , *30*(4), 1066-1081.

MW. (2020). 武汉市老旧小区改造三年行动计划*(2019—2021*年*) (Three-Year Action Plan for Old Urban Community Retrofitting in Wuhan (2019-2021))*. Retrieved from http://fgj.wuhan.gov.cn/xxgk/xxgkml/ghjh/lsgh/202006/t20200619_1381751.shtml

Nathansohn, R., & Lahat, L. (2022). From urban vitality to urban vitalisation: Trust, distrust, and citizenship regimes in a Smart City initiative. *Cities*, *131*, 103969. https://doi.org/https://doi.org/10.1016/j.cities.2022.103969

Niitamo, A. (2021). Planning in no one's backyard: municipal planners' discourses of participation in brownfield projects in Helsinki, Amsterdam and Copenhagen. *European Planning Studies*, *29*(5), 844-861.

Nixon, R., Carlton, J. S., & Ma, Z. (2023). Trust and collaboration connect remediation and restoration to community revitalization. *Landscape and Urban Planning*, *233*, 104710. https://doi.org/https://doi.org/10.1016/j.landurbplan.2023.104710

Nunnally, J. D. (1978). Psychometric Theory (2nd ed), New York: McGraw-Hill.

Orchowska, A. (2019). The Human Factor in the Revitalization of the Housing Estates. IOP Conference Series: Materials Science and Engineering,

Pérez, M. G. R., Laprise, M., & Rey, E. (2018). Fostering sustainable urban renewal at the neighborhood scale with a spatial decision support system. *Sustainable Cities and Society*, *38*, 440-451.

Petts, J. (1999). Public participation and environmental impact assessment. Handbook of ELA, Volume 1. ELA: Process, methods and potential. In: Oxford: Blackwell Science.

Plummer, J., & Taylor, J. G. (2013). *Community participation in China: Issues and processes for capacity building*. Routledge.

Pradhananga, A. K., & Davenport, M. A. (2017). Community attachment, beliefs and residents' civic engagement in stormwater management. *Landscape and Urban Planning*, *168*, 1-8. https://doi.org/https://doi.org/10.1016/j.landurbplan.2017.10.001

Purdue, D. (2001). Neighbourhood governance: Leadership, trust and social capital. *Urban Studies*, *38*(12), 2211-2224.

Puskás, N., Abunnasr, Y., & Naalbandian, S. (2021). Assessing deeper levels of participation in nature-based solutions in urban landscapes – A literature review of real-world cases. *Landscape and Urban Planning*, *210*, 104065. https://doi.org/https://doi.org/10.1016/j.landurbplan.2021.104065

Rockart, J. F. (1979). Chief executives define their own data needs. *Harvard business review*, *57*(2), 81-93.

Rowe, G., & Frewer, L. (2000). Public Participation Methods: A Framework for Evaluation. *Sci Technol & Hum Values*, *25*. https://doi.org/10.1177/016224390002500101

Rowe, G., Marsh, R., & Frewer, L. (2004). Evaluation of a Deliberative Conference. *Science, technology and human values 29 (2004) 1*, *29*. https://doi.org/10.1177/0162243903259194

SC. (2020). 国务院办公厅关于全面推进城镇老旧小区改造工作的指导意见 *(Guiding Opinions on Comprehensively Promoting Neighborhood Rehabilitation)*. (000014349/2020-00061). Retrieved from https://www.gov.cn/zhengce/content/2020-07/20/content_5528320.htm

Serrao-Neumann, S., Harman, B., Leitch, A., & Low Choy, D. (2015). Public engagement and climate adaptation: insights from three local governments in Australia. *Journal of environmental planning and management*, *58*(7), 1196-1216.

Sun, Y. (2015). Facilitating generation of local knowledge using a collaborative initiator: A NIMBY case in Guangzhou, China. *Habitat International*, *46*, 130-137. https://doi.org/https://doi.org/10.1016/j.habitatint.2014.11.005

Tang, D., Gong, X., & Liu, M. (2022). Residents' behavioral intention to participate in neighborhood micro-renewal based on an extended theory of planned behavior: A case study in Shanghai, China. *Habitat International*, *129*, 102672.

Tao, Y., Chai, Y., Zhang, X., Yang, J., & Kwan, M.-P. (2021). Mobility-based environmental justice: Understanding housing disparity in real-time exposure to air pollution and momentary psychological stress in Beijing, China. *Social Science & Medicine*, *287*, 114372.

Uittenbroek, C. J., Mees, H. L., Hegger, D. L., & Driessen, P. P. (2019). The design of public participation: who participates, when and how? Insights in climate adaptation planning from the Netherlands. *Journal of Environmental Planning and Management*, *62*(14), 2529-2547.

Urbanowicz, K., & Nyka, L. (2016). Media architecture and interactive art installations stimulating human involvement and activities in public spaces. CBU International Conference Proceedings,

Uslaner, E. M., & Badescu, G. (2004). Legacies and conflicts: The challenges to social capital in the democratic transition. In *Social Capital and the Transition to Democracy* (pp. 233-246). Routledge.

WBNRP. (2021). 武汉市社区微改造规划导则*(*试行版*) (Wuhan Community Micro-Renovation Planning Guidelines (Trial version))*. Retrieved from http://zrzyhgh.wuhan.gov.cn/xxfw/ghzs/202105/t20210517_1699705.shtml

Webler, T., & Tuler, S. (2006). Four perspectives on public participation process in environmental assessment and decision making: Combined results from 10 case studies. *Policy Studies Journal*, *34*(4), 699-722.

Webler, T., Tuler, S., & Krueger, R. (2001). What is a good public participation process? Five perspectives from the public. *Environmental management*, *27*(3), 435-450.

Wu, L., Jia, G., & Mackhaphonh, N. (2019). Case study on improving the effectiveness of public participation in public infrastructure megaprojects. *Journal of construction engineering and management*, *145*(4), 05019003.

Yu, J., & Leung, M.-y. (2015). Exploring factors of preparing public engagement for large-scale development projects via a focus group study. *International Journal of Project Management*, *33*(5), 1124-1135.

Zhao, N., Liu, Y., & Wang, J. (2023). "Co-production" as an alternative in post-political China? Conceptualizing the legitimate power over participation in neighborhood regeneration practices. *Cities*, *141*, 104462.

Zhou, Y., Hou, L., Yang, Y., Chong, H.-Y., & Moon, S. (2019). A comparative review and framework development on public participation for decision-making in Chinese public projects. *Environmental Impact Assessment Review*, *75*, 79-87.

Zhu, J. (2023). Micro-regeneration in Shanghai and the public-isation of space. *Habitat International*, *132*, 102741.

Zhuang, T., Qian, Q. K., Visscher, H. J., Elsinga, M. G., & Wu, W. (2019). The role of stakeholders and their participation network in decision-making of urban renewal in China: The case of Chongqing. *Cities*, *92*, 47-58.

3 Understanding Stakeholder Influence on Resident Participation in Neighborhood Rehabilitation

The Case of Wuhan, China

This chapter is submitted to journal *Environmental Science and Policy* and under review at the moment of writing this manuscript.

ABSTRACT Active resident engagement and effective organizer management are crucial for participatory neighborhood rehabilitation. Yet, existing public participation research focuses on residents, leaving the behaviors of organizers and their influence on outcomes less examined. Furthermore, most renewal studies treat the rehabilitation process as homogeneous and static, overlooking how stakeholders' objectives, strategies, and actions evolve throughout the project lifecycle. To address these gaps, this paper employs stakeholder theory to propose the Stakeholder Influence Model (SIM), which investigates the multifaceted influence of stakeholders on resident participation across different phases of neighborhood rehabilitation. Drawing on 44 in-depth interviews and a four-month participant observation in

Wuhan, China, deductive content analysis reveals stakeholders' distinct influence strategies and both stimulating or disincentivizing effects on resident engagement. Specifically, indirect local government involvement, excessive delegation to neighborhood committees, and imbalanced power dynamics among residents are identified, jeopardizing the fairness, inclusiveness, and long-term viability of rehabilitation initiatives. By highlighting diverse stakeholders' evolving impacts, this study advances current understanding of participatory urban renewal. The proposed SIM provides a robust framework for analyzing stakeholder interactions and informs policy interventions aimed at fostering more equitable and inclusive urban rehabilitation in China.

KEYWORDS Resident participation; neighborhood rehabilitation; stakeholder analysis; urban renewal; China

3.1 Introduction

After witnessing displacement and gentrification caused by brutal demolition and redevelopment, rehabilitation has become a preferred paradigm for recent urban renewal efforts. Unlike the knock-down-and-rebuild strategy for redevelopment, rehabilitation is a restoration and enhancement, aiming to modernize backward urban areas to meet current development needs while allowing the original inhabitants to continue living and working in their habitats (Li, Tao et al., 2024). By minimizing the evacuation and displacement of the original inhabitants, rehabilitation effectively preserves collective memories and longstanding social ties (Pérez, Laprise et al., 2018; Zhuang, Qian et al., 2019). Consequently, rehabilitation is recognized as a crucial strategy for sustainable urban development, particularly effective at the residential neighborhood scale (Pérez, Laprise et al., 2018).

With a growing appeal for social sustainability, neighborhood rehabilitation is evolving from a top-down economic stimulus to a bottom-up social movement, thereby advocating resident participation. For neighborhood rehabilitation, resident participation (RP) refers to *any process that involves residents in problem-identifying and decision-making to enable public input to be manifested in rehabilitation decisions and outcomes* (IAP2). Anticipated benefits of participatory neighborhood rehabilitation include cultivating local insights and shared values (Uittenbroek, Mees et al., 2019). It reduces superfluous expenditure and delay (Creighton, 2005), thus enhancing the project's efficiency, effectiveness, and overall satisfaction (Suschek-Berger and Ornetzeder, 2010). For residents, participation acts as a channel for social learning, fostering the acquisition of knowledge and skills, and nurturing self-identity and confidence (Nienhuis, Van Dijk et al., 2011). It also bolsters neighborhood cohesion (Dickens, 2013) and subjective well-being (Orchowska, 2019). Given these prospects, from the initial efforts in North America, the United Kingdom, and Europe to recent advancements in developing countries, participatory strategies have been integrated and institutionalized into renewal policies, serving as a fundamental pillar in pursuing inclusive and resilient urban development.

However, participation practice is not always effective, marked by a low degree of engagement, lack of access, order and transparency, and minimal impact on decision-making (Mohammadi, 2010; Swapan, 2014; Uittenbroek, Mees et al., 2019). Facing ineffective RP, scholars and government officials promptly attributed the problem to "apathetic" residents. Consequently, strategies are proposed to "sensitize" residents, enhancing their awareness, capacity, and actual behavior

(Mohammadi, 2010; Swapan, 2014). Nevertheless, the policy census by (Lowndes, Pratchett et al., 2001a, 2001b) and ethnographic observations by Mathers, Parry et al. (2008) in the U.K. challenge this perspective. Their cases show that residents' non-participation does not stem from indifference towards neighborhood issues. Instead, it is a conscious resistance to government-imposed participation initiatives (Mathers, Parry et al., 2008). Later, as participation practices become widely disseminated, a growing number of studies argue that the organizers bear significant responsibility for ineffective RP (Li, Tao et al., 2024; López-Rodríguez, Ruiz-Mallén et al., 2020; Uittenbroek, Mees et al., 2019). In this sense, a comprehensive analysis of organizers is imperative to curb organizers' potentially arbitrary and irresponsible behaviors that undermine the effectiveness of participation practices and the success of neighborhood rehabilitation initiatives.

The stakeholder theory, distinguished by diverse disciplinary perspectives and analytical frameworks, is a powerful and widely used tool for examining organizers (Freeman, 1984; Olander and Landin, 2005; Reed, Graves et al., 2009). In urban renewal, nevertheless, established stakeholder studies focus on identifying and categorizing stakeholders, with few studies investigating stakeholder influence (Mok, Shen et al., 2015), let alone their impact on RP. Moreover, extant stakeholder influence research is based on the conventional framework proposed by Freeman (1984), which posits that stakeholders operate independently and directly influence the focal issue. This hub-and-spoke-like assumption of the organization-stakeholder relationship overlooks the influence of stakeholder interactions (Frooman, 1999). Hence, it is challenging to comprehend why some stakeholders, seemingly without direct involvement, can substantially influence decisions. Additionally, most renewal studies simplify the renewal process as a homogeneous and static entity, ignoring that the purposes and outcomes of renewal activities, attributes, behavior, and strategies of stakeholders change significantly over time (Mok, Shen et al., 2015). Despite widespread appeals from scholars (Freeman, 1984; Frooman, 1999; Mitchell, Agle et al., 1997; Mok, Shen et al., 2015; Olander and Landin, 2005), longitudinal stakeholder analysis that adopts a project lifecycle perspective remains scarce.

To fill these gaps, this study proposes an analytical framework for understanding stakeholder influence based on the stakeholder theory. Additionally, given the frequent occurrence of ineffective resident participation in neighborhood rehabilitation and the inherent responsibility of stakeholders in such occurrences, the framework is applied to this specific context. The objective of this research is to understand how stakeholders influence resident participation throughout the project lifecycle of neighborhood rehabilitation. Specifically, this research addresses three questions: 1) What are the different types of stakeholder influence? 2) How do stakeholders influence resident participation in neighborhood rehabilitation? and 3)

How does stakeholder influence evolve across various phases of neighborhood rehabilitation lifecycle? Insights into stakeholder influence are expected to curb their undesirable behaviors and unhealthy relationships, promote effective resident participation, thereby contribute to a more inclusive and resilient urban development.

3.2 Literature Review

3.2.1 Stakeholder Theory and Analysis

The concept of stakeholder was coined by the Stanford Research Institute in 1963 and further refined by R. Edward Freeman in 1984. Freeman (1984) defined stakeholders as "*any group or individual who can affect, or is affected by, the achievement of the organization's objectives.*" Since its introduction, stakeholder analysis has not only gained popularity but has also become essential in scholarly and practical fields. Stakeholder analysis generally refers to a comparative process that involves delineating phenomena, identifying stakeholders, and formulating engagement strategies (Reed, Graves et al., 2009). Established and validated approaches for stakeholder analysis include Power/Interest Matrix, Stakeholder Salience Model, Stakeholder Circle, and Social Network Analysis. Meanwhile, case studies, focus groups, and semi-structured interviews are preferred data collection methods (Yang, Shen et al., 2011). Each methodology offers unique advantages while possessing certain limitations. Consequently, scholars often employ a multi-methodological approach, integrating diverse models and data to conduct in-depth analyses and cross-validation (Reed, Graves et al., 2009; Yang, 2014; Zhuang, Qian et al., 2019), thus enhancing the robustness and precision of research outcomes.

While widely debated, the rationale for stakeholder research is roughly structured around the three dimensions (Donaldson and Preston, 1995): descriptive, instrumental, and normative. Descriptive research outlines phenomena and their relationships with stakeholders, while instrumental research seeks to achieve organizational objectives through analysis. Normative research advocates for the legitimacy of stakeholder engagement, thus grounded in moral or ethical considerations. Building on this theoretical foundation, the review by Reed, Graves et al. (2009) synthesizes various methodologies with distinct rationales, providing

a structured approach to selecting methods that align with specific goals and contexts. Later, the study by Yang, Shen et al. (2011) highlights the effectiveness of stakeholder analysis in identifying key stakeholders and managing potential conflicts, broadening its applicability across various fields, including urban renewal. For example, Yang (2014) employs the Stakeholder Circle and Stakeholder Salience Model to categorize and prioritize stakeholders in an Australian district revitalization project. Rădulescu, Ştefan et al. (2016), focusing on a Romanian brownfield redevelopment project, pinpointed essential stakeholders and proposed targeted strategies for boosting their engagement. Using the case of Chongqing, China, Zhuang, Qian et al. (2019) integrate Power/Interest Matrix alongside Social Network Analysis to investigate stakeholder interactions and their influence on urban renewal decision-making.

Despite these advances, in the realm of urban renewal, existing stakeholder research concentrates on identifying and categorizing stakeholders and quantifying the strength of their relationships. Few studies explore stakeholder influence or its subsequent impact on RP (Mok, Shen et al., 2015). Additionally, while Mitchell, Agle et al. (1997) note that "*power is transitory: it can be acquired as well as lost,*" Olander and Landin (2005) emphasize the necessity of continuously analyzing and updating stakeholder information throughout the project lifecycle. Yet, established research often overlooks the dynamic and temporal aspects of stakeholder influence. Longitudinal studies on this topic are particularly scarce, with few exceptions (Aaltonen and Kujala, 2010; Olander and Landin, 2005). This study addresses these gaps by providing a comprehensive analysis of stakeholder dynamics over time, specifically focusing on their evolving influence behaviors and the consequent effects on resident participation throughout various phases of urban renewal projects.

3.2.2 Stakeholder Influence on Resident Participation

Direct Influence

What are the different types of stakeholder influence? Established stakeholder research provides few explanations of the concept of influence, with Reed, Graves et al. (2009) as one exception. Reed, Graves et al. (2009) adopt the definition from social psychology, in which influence is defined as the "*process of affecting the thoughts, behavior, and feelings of another* (Nelson, Nelson et al., 1994)." The remaining studies focus on the measurement rather than the definition, with power being the commonly used attribute. Power is preferred as it is a determinant of

stakeholders' capacity to influence (Nelson, Nelson et al., 1994) and is "a necessity to raise the impact level (Olander, 2007)." For similar reasons, this research uses power to describe and analyze stakeholder influence.

Meanwhile, many efforts have been devoted to defining and categorizing stakeholder power. Etzioni (1964) provides a classical and concise classification. According to Etzioni (1964), power refers to "*an actor's ability to induce or influence another actor to carry out his directives or any other norms he supports*." Stakeholders are deemed to possess coercive, utilitarian and normative power based on their physical, material and symbolic resources, respectively (Etzioni, 1964; Mitchell, Agle et al., 1997). This classification prioritizes the organizational attributes of stakeholders over their individual impact on the issue. Yukl (1998) expands on this by noting that power can also stem from personal sources. Building on Yukl's argument, this study argues that in addition to political and positional power, stakeholders may use leadership, charisma, integrity, enthusiasm and other personal traits to influence participation practices during neighborhood rehabilitation projects. Drawing from the above insights and relevant government documents, this study recognizes that stakeholders can exert four types of influence (Table 3.1): 1) ***Assets***, 2) ***Knowledge***, 3) ***Traits***, and 4) ***Position***.

TABLE 3.1 Stakeholder direct influence on resident participation shortlisted from the literature[8]

Type of Influence	Cd.	Subtypes and implication for resident participation	(French and Raven, 1959)	(Etzioni, 1964)	(Yukl, 1998)	(Pajunen, 2006)	(Reed, Graves et al., 2009)	(Greene, 2010)	(Beritelli and Laesser, 2011)	(Aragonés-Beltrán, García-Melón et al., 2017)	(Yu and Leung, 2018)	(Lu and Lange, 2021)	(USC, 1992)	(BZK, 1994)	(MOHURD, 2017)	(SC, 2020)
Assets	A1.	Possession/control of (in)tangible resources, e.g., money, labor, venue, technology, information, permit, etc.	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	A2.	Importance and necessity of resources for the focal issue				√									√	
	A3.	Timeliness, stability and security of resource supply	√		√		√		√	√			√		√	√
	A4.	Level of dependence on others for resources				√								√		
Knowledge	K1.	Expert knowledge	√		√			√	√	√	√	√	√	√	√	√
	K2.	Professional competence							√	√		√	√	√	√	√
	K3.	Personal strategies							√	√		√		√		
Traits	T1.	Capacity to shape values and beliefs, e.g., persuasiveness, credibility, and leadership.	√	√	√		√			√		√		√	√	√
	T2.	Public image, e.g., charisma, likeability, admiration, wisdom, generosity.			√			√		√					√	
	T3.	Interpersonal skills, e.g., resourcing, networking, teamworking, communication and negotiation skills.				√		√		√			√			
Position	P1.	Hierarchical position	√		√			√	√	√	√	√	√		√	√
	P2.	Organizational position (image of the organization)			√			√			√		√	√	√	√
	P3.	Mechanism position (position in a specific process/mechanism)				√			√	√			√	√	√	

8 USC: United States Congress, BZK: Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, the Netherlands, MOHURD: Ministry of Housing and Urban-Rural Development, China, SC: State Council, China

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Assets refer to a stakeholder's capacity and willingness to supply resources, and the ability to provide resources in a timely, stable and safe manner (Aragonés-Beltrán, García-Melón et al., 2017). Endorsed by resource dependency theory and exchange theory, the underlying assumption of ***Assets*** influence is that stakeholders obtain influence by controlling critical and needed resources (Henriques and Sharma, 2005). A stakeholder's influence becomes more pronounced as the focal issue increasingly relies on the stakeholder's resources (Pajunen, 2006). For resident participation, tangible resources include money, labor, technologies and services, venues, and equipment. Time allowance, permits, and licenses are common intangible resources.

Knowledge refers to the intelligence, expertise, and skills that stakeholders gain and accumulate through work and training (Beritelli and Laesser, 2011). Aragonés-Beltrán, García-Melón et al. (2017) subdivide it into K1. *Expert knowledge*, K2. *Professional competence*, and K3. *Individual strategies*. For resident participation, they respectively refer to knowledge regarding techniques, channels and measures acquired through thematic training; expertise accumulated from professional work and competence it brings; and personal strategies summarized after going through various rehabilitation and participation activities and interacting with diversified stakeholders.

Knowledge alone does not guarantee influence, which also relies on stakeholders' abilities to collect, process, share, and apply information (Yukl, 1998). The control over information is largely determined by individual ***Traits*** (Li, Tao et al., 2024; Parise, 2007), which can be organized into three distinct categories: T1. *Capability to shape values* includes leadership, infectiousness, and persuasiveness (French and Raven, 1959; Yukl, 1998). Stakeholders possessing these traits can sway others, inspiring target groups to follow directives even without fully grasping the advocated principles. T2. *Public image* includes charisma, enthusiasm, optimism, and generosity (Greene, 2010; Yukl, 1998). Influence driven by public image is about personal appeal, fostering relationships based on friendship or admiration. T3. *Interpersonal skills*. Individuals with well-developed interpersonal competencies, such as resourcing, networking, teamwork, communication, and negotiation skills, are more likely to accumulate resources and build coalitions for more significant impact (Li, Zhuang et al., 2024).

Position, in contrast, is determined by the environment in which stakeholders operate and is less related to individual traits (Greene, 2010; Yukl, 1998). ***Position*** influence stems from three main dimensions: P1. *Organizational position* refers to the influence stakeholders receive from their affiliated institution, determined by the institution's social role, qualifications, and reputation (French and Raven, 1959;

Greene, 2010; Yukl, 1998). P2. *Process position* influence arises from processes and mechanisms and is closely related to project nature (Aragonés-Beltrán, García-Melón et al., 2017; Beritelli and Laesser, 2011). For instance, residents generally have more decision-making power in the design phase of a rehabilitation project than in a redevelopment project. P3. *Hierarchical position* relates to the vertical position of stakeholders within their organizations (Beritelli and Laesser, 2011; French and Raven, 1959), determining stakeholders' prerogatives, duties, and responsibilities (Yukl, 1998).

Indirect influence

Despite the fruitful exploration of power in the above research frameworks, the shortcoming is evident: the influence of stakeholders' interrelationships on each other's behavior is overlooked (Henriques and Sharma, 2005). Frooman (1999) explains this indirect influence through the lens of resource dependence theory, and power is considered an attribute embedded in the relationship between stakeholders. Based on the type of dependency (yes or no) and degree of dependence (high or low) between a pair of stakeholders, Frooman (1999) proposes four types of indirect influence: 1) direct withhold, 2) direct usage, 3) indirect withhold, and 4) indirect usage. Aaltonen and Kujala (2010) amalgamate it with Mitchell, Agle et al. (1997)'s Stakeholder Salience Model, and refine the indirect influence into seven distinct categories. Using the case of a pulp mill project in Uruguay, Aaltonen and Kujala (2010) validate the applicability of the framework in analyzing stakeholders' indirect influences in construction projects. This framework also highlights the complexities similar to those encountered in neighborhood rehabilitation initiatives. These complexities include competing and conflicting interests that are often challenging to identify and reconcile. Moreover, both projects generate environmental and social impacts that transcend physical boundaries, involving a broad spectrum of social and community actors. Given these parallels, Aaltonen and Kujala (2010)'s framework is well-suited for uncovering hidden relationships and impacts in neighborhood rehabilitation, thereby addressing previously identified gaps in urban studies. Consequently, this research adopts Aaltonen and Kujala (2010)'s framework, proposing that stakeholders indirectly influence resident participation through seven distinct pathways:

- ***Direct withhold/usage****:* Stakeholder A either ceases to supply critical resources to stakeholder B, referred to as ***Direct withhold***; or dispenses resources but with conditions attached, termed as ***Direct usage***. These conditions motivate Stakeholder B to adopt and execute RP in neighborhood rehabilitation or modulate B's undesirable behaviors.

- ***Indirect withhold/usage:*** Stakeholder A influences stakeholder C to either stop providing resources to stakeholder B, termed as ***Indirect withhold***; or to allocate resources to B but with added conditions, known as ***Indirect usage***. This way of influence resembles ***Direct withhold/usage***. In this case, Stakeholder A' chooses, or often can only use, the intermediary Stakeholder C to influence Stakeholder B's behavior.

- ***Resource building:*** Stakeholder A increases its holdings of critical resources to a target stakeholder, like stock, credibility, and trust. Or critical resources for RP, such as policies, knowledge, or tactics. Hence, promoting Stakeholder A's perceived influence on the target stakeholder or RP. This is especially the case during the initial stages of the rehabilitation process, where stakeholders may lack sufficient resources to initiate or organize RP effectively.

- ***Coalition building:*** Stakeholder A collaborates with other stakeholders to build synergies for RP and enhance its advocacy's credibility.

- ***Conflict escalation:*** Stakeholders escalate existing conflicts to reshape the environment. Within this altered context, their advocacy for RP is more resonant and understandable to other stakeholders and the broader community.

- ***Communication and credibility building:*** Stakeholders disseminate information through various channels to build credibility and a positive image, fostering an environment that encourages support and acceptance of their proposals, like RP.

- ***Direct action:*** Stakeholders organize petitions, protests, boycotts, and roadblocks to compel other stakeholders to adopt and implement RP. This strategy aims to prompt immediate response and tangible changes through direct confrontation.

  Building upon the identified influence strategies, this research proposes an analytical framework termed the Stakeholder Influence Model (SIM) (FIG. 3.1):

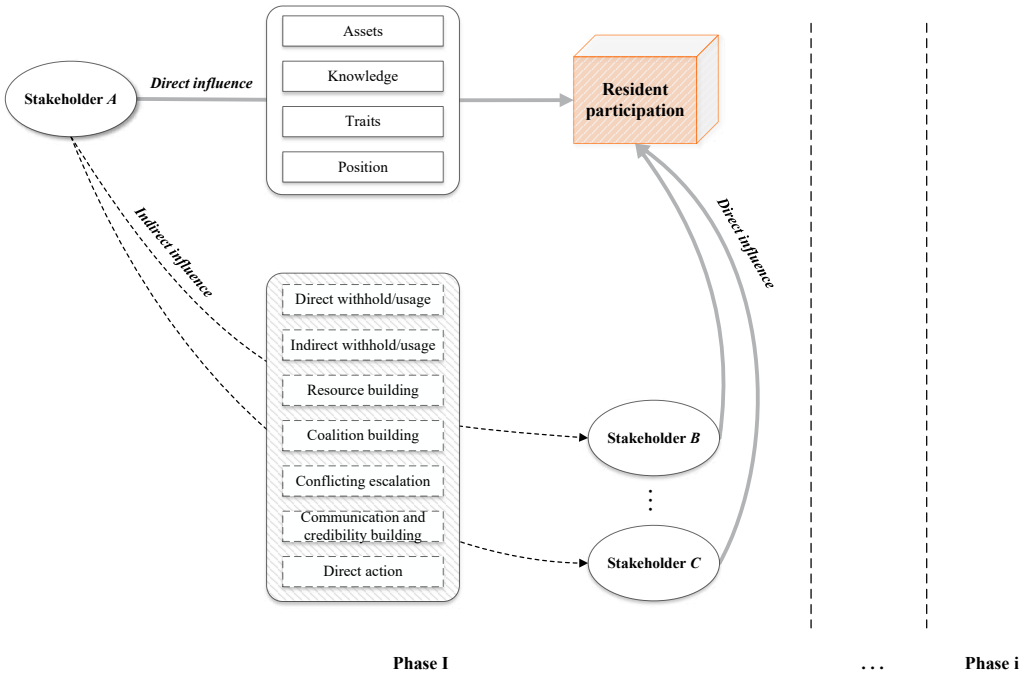

FIG. 3.1 The Stakeholder Influence Model (SIM)

3.2.3 Neighborhood Rehabilitation in Urban China

The residential neighborhood in China refers to *an urban district with clear geographical boundaries where the primary purpose of land use is housing* (MOHURD, 2018). Those constructed before 2000 are commonly referred to as old neighborhoods and are the focus of recent rehabilitation initiatives (SC, 2020). Given extensive socio-political benefits, local governments remain the initiator and the primary financier of rehabilitation. Government-initiated neighborhood rehabilitation mainly aims to (SC, 2020): 1) restore building structures and exteriors; 2) improve the communal environment and amenities; and 3) boost community engagement and grassroots governance.

Meanwhile, RP is gaining recognition in China as a critical component in achieving sustainable neighborhood rehabilitation. The *2017 Symposium on the Pilot Programme of Old Neighborhood Rehabilitation* introduced the concept of resident participation to China's urban renewal policies, which is now articulated as Co-

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creation (*Gongtong Dizao*) in policy frameworks. To foster co-created urban neighborhoods, residents are actively involved in determining (MOHURD, 2017; SC, 2020): 1) whether to rehabilitate the neighborhood; 2) rehabilitation scope and content; 3) design plans and technology; 4) construction content and sequence; and 5) management mode and responsible body. These milestones, in turn, subdivide the neighborhood rehabilitation process into five phases:

- **Phase I - Intention and Setup**
- **Phase II - Mapping and Assessment**
- **Phase III - Planning and Design**
- **Phase IV - Construction and Acceptance**
- **Phase V - Operation and Maintenance**

Established policies also outline the responsibilities and roles of involved parties. Besides residents, recent cases show that five stakeholder groups are most relevant to RP in neighborhood rehabilitation in China (Li, Tao et al., 2024; Lu and Lange, 2021; SC, 2020): local government, neighborhood committee, design professional, implementation and construction unit, and consulting party.

The local governance structure in China encompasses three hierarchical levels: Municipality, District Government, and Sub-district Administrative Office. For neighborhood rehabilitation, the municipality crafts overarching policies, monitors project progression, and evaluates outcomes (SC, 2020). The district government's responsibilities include funding allocation, project approval, and recruiting and coordinating essential personnel such as designers, implementers, and consultants (SC, 2020). At the grassroots, the sub-district office implements these projects, handling policy training, task delegation, staff management, and site supervision. Despite the differentiated roles, all three levels are united in the commitment to urban development and social stability (SC, 2020). Therefore, like other urban studies (Li, Tao et al., 2024; Liu, Wang et al., 2018; Lu and Lange, 2021), this research views these three governmental tiers as an integrated entity, aiming to understand their collective impact on neighborhood rehabilitation and associated efforts.

In China, neighborhood committee is an institutionalized community-based organization that facilitates self-governance, self-education, and self-service among residents (NPCSC, 2018). The committee is established under government guidance and supported with empowerment and subsidies (NPCSC, 2018). Within neighborhood rehabilitation, neighborhood committee fulfills dual roles. It acts as the government's "spokesperson," relaying policies, implementing directives, and mobilizing residents to engage in civic duties (Liu, Lin et al., 2023). Simultaneously,

it serves as residents' "family head," mediating internal conflicts, facilitating interactions with external parties, and safeguarding residents' interests and rights (Li, Tao et al., 2024; SC, 2020). Besides neighborhood committee, residents may spontaneously form other community-based organizations, including homeowner committee, clan organization, self-management group, and interest group (Li, Tao et al., 2024; Lu and Lange, 2021; SC, 2020). The presence, roles, and impact of these groups vary widely across neighborhoods (Lu and Lange, 2021). Given this variation, this study specifically focuses on the neighborhood committee's unique behavior in RP.

In neighborhood rehabilitation projects, designers and implementation units primarily manage plan design and field construction. They also take on roles such as surveyors or community planners, organizing lectures, surveys and workshops to gather and integrate residents' feedback into the decisions (Li, Zhang et al., 2020; SC, 2020). Consulting entities, including research institutions, non-government organizations (NGOs), media, businesses, and pressure groups, also play a vital role (Li, Tao et al., 2024; Li, Zhuang et al., 2024). Their activities span education, platform creation, event planning, monitoring, and policy formulation when required (Li, Zhang et al., 2020; Yu and Leung, 2018).

3.3 Methodology

The case study approach, frequently employed in stakeholder research, was applied to examine how stakeholders impact RP throughout the neighborhood rehabilitation lifecycle. Given this research's revelatory nature, the case study method enables an in-depth examination of the adaptability and comprehensiveness of the proposed Stakeholder Influence Model (SIM, FIG. 3.1) within the context of neighborhood rehabilitation. Additionally, this methodology enables a "thick description" of multifaceted and evolving stakeholder behaviors (Patton, 2014), providing a nuanced understanding of stakeholders' effects on RP.

3.3.1 Case study area

Wuhan, China, was selected as the case study area. Wuhan is the capital city of Hubei province, with 13 administrative districts (FIG. 3.2). As the largest city in central China in terms of both population size and gross regional product (GRP), Wuhan is a pivotal hub for central region development. From 2020 to 2023, Wuhan has rehabilitated 1,560 aging neighborhoods, benefiting approximately 685,700 households. [9] Public participation practices emerged in 2008 and were institutionalized into urban renewal policies by 2020[10]. Such extensive endeavors furnish public, private and societal stakeholders in Wuhan with invaluable experience and insights to answer the research questions.

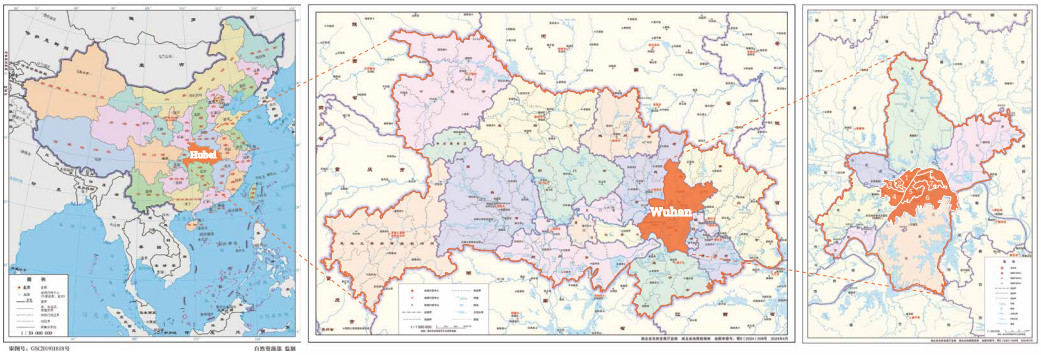

FIG. 3.2 Location of Wuhan

Wuhan's selection as the study area is also informed by its distinctive role within domestic and global urban hierarchies. Its status as a representative second-tier[11]

9 Calculated from government annual reports.

10 For a detailed review of the history and policies of urban renewal and resident participation in Wuhan, see our previous research Li, Zhuang et al. (2024) and Li, Tao et al. (2024).

11 The National Bureau of Statistics (NBS) categorizes Chinese cities into three tiers based on political status, administrative level, economic volume, and population size. Currently, there are 4 first-tier cities (Beijing, Shanghai, Guangzhou, Shenzhen), 31 second-tier cities, and 35 third-tier cities. Most of the second-tier cities are provincial capitals. Wuhan, as the capital of Hubei province, is among the middle level of provincial capitals in terms of economic size and population, and is thus a widely accepted second-tier city. For cities included in each tier, please see https://www.gov.cn/lianbo/bumen/202401/content_6926526.

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and Beta city[12] creates a valuable context for examining stakeholder influence on RP. On the one hand, while first-tier cities exert significant domestic and global impact, second-tier cities host more aging neighborhoods and larger populations (Wei, 2020). Renewal studies in China focus on first-tier cities, leaving a gap in understanding due to the limited budgets, fewer social resources, and more conservative governance structures typical of second-tier cities. Therefore, as a representative second-tier city in China, insights from Wuhan are instrumental for calibrating and contextualizing findings from developed regions and offering lessons for other developing cities navigating similar constraints.

On the other hand, second-tier cities usually operate on tighter fiscal budgets for social services. The COVID-19 pandemic further exacerbates these financial challenges, significantly reducing urban development investments. A case in point is that government funding for neighborhood rehabilitation in Wuhan decreased from ¥70,000 per household in early 2020 to less than ¥20,000 by the end of 2022 (Li, Tao et al., 2024). The government allocates ¥100,000 per year to each neighborhood, but is expected to cover the entire cost of community services for 1,000 to 2,000 households (about 3,000 to 6,000 people) (Liu, Lin et al., 2023). Such fiscal austerity mirrors the trends witnessed in Western countries following the 2008 economic crisis. Given this parallel fiscal context, Wuhan can offer nuanced insights for Western countries navigating persistent budgetary challenges.

3.3.2 Data collection

Qualitative methods, including desk research, semi-structured interviews, and participant observations, were integrated to validate the SIM and address the study's second and third research questions: How do stakeholders influence resident participation in neighborhood rehabilitation? How does stakeholder influence evolve across different phases of the neighborhood rehabilitation lifecycle?

Data collection began with desk research of policy documents, project records, and newspaper articles to create a database of neighborhood rehabilitation projects in Wuhan. This database cataloged each project's geographical location, rehabilitation details, and contact information for relevant agencies. Utilizing this database, initial

12 Globalization and World Rankings Research Institute (GaWC) classifies second-tier cities in China from Beta to Gamma- cities. Wuhan is designated as a Beta city, indicating moderate connections with the global economy. See https://www.lboro.ac.uk/microsites/geography/gawc/world2020t.html for a detailed list.

contacts were made with government agencies and implementation units, who facilitated further connections with neighborhood committee members, design professionals, and consultants. Government interviewees were purposively selected from all three levels of local government across all inner districts (FIG. 3.1, Districts 1–7), focusing on departments involved in neighborhood rehabilitation. Representatives from neighborhood committees were carefully selected to cover each inner district, and design and construction firms were chosen to ensure representation of projects across Wuhan. For these non-resident stakeholders, leaders and managers were targeted for their deep insights into urban renewal and their ability to articulate institutional perspectives. Resident respondents were recruited through two approaches: a random selection from the public and a stratified method based on project locations from the database. This approach aimed to collect diverse viewpoints, representing various ages, educational levels, income brackets, and residential backgrounds.

During the interviews, participants were prompted to 1) describe neighborhood rehabilitation lifecycle and associated RP activities; 2) identify the phases of their involvement; and 3) discuss their and other stakeholders' influence on RP. Sampling across the six stakeholder categories continued until no new influencing strategies emerged. From May to September 2022, 44 interviewees were approached, including 9 government officials, 7 neighborhood committee directors, 7 design professionals, 5 construction practitioners, 7 consultant representatives, and 9 residents. Interviews, conducted face-to-face by one of the authors, lasted between 0.7 to 3 hours. The study followed Kaiser (2009)'s methodological framework to ensure confidentiality throughout the design and data collection phases. The interview protocol (first column of Table 3.2) was approved by the Human Research Ethics Committee (HERC) at the authors' institution. At the beginning of each interview, a confidentiality agreement was presented, ensuring that personal information would be pseudonymized and the data would be used exclusively for academic research. All participants consented to the recording, transcribing, and quoting of their statements.

Table 3.2 shows that the resident sample primarily includes middle-aged and elderly homeowners, complemented by younger tenants with higher education and income levels, aligning with demographic trends in aging neighborhoods in China (Li, Zhuang et al., 2024). Non-resident respondents are urban renewal experts active across various administrative districts, with 3 to 5 years of experience in neighborhood rehabilitation, consistent with the recent implementation of rehabilitation policies in China's second-tier cities since 2020 (Li, Tao et al., 2024). Hence, the respondents are considered representative and equipped to offer meaningful and varied insights into the study's research questions.

TABLE 3.2 Profile of the interviewees[13]

Group	Cd.	Position	Profile
Local government	LG1	Section head	Government department A at the municipal level; Specialized in propaganda and grassroots work; 5 years of experience in devising resident participation
	LG2	Vice director	Government department B at the municipal level; Urban planning and development specialist; Over 20 years of renewal experience
	LG3	Section head	District Bureau of Housing Management Housing; Specialized in housing renovation and management; 20 years of experience in urban renewal, 5 years in rehabilitation
	LG4	Section head	District Bureau of Finance; 3 years of experience in grassroots work, 10 years of experience in finance and 5 years of experience in urban rehabilitation
	LG5	Section head	District Branch of Natural Resources and Planning Bureau; 10 years of experience in urban renewal and 5 years of experience in neighborhood rehabilitation
	LG6	Section head	District Bureau of Administration and Approval; Specialized in construction project appraisal; 5 years of experience in neighborhood rehabilitation
	LG7	Section head	Subdistrict Administrative Office A; Specialized in public policy and administration, 18 years of experience in grassroots work; Implemented over 35 neighborhood rehabilitation projects
	LG8	Section head	Subdistrict Administrative Office B; Specialized in urban development, 10 years of experience in urban renewal. Implemented over 20 neighborhood rehabilitation projects
	LG9	Section head	Subdistrict Branch of Urban Management and Law Enforcement; 15 years of experience in assessing and removing unauthorized building works (UBWs)
Neighborhood committee	NC1	Director	Neighborhood Committee A; Over 20 years of experience in grassroots work; Implemented over 10 neighborhood rehabilitation projects
	NC2	Section head	Neighborhood Committee B; 10 years of experience in grassroots work; Implemented over 10 neighborhood rehabilitation projects
	NC3	Director	Neighborhood Committee C; 15 years of experience in grassroots work; Implemented 6 neighborhood rehabilitation projects
	NC4	Director	Neighborhood Committee D; Over 20 years of experience in neighborhood governance and grassroots work; Implemented 20 neighborhood rehabilitation projects
	NC5	Section head	Neighborhood Committee E; 13 years of experience in neighborhood governance and grassroots work

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13 Specific names of the organizations are not disclosed to comply with confidentiality agreements.

TABLE 3.2 Profile of the interviewees[13]

Group	Cd.	Position	Profile
Neighborhood committee	NC6	Director	Neighborhood Committee F; 10 years of experience in neighborhood governance; Initiated 2 rehabilitation projects
	NC7	Director	Neighborhood Committee G; 5 years of experience in neighborhood rehabilitation; Implemented 8 neighborhood rehabilitation projects
Planning and design professional	PD1	Chief planner	Planning and Design Institute A; Specialist in urban planning; Planned over 10 neighborhood rehabilitation projects spanning 4 districts
	PD2	Chief architect	Architectural firm A; 20 years of experience in architectural design; Planned over 10 rehabilitation projects spanning 3 districts
	PD3	Senior designer	Architectural firm B; 10 years of experience in landscape design; Designed over 5 rehabilitation projects spanning 2 districts
	PD4	Designer	Planning and Design Institute B; 15 years of experience in architectural design; Designed over 25 rehabilitation projects spanning 5 districts
	PD5	Designer	Planning and Design Institute C; 10 years of experience in architectural design; Designed over 10 rehabilitation projects spanning 3 districts
	PD6	Designer	Planning and Design Institute D; 3 years of experience in architectural design; Designed over 5 rehabilitation projects spanning 2 districts
	PD7	Surveyor	Local Development and Construction Company A; 10 years of experience in project management; Surveyed over 20 old neighborhoods
Implementation and construction unit	DC1	Manager	Local Development and Construction Company A; 20 years of experience in real estate development; Implemented 10 rehabilitation projects
	DC2	Manager	Local Development and Construction Company B; 10 years of experience in construction management; Implemented 13 neighborhood rehabilitation projects
	DC3	Senior manager	Construction company A; 20 years of experience in construction; Constructed over 20 rehabilitation projects spanning 4 districts
	DC4	Senior manager	Construction company B; 15 years of experience in construction; Constructed 8 rehabilitation projects spanning 2 districts
	DC5	Manager	Construction company C; 5 years of experience in construction; Constructed 5 rehabilitation projects spanning 2 districts

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TABLE 3.2 Profile of the interviewees[13]

Group	Cd.	Position	Profile
Consulting party	CP1	Professor	Local university A; 20 years of experience in urban planning,10 years in public participation. Planned 15 rehabilitation projects spanning 3 districts
	CP2	Researcher	Local university A; 5 years of experience in neighborhood rehabilitation; Designed 8 rehabilitation projects spanning 3 districts
	CP3	Professor	Local university B; 15 years of experience in urban renewal and 3 years in public participation; Currently in charge of three participatory rehabilitation projects
	CP4	Lecturer	Local university C; 5 years of experience in neighborhood rehabilitation; Currently in charge of a participatory planning project
	CP5	Head	NGO A for neighborhood planning and design; Specialized in neighborhood development and public participation; Involved in over 30 rehabilitation projects spanning 4 cities
	CP6	Member	NGO B for community building; Specialized in grassroots work, mediation of disputes, and formation of community-based organizations; Involved in over 10 neighborhoods spanning 3 districts
	CP7	Section head	Local newspaper; 8 years of experience in reporting urban renewal, and 3 years in neighborhood rehabilitation; Coverage of almost all rehabilitation projects in Wuhan
Resident	NR1	Homeowner	Male, 79 years old, 30 years of residence in rehabilitated Neighborhood A, bachelor's degree, has regular income above city median
	NR2	Tenant	Female, 32 years old, 8 years of residence in rehabilitated Neighborhood A, bachelor's degree, has regular below city median
	NR3	Homeowner	Female, 84 years old, 40 years of residence in rehabilitated Neighborhood B, associate degree, has regular income around city median
	NR4	Homeowner	Female, 48 years old, 15 years of residence in rehabilitated Neighborhood C, master's degree, has regular income around city median
	NR5	Tenant	Female, 58 years old, 10 years of residence in rehabilitated Neighborhood C, illiterate, living with children and no income
	NR6	Tenant	Male, 25 years old, 3 years of residence in Neighborhood D, bachelor's degree, has regular income around the city median
	NR7	Tenant	Male, 38 years old, 6 years of residence in Neighborhood E, Ph.D., has regular income above city median, just experienced an elevator addition
	NR8	Homeowner	Male, 49 years old, 20 years of residence in Neighborhood F, Ph.D., has regular income above the city median, just initiated a neighborhood rehabilitation
	NR9	Homeowner	Male, 60 years old, 12 years of residence in Neighborhood G, bachelor's degree, has regular income above the city median

Moderate participant observation was utilized to align subjective perceptions with objective data, fortifying the validity of the findings. From April to December 2022, two authors visited 20 completed and 13 ongoing rehabilitation projects across Wuhan and participated in 15 RP events. Field notes, photographs, random interviews, and reflective journals were gathered during the observations (FIG. 3.3), focusing on four main themes: 1) rehabilitation tasks and related RP activities, 2) objectives, processes, and outcomes of RP activities, 3) involved stakeholders, and 4) stakeholder influence behaviors and impacts on RP. In the end, the study compiled a dataset including 44 audio recordings, 3 videos, 65 interview transcripts (44 from semi-structured and 21 from impromptu interviews during observations), 218 photographs, 56 field notes, 23 project reports, 53 policy documents, and 43 news articles.

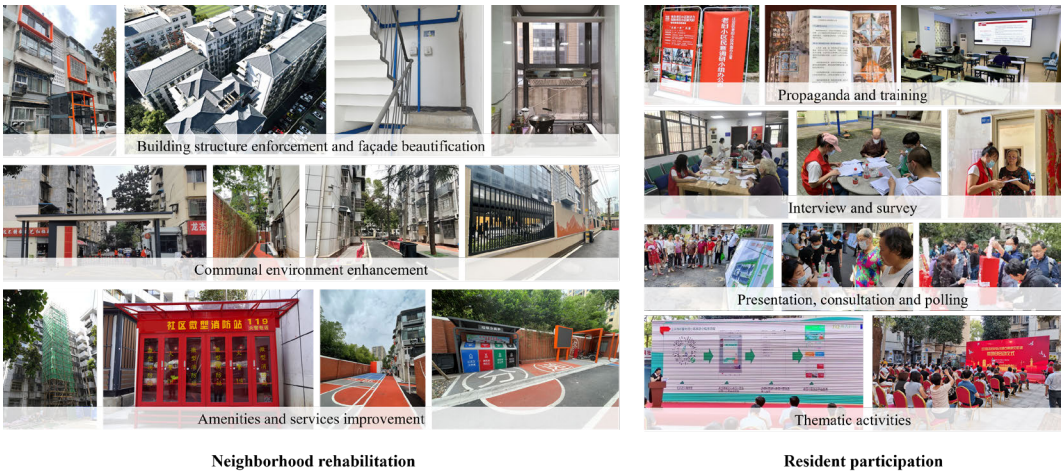

FIG. 3.3 Neighborhood rehabilitation and resident participation in Wuhan

3.3.3 Data analysis

Deductive content analysis was adopted to analyze the dataset, aiming to examine the applicability and effectiveness of the SIM in neighborhood rehabilitation context and the varied influence behaviors of stakeholders on RP. The analysis was structured into two phases. The SIM was first converted into a codebook with six defined themes: 1) stage of influence, 2) specific RP activity, 3) involved stakeholders, 4) target of influence (who influences whom), 5) type of influence (direct, indirect), and 6) impact on RP (facilitate, inhibit). These themes and their subcategories are elaborated in the codebook presented in Table 3.3.

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TABLE 3.3 Coding framework: phases, stakeholders, direction and types of influence

Interview question		Theme	Categories
In the X (1-5) phase of the rehabilitation, – What rehabilitation activities did you undertake? – Were residents involved? – How were the residents involved?	1	Phase of neighborhood rehabilitation	– Phase I - Intention and Setup; – Phase II - Mapping and Assessment; – Phase III - Planning and Design; – Phase IV - Construction and Acceptance; – Phase V - Operation and Maintenance
	2	RP activity	Specific name of the activity[14]
Did you meet any other stakeholders during the activity? Did this stakeholder have an impact on RP?	3	Relevant stakeholders	– Local government; – Neighborhood committee; – Design professional; – Implementation and construction unit; – Consulting group; – Resident
For this stakeholder, – Did this stakeholder have an impact on your behavior toward RP? – Or did you influence their behavior? – How did you influence each other?	4	Target of influence	- Influencer; – The influenced
	5	Type of influence	– Direct: 1) Assets; 2) Knowledge; 3) Traits; and 4) Position – Indirect: 1) Direct withhold/usage; 2) Indirect withhold/usage; 3) Resource building; 4) Coalition building; 5) Conflict escalation; 6) Communication and credibility building; 7) Direct action – Others
What was the impact of your actions on RP?	6	Impact on RP	- Facilitate; – Inhibit

14 For specific names of common RP activities for neighborhood rehabilitation in China, see Li, Zhuang et al. (2024).

Research data were then reviewed and coded using ATLAS.ti software to align with these predefined themes and categories. For example, local government interviewee LG5 stated during the interview, "*We require the applicant (implementation units) to submit supporting documents along with the design plan. The documents are to prove that, for this project, they have conducted public surveys, the design plan has been publicized in a conspicuous place, and most residents agree to the plan. If they do not submit these (supporting documents), we will not approve their application. In turn, they will not have a permit to construct.*" According to the codebook, this statement indicates local government's direct and indirect influence on implementation unit, facilitating RP. FIG. 3.4 illustrates how this statement was coded in ATLAS.ti.

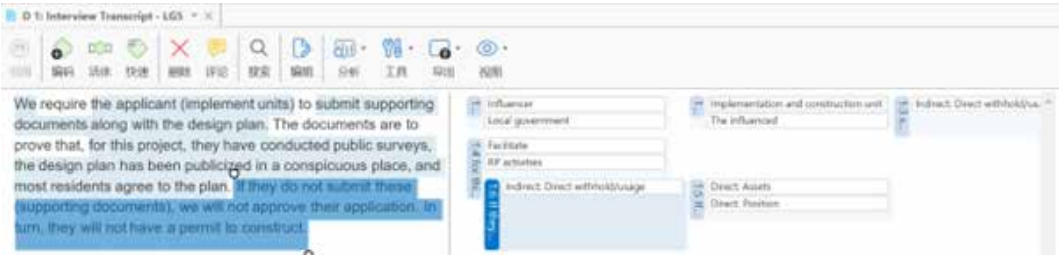

FIG. 3.4 An example of data coding using software ATLAS.ti

We enhanced finding validity through method and investigator triangulation. Two of the authors independently coded the data, and compared the results. Discrepancies in coding were resolved through discussion. If agreement was not reached, a third researcher arbitrated the decision.

3.4 Results

3.4.1 Stakeholder influence on resident participation

Phase I. Intention and Setup

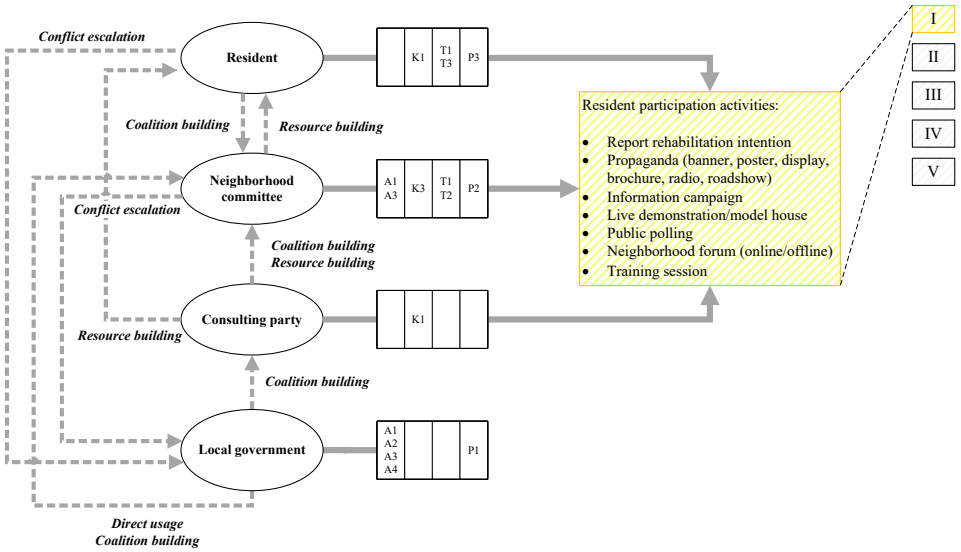

FIG. 3.5 Stakeholder influence on resident participation at Phase I

In Phase I, local government indirectly promoted RP (FIG. 3.5), setting the stage for neighborhood committee, consulting party, and residents to employ a mix of direct and indirect influence strategies. Local government provided the committee with financial resources and administrative authority (***Assets***, ***Position***), which enabled it to collaborate with local media (***Coalition building***). This partnership focused on extensively publicizing relevant policies and real-life examples, fostering residents' understanding of and positive attitudes toward rehabilitation initiatives (***Resource building***). Additionally, some committees, leveraging their grassroots knowledge and reputation within the governmental system (***Knowledge***, ***Traits***), advocated from the bottom up and led to significant improvements in the efficiency and effectiveness of RP:

'From the start of this project, I emphasized that if they wanted our help, we first needed to get on the same page (***Conflict escalation***) —figuring out how to address resident concerns. We completed 80% of the public survey within just four days. The government called it a miracle. After that, they adopted our approach for future surveys.' (Neighborhood committee interviewee, NC1)

Another objective of RP activities in this phase is to ensure that organizers and participants acquire the necessary knowledge to implement subsequent phases (***Knowledge***) effectively. To facilitate this, local government contracted NGOs (***Coalition building***), drawing on their professional expertise and experience (***Knowledge***). Through targeted education and training, NGOs enhanced the participants' ability to plan, design, organize and engage (***Resource building***), thereby indirectly promoting RP.

Phase II. Diagnosis and assessment

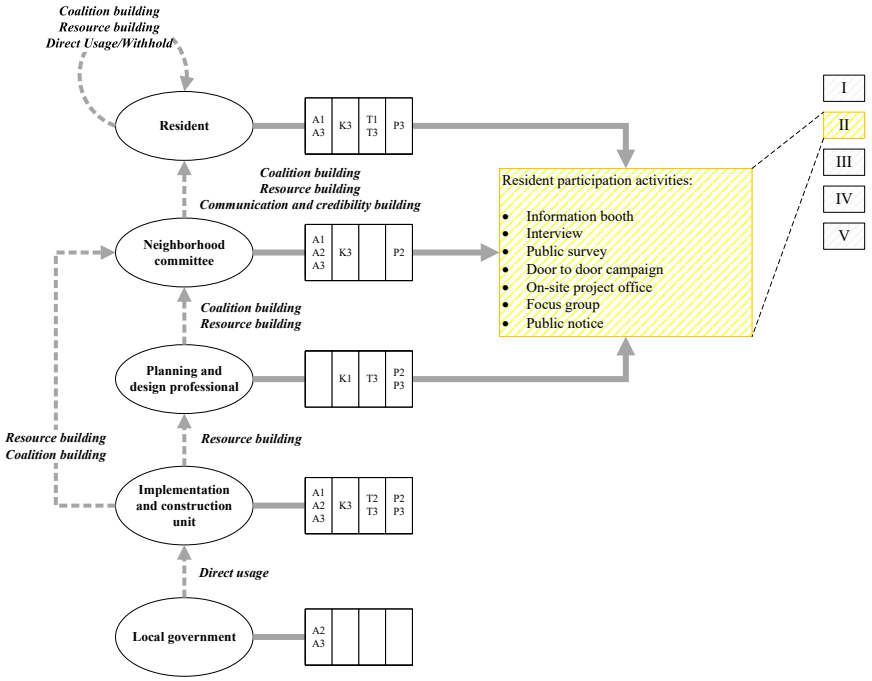

FIG. 3.6 Stakeholder influence on resident participation at Phase II

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In Phase II, the demand for RP came from implementation units and designers, exerting direct influences (FIG. 3.6). Implementation units engaged residents to comply with administrative and auditing requirements mandated by local government. While designers focused on understanding residents' preferences to ensure their design solutions were well-suited to local needs. Specifically, implementation units provided essential resources such as hardcopy questionnaires, display boards, and gifts (***Assets***). Neighborhood committee facilitated RP by preparing the necessary venues and equipment (***Assets***). While designers could conduct interviews and distribute questionnaires independently (***Traits***, ***Knowledge***), they often relied on the committee to engage residents and recruit participants (***Coalition building***):

'……even though we have professional knowledge and skills, we don't have the authority to carry out activities in neighborhoods or the ability to rally resident support (lack of ***Assets*** and ***Position***). Therefore, we rely on the committee's assistance for most cases.' (Design professional interviewee, PD2)

Residents formed collaborative groups to encourage more residents to actively express their needs. It also excluded those whose interests conflicted with the established coalitions:

'My friend underwent the roof renovation (Pinggaipo) during their rehabilitation. I shared this with Ms. S, who, like me, lives on the top floor and has been dealing with constant leaks and overheating (***Resource building***). After that, we gathered a few more top-floor residents to complete questionnaires, pushing for Pinggaipo in our neighborhood (***Coalition escalation***).' (Resident interviewee, NR2)

'At the meeting, the residents agreed to demolish the unauthorized building works (UBWs), assuring us that they represented the violators and had communicated the situation to them. However, it turned out that they only informed those who supported the demolition about our meeting (***Direct usage/withhold***, ***Coalition building***, ***Resource building***) and deliberately withheld information from the actual violators to prevent them from attending the meeting or contacting us.' (PD1)

Phase III. Planning and design

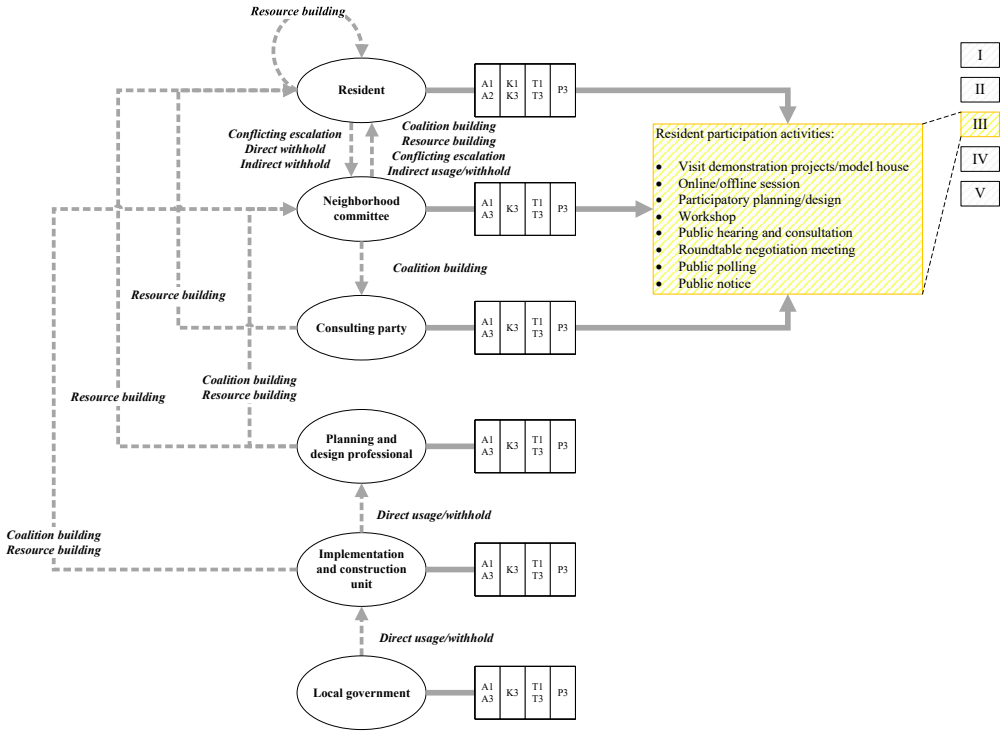

FIG. 3.7 Stakeholder influence on resident participation at Phase III

Designers and the implementation units continued to act as primary and direct promoters of RP in Phase III (FIG. 3.7). By specifying the budget usage and restricting the approval criteria, local government left implementation unit no alternatives but to carry out RP:

'We require them to submit supporting documents along with design plans (***Direct usage***). These documents must show that public surveys have been conducted, the design plan has been publicly displayed, and that most residents agree. Without these documents, we won't approve their application, and they won't be allowed to start construction. (***Direct withhold***).' (LG5)

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Designer initiated RP, while the organization and execution of RP largely depended on the material resources provided by implementation unit and the convening power of neighborhood committee (***Traits***, ***Position***):

'I must admit, for neighborhood project, it has already become our default to contact the committee first. We always present the plans to the committee and ask them to explain to residents and handle their inquiries. They are much better at this as we often use technical terms that residents don't understand or have the patience for. Plus, we are quite busy and not solely dedicated to serving them.' (PD6)

Neighborhood committee built trust and credibility among residents through daily interactions and, more significantly, by demonstrating positive attitudes, strategies, and satisfactory outcomes during emergencies, such as the COVID-19 pandemic. This enhanced public image (***Knowledge***, ***Traits***, ***Position***) enabled the committee to reach and mobilize the residents easily*:*

'After I experienced the pandemic, I realized that our committee truly serves the residents selflessly (***Communication and credibility building***). That is why I never hesitate to help when they ask for assistance with resident issues.' (NR3)

Experienced committees introduced residents to participation activities in batches. Enthusiastic, understanding, and reputable residents are typically involved first (***Traits***, ***Knowledge***), expecting them to act as catalysts for broader participation (***Resource building***). RP process was deliberately complicated for those not engaging through designated channels and schedules (***Indirect usage/withhold***), aiming to ensure orderly and structured RP:

'Some residents refuse to replace the burglar bars. However, after seeing other people's new burglar bars, they want to replace them. I told them that they had to obtain approval from various levels of government first. Actually, it does not need to be so complicated because I can do it for him. But they need to know that acting outside the program comes with a price.' (NC2)

Phase IV. Construction and Acceptance

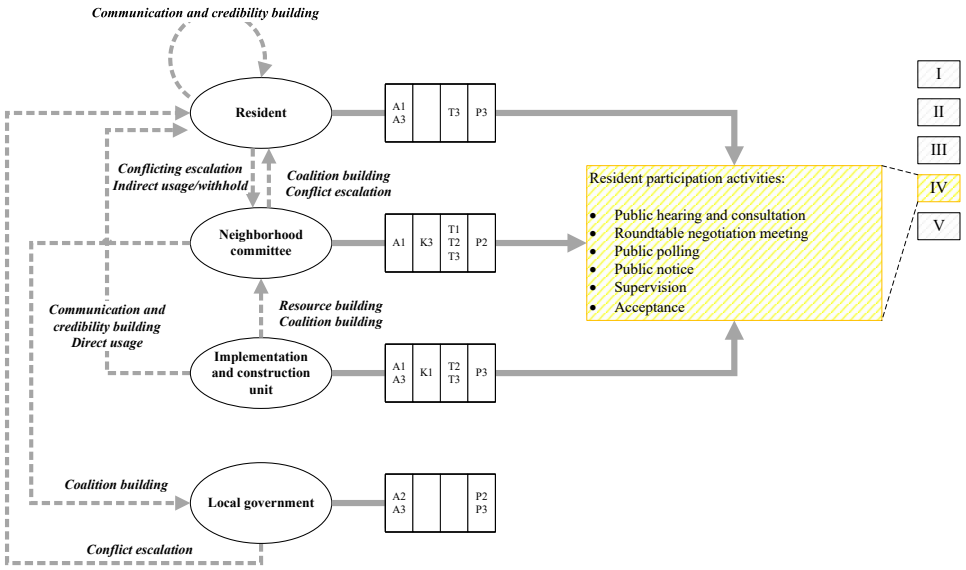

FIG. 3.8 Stakeholder influence on resident participation at Phase IV

In Phase IV, implementation units remained the primary advocator for RP (FIG. 3.8). Due to the illegal nature of UBWs, local government did not provide any monetary or in-kind compensation to violators. Nor is it permissible to use the rehabilitation budget to remove UBWs (lack of ***Assets***). To start work early, construction companies (***Knowledge***) tended to privately incentivize violators with consolation money or promise to restore their UBWs after rehabilitation by oral contracts (***Assets***, ***Resource building***). The committee also played a crucial role in the demolition of UBW. It persuaded residents to use non-material resources, such as referencing laws, asking for favors, or appealing to their sense of humanity (***Traits***). Still, the committee primarily relied on fellow residents (***Position***) to persuade violators (***Communication and credibility building***):

'Relying on us or the government to do persuasive work, violators will feel that you are using administrative mandatory orders to suppress them. But if the residents are to do the work, there will be less resistance.' (NC2)

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Besides the trust and credibility built up in the communication and interactions between residents and constructors, progressive rehabilitation results also promoted RP:

'From their working attitude and the results achieved so far (***Resource building***), I realized that constructors really want to help us. Thus, in later construction works, I always support their decisions.' (NR3)

Phase V: Operation and maintenance

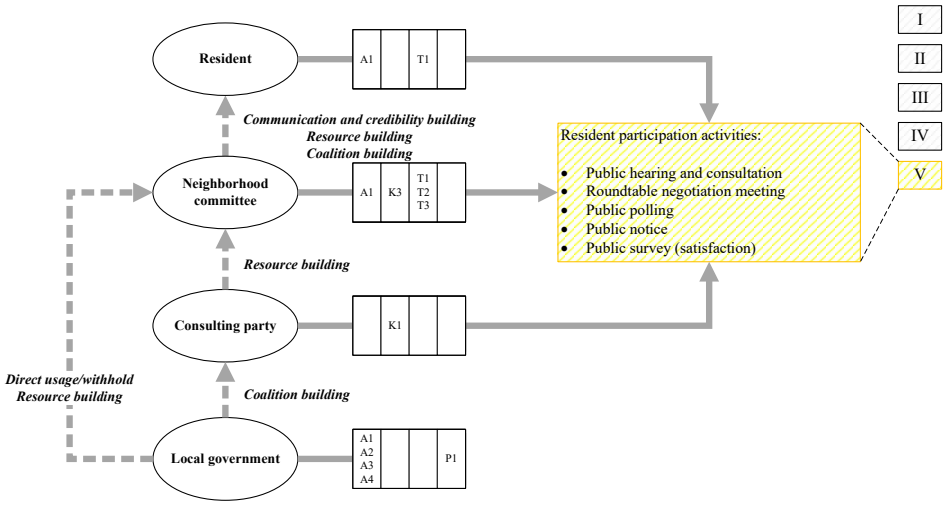

FIG. 3.9 Stakeholder influence on resident participation at Phase V

Neighborhood committee acted as RP's organizer and initiator in Phase V (FIG. 3.9). The local government provided specialized funds directly to the committees and engaged consulting parties to educate them on relevant laws, regulations, and practical methods for electing property companies (***Resource building***). Nevertheless, the committee only partially relied on this procedural knowledge to manage specific issues. Instead, they frequently sought the support and influence of esteemed residents (***Coalition building***) who possessed substantial social connections and influence within the neighborhood (***Knowledge***, ***Traits***, ***Position***):

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'Without Mr. L's help, I could not have brought in the property management company so smoothly. Mr. L has lived here for decades. He was so dedicated to the collective good of the neighborhood. Thus, most residents trust him. That is why I grabbed him this time.' (NC4)

The charisma, personality, trust and credibility built up in the daily work (***Traits***, ***Communication and credibility building***) enabled the neighborhood committee to persuade resident leaders to be at their disposal. Spiritual awards were the committee's primary incentive. The committee also delegated trusted residents with management authority (***Assets***) and helped them form self-management organizations (***Position***, ***Resource building***). These residents were then expected to replace the committee in monitoring and regulating other residents:

'…residents who cooperated with us to demolish UBWs formed a 'platform guard team.' The members go up (to the roof) every week to patrol and ensure that no new UBWs are created.' (NC6)

3.4.2 Evolution of stakeholder influence

Synthesizing the research data shows that the SIM (FIG. 3.1) effectively captures all types of influence measures adopted by stakeholders, as well as their specific effects on RP, as detailed in Table 4.1. Furthermore, the case study facilitates a comprehensive analysis of the dynamics in stakeholder behaviors and relationships, as evidenced by the interview materials discussed in the previous section.

Besides residents, local government and neighborhood committee were involved throughout the entire lifecycle of rehabilitation. Local government primarily exerted an indirect influence on RP, whereas the committee often had a direct impact. Designers and constructors influenced RP directly but only in phases related to their job responsibilities. Consulting parties were engaged upon the request of other stakeholders and could influence RP either directly or indirectly.

Among the influence strategies, ***Assets***—particularly ***A1. Possession/control of (in) tangible resources***—was stakeholders' most preferred direct method of shaping RP, followed by ***Knowledge***, ***Traits***, and ***Position***. ***Resource building*** emerged as the most used indirect strategy, adopted by all six stakeholder groups, while ***Direct action*** was the least utilized, employed only by residents.

TABLE 3.4 Stakeholder evolving influence on resident participation in neighborhood rehabilitation

Phases	Stakeholders		Influence strategies											Impact on RP	
			Direct				Indirect								
	Influencer	Target	Assets	Knowledge	Traits	Position	DireUW	IndireUW	ResouB	CoaliB	ConfliEx	CrediB	DirectA	Aspect of RP	Type of impact
I	Government	Committee	A1, A2, A3, A4			P1	√		√					Attitude, perception	↑
		Consultant	A1			P2				√				Knowledge, skills	↑
II		Implementer	A2, A3				√							Channel, approach, technology	↑
III		Implementer	A2, A3			P2	√							Approach, depth, width	↑
IV		Implementer	A2, A3			P2	√							Level of influence	↑↓
		Committee				P2, P3				√				Cooperate with demolition	↑↓
V		Consultant	A1							√				Working mechanism, approach, technology	↑
		Committee	A1, A2, A3, A4			P1	√		√					Channel, approach, technology	↑
I	Committee	**Resident**	A1, A3	K3		P2			√	√				Strategy, speed, breadth, innovative RP mechanism	↑
		Government			T1, T2					√	√			Mechanism, strategy	↑
II		**Resident**	A1, A2, A3	K3		P2				√		√		Speed, comprehensiveness	↑↓
III		**Resident**	A1, A3	K2, K3	T1, T3			√	√	√	√			Order, mode of participation	↑↓
		Consultant		K2						√				Legitimacy of decision-making	↑
IV		**Resident**	A1	K3	T1, T2, T3				√	√	√	√		Mode of participation, continued RP.	↑
		Government			T1, T2, T3	P2				√				Fairness	↑
V		**Resident**	A1	K3	T1, T2, T3				√	√		√		Willingness to participate, sense of responsibility, sense of belonging	↑
I	Designer														
II		**Resident**		K1, K3	T3									Transparency, sufficient information and timely feedback, professional knowledge	-
		Committee		K1		P2 , P3			√	√				Transparency, sufficient information and timely feedback	↑
III		**Resident**	A1, A3	K1	T3				√					Detailed explanation and feedback, mode, perception of participation	↑
		Committee	A1, A3	K1					√	√				Transparency, sufficient information and timely feedback	↑↓
IV															
V															

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TABLE 3.4 Stakeholder evolving influence on resident participation in neighborhood rehabilitation

Phases	Stakeholders		Influence strategies											Impact on RP	
			Direct				Indirect								
	Influencer	Target	Assets	Knowledge	Traits	Position	DireUW	IndireUW	ResouB	CoaliB	ConfliEx	CrediB	DirectA	Aspect of RP	Type of impact
I	Implementer														
II		Designer	A1, A2, A3						√					Diversity of RP activities	↑
		Resident	A1		T2, T3	P2								Willingness to participate, perception of rehabilitation initiatives	↑↓
		Committee	A1, A2			P3			√	√				willingness to participate	↑
III		Designer	A1, A3				√							Variety of RP activities, depth, width, breadth, transparency, inclusiveness	↑
IV		Committee	A1, A3	K1		P3				√		√			
		Resident	A1, A3		T2, T3		√				√	√		Mode of participation	↑
V															
I	Consultant	**Resident**		K1					√					Refuse to participate	↑↓
		Committee		K1					√					Capacity to participate, skills, knowledge	↑
II															
III		**Resident**	A1											Attractiveness and fun of participation	↑
		Committee		K1, K2, K3					√					Diversity and efficacy of participation	↑
IV															
V		**Resident**		K1										Fairness, comprehensive, transparency	↑
		Committee		K1					√						
I	Resident	Government			T3	P3					√			Chance to participate	↑
		Committee		K1	T1, T3	P3						√		Chance to participate	↑
II		**Resident**	A1, A3	K1	T1, T3		√		√	√	√	√		Level of influence, representative of the participants, transparency, inclusiveness	↑↓
III		Implementer	A1, A2				√						√	Influence on decision-making	↑
		Committee		K3	T3	P3	√	√			√			Chance to participate	↑↓
		Resident		K1	T1				√	√				Influence on decision	↑
IV		Committee	A1, A3		T3			√			√		√	Influence on decision	↑
		Implementer	A1, A3								√		√	Influence on decision	↑
		Resident			T3	P3						√		Willingness to participate, attitude toward communication	↑
		Government			T3	P3							√	Influence on decision	↑
V		Committee	A1		T1						√			Change decision	↑
	FR*		26	20	17	17	11	3	17	17	10	8	4		

Note: FR: Frequency, *1. A blank indicates the stakeholder did not exert this influence. 2. Impact on RP: "↑"-facilitate RP, "↓"-inhibit RP, and "-"-neutral impact.*

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Regarding the extent of strategy use, residents were the most exhaustive, employing all four direct and seven indirect strategies throughout the project lifecycle. Neighborhood committee was also adaptable, mastering all four direct and five indirect strategies, except for ***Direct usage/withhold*** and ***Direct action***. Consultants had the most restricted impact, with only two direct influences—***Assets*** and ***Knowledge***—and a single indirect influence, ***Resource building***.

Consistent with assumptions, the influencing strategies used by various stakeholders—whether direct or indirect—vary depending on project stage and target. In general, neighborhood committee and resident representatives are the primary targets. As the project progresses, the type and scale of influencing strategies evolve, particularly among neighborhood committees, implementing units, and residents. Initially, the committee primarily employed ***Assets***, ***Knowledge***, and ***Position***, without significant use of ***Traits***-type influence. ***Traits*** became the primary direct influence strategy as the project moved into later stages. Implementing units started with direct strategies (***Assets***) and gradually shifted towards indirect strategies (***Communication and credibility building***) to manage increasing complexity and specific project challenges. Residents initially favored collaborative indirect measures such as ***Communication***, ***Resource building***, and ***Coalition Building*** to build consensus on collective interests. However, by Phase IV, they adopted more assertive measures, including ***Conflict escalation*** and ***Direct action***, to advance their individual interests.

Notably, the strategies demonstrated significant stage-related variations in influencing various dimensions of RP, such as attitude, timing of participation, diversity of activities, and degree of participation (last column of Table 3.4). Early in the project, these strategies exhibited both facilitative and inhibitive effects. As the project advanced, the sources of stakeholder influence diversified and increased in scale, reducing the inhibitive effects of these strategies and enhancing their facilitative impact.

3.5 Discussion

3.5.1 Stakeholder influence on resident participation

Local government – Primary but indirect facilitator of RP

The case of Wuhan highlights that, within the framework of neighborhood rehabilitation in China, local governments remain the primary initiators of RP, exerting substantial influence. This influence is bolstered by a diverse array of resources, including financial, administrative, labor, and material assets, as detailed in previous studies (Li, Zhang et al., 2020; Yu and Leung, 2018), alongside intangible resources like control over social norms, public value, licensing, and information access, as evidenced by our case study. Further analysis of interview data suggests that the government's profound impact on RP extends beyond mere resource possession. It also involves the capacity to ensure the stable, timely, and secure provision of these crucial resources (see Table 2.1, A3, A4). This capability shapes the government's stance on RP, influencing the willingness and actions of other stakeholders and ultimately determining the occurrence of RP.

As a result, distinct from the direct oversight noted in existing literature (Sun, Chen et al., 2022; Yu and Leung, 2018), the Wuhan case illustrates that local government facilitated RP through indirect methods—***Direct usage/withhold***, ***Coalition building***, and ***Resource building***. A prominent example includes the government's specification of RP content and the requirement for RP documentation as a condition for project approval and permit issuance. This catalyzed diverse, extensive, in-depth, and sustained engagement from implementing units during Phases II and III of rehabilitation. This strategy aligns with the findings of Pinkse and Dommisse (2009) in residential market builders in the Netherlands and Wu (2023) in two public infrastructure megaprojects in Shanghai, where ***Direct usage/withhold***—characterized by establishing stringent standards and fostering a participatory environment—is proved to be a viable and effective indirect method for local governments to promote RP.

Nevertheless, interview results show that local government's preference for indirect strategies has led to a substantial mismatch between policy intentions and practical needs, particularly in addressing UBWs. The government's indirect involvement

has compromised its ability to differentiate between the needs of residents in rehabilitation versus redevelopment[15], notably in its failure to provide necessary compensation for those affected. In demolishing UBWs, the government employed ***Coalition Building*** and ***Resource Building***, transferring authority and responsibilities to neighborhood committees and implementation units, while overlooking the economic costs and public dissatisfaction these entities often face due to demolition activities. Although intended to foster collaboration and empowerment, this redistribution of duties led to non-participation by violators and fostered resentment and resistance within the committees, jeopardizing the sustainability of RP initiatives. Feedback from implementing units reveals a growing hesitance to engage in future rehabilitation efforts. Therefore, while indirect measures contribute to RP occurrence, direct involvement of the government is necessary to ensure the long-term viability of these initiatives.

Neighborhood committee – A guarantee for effective RP, for initial and ongoing participation

While local government plays a leading role in initiating RP, the case indicates that neighborhood committee significantly influence its effectiveness, aligning both global (López-Rodríguez, Ruiz-Mallén et al., 2020; Uittenbroek, Mees et al., 2019) and domestic studies (Hu, de Roo et al., 2013; Li, Tao et al., 2024; Zhuang, Qian et al., 2019). In the context of China, the COVID-19 pandemic and lockdown catalyzed the accumulation of power and further clarified the roles of these committees in neighborhood affairs. As Liu, Lin et al. (2023) highlight, during the pandemic, neighborhood committees excelled in information circulation, resource coordination, and conflict resolution, gaining substantial government recognition and public trust. In the case of Wuhan, these ***Assets*** and ***Positions*** emerged as proviral sources of influence for neighborhood committee in initiating, planning, organizing and managing RP. Additionally, the committee's influence extended throughout the lifecycle of neighborhood rehabilitation, albeit evolving in source. As the process progressed, the committee increasingly drew direct influence from ***Knowledge***, gained through assisting in rehabilitation tasks, and ***Traits*** developed through daily interactions with residents. To foster initial RP, the committee employed ***Resource building*** and ***Conflict escalation*** indirect strategies, complemented by ***Coalition building***, ***Direct usage/withhold***, ***Communication and credibility building*** to ensure sustained involvement. Thus, beyond serving as RP's official and localized venues, as

15 Unlike residents of urban villages who may construct UBWs for profit, residents of old neighborhoods typically build UBWs to improve their living conditions or for survival.

noted by Liu, Lin et al. (2023), and ensuring diverse, comprehensive and impactful RP, as argued by Li, Tao et al. (2024), this study highlights that neighborhood committee has become reliable and preferred channels for external stakeholders to engage with residents.

The empowerment from the government, coupled with other stakeholders' reliance, prompted neighborhood committee to emerge as the most influential stakeholder in the later phases of rehabilitation. This development marks a significant change from their noted powerlessness in urban renewal, as discussed by Hu, de Roo et al. (2013) and Zhuang, Qian et al. (2019), with some committees adopting assertive roles that contrast sharply with their past passivity. To cement their newfound influence, some committees controlled the dissemination of retrofitting-related knowledge, managed access to participation opportunities, and solicited feedback from specific residents. This selective engagement marginalized dissenting voices and vulnerable populations in decision-making. The manipulation of values and viewpoints during the design phase led to a homogenization of ideas, perspectives, and strategies. Notably, this increasing reliance on neighborhood committee also prompted government officials and designers to minimize direct interactions with residents, choosing instead to depend on the committee's filtered perspectives. By the end of the process, few stakeholders could challenge the committee's authority over resident affairs or regulate their actions. Regrettably, inadequate accountability mechanisms, outdated policy frameworks, and resource constraints only further enabled neighborhood committee's arbitrariness.

Resident-initiated participation – A shared vision or a new dictatorship?

Scholars and governments suggest that RP's ultimate goal is to develop participation habits, i.e., residents' spontaneous involvement in neighborhood issues (Nienhuis, Van Dijk et al., 2011; Tang, Gong et al., 2022). The Wuhan case exemplifies this positive trend. Throughout rehabilitation, residents evolved from passively accepting predetermined decisions to holding final decision-making authority. They proficiently utilized all four categories of direct and all seven categories of indirect influence strategies. Specifically, in addition to obstructing construction (***Direct action***), residents sought attention from higher levels of government through *Mayor's Hotline* and petitions (***Conflict escalation***). Others turned to acquaintances with social influence (neighborhood committee director, deputy to People's Congress), or by lobbying (***Resource building***) and partnering with like-minded residents to become salience (***Coalition building***). Consistent with the framework outlined by Mitchell, Agle et al. (1997), all these actions aimed to increase the likelihood that their

demands and concerns would be heeded and understood by the working group. This dynamic raises a critical question: among those actively involved, are they the ones who should be involved?

Regarding the issue of Who, academics are broadly divided into two schools of thought: universal participation, and participation by elected representatives. China's current strategy is the latter. With many residents in a neighborhood, it is not feasible or practical to have them all participate in decision-making simultaneously and through the same channels (Liu, Wang et al., 2018). In practice, neighborhood committee recruits and selects participants, using the Independent Cascade Model. It first activates a group of residents, who then activate the whole neighborhood. Meanwhile, the government is actively implementing the homeowner committee scheme to confront the dictatorship of neighborhood committee over neighborhood affairs. Then, who are the initial participants and representatives of residents? Whose interests do they represent? For the first question, Li, Zhang et al. (2020) and many Chinese studies show they are the most prestigious and persuasive people in the neighborhood. In our case, they are often some of the closest, well-connected residents to neighborhood committee. To the second question, our findings align with many previous studies (Aitken, 2017; Nienhuis, Van Dijk et al., 2011), where resident representatives are motivated by individual interests. These interests range from meeting personal expectations and values to optimizing design plans for economic gain and convenience. In some instances, these representatives leverage their social stature and networks to package their pursuit of personal interests as a priority for the collective good. In more extreme scenarios, active residents utilize the system of batch participation to control information dissemination and hinder the involvement of residents with conflicting interests and opinions. Institutional innovations intended to empower residents have instead exacerbated process inequities and information opacity. Nevertheless, there is still no clear answer to how to balance power among residents and, in this context, reconcile power imbalances between residents and neighborhood committee.

3.5.2 Research implications

Based on the critical findings presented above, suggestions are provided to regulate stakeholders' undesirable behaviors and curb unhealthy relationships, thus promoting meaningful RP and inclusive neighborhood rehabilitation. First, to cope with the lagging policies, local government is suggested to intervene directly in implementing RP. One viable but less-mentioned solution is to introduce a policy evaluation and feedback mechanism within the administrative system. It is

recommended that the evaluation be conducted after the initial policy advocacy phase of each project. At this juncture, experienced grassroots staff are encouraged to identify potential risks and recommend preventive measures, while higher government levels provide targeted interim adjustments and support based on these prejudgments. Meanwhile, upon completing each batch of rehabilitation programme, representatives from all government levels are advised to hold a joint meeting to assess the feasibility, rationality, and complexity of existing policies, and to forge a consensus on improvement strategies. This dual approach of ad hoc and systematic evaluations ensures that policies are finely tuned to meet the specific needs of each project and are adaptable to regional characteristics, boosting overall policy effectiveness.

As for the excessive transfer of power to neighborhood committee, aside from perfecting homeowner committee scheme, consulting agencies can be invited to be present permanently. As seen in areas with more experience in urban renewal, neighborhood micro-renewal will become a regular thematic neighborhood activity (Li, Zhuang et al., 2024; Tang, Gong et al., 2022), and neighborhood rehabilitation will shift from government-initiated to resident-initiated (Tang, Gong et al., 2022; Zheng, Fu et al., 2023). Transitioning the consulting service from a task-based model to a long-term contractual system could enhance the effectiveness and continuity of advisory services. Such a transition would enable consultants to deliver more systematic and coherent guidance, fostering sustained social impacts in neighborhood rehabilitation projects.

Finally, to address the challenge of uneven resident representation, the widely practiced jury system in the U.K. and the U.S. merits consideration. Specifically, it is recommended to draw jurors from qualified citizens outside the neighborhood. A key suggestion is combining AI technology with a judge-led voir dire process to ensure diverse perspectives and requisite analytical skills. Government agencies are advised to offer pre-trial training on procedures and background knowledge to prevent information inequality and strengthen grassroots needs recognition. Judges would then screen prospective jurors to eliminate biases and validate impartiality. During the trial, the judge supervises procedural integrity while residents present evidence, and the jury delivers a verdict that the neighborhood committee implements. By decentralizing decision-making power—formerly concentrated among a few resourceful residents—and curbing committee control over information, this approach promotes a more balanced power distribution. Crucially, as judges and jurors have no direct stake in outcomes, the process fosters independent, objective deliberations, leading to more professional and sound decisions.

Despite its foundational role in Anglo-American judicial procedures, the jury system encounters significant barriers to direct adoption in China. Substantial differences exist in legal frameworks, institutional structures, socio-cultural norms, and public readiness. Although China's Civil Code clarifies property rights and encourages neighborhood-level participation, Confucianism, top-down policy directives, and remnants of the Work Unit (Danwei) system continue to constrain citizens' awareness and participatory skills (Li, Ng et al., 2012; Li, Zhuang et al., 2024). Overcoming these barriers requires refining existing legal frameworks, establishing specialized institutions, and implementing supportive incentives and protections. It is recommended to pilot system in neighborhoods with strong self-governance, high educational attainment, and robust civic engagement, yielding insights for broader application. Sustained educational and training initiatives would enhance public awareness and participation skills, helping adapt and optimize the jury system in China and ultimately fostering equitable, transparent, and professional decision-making in neighborhood affairs.

3.6 Conclusions

In response to the need for more attention to personal traits, indirect influences, and stakeholder dynamics in established research, this study proposes the Stakeholder Influence Model (SIM) to understand stakeholder influence. Meanwhile, given the longstanding neglect of RP research for organizers, we use this as a backdrop to validate the SIM and provide an initial exploration of stakeholder influence on RP. Data collected from 44 interviewees and four-month participant observation in Wuhan, China, provide empirical support for the SIM. The interview results show that different stakeholders exert distinct influence on RP. Besides residents, few stakeholder groups have all four types of direct influence that enable them to engage residents independently. Thus, they often use indirect strategies to influence RP through intermediary stakeholders. Neighborhood committee and its screened resident representatives are the preferred intermediaries. Notably, the source of stakeholders' direct influence, and their choice of indirect influence strategies evolve along the rehabilitation lifecycle.

This study also encounters several limitations that warrant further investigation. First, the stakeholder analysis herein is descriptive and instrumental rather than normative. This limitation stems from diverse participation criteria across various political, social, economic, and institutional contexts. Future research could test the validity of the SIM in different regions to enhance and contrast the findings of this study. Second, although utilizing a revelatory case study approach facilitates theory building and validation, its results can be challenging to generalize. Also, owing to space limitations, only the predominant results are presented and discussed. Consequently, future research could focus on a specific group to delve into their strategic influences and mechanisms in detail, thereby enabling more precise recommendations for enhancing practice. Finally, while hypothesizing stakeholders' aims for deeper resident involvement, the case study reveals tactics that discourage participation, and higher RP is not always beneficial. Further research is recommended to elucidate the relationship between RP objectives and stakeholder influence strategies.

References

Aaltonen, K., & Kujala, J. (2010). A project lifecycle perspective on stakeholder influence strategies in global projects. *Scandinavian journal of management*, *26*(4), 381-397.

Aitken, D. (2017). The Influence Fallacy: Resident Motivations for Participation in an English Housing Regeneration Project. *Planning theory & practice*, *18*(4), 549-565.

Aragonés-Beltrán, P., García-Melón, M., & Montesinos-Valera, J. (2017). How to assess stakeholders' influence in project management? A proposal based on the Analytic Network Process. *International Journal of Project Management*, *35*(3), 451-462.

Beritelli, P., & Laesser, C. (2011). Power dimensions and influence reputation in tourist destinations: Empirical evidence from a network of actors and stakeholders. *Tourism Management*, *32*(6), 1299-1309.

BZK. (1994). *Het grotestedenbeleid (GSB)*.

Creighton, J. L. (2005). *The public participation handbook: Making better decisions through citizen involvement*. John Wiley & Sons.

Dickens, B. (2013). ENGAGING TO HARNESS COMMUNITY CREATIVITY FOR SUSTAINABLE URBAN PLANNING. Proceedings of the 57th Annual Meeting of the ISSS-2013 HaiPhong, Vietnam,

Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of management Review*, *20*(1), 65-91.

Etzioni, A. (1964). Modern Organizations Englewood Cliffs. *NJ Prentice-Hall, Inc*, *964*, 58-59.

Freeman, R. E. (1984). *Strategic management : a stakeholder approach*. Pitman.

French, J. R., & Raven, B. (1959). The bases of social power. *Studies in social power*, *150*, 167.

Frooman, J. (1999). Stakeholder influence strategies. *Academy of management Review*, *24*(2), 191-205.

Greene, R. (2010). *48 Laws Of Power*. Profile Books. http://www.myilibrary.com?id=326989

Henriques, I., & Sharma, S. (2005). Pathways of stakeholder influence in the Canadian forestry industry. *Business Strategy and the Environment*, *14*(6), 384-398.

Hu, Y., de Roo, G., & Lu, B. (2013). 'Communicative turn' in Chinese spatial planning? Exploring possibilities in Chinese contexts. *Cities*, *35*, 42-50. https://doi.org/https://doi.org/10.1016/j.cities.2013.05.001

IAP2. *IAP2 Code of Ethics for Public Participation Practitioners*. https://www.iap2.org/page/ethics#:~:text=We%20define%20public%20participation%20as,of%20the%20public%20participation%20process.

Kaiser, K. (2009). Protecting respondent confidentiality in qualitative research. *Qualitative health research*, *19*(11), 1632-1641.

Li, X., Zhang, F., Hui, E. C.-m., & Lang, W. (2020). Collaborative workshop and community participation: A new approach to urban regeneration in China. *Cities*, *102*, 102743. https://doi.org/https://doi.org/10.1016/j.cities.2020.102743

Li, Y., Tao, Y., Qian, Q. K., Mlecnik, E., & Visscher, H. J. (2024). Critical factors for effective resident participation in neighborhood rehabilitation in Wuhan, China: From the perspectives of diverse stakeholders. *Landscape and Urban Planning*, *244*, 105000. https://doi.org/https://doi.org/10.1016/j.landurbplan.2023.105000

Li, Y., Zhuang, T., Qian, Q. K., Mlecnik, E., & Visscher, H. J. (2024). From acceptance to continuance: Understanding the influence of initial participation experience on residents' intentions to continue participation in neighborhood rehabilitation. *Cities*, *147*, 104788. https://doi.org/https://doi.org/10.1016/j.cities.2024.104788

Liu, B., Wang, X., Xia, N., & Ni, W. (2018). Critical success factors for the management of public participation in urban renewal projects: Perspectives from governments and the public in China. *Journal of Urban Planning and Development*, *144*(3), 04018026.

Liu, Z., Lin, S., Lu, T., Shen, Y., & Liang, S. (2023). Towards a constructed order of co-governance: Understanding the state–society dynamics of neighbourhood collaborative responses to COVID-19 in urban China. *Urban Studies*, *60*(9), 1730-1749.

López-Rodríguez, M. D., Ruiz-Mallén, I., Oteros-Rozas, E., March, H., Keller, R., Lo, V. B., Cebrián-Piqueras, M. A., & Andrade, R. (2020). Delineating participation in conservation governance: Insights from the Sierra de Guadarrama National Park (Spain). *Environmental Science & Policy*, *114*, 486-496. https://doi.org/https://doi.org/10.1016/j.envsci.2020.09.019

Lowndes, V., Pratchett, L., & Stoker, G. (2001a). Trends in public participation: part 1-local government perspectives. *Public administration*, *79*(1), 205-222.
Lowndes, V., Pratchett, L., & Stoker, G. (2001b). Trends in public participation: Part 2-Citizens' perspectives. *Public administration*, *79*(2), 445-455.
Lu, X., & Lange, E. (2021). Stakeholder Characteristics and Interactions in a Participatory Community Renewal Project: A Case Study of Pun Tong Wuyue Village, Guangzhou. *Landscape Architecture*, *28*(9), 24-30. https://doi.org/10.14085/j.fjyl.2021.09.0024.07
Mathers, J., Parry, J., & Jones, S. (2008). Exploring resident (non-) participation in the UK new deal for communities regeneration programme. *Urban Studies*, *45*(3), 591-606.
Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of management Review*, *22*(4), 853-886.
Mohammadi, H. (2010). *Citizen participation in urban planning and management: The case of Iran, Shiraz City, Saadi community*. kassel university press GmbH.
MOHURD. (2017). *Making full use of the concept of "Co-Creation" to promote the renovation of old communities*. Retrieved from http://www.mohurd.gov.cn/jsbfld/201712/t20171204_234246.html
MOHURD. (2018). **城市居住区规划设计标准** *(Standard for urban residential area planning and design)*. Beijing Retrieved from https://www.mohurd.gov.cn/gongkai/zhengce/zhengcefilelib/201811/20181130_238590.html
Mok, K. Y., Shen, G. Q., & Yang, J. (2015). Stakeholder management studies in mega construction projects: A review and future directions. *International Journal of Project Management*, *33*(2), 446-457.
Nelson, D. L., Nelson, Quick, J. C., Smith, P. C., & Gray, D. A. (1994). *Organizational Behaviour: Foundations, Realities and Challenges*. West Publishing Company, College & School Division. https://books.google.nl/books?id=CojtPQAACAAJ
Nienhuis, I., Van Dijk, T., & De Roo, G. (2011). Let's collaborate! But who's really collaborating? Individual interests as a leitmotiv for urban renewal and regeneration strategies. *Planning theory & practice*, *12*(1), 95-109.
Organic Law of the People's Republic of China on Urban Neighbourhood Committee (Amendment), (2018).
Olander, S. (2007). Stakeholder impact analysis in construction project management. *Construction management and economics*, *25*(3), 277.
Olander, S., & Landin, A. (2005). Evaluation of stakeholder influence in the implementation of construction projects. *International Journal of Project Management*, *23*(4), 321-328.
Pajunen, K. (2006). Stakeholder influences in organizational survival. *Journal of management studies*, *43*(6), 1261-1288.
Parise, S. (2007). Knowledge management and human resource development: An application in social network analysis methods. *Advances in developing human resources*, *9*(3), 359-383.
Patton, M. Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice*. Sage publications.
Pérez, M. G. R., Laprise, M., & Rey, E. (2018). Fostering sustainable urban renewal at the neighborhood scale with a spatial decision support system. *Sustainable Cities and Society*, *38*, 440-451.
Pinkse, J., & Dommisse, M. (2009). Overcoming barriers to sustainability: an explanation of residential builders' reluctance to adopt clean technologies. *Business Strategy and the Environment*, *18*(8), 515-527.
Rădulescu, C. M., Ştefan, O., Rădulescu, G. M., Rădulescu, A. T., & Rădulescu, M. V. (2016). Management of stakeholders in urban regeneration projects. Case study: Baia-Mare, Transylvania. *Sustainability*, *8*(3), 238.
Reed, M. S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., Prell, C., Quinn, C. H., & Stringer, L. C. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of environmental management*, *90*(5), 1933-1949.
SC. (2020). *Guiding Opinions on Comprehensively Promoting Neighborhood Rehabilitation*. (000014349/2020-00061). Retrieved from https://www.gov.cn/zhengce/content/2020-07/20/content_5528320.htm
Sun, S., Chen, R., Qin, S., & Liu, L. (2022). Evaluating the Public Participation Processes in Community Regeneration Using the EPST Model: A Case Study in Nanjing, China. *Land*, *11*(9), 1405. https://www.mdpi.com/2073-445X/11/9/1405

Suschek-Berger, J., & Ornetzeder, M. (2010). Cooperative Refurbishment Inclusion of Occupants and other Stakeholders in Sustainable Refurbishment Processes in Multi-Floor Residential Buildings. *open house international*, *35*(2), 33-38.

Swapan, M. S. H. (2014). Realities of community participation in metropolitan planning in Bangladesh: A comparative study of citizens and planning practitioners' perceptions. *Habitat International*, *43*, 191-197.

Tang, D., Gong, X., & Liu, M. (2022). Residents' behavioral intention to participate in neighborhood micro-renewal based on an extended theory of planned behavior: A case study in Shanghai, China. *Habitat International*, *129*, 102672.

Uittenbroek, C. J., Mees, H. L., Hegger, D. L., & Driessen, P. P. (2019). The design of public participation: who participates, when and how? Insights in climate adaptation planning from the Netherlands. *Journal of Environmental Planning and Management*, *62*(14), 2529-2547.

USC. (1992). *Housing and Community Development Act of 1992*. (Pub. L. No. 102-550). Retrieved from https://www.congress.gov/bill/102nd-congress/house-bill/5334

Wei, Y. (2020). **新万亿蓝海，或掀起住房领域的二次革命（** *New trillion blue ocean, or set off a second revolution in the housing sector* **）**. https://research.ke.com/121/ArticleDetail?id=274

Wu, L. (2023). Effects of informal institutions on stakeholder and public participation in public infrastructure megaprojects: A case study of Shanghai. *Journal of Environmental Planning and Management*, *66*(8), 1655-1674.

Yang, J., Shen, G. Q., Bourne, L., Ho, C. M. F., & Xue, X. (2011). A typology of operational approaches for stakeholder analysis and engagement. *Construction management and economics*, *29*(2), 145-162.

Yang, R. J. (2014). An investigation of stakeholder analysis in urban development projects: Empirical or rationalistic perspectives. *International Journal of Project Management*, *32*(5), 838-849. https://doi.org/https://doi.org/10.1016/j.ijproman.2013.10.011

Yu, J., & Leung, M.-y. (2018). Structural stakeholder model in public engagement for construction development projects. *Journal of Construction Engineering and Management*, *144*(6), 04018046.

Yukl, G. A. (1998). *Leadership in Organizations*. Prentice Hall. https://books.google.nl/books?id=NYG_QgAACAAJ

Zheng, S., Fu, X., Zhuang, T., & Wu, W. (2023). Exit, voice, loyalty, and neglect framework of residents' responses to urban neighborhood regeneration: The case of Shanghai, China. *Environmental Impact Assessment Review*, *100*, 107087.

Zhuang, T., Qian, Q. K., Visscher, H. J., Elsinga, M. G., & Wu, W. (2019). The role of stakeholders and their participation network in decision-making of urban renewal in China: The case of Chongqing. *Cities*, *92*, 47-58.

4 Understanding the Influence of Information Sharing on Resident Participation in Neighborhood Rehabilitation

Dissemination, Manipulation or Monopolization?

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ABSTRACT Socially sustainable urban renewal hinges on active public participation, necessitating effective information sharing. Combining Social Network Analysis (SNA) and Ecological Network Analysis (ENA), this study longitudinally

investigates how stakeholder information sharing evolves over the project lifecycle of neighborhood rehabilitation and its impacts on resident participation. A representative neighborhood rehabilitation project in Wuhan, China, serves as the study case, with data from 10 interviews, 35 questionnaires, and 3 focus groups. The study suggests that SNA and ENA are complementary and competent in identifying key stakeholders, as well as uncovering undesirable behaviors of manipulation and monopolization, and unhealthy relationships like exploitation and competition. Implementation unit and neighborhood committee emerged as principal information holders, while local media and tenant were least informed. SNA results underscore the central position of neighborhood committee in collecting and disseminating information, demonstrating significant autonomy and control throughout project lifecycle. Conversely, homeowner showed marked dependence and lacked control, particularly in the planning and design phase. ENA findings reveal neighborhood committee's ongoing struggle with information exploitation, eroding its willingness and capacity to share information during the later phases of rehabilitation process. The information exploitation led to a fragile network that further marginalized local media, undermined by dwindling trust and autonomy. Homeowners amplified their discourse power as project progressed, shifting from passive recipients to active decision-makers. Yet, well-informed homeowners monopolized information sharing, deliberately excluding others with conflicting interests, intensifying issues of inequity and opacity. Policy recommendations are provided to counter unhealthy stakeholder dynamics and promote equitable and inclusive public participation in urban renewal initiatives.

4.1 Introduction

Reflecting a heightened focus on social sustainability, public participation is increasingly recognized as an integral part of urban renewal efforts (Arnstein, 1969; Boyle and Michell, 2020; Enserink and Monnikhof, 2003; Hanzl, 2007; Webler and Tuler, 2006). Following this global trend, China is institutionalizing and normalizing public participation in response to the inequalities, confrontations, and social conflicts emerging in urban renewal initiatives, especially highlighted in its recent endeavors in neighborhood rehabilitation (Hui, Chen et al., 2021; Li, Zhang et al., 2020; Li, Tao et al., 2024). Focusing on the aging and dilapidated residential neighborhoods built before 2000, neighborhood rehabilitation in China is the restoration and enhancement of residential buildings, communal environment, facilities, and systems to "good condition, operation, or capacity" (Zheng, Shen

et al., 2014). To promote public participation in urban development, the Chinese government revised the *Urban and Rural Planning Law* in 2008, and enacted the *Civil Code of the People's Republic of China* in 2020. These laws confirm the legitimacy of the public's access to information, decision-making and influence over their living environment, and homeowners are entitled to "*possess, use, seek profits from and dispose of the exclusive parts of the building… the common ownership and management over the common areas other than the private areas.*" The *2017 Symposium on the Pilot Programme of Old Neighborhood Rehabilitation* marked the formal integration of the public participation concept into China's urban renewal initiatives, articulated as "Co-Creation" (Gongtong Dizao) in policy frameworks. Rehabilitation activities provide practical scenarios for applying this concept, encouraging residents to collaborate with public, private, and other social actors to identify problems, allocate resources, make decisions, and share the benefits of these improvements.

Despite policy improvements and the advent of Co-Creation concept have boosted resident participation in China, recent cases show that the participation practices are often clouded by ineffectiveness. One of the main reasons for the ineffective involvement of residents is the problematic sharing of information. This includes underestimating residents' capacity to process information (Leung, Yu et al., 2014), providing insufficient, delayed, or selected information (Liu, Wang et al., 2018), relying on a one-way information flow that limits public participation to mere informing and consulting (Zheng, Sun et al., 2024), and offering few feedback opportunities, alongside a scarcity of channels and platforms for such engagement (Li, Krishnamurthy et al., 2020). These information sharing failures have led to project delays, reversals, loss of public trust (Li, Tao et al., 2024), intensified group antagonism and social conflict (Li, Krishnamurthy et al., 2020), undermining the well-intended objectives of these legislative and conceptual reforms.

Similarly, in academia, public participation is recognized as empowering the "have-nots" (Arnstein, 1969), while it is the effective and efficient information sharing that makes it possible (Wilcox, 1994). This viewpoint is grounded in the belief that information sharing is not only a significant aspect of empowerment (Webler and Tuler, 2006), a vital channel of power (Aragonés-Beltrán, García-Melón et al., 2017), but also the prerequisite for residents to exercise their authority (Gudowsky and Bechtold, 2013). As Michel Foucault notes, power can be established and sustained through language, texts, and various forms of communicative practices (Foucault, 2023). Beyond theoretical discussions, empirical research highlights that information asymmetry, alongside insufficient and inefficient feedback, can result in residents' apathy towards participation opportunities (Jia, Qian et al., 2021), misconceptions about rehabilitation objectives (Li, Tao et al., 2024),

diminished trust (Li, Tao et al., 2024), and Not in My Backyard (NIMBY) behaviors (Liu, Hu et al., 2018), which collectively lead to their reluctance to participation and collaboration. Additionally, from an operational standpoint, scholars investigate the impact of information sources (Zheng, Sun et al., 2024), intermediaries (Jia, Qian et al., 2021), presentation styles (B. Liu, S. Lin et al., 2023), dissemination channels (Li, Zhuang et al., 2024), and information and communication technologies (ICTs) (Hanzl, 2007) in enhancing participation performances.

While existing studies offer invaluable insights, two significant gaps are apparent. First, these studies depict a dyadic relationship between residents and other stakeholders, treating stakeholders as isolated units that independently exchange information directly with residents. However, real-world observations frequently indicate that stakeholders sharing information are not always the original sources (Weimann, 1982), and indirect transmission and influence are commonly observed (Jia, Qian et al., 2021). Recognizing these limitations, Rowley (1997) suggests reimaging construction projects as networks. Social Network Analysis (SNA), a methodology that blends graph theory with mathematical analysis, is introduced and spread in the realms of sociology and management. SNA excels in assessing the flow and intensity of information exchange, whereas it is less adept at discerning the information interdependency among stakeholders and the nature of stakeholders' impact (e.g., beneficial or disruptive). Secondly, most renewal studies oversimplify the renewal process as a homogeneous and static entity. They overlook the dynamic and temporal aspects of information flow, where stakeholder objectives, behaviors, strategies and impacts can substantially evolve (Jia, Qian et al., 2021; Weimann, 1982). Despite widespread appeals from scholars, longitudinal studies that examine the evolution of information sharing remain scarce in urban renewal research. The impacts of changing stakeholder behaviors and their interrelationships on resident participation are yet to be understood.

Given this backdrop, this study introduces an analytical framework integrating Social Network Analysis (SNA) and Ecological Network Analysis (ENA) to longitudinally investigate how stakeholder information sharing affects resident participation in neighborhood rehabilitation. Widely applied in ecosystem research, ENA examines interactions and flows within systems, evaluating how these contribute to system functionality and stability (Fath, 2007; Fath and Patten, 1998). Crucially, it identifies interaction types among stakeholders—reciprocal, exploitative, or competitive—and their impacts on stakeholders' subsequent behaviors (Xiao, Huang et al., 2021), thereby addressing gaps in SNA regarding interaction influences.

The study selects the Jiaoweiyuan neighborhood in Wuhan, China, as a case study. Data from 10 interviews, 35 questionnaires, and 3 focus groups provide an in-

depth analysis of 1) the types of information stakeholders share; 2) stakeholders' information-sharing behaviors; 3) dependencies and relationships among stakeholders regarding information; 4) the evolution of stakeholder behaviors and relationships through various rehabilitation phases; and 5) the effects of these elements on resident participation. Based on the findings, the study offers policy recommendations aimed at curtailing detrimental stakeholder behaviors and improving information distribution and circulation, which are anticipated to promote equitable and inclusive public participation in urban (re)development.

4.2 Literature Review

4.2.1 Social Network Analysis

Rooted in Jacob Moreno's sociogram concept, Social Network Analysis (SNA) maps the connections among individuals in social phenomena, focusing on nodes—such as individuals, groups, organizations, and systems—and their relationships, which can include kinship, respect, and transactions (Snijders, 2001). Advances in algorithms have enhanced the quantitative evaluation of network structures and the roles and influences of actors. The intuitive nature of sociograms and their ability to uncover hidden actors and informal networks have expanded SNA's use across various disciplines. For example, Nita, Fineran et al. (2022) utilize SNA to examine two-mode networks, highlighting optimal stakeholder involvement in different stages of the Environmental Impact Analysis (EIA) process. In urban redevelopment, Zhuang, Qian et al. (2019) demonstrate SNA's utility in analyzing stakeholder interactions within urban regeneration decision-making. Zhou, Zhu et al. (2022) investigate the evolution of stakeholder value conflicts in construction land reuse projects, while He, Lin et al. (2024) analyze social media comments to show how digital platforms can redistribute power in collaborative planning. Despite these advances, research on information sharing networks of urban renewal and their impact on resident participation is still lacking. This study aims to address these gaps.

Sociograms comprise two elements: points and edges. For renewal projects, points signify the stakeholders involved, and edges depict the information flow between pairs of stakeholders. Although sociograms are effective for illustrating small networks,

their clarity decreases as more points are added, making it difficult to comprehend complex networks (Haythornthwaite, 1996). To address this, researchers use ordinal or interval data and create equations to quantify the network's overall performance, applying metrics such as network density, centralization, average degree, and average path length for evaluation (Haythornthwaite, 1996; He, Lin et al., 2024; Parise, 2007). Similarly, this study employs *network density* and *average path length* to gauge the overall performance of the information network.

Network density evaluates the ratio of actual connections to the maximum possible connections within a network (Haythornthwaite, 1996). In information networks, a higher network density indicates more pathways for information sharing, suggesting that information sharing among stakeholders is more fluid, frequent, and sufficient. *Average path length* calculates the average distance between all possible pairs of nodes within the network (Parise, 2007). For information networks, a shorter average path length signifies a faster flow and more accurate information as it reduces the number of intermediaries.

Meanwhile, stakeholders' roles and positions in the information network are analyzed through *degree centrality*, *closeness centrality*, and *betweenness centrality*. These three indices offer insights into stakeholders' capabilities to gather and distribute information, the extent to which their information behavior is constrained by other stakeholders, and their control over the information flow, respectively (Freeman, 2002).

Nevertheless, unlike reciprocal relationships such as marriage and contracts, information relationships often display pronounced asymmetry. This asymmetry manifests in directionality—where a communication from node *i* to node *j* does not necessarily trigger a reciprocal response; and in frequency, with node *i* sending frequent communications to node *j*, who may only offer sporadic feedback, and vice versa. The content of information exchange also follows this uneven pattern. Directed and weighted networks thus provide a more appropriate description of the dynamics within information sharing. Moreover, information serves not just as a reflection of power and resources but as a conduit through which individuals or organizations wield influence (Aragonés-Beltrán, García-Melón et al., 2017; Gudowsky and Bechtold, 2013). As such, the source, recipient, direction, and frequency of information sharing carry profound implications for trust, authority, popularity, and leadership (Parise, 2007; Wasserman and Faust, 1994). Consequently, most extant studies employ a directed network approach to analyze information interactions (Caniato, Vaccari et al., 2014; Ferré, Martin-Ortega et al., 2022; Yang, Shen et al., 2011). The asymmetric nature of information relationships and established understandings prompt this study to consider information sharing in neighborhood rehabilitation as a weighted directed network.

Degree centrality measures the number of directed edges a node receives or sends in a directed network (Freeman, 2002). Specifically, in-degree indicates a node's capacity to receive information, whereas a high in-degree may denote the node as a critical information recipient, popular, or an opinion leader (Parise, 2007). Conversely, out-degree reflects a node's ability to disseminate information, with a high out-degree suggesting the node acts as a crucial source or distributor of information (Parise, 2007).

Closeness centrality calculates the inverse of the sum of the shortest paths from a node to all others in the network (Rowley, 1997). In directed networks, this metric splits into in-closeness and out-closeness centrality. In-closeness centrality measures how quickly and effectively a node receives information, indicating its accessibility. Conversely, out-closeness centrality assesses how efficiently a node spreads information, reflecting its influence (Wasserman and Faust, 1994). Nodes with high closeness centrality enable rapid and efficient communication, reducing the time and resources needed for information transfer. Moreover, such central nodes enjoy greater autonomy and are less likely to be controlled by other nodes (Rowley, 1997).

Betweenness centrality evaluates the proportion of the shortest paths between all possible pairs of nodes that pass through that node (Freeman, 2002). Nodes with high betweenness centrality act as pivotal "bridges" or "brokers" in controlling, withholding or distorting information flow across the network, promoting communication between different nodes or subgroups (Freeman, 2002).

Notably, stakeholder composition may vary across different phases of the rehabilitation process (Zhuang, Qian et al., 2019), leading to varying sizes of information networks. To analyze nodes' relative standings within the same network and track their positional changes throughout different stages of a project, this study uses the equation proposed by Wang, Gao et al. (2017) for converting absolute values into comparative values:

$$C'_i = \frac{C_i - Min(C)}{Max(C) - Min(C)}$$

Where C'_i represents the relative centrality of node (applicable to degree, closeness, and betweenness centralities). C_i is the absolute centrality value of the node, with *Max* (C) and *Min*(C) denoting the highest and lowest centrality values among the network's nodes, respectively. The formula adjusts centrality to a 0-1 scale, inclusive of 0 and 1, to compare the centrality of node *i* against others in the network. A higher C'_i value indicates a greater centrality relative to other nodes.

4.2.2 Ecological Network Analysis

The widespread application of SNA in empirical research has proven its effectiveness in evaluating network efficiency and pinpointing key stakeholders and their influences. However, SNA faces challenges in dissecting the interdependence of stakeholders (e.g., mutualism or exploitation) and the impact of stakeholder interactions on information sharing (e.g., facilitate or inhibit). Additionally, SNA struggles with identifying complex and conflicting stakeholder behaviors. For instance, node *i* actively gathers and delivers information while refusing to share knowledge with node *j* due to conflicting interests. This contradictory behavior leaves *j* marginalized from rehabilitation activities. SNA highlights *i*'s pivotal role in the information network, but it falls short in addressing its exclusionary impact on *j*. Although infrequently explored in urban studies, the effects of interactions on system functioning are widely discussed in ecosystem studies through the lens of Ecological Network Analysis (Fath, 2007; Fath and Patten, 1999).

Introduced by Hannon (1973), Ecological Network Analysis (ENA) is a powerful tool for investigating species interactions, energy flows, and material cycles within ecosystems, focusing on how these elements contribute to ecosystem function and stability. Throughout the neighborhood rehabilitation process, stakeholders are segmented into subgroups based on characteristics such as social division of labor, class, interest preferences, and educational levels. Information circulates within these subgroups, fostering consensus-building and competition or cooperation among groups. Moreover, since neighborhood rehabilitation projects involve artificial and natural resources and require substantial capital, they can be considered vital subsystems of broader ecological-economic systems. In this sense, ENA has the potential to complement SNA in addressing the latter's oversight of interaction influences.

Network utility analysis (NUA) in the ENA is employed to dissect stakeholders' information interdependency and its impact on information sharing. Specifically, direct utility matrix *D* and integral utility matrix *U* are used to quantify the impacts of interactions among stakeholders (Fath and Patten, 1999). *D* captures the strength of the direct utility of node *i* to *j*, denoted D_{ij}. *U* encompasses both direct and indirect relationships, illustrating the overall effect of these interactions (Fath, 2007):

$$D = \left[d_{ij} \right] = \left[\frac{f_{ij} - f_{ji}}{T_i} \right]$$

$$U = \left(I - D \right)^{-1} = I + D^1 + D^2 + \ldots + D^n + \ldots$$

Where f_{ij} is an information flow from stakeholder *j* to stakeholder *i* and T_i is the sum of information flows into or out of stakeholder *i*. *I* is D^0, stands for the initial flows. D^1 denotes the direct utility relation and D^n stands for the direct utility relation realized by extending flow pathways.

The sign of D_{ij} (Sign *D*) and U_{ij} values (Sign *U*)—positive for beneficial and negative for harmful interactions—helps categorize stakeholder interrelationships into four types (Fath, 2007):

1 Mutualism (+, +), where both stakeholder *i* and stakeholder *j* benefit from their interaction. This type of relationship fosters the production and steady flow of information, which is crucial for the long-term viability of resident participation.

2 Exploitation (+, -) occurs when stakeholder *i* benefits more from the interaction than it contributes to stakeholder *j*. Conversely, Exploited (-, +), where stakeholder *j* benefits at the expense of *i*. Such interactions may offer short-term advantages to the exploiting party but undermine long-term collaboration by reducing the exploited group's willingness and ability to share valuable information.

3 Neutralism (0,0), where both *i* and *j* are unaffected by, or achieve a balance of input and out in, their interaction.

4 Competitive (-, -) describes a detrimental interaction where both stakeholders *i* and *j* are negatively impacted. This competitive stance hinders the production and sharing of information, severely limiting the potential for sustained participation initiatives.

The analysis of stakeholder interactions on information sharing is conducted using the mutualism index (*MI*) and synergism index (*SI*) (Fath and Patten, 1999). *MI* is the ratio of the number of positive and the number of negative relationships in *U*, while *SI* calculates the total utility values of all relationships in the network (Fath and Patten, 1998):

$$MI = \frac{SignU(+)}{SignU(-)}$$

$$SI = \sum_{j=1}^{n}\sum_{i=1}^{n} u_{ij}$$

$MI \geq 1$ indicates that there are more beneficial than unfavorable relationships in the system. Most stakeholders benefit from information sharing. $SI > 0$ implies that the information network is synergistic, i.e., information sharing among stakeholders can accomplish more than stakeholders working alone.

Integrating these indices with SNA ones, the final analytical framework for this study is introduced. As depicted in FIG. 4.1, the analytical framework investigates stakeholder information sharing, its impacts on resident participation, and, more importantly, how these elements evolve across various phases of the neighborhood rehabilitation project lifecycle.

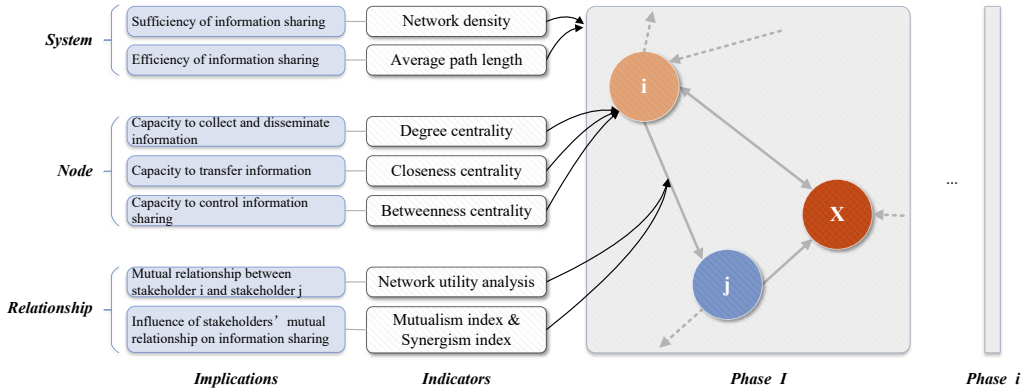

FIG. 4.1 Analytical framework

4.2.3 Neighborhood rehabilitation and resident participation in China – stakeholders, phases and information

China's urbanization rate had surged from 17.92% in 1978 to 65.22% in 2022. This rapid yet uneven urbanization presents considerable challenges, especially in residential areas established during the initial stages of urban expansion. Characterized by subpar construction and lack of daily maintenance, these early-stage neighborhoods often suffer from decaying structures, disorganized communal areas, non-operational facilities, and outdated infrastructure (SC, 2020a). The exodus of more affluent and educated homeowners, coupled with an influx of renters, has exacerbated insecurity, exclusion, and alienation among remaining inhabitants (Li, Zhuang et al., 2024). Currently, around 17,000 aging neighborhoods exist throughout China, negatively impacting the living conditions of over 100 million people (SC, 2020c).

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In response, the *Central Urban Work Conference 2015* underscored the critical need for neighborhood rehabilitation, advocating for an approach that transcends mere energy efficiency to embrace a more holistic paradigm. This vision gained significant traction in 2017, when the Ministry of Housing and Urban-Rural Development (MOHURD) launched pilot projects in 15 cities. By 2019, with an enhanced understanding of the challenges presented by aging neighborhoods and their residents, MOHURD, in collaboration with the National Development and Reform Commission (NDRC) and the Ministry of Finance (MoF), issued the *Notice of 2019 Neighborhood Rehabilitation* to institutionalize neighborhood rehabilitation efforts formally. These initiatives paved the way for subsequent policies, regulations, initiatives and technical standards[16] that not only define the rehabilitation process in detail but also clarify the roles and responsibilities of involved actors. These actors are the stakeholders of neighborhood rehabilitation who possess the information, resources, and competencies necessary to conduct rehabilitation activities or halt unnecessary actions, including resident participation (Freeman, 1984).

Recognizing neighborhood rehabilitation's significant political and social advantages, the government finances and spearheads these initiatives through a top-down approach (SC, 2020a). The central government formulates overarching policies, which provincial and municipal authorities customize to address local needs, secure funding, and define specific objectives. District governments coordinate, provide approvals, manage monitoring and evaluation, and select key project personnel such as designers, constructors, and consultants. At the more localized level, the subdistrict administrative office oversees daily operations, handles emergencies, and facilitates cooperation in rehabilitation (SC, 2020a).

Yet, promoting participatory neighborhood rehabilitation would be challenging for the subdistrict office without the assistance of the neighborhood committee (*Juweihui*) (Li, Tao et al., 2024). In China, the neighborhood committee is a grassroots organization encouraging self-management, self-education, and self-service among residents. Committee members, often non-residents, are elected by residents while are supported and empowered by the local government. The significance of neighborhood committees in fostering civic participation has been highlighted, especially after the COVID-19 pandemic (Z. Liu, S. Lin et al., 2023). They act as liaisons for the government, disseminating laws and policies to residents. They also play the pivotal role of "family head," engaging in resident education, conflict resolution, and feedback collection (SC, 2020a).

16 For a detailed review of policies related to neighborhood rehabilitation and resident participation in China, see Li, Zhuang et al. (2024).

Other stakeholders involved in neighborhood rehabilitation include implementation units, designers, constructors and property management companies, tasked with coordination, design, construction, and ongoing maintenance, respectively (Li, Tao et al., 2024). Meanwhile, some projects engage enterprises, scholars, experts, and non-governmental organizations (NGOs) to foster innovative resident participation in rehabilitation (SC, 2020a). Prominent examples include the co-governance and sharing program in Wuhan (Luo, Wu et al., 2020), the urban regeneration engine model in Beijing (Shen, Yao et al., 2021), and the community planner scheme in Guangzhou (Zhao, Liu et al., 2023). Additionally, the rise of ICTs and social media has amplified the role of media in rehabilitation efforts. These platforms enable quick dissemination of policies and success stories, and provide a venue for residents to voice opinions or dissent (SC, 2020a).

For residents, unlike redevelopment projects that require intensive, one-time involvement, neighborhood rehabilitation emphasizes continuous participation throughout the project's lifecycle (SC, 2020a). Residents are engaged to determine (SC, 2020a, 2020b): 1) the necessity of rehabilitation; 2) rehabilitation scope and content; 3) design plans and strategies; 4) the construction schedule; and 5) management mode and responsible parties. In turn, these critical decision points segment the project lifecycle into five iterative phases (MOHURD, 2021):

- **Phase I - Intention and Setup;**
- **Phase II - Mapping and Assessment**
- **Phase III - Planning and Design**
- **Phase IV - Construction and Acceptance**
- **Phase V - Operation and Maintenance**

Integrating government documents with scholars' empirical observations, this study identifies nine types of information circulated among stakeholders during neighborhood rehabilitation. Their implications for resident participation are detailed in Table 4.1.

TABLE 4.1 Information shared among stakeholders during neighborhood rehabilitation

Types of information	Implications for resident participation	Reference
Policy and regulations	– Laws, policies, objectives and evaluation criteria regarding rehabilitation and resident participation.	(Jia, Qian et al., 2021; SC, 2020a)
Administrative arrangement	– Administrative structure, institutions and process. – Responsibilities and authority of institutions.	(Li, Tao et al., 2024; MOHURD, 2021)
Project information	– Usage, operation and maintenance of buildings, communal environment, infrastructure and services. – Project schedule, decisions and progress. – Problems and issues, their causes and relevant entities.	(Jia, Qian et al., 2021; SC, 2020a)
Indigenous knowledge and experience	– The knowledge, (in)material resources, trust, relational and position capital possessed by neighborhood residents. – Residents' socio-demographic characteristics. – Residents' attitude, awareness, experience and skills regarding rehabilitation and resident participation.	(Liu, Hu et al., 2018; SC, 2020a; Webler, Tuler et al., 2001)
Objectives and concerns	– Capacities and attitudes of group members and other stakeholder groups. – Stakeholders' interests, needs, requirements and constraints to rehabilitation and resident participation. – Stakeholders' comments, suggestions and feedback.	(Enserink and Monnikhof, 2003; Gudowsky and Bechtold, 2013; MOHURD, 2021; SC, 2020a)
Design information	– Design theories, strategies, methods and standards. – Mapping and drawing knowledge, such as presentation, diagramming and technical drawing. – Meaning and implications of design drawings.	(Liu, Hu et al., 2018; Webler, Tuler et al., 2001)
Construction information	– Characteristics, applicability, advantages and constraints of rehabilitation strategies. – Construction methods and techniques, impacts and solutions.	(Jia, Qian et al., 2021; MOHURD, 2021)
Management information	– Experience, expertise and knowledge in managing information, risk, crisis, process, stakeholders, and technology during rehabilitation.	(Li, Tao et al., 2024)
Participation information	– Participation opportunities. – Benefits, limitations and costs of resident participation. – Knowledge concerning resident participation design and implementation, including process, approaches, channels, techniques, depth and breadth of resident participation.	(Boyle and Michell, 2020; Li, Zhuang et al., 2024; MOHURD, 2021; SC, 2020a)

4.3 Methodology

4.3.1 Case study area

Located in central Wuhan, the study case, Jiaoweiyuan neighborhood, was developed in the 1980s. It consists of privatized public housing, housing 481 households with an ownership-to-tenancy ratio of 7:3. The neighborhood recently underwent a government-led rehabilitation, adhering to a recommended five-phase process. The 20-month project commenced in December 2019 but faced delays from February to May 2020 due to COVID-19 lockdowns, resuming thereafter and concluding in December 2021. The recent round of rehabilitation involved 53 tasks aimed at enhancing infrastructure, road and parking facilities, fire and safety measures, building structure and envelope, as well as communal spaces and services.

Jiaoweiyuan rehabilitation project was selected as the study case due to its emphasis on resident participation and information sharing, with the latter regarded as the primary strategy for fostering community engagement. This emphasis ensured detailed documentation of participatory and communication activities throughout the project lifecycle. Also, project-relevant actors showed interest in enhancing information sharing and enthusiasm for participating in this research. Additional rationales for choosing Jiaoweiyuan include the diverse and accessible data, along with the project's representativeness and typicality of neighborhood rehabilitation projects in Wuhan, China.

4.3.2 Data collection and analysis

Following a conventional stakeholder analysis methodology (Yang, Shen et al., 2011), this research was structured in three phases: 1) identifying stakeholders, 2) documenting stakeholders' relationships, and 3) evaluating these relationships. Additionally, employing network analysis, this study concentrated on the complete network within the Jiaoweiyuan project, aiming to investigate all *stakeholders* and their potential *relationships*. In this context, *stakeholders* refer to organizations comprising individuals with similar responsibilities and interests in the project who can affect or are affected by the project (Freeman, 1984). Meanwhile, *relationships* denote the deliberate information exchanges between stakeholders to advance the project.

Data collection began with desk research of government documents, project logs and newspaper articles, to develop an initial list of organizations (stakeholders) that affected or were affected by Jiaoweiyuan rehabilitation project. Semi-structured interviews followed to validate and finalize the stakeholder list. Utilizing snowball sampling, 10 respondents were approached from April to May 2022. These included 3 government officials, 2 community workers, 2 designers, 1 contractor, and 2 residents, all of whom were directly involved in the Jiaoweiyuan rehabilitation project. Through these interviews, 31 stakeholders were identified and cataloged in Table 4.2, comprising 28 non-resident stakeholders and 3 resident stakeholders.

TABLE 4.2 Stakeholders(organizations) in Jiaoweiyuan rehabilitation project

No.	Stakeholder
	Non-resident stakeholders
1	Municipal Bureau of Housing Management
2	Municipal Bureau of Finance
3	Municipal Bureau Natural Resources and Planning
4	District Bureau of Housing Management
5	District Bureau of Finance
6	District Branch of Natural Resources and Planning Bureau
7	District Bureau of Administration and Approval
8	Commission of Development and Reform of the District
9	District Bureau of Water and Lakes
10	District Bureau of Parks and Landscaping
11	Fire Rescue Brigade of the District
12	District Bureau of Public Security
13	Subdistrict Administrative Office
14	Subdistrict Branch of Urban Management and Law Enforcement
15	Neighborhood Committee
16	Community worker
17	Self-governance Group
18	Planner
19	Architect
20	Surveyor
21	Implementation unit
22	Constructor
23	Original property owner (work unit)
24	Property management company
25	Law firm
26	Non-government organization (NGO)
27	Local newspaper
28	Research institute
	Resident stakeholders
29	Homeowner
30	Tenant
31	The public

This study implemented distinct data collection methods for non-resident and resident stakeholders. Between May and October 2022, in-person surveys were conducted with leaders or management-level personnel of non-resident organizations, yielding 35 valid questionnaires encompassing all 28 identified

non-resident stakeholders. Considering the complex and detailed nature of the questionnaire, the in-person approach ensured respondents fully comprehended the research context and queries, thus increasing the accuracy and completeness of their responses (Marta-Pedroso, Freitas et al., 2007). This approach also allowed researchers to perform timely verifications and follow-up interviews (Li, Zhuang et al., 2024). For resident stakeholders, data collection was carried out via focus groups. Considering the large and diverse nature of the population, individual inquiries would not have sufficiently captured all viewpoints. In converse, focus groups facilitated an interplay of opinions, feelings, and experiences, culminating in a consensus rather than isolated experiences (Leung, Yu et al., 2014; Yang, Shen et al., 2011). Thus, the results from focus groups more likely reflect residents' average perceptions of information sharing. The structuring and execution of focus groups followed the methodologies proposed by Leung, Yu et al. (2014) to circumvent potential procedural issues. Given that the suitable group size ranges from 6 to 12 participants, three focus groups were organized, covering the 3 identified resident stakeholders: one with 8 general population representatives, one with 10 neighborhood homeowners, and another with 6 neighborhood tenants. All in-person survey sessions and focus group discussions were conducted with participants' consent and were recorded and transcribed.

During the survey sessions and focus group discussions, participants addressed questions concerning their familiarity with types of information and their information sharing experiences (network questions). The survey protocol is detailed in Appendix C and has received approval from the Human Research Ethics Committee at the authors' institution. Initially, participants used a five-point Likert scale (1 - No knowledge, 2 - Poor knowledge, 3 - Average knowledge, 4 - Good knowledge, 5 - High knowledge) to rate their familiarity with nine types of information encountered during the Jiaoweiyuan rehabilitation (Table 4.1, Question 1). Following this, they responded to network questions, using questions and scales adapted from Yang, Shen et al. (2011). Participants were first presented with a flowchart of the Jiaoweiyuan rehabilitation process and the stakeholder list (Table 4.2). Set against a specific phase of the rehabilitation process, they were then asked to identify all organizations with whom they had exchanged information (Q2), specify the direction of the information exchange (Q3, with P – provide, R – receive, and RP – in both ways), and indicate the frequency of these exchanges (Q4) using a five-point Likert scale (1 – Only once, 2 – Two or three times, 3 – Multiple times, but not weekly, 4 – Once a week, 5 – Several times a week). Q2, Q3, and Q4 were repeated five times to track participants' information exchange actions throughout the different phases of the project.

The qualitative data for this study, including recordings, transcripts, project logs, reports, and newspaper articles, were collated and analyzed using the ATLAS.ti software. This analysis employed a two-step deductive content analysis approach. A codebook was first developed that detailed six themes: phases of information sharing, partners, direction, content, intensity, challenges, and countermeasures. Data was then coded according to these predetermined themes. Network data acquired from surveys and focus groups was organized into five asymmetric valued matrices, each corresponding to one of the five project phases. SNA was performed using Ucinet 6 software (Borgatti, Everett et al., 2002), with visualization facilitated by Netdraw software. ENA was executed in Python using the NumPy library and was visualized in Excel.

4.4 Results

4.4.1 Stakeholders' levels familiarity of information

As shown in FIG. 4.2, most stakeholders of Jiaoweiyuan project were well-acknowledged in *Laws and Regulations*, with only three demonstrating limited knowledge. *Project Information* is the second best-understood category, with 26 stakeholders showing an average knowledge or higher (score≥3). However, there is a noticeable gap in *Indigenous Knowledge and Expertise*, followed by *Management Information* and *Participation Information*. 20, 15 and 10 stakeholders, respectively, indicating poor or no knowledge.

Implementing unit emerges as the most informed stakeholder, except in *Project Information* and *Participation Information*. Planner, Architect, and Neighborhood Committee also show high knowledge levels. Conversely, Local media, Tenant, and Law firm rank lowest in familiarity of most information types, aside from *Objectives and Concerns*.

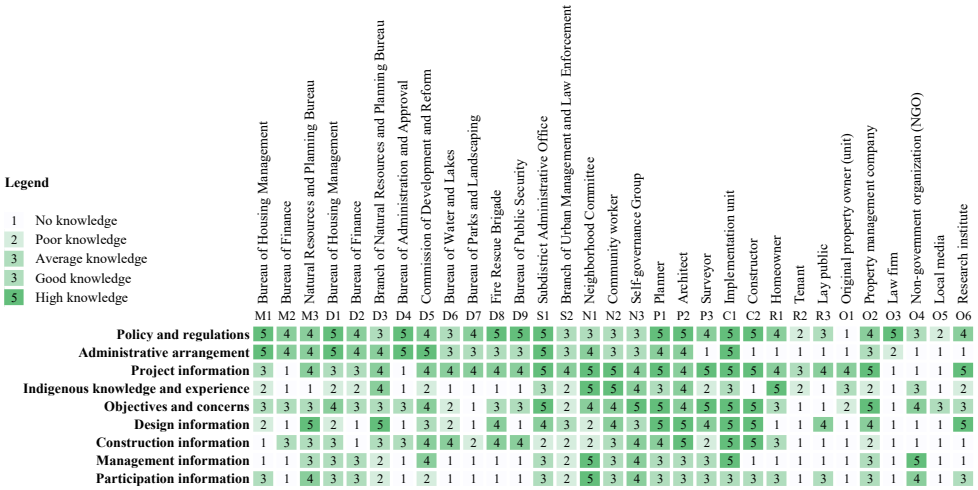


FIG. 4.2 Stakeholders' familiarity with various types of information

4.4.2 Evolution of information sharing and influence on resident participation

Overall network

Table 4.3 shows that the network density remained below 0.3, indicating limited and sporadic information flow among stakeholders throughout the project's lifecycle. The highest density (0.286) occurred in Phase V. The network's average path length remained close to 2 throughout the project. Phases II and III are lower than 2, indicating that in Jiaoweiyuan rehabilitation, stakeholders communicated directly or through just one intermediary to other stakeholders. The network was relatively coherent, facilitating the rapid and accurate dissemination of information among the stakeholders.

TABLE 4.3 Density and average path length of information network of Jiaoweiyuan rehabilitation

	Phase I	Phase II	Phase III	Phase IV	Phase V
Density	0.212	0.266	0.262	0.239	0.286
Average path length	2.120	1.894	1.911	2.028	2.052

Influence of key stakeholders

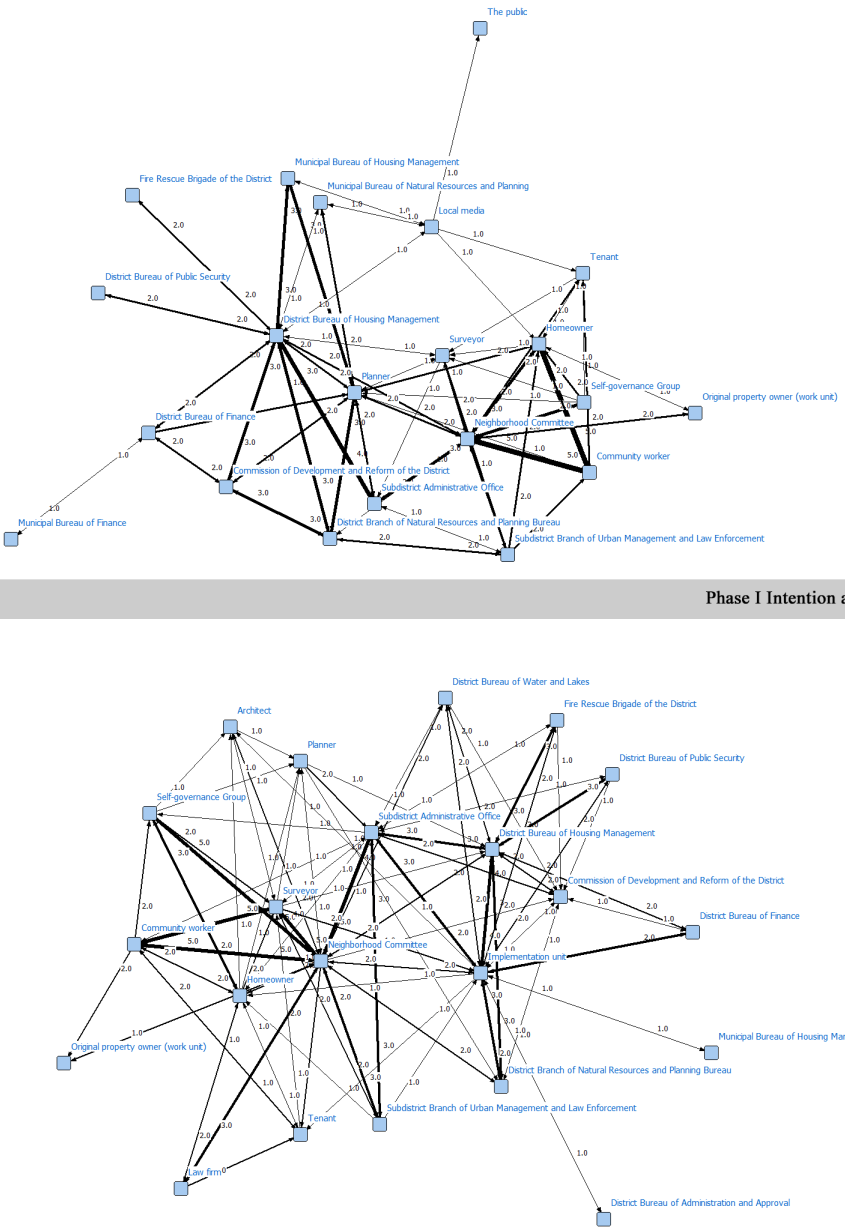


FIG. 4.3 Evolution of the information network for Jiaoweiyuan rehabilitation over the project lifecycle

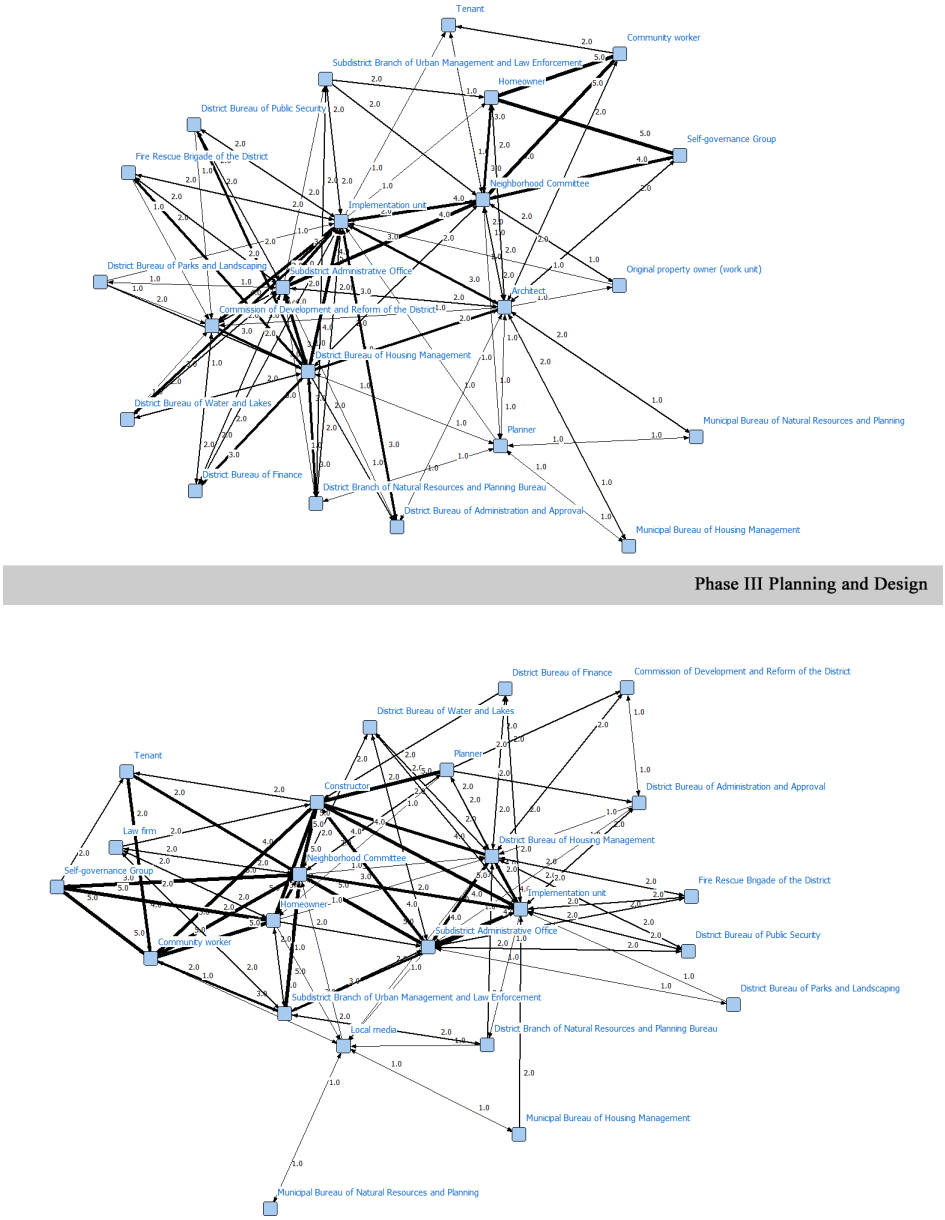
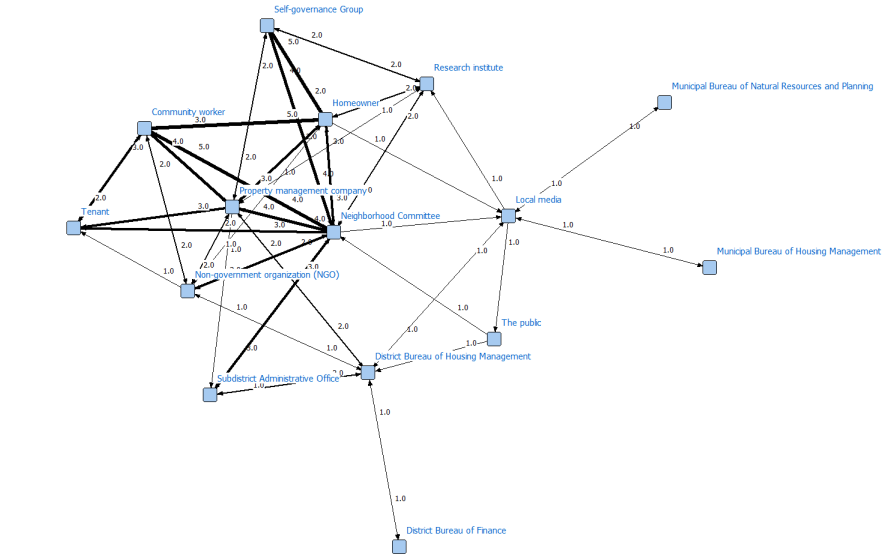


FIG. 4.3 Evolution of the information network for Jiaoweiyuan rehabilitation over the project lifecycle



The arrow indicates the direction of information sharing, from provider to receiver. The score represents the frequency of information sharing and is close to the information provider: 1 - only once, 2 - two to three times, 3 - multiple times, but not weekly, 4 - once a week, and 5 - several times a week.

FIG. 4.3 Evolution of the information network for Jiaoweiyuan rehabilitation over the project lifecycle

Integrating FIG. 4.3 with centrality data (Appendix C) sheds light on seven stakeholders significantly impacting information sharing of Jiaoweiyuan rehabilitation: District bureau of housing management, Sub-district administrative office, Neighborhood committee, Architect, Implementation unit, Local media and Homeowner. They participated in various phases of the rehabilitation process and occupied central positions within the information network. Their significance was further emphasized by frequent mentions and discussions during interviews. As a result, this research focuses on these seven stakeholders, examining their positions in and influence on the information network and the evolution of their impacts.

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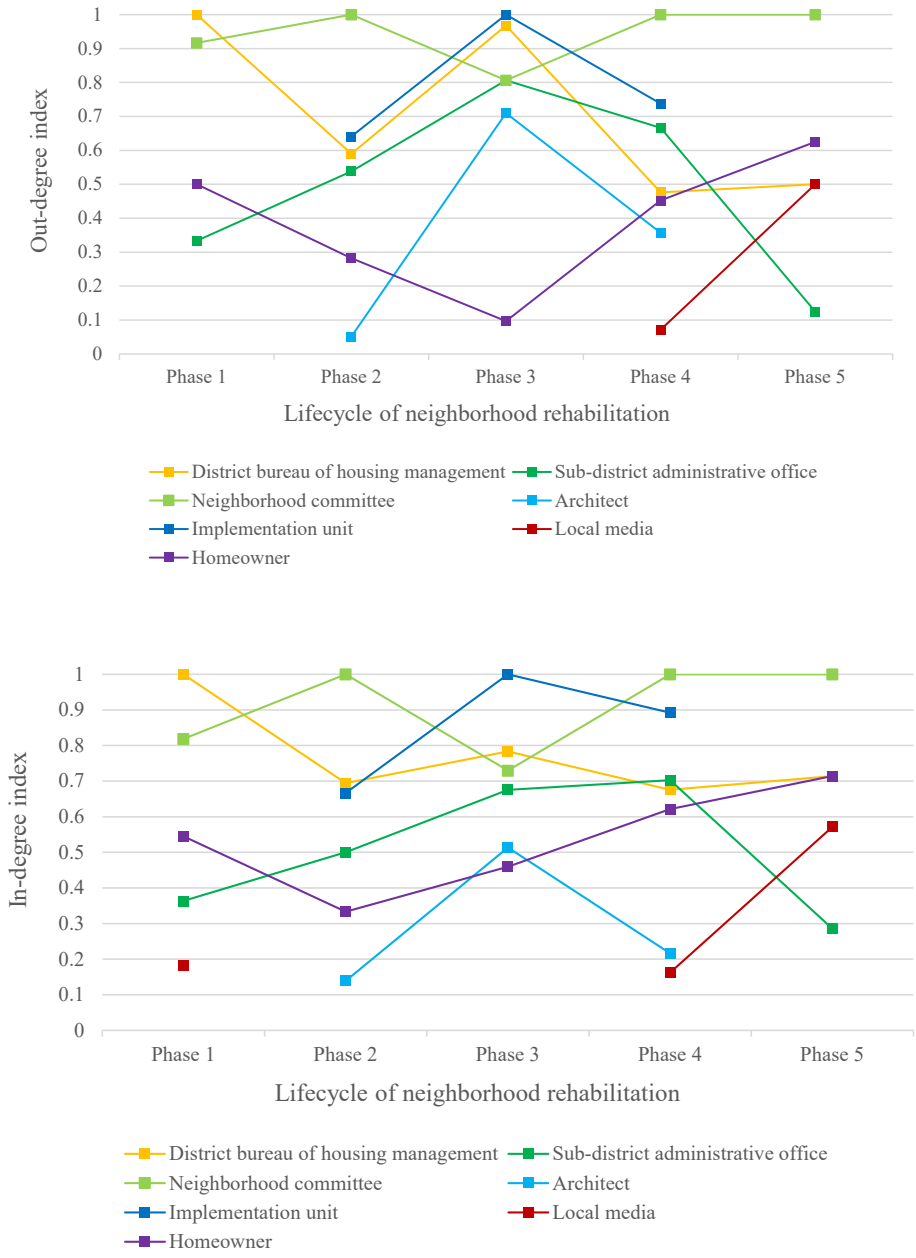

FIG. 4.4 Evolution of centralities of seven critical stakeholders over the project lifecycle

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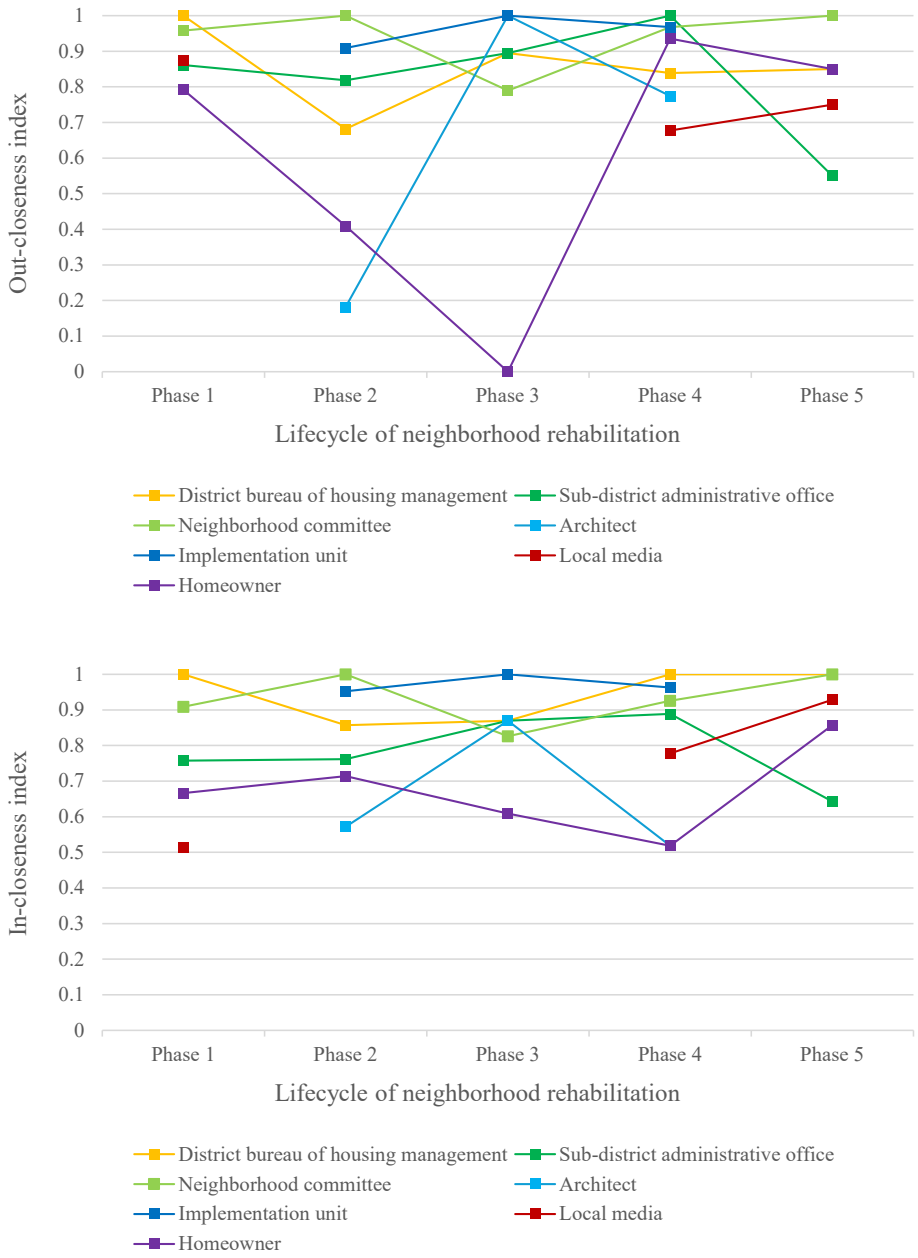

FIG. 4.4 Evolution of centralities of seven critical stakeholders over the project lifecycle

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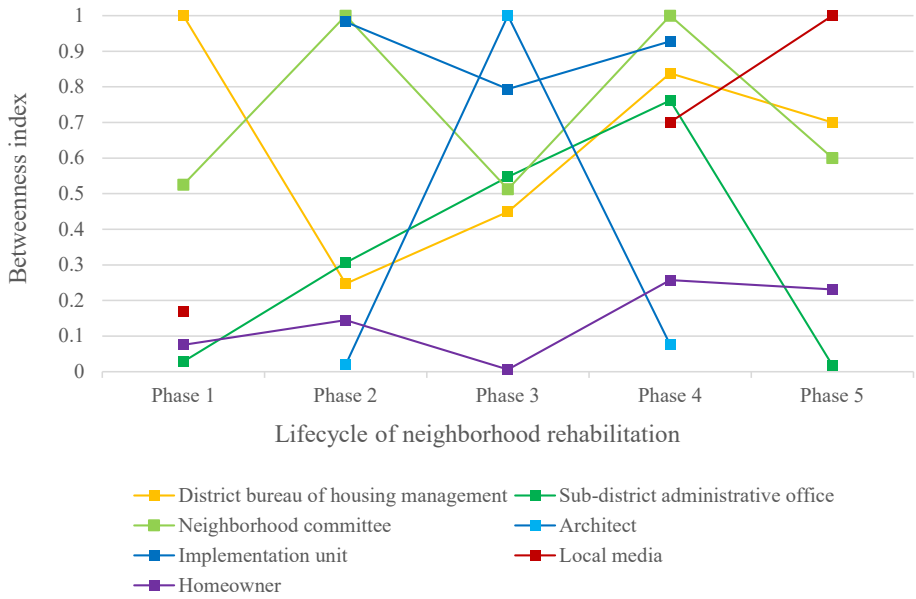

FIG. 4.4 Evolution of centralities of seven critical stakeholders over the project lifecycle

As shown in FIG. 4.4, District bureau of housing management held a prominent position during Phase I. It scored 1 on all five centrality indexes, indicating its superior centrality compared to the other 20 stakeholders. The housing bureau served as both the primary source and recipient of information, exerting significant control over the partner, pathway, and content while maintaining considerable independence. However, its centrality declined as the project progressed. Starting from Phase II, the neighborhood committee assumed a more prominent role in information circulation. Local media took over as the primary information controller in Phase V.

The centrality of the Sub-district administrative office peaked in Phase III. Although the office's capacity to distribute and receive information increased and decreased, it remained relatively low throughout the process. Notably, its influence was minimal during Phase I and Phase V, where it neither acted as a distributor of information nor received significant input from other stakeholders, positioning it at the network's periphery. Nevertheless, its influence surged during the middle three phases, placing it at the network's core. Despite this, its ability to distribute and receive information remained limited, slightly better than homeowner and architect.

Neighborhood committee occupied a central position within the network throughout the project lifecycle. It ranked first or second in the centrality index, acting as the primary information sender and receiver. Moreover, the committee demonstrated high control and maintained significant independence within the network. Its influence remained consistently high, reaching its peak during Phase II and Phase IV, and slightly weakening during Phase III. As noted by numerous respondents, neighborhood committee served as the most crucial source of information and their preferred channel for obtaining information about other stakeholders:

'...they really get the overall situation and have the big picture in mind. They also know which residents tend to stir up trouble or conflict. Focusing on these residents could have much more effective results.' (respondent from implementation unit, in-person survey, 10th September 2022)

'We always show the design plans to the committee first since they know which parts might raise residents' concerns... Once they give the nod, we then share it with the residents. I also noticed that residents preferred communicating with them rather than us.' (respondent from architecture firm, in-person survey, 18th June 2022)

Implementation unit and Architect exhibit a similar pattern, being involved during the middle three phases, with their influence increasing and subsequently declining. During Phase III, Implementation unit replaced Neighborhood committee and Housing bureau, assuming the role of the primary disseminator and recipient of information, while Architect exerted the greatest control. However, there is a significant disparity in the extent of influence between them. In Phases II and IV, Implementation unit significantly outperformed Architect in terms of its ability to disseminate and receive information, exercise control over information flow, and independence. Additionally, FIG. 4.2 illustrates that implementer is positioned at the core of the information network, while Architect often occupies the periphery.

Homeowners were positioned in the central part of the information network, except for Phase IV. However, their influence on information sharing remains consistently low, only surpassing that of local media. Lower degree centrality scores indicate that residents were neither the primary recipients nor the senders of information. Their control over information was minimal, and their exchange heavily depended on other stakeholders. However, their influence was notably improved during Phase V. Their capacity to transmit and receive information ranked second, transitioning from the network's periphery to its core. Participants in the homeowner focus group suggested an increase in residents' discourse power as the process advanced:

'…we liked the original gate, but the government wanted something more culturally reflective, leading to its redesign and rebuild…while more recently, upon finding an empty space in the neighborhood, we hired an architect. She and the committee suggested a children's playground, but we rejected that idea. We preferred a neighborhood canteen instead.'

Local media participated in Phases I, IV, and V, with consistently minimal influence on information sharing. In Phase I, it occupied a relatively central position (FIG. 4.2), facilitating effective communication with residents. However, its low centrality suggests a lack of trust from other stakeholders in providing information. The media's influence remained low in Phase IV, while surged in Phase V, where it became the primary information controller. Despite this, its capacity to send and receive information was limited, relying heavily on other stakeholders. One respondent from local media (a local documentary director) offered insights into this information dependence:

'…we tried reaching out to residents ourselves before, but they tend to be wary of us… That is why we contacted the housing bureau first this time. With the help of the bureau and the committee, the contact and communication were very smooth.'

Influence of interrelationship between stakeholders

FIG. 4.5 depicts the integral mutual relationships (Sign *U*) among the seven stakeholders in the information network, showcasing the integral impact of these dyads on information sharing and the evolution of these relationships and impacts across different phases. *MI* ranges from 1.08 to 1.77, indicating a mutualistic network. *SI* ranges from 2.99 to 5.85, suggesting a synergistic information system.

In Phase I, three types of relationships exist among stakeholders: mutualism, exploitation, and competition, accounting for 10%, 60%, and 30%, respectively. Competitive relationships were observed between Homeowner-Subdistrict office, Media-Housing bureau, and Media-Neighborhood committee. Housing bureau emerged as the primary beneficiary of information sharing. Media and Homeowner were the primary contributors to information exploitation by Housing bureau, Subdistrict office, and Neighborhood committee.

Moving into Phase II, a new dyadic relationship emerged: neutral. Housing bureau maintained a neutral relationship with Subdistrict office, Neighborhood committee, Architect, Implementation unit and Homeowner. Two pairs of relationships changed: the competitive relationship between Homeowner-Subdistrict office shifted to

exploitation, and the exploited relationship between Homeowner-Neighborhood committee shifted to competition. Competitive relationships also emerged between Implementation unit-Neighborhood committee and Homeowner-Implementation

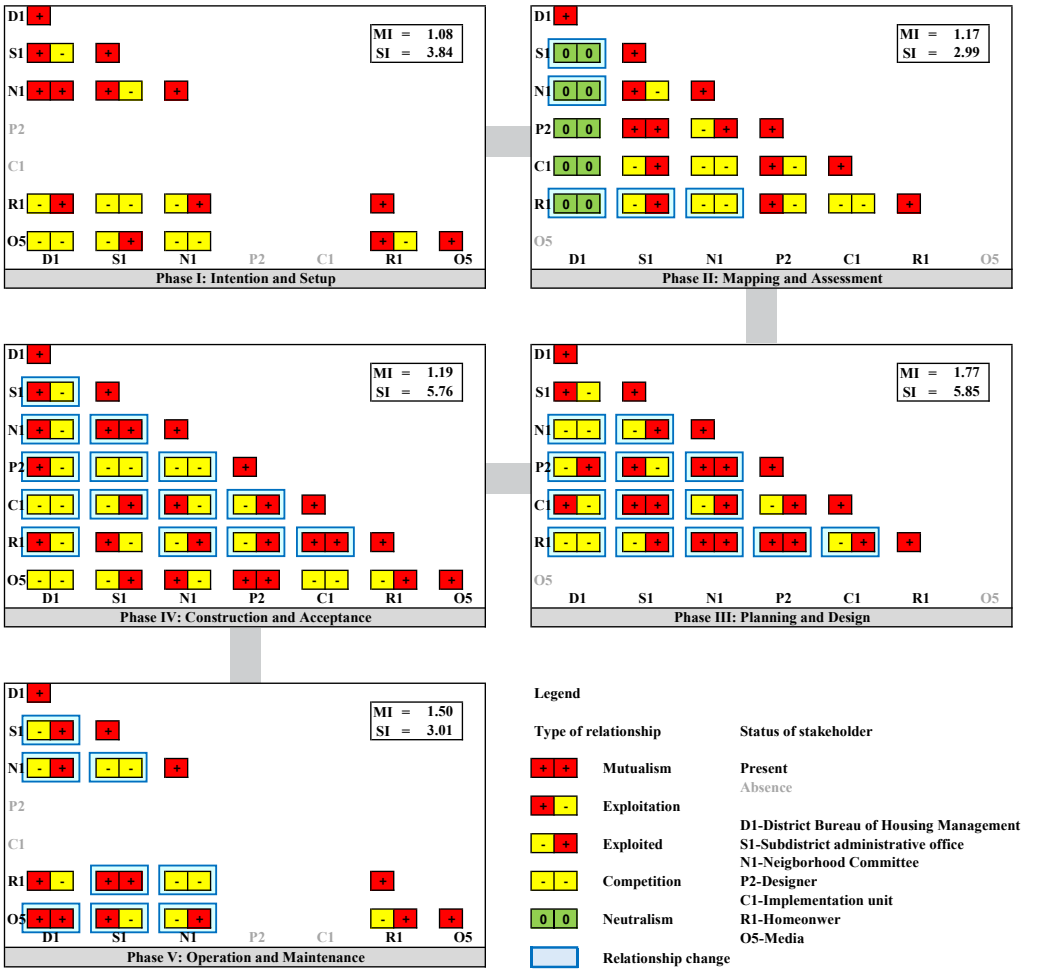

FIG. 4.5 Integral mutual relationship (Sign U) for information sharing in Jiaoweiyuan rehabilitation
Note: In each Sign U, the left symbol represent stakeholder in row, and the right symbol reflects the status of the stakeholder in column. The blue blocks indicate that the interrelationship between these two stakeholders differs from the previous phase. MI is the mutualism index and SI is the synergism index of the information network.

unit. Furthermore, Homeowner became the most prominent information provider, exploited by Subdistrict office, Neighborhood committee, and Implementation unit.

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Conversely, Subdistrict office emerged as the primary information beneficiary, exploiting Architect, Implementation unit, and Homeowner.

In Phase III, significant shifts occur in all relationships, except for two exceptions in Subdistrict office-Housing bureau and Implementation unit-Architect. Competitive relationships arise in Neighborhood committee-Housing bureau and Homeowner-Housing bureau. The proportion of mutualism relationships increases to 26.7% (4/15), including Architect-Neighborhood committee, Implementation unit-Subdistrict office, Homeowner-Neighborhood committee, and Homeowner-Archit. Housing bureau emerged as the primary information contributor, exploited by four stakeholders (Subdistrict office, Neighborhood committee, Implementation unit, Homeowner), with Subdistrict office and Neighborhood committee benefiting the most.

By Phase IV, all relationships change, with mutualism, exploitation, and competition accounting for 14.3%, 61.9%, and 23.8%, respectively. Housing bureau continued as the primary contributor, exploited by the other six stakeholders, notably benefiting Subdistrict office (exploiting Neighborhood committee, Implementation unit, Media) and Architect (exploiting Implementation unit, Homeowner, Media). Architect's relationships face significant challenges, with two-thirds being competitive.

In Phase V, competitive relationships emerge in Neighborhood committee-Subdistrict office and Homeowner-Neighborhood committee, while Homeowner-Subdistrict office and Media-Housing bureau exhibit mutualism. Roles were reversed for Housing bureau and Homeowner, with Housing bureau becoming the primary information beneficiary, exploiting Subdistrict office, Neighborhood committee, and Media. In contrast, Subdistrict office transited to the main contributor, exploited by Neighborhood committee and Subdistrict office.

4.5 Discussion

4.5.1 Stakeholder information sharing and evolution in the view of SNA and ENA

Neighborhood Committee – primary information broker, yet heavily exploited

The case of Jiaoweiyuan rehabilitation highlights the Neighborhood Committee as a pivotal and influential stakeholder in information sharing, evidenced by its possession of the most comprehensive and detailed information (FIG. 4.1). Throughout the project's lifecycle, the committee was integral to the information network, serving as both the primary distributor and recipient of information (FIG. 4.2, FIG. 4.3). Except for Phase III Planning and Design, the committee wielded substantial control with minimal interference from other stakeholders. This central function is consistent with findings by Z. Liu, S. Lin et al. (2023) in eight Chinese cities, where the Neighborhood Committee not only facilitated horizontal connections among residents, designers, and execution units, but also established hierarchical relationships with government entities. Beyond these "liaison" and "representative" roles (Parise, 2007), this study reveals its additional role as an "advisor," aimed at facilitating internal communication and thereby fostering consensus and trust among the residents.

Despite this, ENA results indicate that the committee has been exploited by other stakeholders throughout the project lifecycle, contributing significantly more to information sharing than it receives (FIG. 4.4). Additionally, its role as an information hub was not spontaneously occurring (Z. Liu, S. Lin et al., 2023). In the short term, this exploitation allows governmental bodies and designers to access and understand the neighborhood swiftly, facilitating adequate supervision and informed designs. However, the excessive exploitation, compounded by insufficient feedback, hindered the committee from accumulating information and trust from the residents. A discernible impatience and dwindling confidence in communicating with residents have also emerged among some stakeholders.

Notably, this over-reliance on information sharing jeopardizes the long-term viability of rehabilitation initiatives. Complaints like "*Dealing with residents' feedback often*

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keeps us busy until midnight," "*If we don't promptly respond to residents, they complain to the government. Besides communicating with residents, we spend considerable time briefing the government*," and "*The workload is overwhelming, leading us to opt out of future rehabilitation rounds,*" underscore the committee's predicament. Additionally, the committee's exclusive and indispensable role within the information network raises the network's fragility (Tononi, Sporns et al., 1999). The absence of redundancy in the network implies that if the committee were to burn out, lose contact with other groups, or be impacted by sudden events, the project's information network faces a significant risk of collapse (Tononi, Sporns et al., 1999). Therefore, while affirming the critical role of the committee in facilitating cross-boundary communication (Z. Liu, S. Lin et al., 2023), an increasing focus on building prestige and trust among other stakeholders is advocated. Cultivating backup stakeholders and interactions can prevent the overexploitation of community workers and ensure the resilience of the information network.

Homeowners – a rise and monopolization of the discourse power

As the project progressed, residents' discourse power increased noticeably, transitioning from passive compliance with predefined decisions to possessing ultimate decision-making authority. This transformation is attributed to the residents' increasingly pivotal role within the information network (FIG. 4.2), as well as their innovative communication strategies. In the case of Wuhan, residents utilized multiple avenues to have their voices heard by higher levels of government. As noted by participants in the homeowner focus groups, they called the mayor's hotline, reached out to provincial Chinese People's Political Consultative Conference (CPPCC) and National People's Congress (NPC) deputies, commented on the government's social media accounts, and resorted to legal action by filing lawsuits, to urge grassroots governments to respond to their appeals. The accumulation of residents' discourse power is further evidenced by their transition from contributors to beneficiaries in the information network (FIG. 4.4). Their information interdependency with other stakeholders evolved from exploitation and competition during the initial three phases to exploitation and mutualism in Phases IV Construction and Acceptance and V Operation and Maintenance.

Despite this positive shift in discourse power, the study underscores a persistent challenge in urban planning research—the underestimation of residents' contributions by decision-makers and the opaqueness of the decision-making process (Enserink and Monnikhof, 2003; Liu, Hu et al., 2018). The SNA results indicate that residents were not the primary sources of information, nor did information flow to them freely. More critically, residents held minimal control and

relied heavily on other stakeholders to voice their opinions and acquire information. This informational vulnerability peaked in Phase III Planning and Design, where the residents' input was most needed.

Another notable trend is the stratification of residents' information roles. During Phase I Intention and Setup, the committee consciously recruited neighborhood leaders and cultivated them into activists. These activists, enriched with rehabilitation knowledge and communication skills, became the information "gatekeepers" (Parise, 2007). In subsequent phases, external insights were filtered through these activists and relayed to the broader population. Jiaoweiyuan case reports substantial success with this layered messaging, as the head of the neighborhood committee exemplified:

'…upon receiving a task, we convened a meeting with the activists to align our understanding and, more critically, ensured consistency in our messages… it took months to gather questionnaire responses in other neighborhoods, we managed it within a week…when complaints arise, we delegate mediation to activists familiar to the concerned resident, as direct intervention from us might be perceived as administrative overreach.'

Nevertheless, not all "gatekeepers" were committed to facilitating information sharing. Sometimes, they marginalized vulnerable groups and suppressed voices with conflicting interests, exacerbating inequalities in the participatory process. Aligning Boyle and Michell (2020)' observation during a collaborative regeneration project in South Africa, This phenomenon mirrors observations by Boyle and Michell (2020) during a collaborative regeneration project in South Africa. In Jiaoweiyuan rehabilitation, homeowner representatives refused to inform UBW violators about the time and location of the demolition seminar, excluding them from a crucial negotiation with the working group. During the meeting, these homeowners fabricated the views of the violators, resulting in the latter's displacement.

Local media – competent participation promoter, but nowhere near whistleblower

Media is often recognized as influential in promoting public participation (Yang and Callahan, 2007; Yu, Hamnett et al., 2021). This influence stems from its ability to highlight environmental issues and potential benefits of the renovation technologies, thereby sparking residents' desire to initiate environmental improvements (Jia, Qian et al., 2021). Widespread sensitization on the importance of and opportunities for participation enables residents' timely involvement (Yang and Callahan, 2007).

The Jiaoweiyuan case contributes by exemplifying how media coverage can motivate the lay public to pursue rehabilitation efforts. One participant in the public focus group noted, "*I read in the newspaper that Jiaoweiyuan's appearance has improved greatly. So, I contacted my neighborhood committee and asked if our neighborhood could also be renovated.*" For Jiaoweiyuan residents, the publicity boosted their residential satisfaction and eagerness for ongoing engagement. The homeowner focus group participants remarked, "*…seeing the photos of the before and after rehabilitation, I felt fortunate. I thought I had to do something to maintain this hard-won good life.*"

Despite the media's capacity to engage various resident groups, there is significant distrust towards it among stakeholders. SNA results reveal stakeholders were hesitant to voluntarily share information with the media, even though it held considerable control over information dissemination (FIG. 4.3). Additionally, ENA results indicate that the local media adopted an exploitative role throughout the project's lifecycle, casting doubts on its ability to function as an independent agent. This finding challenges the conventional expectation, as noted by Yu, Hamnett et al. (2021), that the media should act as a whistleblower in construction projects.

In the Jiaoweiyuan case, local media was constrained from challenging government directives or championing increased decision-making power for residents. Its dependency on the government and the neighborhood committee for information starkly contrasts the independence reported by Zheng, Sun et al. (2024) in an urban village renovation project in Tianjin. Instead, it aligns more closely with Wu (2023)'s observations of a public infrastructure project in Shanghai, where the media was limited to disseminating the positive aspects of the projects. Concerningly, media coverage was predominantly published on government platforms, suggesting that the intended audience was the governmental apparatus rather than the residents or the broader society.

4.5.2 Policy recommendations

Policy recommendations are made to rectify unhealthy interrelationships and curb undesirable stakeholder behaviors. Given the case of Jiaoweiyuan rehabilitation, these recommendations address the issues of information exploitation by neighborhood committee, manipulation by homeowners, and the loss of media autonomy, respectively.

To counteract information exploitation by neighborhood committees, this study suggests integrating redundancy nodes and relationships within the information network. Traditionally supported by academia and government, community planner schemes favor design experts (Hui, Chen et al., 2021; Li, Zhang et al., 2020; SC, 2020a; Shen, Yao et al., 2021). However, this research advocates a shift toward appointing community opinion leaders as planners, emphasizing that their trust and relational capital are more vital for effective information exchange than merely technical expertise. Despite the benefits, reliance on manual processes exposes planners to exploitation. As a novel solution, this study recommends integrating sensors and computer algorithms to automate information capture and distribution, enhancing efficiency and reducing manual dependency. Crucially, while the development of digital communication platforms is promising and advocated by many scholars (Nita, Fineran et al., 2022; Zhang, Zhang et al., 2021), this study shifts the focus towards enhancing user interaction rather than merely aggregating data within these platforms. The implementation of AI-powered chatbots is suggested to improve resident engagement and the accuracy of information dissemination, simplifying the neighborhood committee's role to verifying and clarifying data.

By using objective data from devices and directly transmitting subjective data from the source, this platform can also mitigate information manipulation by specific residents. Nevertheless, this shift in communication requires significant investment in time, resources, and training to ensure users are effectively engaged and the technology achieves its intended purpose. Consequently, scholars often prefer immediate solutions, such as diversifying information channels (He, Mol et al., 2015), establishing platforms for conflict resolution (Nita, Fineran et al., 2022), introducing monitoring mechanisms (Zhou, Zhu et al., 2022), and enacting laws (Zhang, Zhang et al., 2021). Nevertheless, the Jiaoweiyuan case highlights additional challenges such as the uneven selection of delegates and the "train the trainer" method used by the committee for information dissemination. To address uneven representation, this study suggests a "resident jury" scheme. Although well-recognized internationally, it remains underutilized in Chinese academic and practical contexts. In this scheme, project beneficiaries and detractors present their cases, leaving decision-making to randomly selected citizen jurors with no direct stakes in the project. Regarding the "train-the-trainer" approach, despite its effectiveness in speeding up information spread and broadening public participation, it introduces exclusivity and unfairness, necessitating careful refinement. Contrary to typical practices of targeting children or retirees for training (Dickens, 2013; Li, Zhuang et al., 2024; Luo, Wu et al., 2020),

this paper recommends focusing on adolescents[17] due to their enthusiasm for new ideas and more mature judgment, with a lower likelihood of being influenced by personal interests, therefore can minimize bias in information dissemination.

The Jiaoweiyuan case highlights distrust in local media, exacerbated by their limited autonomy in reporting, controlled by regional powers rather than central authorities (Jingrong, 2010). This is evident in strategies implemented during the Enning Road renovation in Guangzhou, where provincial-level media were brought into spotlight misconduct in district-level initiatives (Yu, Hamnett et al., 2021). This tactic aligns with Chinese Communist Party (CCP) directives that encourage the media to monitor public opinion and expose flaws in lower-level administrations (Jingrong, 2010), an approach this study advocates to mitigate local media autonomy issues. However, a broader solution involves reforming the legal framework for information, as the current *Cybersecurity Law* focuses narrowly on security and monitoring without adequately supporting freedom of discourse. Recommended reforms include enacting legislation that guarantees media report accuracy and, more importantly, protects journalists' and citizens' freedom to express opinions without fear of censorship or retribution. Drawing on international examples like the U.K.'s *Freedom of Information Act*, the U.S. *First Amendment*, *Article 10 of the European Convention on Human Rights*, and Hong Kong's *Personal Data (Privacy) Ordinance* could guide these reforms. Such reforms would enhance media credibility and independence, fostering a more transparent and informed public discourse.

4.5.3 Strength and limitations

The study presents strengths and limitations, setting directions for future research. Firstly, recognizing SNA's limitation in capturing nuanced relationships within networks, this research integrates ENA to explore stakeholders' influence on information networks, networks' consequential impacts, and their effects on resident participation in neighborhood rehabilitation. It indicates that ENA effectively complements SNA by revealing detrimental relationships, such as exploitation and competition, which often remain obscured within SNA research. Furthermore, this study addresses the growing scholarly demand for exploring the dynamic nature of construction projects through longitudinal research, thereby securing a unique position within existing literature. However, the study's retrospective single-case

17 The World Health Organization (WHO) defines an adolescent as a human between ages 10 and 19.

study design limits its scope to investigating transpired phenomena and existing challenges, thus lacking foresight and generalizability—common constraints in SNA studies. Despite these limitations, notable advancements have been made by incorporating additional network motifs, as demonstrated by the work of scholar Andreea Nita. For instance, employing data from European conservation projects, Nita, Rozylowicz et al. (2016) combine SNA and the Exponential Random Graph Model (ERGM) to understand intra- and inter-country collaboration and, more importantly, predict trends in re-cooperation. More recently, leveraging data from global EIA researchers, Nita, Fineran et al. (2022) apply a two-mode network approach to delineate the optimal stakeholder composition and their ideal level of involvement for each phase of the EIA lifecycle. These innovative approaches offer valuable methodologies for future research to conduct more predictive or scenario-based studies.

Secondly, this study examines the sharing behavior and relationships of different stakeholders and how they evolve during the various phases of rehabilitation. However, in line with Weimann (1982), the content of information and focus of sharing vary in phases, which in turn influence the partner, direction, and frequency of sharing. Given this dynamic, future research could focus on one or more of the identified nine types of information to conduct detailed studies to enhance the efficiency of specific information dissemination.

Finally, this study assumes that sufficient information sharing facilitates public participation. Nonetheless, an increasing number of scholars (Jia, Qian et al., 2021; Li, Tao et al., 2024) and schools of thought (e.g., behavioral economics Camerer, Loewenstein et al. (2004) and transaction costs Ketokivi and Mahoney (2016)) argue that public is not guaranteed to participate by having more information, especially given their limited rationality and uneven information-processing capabilities. Hence, future research could explore the tipping point of information sharing and determine the appropriate quantity and quality of information that encourages public participation without overwhelming or underwhelming the target audience.

4.6 Conclusions

Sustainable urban renewal hinges on active public participation, necessitating effective information sharing. This study makes an important step in this regard by longitudinally exploring stakeholder information sharing throughout the project lifecycle of neighborhood rehabilitation and its impacts on resident participation. It shows that SNA and ENA are complementary and competent in identifying critical stakeholders while uncovering undesirable behaviors such as manipulation and monopolization, and highlighting unhealthy relationships like exploitation and competition. Centered on a typical and inspiring neighborhood rehabilitation project in Wuhan, China, the study identifies 31 stakeholders, illustrating the complexity and dynamism of the information network within rehabilitation. Stakeholders influence this network, which in turn subtly informs their objectives and dissemination strategies. Neighborhood committee and local media emerged as most crucial in sharing information as well as promoting resident participation. Through innovative communication models, Neighborhood committee enabled rapid and extensive information flow, enhancing residents' sense of empowerment and boosting their enthusiasm for engagement. Concurrently, local media coverage increased public awareness of the rehabilitation initiatives, encouraging actions to improve living conditions and heightening the residential satisfaction of residents in rehabilitated neighborhoods, thereby promoting their ongoing involvement.

However, the findings indicate that stakeholders' over-reliance on and exploitation of neighborhood committee for information sharing eroded the committee's willingness, capacity and trust to disseminate information during the later project phases. This avoidance and shifting of communication responsibilities led to a fragile information network and further marginalized local media, undermined by dwindling trust and autonomy. Homeowners amplified their discourse power as the project progressed, shifting from passive recipients to active decision-makers. Yet, well-informed homeowners monopolized information sharing, deliberately excluding others with conflicting interests, intensifying the inequity and opacity of the participation process.

In response, it is crucial to introduce redundancies and broaden relationships within the currently over-concentrated information network. Instituting community planners or engaging NGOs can mitigate information exploitation by neighborhood committee and enhance network resilience. Breaking information manipulation by certain residents could involve diversifying information recipients, such as training youth in information dissemination. However, fundamentally addressing

these challenges requires a radical shift in information-sharing model. Deploying data collection devices, utilizing computer algorithms and machine learning for processing, and employing AI-powered chatbots for distribution can drastically reduce reliance on human intervention and biases. Additionally, urgent legal reforms are necessary to protect the freedom of expression for media and citizens from interference and threats by interest groups. As envisioned by this study, such enhanced information-sharing behaviors and relationships will promote more transparent, equitable, inclusive, and sustainable public participation in urban (re) development.

References

Aragonés-Beltrán, P., García-Melón, M., & Montesinos-Valera, J. (2017). How to assess stakeholders' influence in project management? A proposal based on the Analytic Network Process. *International Journal of Project Management*, *35*(3), 451-462.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of planners*, *35*(4), 216-224.

Borgatti, S. P., Everett, M. G., & Freeman, L. C. (2002). Ucinet for Windows: Software for social network analysis. *Harvard, MA: analytic technologies*, *6*, 12-15.

Boyle, L., & Michell, K. (2020). Key ingredients for a collaborative urban regeneration strategy in the Global South. *Construction Economics and Building*, *20*(2), 150-164.

Camerer, C. F., Loewenstein, G., & Rabin, M. (2004). *Advances in behavioral economics*. Princeton university press.

Caniato, M., Vaccari, M., Visvanathan, C., & Zurbrügg, C. (2014). Using social network and stakeholder analysis to help evaluate infectious waste management: A step towards a holistic assessment. *Waste Management*, *34*(5), 938-951.

Dickens, B. (2013). ENGAGING TO HARNESS COMMUNITY CREATIVITY FOR SUSTAINABLE URBAN PLANNING. Proceedings of the 57th Annual Meeting of the ISSS-2013 HaiPhong, Vietnam,

Enserink, B., & Monnikhof, R. A. (2003). Information management for public participation in co-design processes: evaluation of a Dutch example. *Journal of Environmental Planning and Management*, *46*(3), 315-344.

Fath, B. D. (2007). Network mutualism: Positive community-level relations in ecosystems. *Ecological modelling*, *208*(1), 56-67.

Fath, B. D., & Patten, B. C. (1998). Network synergism: Emergence of positive relations in ecological systems. *Ecological modelling*, *107*(2), 127-143. https://doi.org/https://doi.org/10.1016/S0304-3800(97)00213-5

Fath, B. D., & Patten, B. C. (1999). Review of the Foundations of Network Environ Analysis. *Ecosystems*, *2*(2), 167-179. https://doi.org/10.1007/s100219900067

Ferré, M., Martin-Ortega, J., Di Gregorio, M., & Dallimer, M. (2022). How do information flows affect impact from environmental research?-An analysis of a science-policy network. *Journal of environmental management*, *321*, 115828.

Foucault, M. (2023). Discipline and punish. In *Social Theory Re-Wired* (pp. 291-299). Routledge.

Freeman, L. C. (2002). Centrality in social networks: Conceptual clarification. *Social network: critical concepts in sociology. Londres: Routledge*, *1*, 238-263.

Freeman, R. E. (1984). *Strategic management : a stakeholder approach*. Pitman.

Gudowsky, N., & Bechtold, U. (2013). The role of information in public participation. *Journal of Deliberative Democracy*, *9*(1).

Hannon, B. (1973). The structure of ecosystems. *Journal of theoretical biology*, *41*(3), 535-546.

Hanzl, M. (2007). Information technology as a tool for public participation in urban planning: a review of experiments and potentials. *Design Studies*, *28*(3), 289-307. https://doi.org/https://doi.org/10.1016/j.destud.2007.02.003

Haythornthwaite, C. (1996). Social network analysis: An approach and technique for the study of information exchange. *Library & information science research*, *18*(4), 323-342.

He, G., Mol, A. P., Zhang, L., & Lu, Y. (2015). Environmental risks of high-speed railway in China: public participation, perception and trust. *Environmental Development*, *14*, 37-52.

He, J., Lin, Y., Hooimeijer, P., & Monstadt, J. (2024). Measuring social network influence on power relations in collaborative planning: A case study of Beijing City, China. *Cities*, *148*, 104866. https://doi.org/https://doi.org/10.1016/j.cities.2024.104866

Hui, E. C.-m., Chen, T., Lang, W., & Ou, Y. (2021). Urban community regeneration and community vitality revitalization through participatory planning in China. *Cities*, *110*, 103072.

Jia, L., Qian, Q. K., Meijer, F., & Visscher, H. (2021). How information stimulates homeowners' cooperation in residential building energy retrofits in China. *Energy Policy*, *157*, 112504.

Jingrong, T. (2010). The crisis of the centralized media control theory: how local power controls media in China. *Media, Culture & Society*, *32*(6), 925-942.

Ketokivi, M., & Mahoney, J. T. (2016). Transaction cost economics as a constructive stakeholder theory. *Academy of Management Learning & Education*, *15*(1), 123-138.

Leung, M.-y., Yu, J., & Chan, Y. S. (2014). Focus group study to explore critical factors of public engagement process for mega development projects. *Journal of Construction Engineering and Management*, *140*(3), 04013061.

Li, J., Krishnamurthy, S., Pereira Roders, A., & van Wesemael, P. (2020). Community participation in cultural heritage management: A systematic literature review comparing Chinese and international practices. *Cities*, *96*, 102476. https://doi.org/https://doi.org/10.1016/j.cities.2019.102476

Li, X., Zhang, F., Hui, E. C.-m., & Lang, W. (2020). Collaborative workshop and community participation: A new approach to urban regeneration in China. *Cities*, *102*, 102743. https://doi.org/https://doi.org/10.1016/j.cities.2020.102743

Li, Y., Tao, Y., Qian, Q. K., Mlecnik, E., & Visscher, H. J. (2024). Critical factors for effective resident participation in neighborhood rehabilitation in Wuhan, China: From the perspectives of diverse stakeholders. *Landscape and Urban Planning*, *244*, 105000. https://doi.org/https://doi.org/10.1016/j.landurbplan.2023.105000

Li, Y., Zhuang, T., Qian, Q. K., Mlecnik, E., & Visscher, H. J. (2024). From acceptance to continuance: Understanding the influence of initial participation experience on residents' intentions to continue participation in neighborhood rehabilitation. *Cities*, *147*, 104788. https://doi.org/https://doi.org/10.1016/j.cities.2024.104788

Liu, B., Hu, Y., Wu, X., Yu, J., Yu, Z., & Wang, A. (2018). Critical Factors of Effective Public Participation in Sustainable Energy Projects. *Journal of Management in Engineering*, *34*(5). https://doi.org/10.1061/(ASCE)ME.1943-5479.0000635

Liu, B., Lin, S., Yuan, X., He, S., & Zhang, J. (2023). Nudge citizen participation by framing mobilization information: a survey experiment in China. *Journal of Chinese Governance*, 1-26.

Liu, B., Wang, X., Xia, N., & Ni, W. (2018). Critical success factors for the management of public participation in urban renewal projects: Perspectives from governments and the public in China. *Journal of Urban Planning and Development*, *144*(3), 04018026.

Liu, Z., Lin, S., Lu, T., Shen, Y., & Liang, S. (2023). Towards a constructed order of co-governance: Understanding the state–society dynamics of neighbourhood collaborative responses to COVID-19 in urban China. *Urban Studies*, *60*(9), 1730-1749.

Luo, J., Wu, H., & Peng, Y. (2020). Research on Community Planning under the Concept of Co-Governance and Sharing - A Case of the Micro-Reconstruction of Shuilu Community in Wuhan. *Urbanism and Architecture*, *17*, 52-59.

Marta-Pedroso, C., Freitas, H., & Domingos, T. (2007). Testing for the survey mode effect on contingent valuation data quality: A case study of web based versus in-person interviews. *Ecological economics*, *62*(3-4), 388-398.

MOHURD. (2021). *Notification on Clarifying the Requirements for the Rehabilitation of Old Urban Neighborhoods*. Retrieved from https://www.gov.cn/zhengce/zhengceku/2021-12/31/content_5665762.htm

Nita, A., Fineran, S., & Rozylowicz, L. (2022). Researchers' perspective on the main strengths and weaknesses of Environmental Impact Assessment (EIA) procedures. *Environmental Impact Assessment Review*, *92*, 106690. https://doi.org/https://doi.org/10.1016/j.eiar.2021.106690

Nita, A., Rozylowicz, L., Manolache, S., Ciocănea, C. M., Miu, I. V., & Popescu, V. D. (2016). Collaboration networks in applied conservation projects across Europe. *PloS one*, *11*(10), e0164503.

Parise, S. (2007). Knowledge management and human resource development: An application in social network analysis methods. *Advances in developing human resources*, *9*(3), 359-383.

Rowley, T. J. (1997). Moving beyond dyadic ties: A network theory of stakeholder influences. *Academy of management Review*, *22*(4), 887-910.

SC. (2020a). *Guiding Opinions on Comprehensively Promoting Neighborhood Rehabilitation*. (000014349/2020-00061). Retrieved from https://www.gov.cn/zhengce/content/2020-07/20/content_5528320.htm

SC. (2020b). *Policy Briefing of the State Council on July 21, 2020 — Urban renovations to aid economic growth*. Retrieved from http://www.gov.cn/xinwen/2020zccfh/15/wzsl.htm

SC. (2020c). *Report on the Work of the Government*. Retrieved from http://www.gov.cn/guowuyuan/zfgzbg.htm

Shen, T., Yao, X., & Wen, F. (2021). The Urban Regeneration Engine Model: An analytical framework and case study of the renewal of old communities. *Land Use Policy*, *108*, 105571.

Snijders, T. A. (2001). The statistical evaluation of social network dynamics. *Sociological methodology*, *31*(1), 361-395.

Tononi, G., Sporns, O., & Edelman, G. M. (1999). Measures of degeneracy and redundancy in biological networks. *Proceedings of the National Academy of Sciences*, *96*(6), 3257-3262.

Wang, L., Gao, S., Ding, R., & Sun, T. (2017). Research on Dynamic Evaluation of Project Governance under the Information Network Perspective——A Case Study on Collaborative Innovation Project of Industrial Technology Research Institute. *Science & Technology Progress and Policy*, *34*(04), 31-39. https://www.cnki.net/KCMS/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2017&filename=KJJB201704005&uniplatform=OVERSEA&v=tlbcE8ALcfL_HtXXgI8Nz7uTmtnCaCFKBK4pZ07R-R85KRFcpOK2o9SgLR0Il9QZU

Wasserman, S., & Faust, K. (1994). Social network analysis: Methods and applications.

Webler, T., & Tuler, S. (2006). Four perspectives on public participation process in environmental assessment and decision making: Combined results from 10 case studies. *Policy Studies Journal*, *34*(4), 699-722.

Webler, T., Tuler, S., & Krueger, R. (2001). What is a good public participation process? Five perspectives from the public. *Environmental management*, *27*(3), 435-450.

Weimann, G. (1982). On the importance of marginality: One more step into the two-step flow of communication. *American Sociological Review*, 764-773.

Wilcox, D. (1994). *The guide to effective participation*. Partnership Brighton.

Wu, L. (2023). Effects of informal institutions on stakeholder and public participation in public infrastructure megaprojects: A case study of Shanghai. *Journal of Environmental Planning and Management*, *66*(8), 1655-1674.

Xiao, L., Huang, S., Ye, Z., Zhang, O., & Lin, T. (2021). Identifying multiple stakeholders' roles and network in urban waste separation management-a case study in Xiamen, China. *Journal of Cleaner Production*, *278*, 123569.

Yang, J., Shen, G. Q., Bourne, L., Ho, C. M. F., & Xue, X. (2011). A typology of operational approaches for stakeholder analysis and engagement. *Construction management and economics*, *29*(2), 145-162.

Yang, K., & Callahan, K. (2007). Citizen involvement efforts and bureaucratic responsiveness: Participatory values, stakeholder pressures, and administrative practicality. *Public administration review*, *67*(2), 249-264.

Yu, Y., Hamnett, C., Ye, Y., & Guo, W. (2021). Top-down intergovernmental relations and power-building from below in China's urban redevelopment: An urban political order perspective. *Land Use Policy*, *109*, 105633.

Zhang, W., Zhang, X., & Wu, G. (2021). The network governance of urban renewal: A comparative analysis of two cities in China [Article]. *Land Use Policy*, *106*, Article 105448. https://doi.org/10.1016/j.landusepol.2021.105448

Zhao, N., Liu, Y., & Wang, J. (2023). “Co-production” as an alternative in post-political China? Conceptualizing the legitimate power over participation in neighborhood regeneration practices. *Cities*, *141*, 104462.

Zheng, H. W., Shen, G. Q., & Wang, H. (2014). A review of recent studies on sustainable urban renewal. *Habitat International*, *41*, 272-279.

Zheng, X., Sun, C., & Liu, J. (2024). Exploring stakeholder engagement in urban village renovation projects through a mixed-method approach to social network analysis: a case study of Tianjin. *Humanities and Social Sciences Communications*, *11*(1), 1-15.

Zhou, J.-H., Zhu, Y.-M., He, L., & Mu, B.-X. (2022). Recognizing and coordinating multidimensional dynamic stakeholder value conflicts for sustainability-oriented Construction Land Reduction projects in Shanghai, China: An integrated SA-SNA-TRIZ approach. *Journal of Cleaner Production*, *348*, 131343.

Zhuang, T., Qian, Q. K., Visscher, H. J., Elsinga, M. G., & Wu, W. (2019). The role of stakeholders and their participation network in decision-making of urban renewal in China: The case of Chongqing. *Cities*, *92*, 47-58.

5 From Acceptance to Continuance

Understanding the Influence of Initial Participation Experience on Residents' Intentions to Continue Participation in Neighborhood Rehabilitation

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ABSTRACT In the context of increasing focus on social sustainability, neighborhood rehabilitation has emerged as a crucial component of global urban renewal initiatives. Distinct from most renewal paradigms that are usually one-offs, neighborhood rehabilitation is a long-term endeavor that requires ongoing resident participation to effectively address diverse needs, investment shortages, and governance challenges. Extant research predominantly focuses on residents' initial engagement, leaving the dynamics of continued participation and its influencing factors largely unexamined. Employing the Expectation-Confirmation Model (ECM), this study explores how residents' initial participation experiences influence their intentions to continue participation. Analyzing questionnaire responses from 367 experienced residents in Wuhan, China, the study finds that a mere 38.2% of residents exhibit re-engage intention. Path analysis shows that initial participation experience influences residents' re-engage intention indirectly through participation satisfaction and perceived usefulness. Residents' re-engage intention is most influenced by level of influence residents hold in decision-making, followed by type of activities they

engage in, and stage of their initial involvement. As an exploratory study into the realm of continued participation, this research uncovers several potential pathways and policy recommendations, aiming to ease residents' transition from initial acceptance to sustained engagement in future neighborhood development efforts.

KEYWORDS Neighborhood rehabilitation; urban renewal; resident participation; continued participation; Expectation-Confirmation Model (ECM); China

5.1 Introduction

Sustainable development is a goal that all cities strive for. Having witnessed the displacement and gentrification brought about by brutal demolition and reconstruction, rehabilitation has become a preferred paradigm for recent urban renewal efforts (Itard and Klunder, 2007; Steinberg, 1996). For rehabilitation, the residential neighborhood is considered the most appropriate geographical scale (Pérez, Laprise et al., 2018). Distinct from the knock-down-and-rebuild strategy adopted in redevelopment, neighborhood rehabilitation[18] is a restoration and enhancement of existing neighborhood buildings, communal environment, facilities and systems to "good condition, operation, or capacity" (Zheng, Shen et al., 2014). Notably, with a growing emphasis on social sustainability and reconstruction of civil society, neighborhood rehabilitation is progressing from a top-down economic stimulus to a bottom-up social movement, thereby advocating resident participation (Arnstein, 1969; Mathers, Parry et al., 2008; Nienhuis, Van Dijk et al., 2011).

For neighborhood rehabilitation, resident participation (RP) refers to any process that involves neighborhood residents in problem-identifying and decision-making to enable public input to be manifested in rehabilitation decisions and outcomes (IAP2). Involving residents in neighborhood rehabilitation not only yields qualified designs, minimizes costs and unnecessary delays, but also aids in mitigating conflicts, boosting trust, fostering neighborhood interaction and ultimate cohesion (Liu, Wu

18 Similar concepts, such as neighborhood revitalization, community renovation, and community (micro-) renewal, are often used interchangeably. The selection among these depends on the depth and theme of enhancement, as well as the national context. In this paper, neighborhood rehabilitation is employed as the umbrella term to encompass these initiatives. Development strategies primarily centered on demolition and rebuilding are outside the ambit of this concept.

et al., 2017; Nienhuis, Van Dijk et al., 2011; Uittenbroek, Mees et al., 2019). Given these benefits, countries and regions are incorporating participation initiatives into renewal policies, such as the Housing and Community Development Act in the U.S., New Deals for Communities in the U.K., Big Cities Policy in the Netherlands, and Co-Creation for Better Environment and Well-being in recent China (SC, 2020a). These updated policies aim to promote not only economically viable, environmentally sound, but also socially inclusive urban development.

Nevertheless, unlike most renewal paradigms that are typically one-offs, neighborhood rehabilitation represents a continuous endeavor (Ginsburg, 1999; Shen, Yao et al., 2021). A shift from passive, one-time involvement to proactive, continuous RP is therefore necessary (Hindhede, 2016; Zheng, Fu et al., 2023). This shift is especially relevant in contemporary China. In China, governmental bodies are the principal financiers of neighborhood rehabilitation, as limited profit margins and delayed returns dissuade private sector investment (Zheng, Fu et al., 2023). Considering the vast number of aging neighborhoods and the prolonged nature of rehabilitation efforts, relying solely on government funding is neither practical nor economically feasible. Despite this, government-led rehabilitation projects also face governance challenges. The disengagement of residents from decision-making often leads to a disparity between their expectations and the actual decisions made. This misalignment results in residents' disinterest and absence in neighborhood maintenance, causing the rehabilitated area to deteriorate once again (Liu, Zhang et al., 2015; Yau, 2010). Consequently, continuous RP is imperative to address residents' diverse needs, investment shortages and governance dilemmas. Recent changes in government administration and grassroots governance further indicate the crucial role of Chinese residents in neighborhood affairs. Aligning with the 'People-oriented' (Yiren Weiben) and 'People-centered' (Yirenmin Weizhongxin) development philosophies, the Chinese government is transitioning from a management-centric to a service-centric approach. This shift is mirrored at the grassroots level, where governance evolves from management-based to collaborative governance[19]. The COVID-19 pandemic and subsequent lockdowns have further underscored residents' emergent role and growing capabilities in grassroots governance (Liu, Lin et al., 2021). Prompted by these changes, the Chinese government views recent neighborhood rehabilitation programs as an opportunity to foster habitual participation among residents, ensuring their sustained engagement in neighborhood development (SC, 2020a).

19 This approach is termed as 'Co-Creation' (*Gotong Dizao*) in policy frameworks, whereby residents collaborate with public and private entities to plan, construct, manage and evaluate rehabilitation activities and subsequent neighborhood affairs, and share the benefits brought by the improvements.

Being part of the collective and society, residents and their participation are shaped by the surrounding political and economic milieu, prevailing social values, and cultural customs (Dekker and Van Kempen, 2008; Hu, de Roo et al., 2013; Wu, 2023). The characteristics of the construction project (e.g., scale, location, political and social sensibility) can also affect their participation decisions (Liu, Hu et al., 2018; Sun, Zhu et al., 2016). The shortcoming of this macro-meso perspective is evident: by treating residents as a homogeneous entity, behavioral variations between individuals are overlooked. As a result, recent studies examine individual participation from sociological and psychological perspectives. Factors such as self-interests (Mathers, Parry et al., 2008), social capital and networks (Hindhede, 2016), and lifestyle (Brown, Bos et al., 2016), are all found to influence RP decisions. Compared to Western and other developed regions, RP in China is characterized by low awareness, limited power, few participation channels, and general disorganization (Li, Zhang et al., 2019; Li, Krishnamurthy et al., 2020). This is partly due to the influence of Confucianism, collectivism, the remnants of a planned economy, and the Work Unit system (Hu, de Roo et al., 2013). Moreover, the top-down approach of government-led rehabilitation initiatives often constrains the decision-making power of residents, thereby reducing their willingness to engage (Hu, de Roo et al., 2013; Liu, Wang et al., 2018). Targeting individual behavior, various socio-psychological factors have been examined to influence RP decisions, such as community attachment (Wu, 2012), neighborhood interaction (Liu, Wu et al., 2017), and self-efficacy (Tang, Gong et al., 2022). Scholars have also developed participation frameworks that are apt for the Chinese context, focusing on the extent of empowerment in decision-making (Mo, 2014), the models and approaches of participation (Hu, de Roo et al., 2013; Li, Zhang et al., 2020), and the timing for RP in projects (Sun, Zhu et al., 2016). These efforts aim to achieve a more equitable balance between bottom-up and top-down dynamics in RP.

While these studies contribute invaluable insights, most have been limited to examining first-time participation, leaving continued participation largely unexplored. Nevertheless, some scholars notice that residents' intention to re-engage may be influenced by their earlier experience, resulting in a virtuous or vicious cycle of participation. Moreover, most of their observations fall into the latter, whereby previous participation prevents residents from re-engagement (Li, Feng et al., 2020; Webler, Tuler et al., 2001) or causes a constant loss of participants in the rehabilitation process (Brown, Bos et al., 2016; Uittenbroek, Mees et al., 2019). Although infrequently explored in urban studies, the formation of repeated behavior has received intensive discussion in consumer behavior research, primarily through the lens of the Expectation-Confirmation Model (ECM). Rooted in social psychology, the ECM posits that consumers' intention to continue using a product or service is determined by their previous use experience and perceptions derived from

that experience (Bhattacherjee, 2001; Oliver, 1980). In general, neighborhood rehabilitation is a public good and a social service in which the inhabitants are investors and users, i.e., consumers. The long-term nature of rehabilitation also dictates the necessity of "repeat consumption" by the residents. In this sense, the ECM has the potential to disentangle the link between residents' initial participation experience and intention to repeat participation, thereby filling the research gap of insufficient attention to continued participation.

Based on the ECM, this paper aims to understand how residents' initial participation experience influences their intention for continued participation in neighborhood rehabilitation. A questionnaire survey was conducted among 367 experienced residents in Wuhan, China. Insights into re-engage intention are expected to break the acceptance-discontinuance anomaly in participation practices, facilitating a transition in RP from initial acceptance to sustained engagement.

5.2 Literature Review

5.2.1 Expectation-Confirmation Model (ECM)

Rooted in social psychology, the ECM was first introduced in consumer behavior research. Scholars use ECM to explain and predict consumer's repurchase intention and its determinants. Its predictive power has been confirmed by a large number of laboratory experiments as well as empirical research, in fields ranging from information systems (Susanto, Chang et al., 2016), transportation (Fu, Zhang et al., 2018), and e-participation in social governance (Zolotov, Oliveira et al., 2018). Nevertheless, the application of ECM in the realms of urban renewal and RP remains limited, with Tang, Gong et al. (2022) as an exception. Using Shanghai, China, as a case study, Tang, Gong et al. (2022) investigate the relationship between residential satisfaction and residents' intention to initial participation.

The ECM consists of four constructs (FIG. 5.1): continuance intention, satisfaction, perceived usefulness, and confirmation (Bhattacherjee, 2001). Continuance intention refers to one's self-instructions to continue using a product or service (Sheeran and Webb, 2016). Satisfaction evaluates the emotions generated by the previous

experience (Hunt, 1977; Oliver, 1981). The smaller the gap between the expected and the experience, the higher the satisfaction (Bhattacherjee, 2001). Retrieved from the Technology Acceptance Model (TAM), perceived usefulness is defined as "… the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989). Confirmation is the degree to which the users' perceived experience matches the expectation (Oliver, 1980). It occurs if the experience of the products meets or exceeds users' expectations. According to ECM, continuance intention is determined by users' satisfaction and perceived usefulness developed from their initial usage. Satisfaction and perceived usefulness, in turn, are shaped by users' confirmation of their initial usage of the service or product.

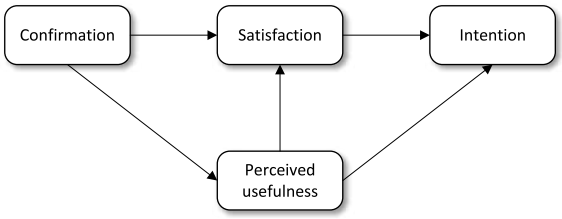

FIG. 5.1 ECM (Source: Bhattacherjee (2001))

As for neighborhood rehabilitation, scholars argue that residents participate in safeguarding and pursuing personal interests or out of a sense of social responsibility. (Li, Krishnamurthy et al., 2020; Li, Zhang et al., 2020; Mathers, Parry et al., 2008), and there is a lack of anticipation of their participation (Gu, 2019). Moreover, the impact of their individual behavior on a collective project is hardly summarized by a simple cause-and-effect. In this sense, it is impractical for residents to evaluate whether their initial participation experience confirms prior expectations about participation. To enhance the operational and practical relevance of the study, this study adjusts confirmation to the construct *Acceptance Participation Experience*. *Acceptance Participation Experience* refers to residents' objective and subjective retrospection of their initial participation in neighborhood rehabilitation. In addition, the rest of the constructs are renamed *Re-engage Intention, Participation Satisfaction*, and *Perceived Usefulness of Participation.*

Besides the psychological factors, external factors such as project-related and participants' personal traits may also impact RP. For instance, Li, Tao et al. (2024) identified that funding is the most critical factor for effective RP in the Chinese context. An additional investment brings deliberate and innovative process design, a deeper participation level, and efficient implementation (Dekker and Van Kempen, 2008; Uittenbroek, Mees et al., 2019). While a number of studies

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pinpoint the correlation between investment level and RP performance (Fang, Perc et al., 2022; Li, Zhang et al., 2020; Luo, Wu et al., 2020), there is a paucity of quantitative studies revealing the causal relationship between these two. This research aims to fill the gap. The impact of personal traits on continued participation remains understudied either. Nevertheless, their impacts on acceptance participation have been extensively studied (Li, Gu et al., 2020a; Li, Zhang et al., 2019; Liu, Wu et al., 2017). These studies identified seven participant-related factors: age, gender, income, education, length of residence, and type of residence. Consequently, an important question arises: What exactly do people refer to when discussing 'participation experience'?

5.2.2 Perspectives on Describing Resident Participation Experience

While there is a consensus that participation experience is challenging to describe and measure, established research attempts to describe it from three perspectives: models of participation (Fung, 2006; Reed, Vella et al., 2018; Rowe and Frewer, 2005), degrees of participation (Aitken, 2017; Arnstein, 1969), and duration of participation (Li, Zhang et al., 2019; Uittenbroek, Mees et al., 2019).

Models of participation are *Type of Activities* that residents participate in during rehabilitation. Ways of information exchange are the most common way of its classification. Informed by the direction of information exchange, Rowe and Frewer (2005) categorize RP into three primary types: receiving, providing, and both. Fung (2006) extends this classification by introducing the intensity of information exchange, segmenting two-way communication into comparison, bargaining, and negotiation. Reed, Vella et al. (2018) further refine their frameworks by classifying participation activities based on information sources, distinguishing between top-down and bottom-up models. Top-down participation involves information flow from decision-makers to the affected, while bottom-up participation denotes the opposite direction. Accordingly, we identify five distinct types of RP activities: 1) Silent Observance, 2) Opinion Awakening, 3) Tendency Shaping, 4) Internal Consensus, and 5) External Unity. In Silent Observance, residents passively receive information without providing feedback. Opinion Awakening entails residents offering their needs and insights. Tendency Shaping marks the start of bidirectional exchange. Residents are educated and assisted in prioritizing their rehabilitation needs. Internal Consensus is centered on information exchange among residents to establish a unified perspective. External Unity expands upon this, involving non-resident stakeholders, aiming to harmonize various concerns and expectations for an inclusive decision.

However, it is argued that information exchange is necessary but insufficient for RP. There may be the case where residents maintain adequate and intensive information exchange with other stakeholders, but have little impact on the decisions. Therefore, scholars, represented by Arnstein (1969) and Aitken (2017), prefer to use the level of power citizens are delegated in decision-making as a proxy for their participation. This research adopts the International Association for Public Participation (IAP2)'s classification and considers a total of 5 *Levels of Influence*: 1) Inform, 2) Consult, 3) Involve, 4) Collaborate, and 5) Empower[20].

While these studies offer a variety of perspectives on describing participation experience, few address the crucial issue of *When* — the timing at which residents first engage in the rehabilitation process (abbreviated as *Initial Stage* in the succeeding text). *Initial Stage* should not be overlooked in describing RP as it implies the process transparency (Hall and Hickman, 2011), residents' opportunity and degree of influence on decision-making (Uittenbroek, Mees et al., 2019), and even their trust with other stakeholders (Liu, Hu et al., 2018). As a mutual learning process, it also reflects residents' familiarity with neighborhood rehabilitation and participation.

Building upon the above studies, we have developed a framework for describing and evaluating residents' participation experience. This framework comprises five key aspects: 1) *Number of Activities*, 2) *Type of Activities*, 3) *Number of Stages*, 4) *Initial Stage*, and 5) *Level of Influence*. Integrating this with the ECM, we introduce the analytical framework for this research — the Acceptance-Continuance Model (ACM) for Resident Participation, as depicted in FIG. 5.2.

20 Detailed descriptions of the classification can be found in IAP2 .

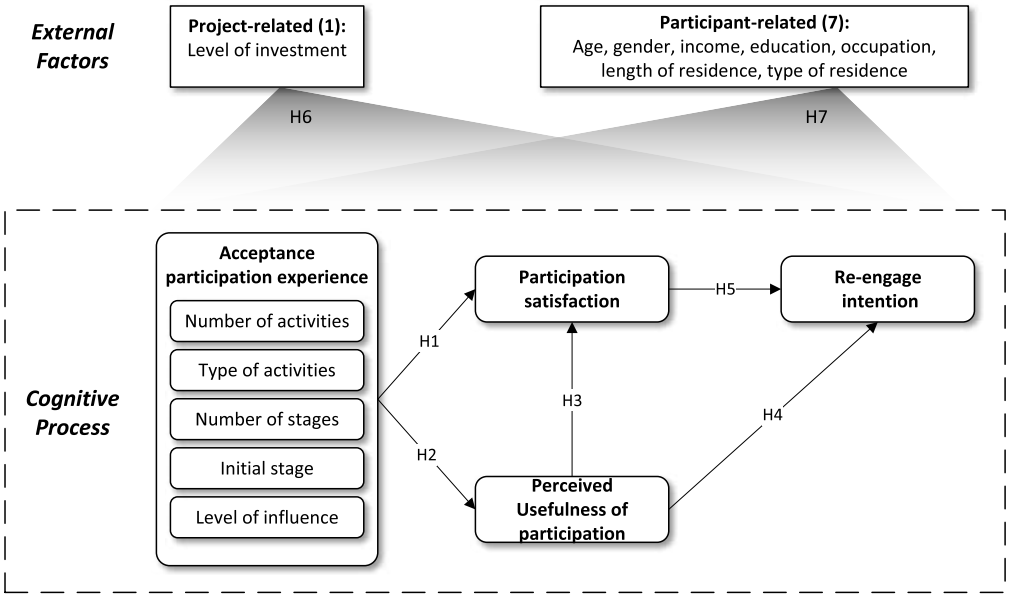

FIG. 5.2 The Acceptance-Continuance Model (ACM) for Resident Participation

5.3 Background: Neighborhood Rehabilitation and Resident Participation in China

Differences in neighborhood rehabilitation and resident participation across countries and regions open the ACM to varying interpretations. In this paper, we give an initial validation in the context of China and lay the foundation for subsequent exploration of the link between initial participation and re-engagement.

In China, a 'neighborhood' (*Juzhuqu*) is a geographically defined area where the primary purpose of land use is housing. Those constructed before 2000 are referred to as old neighborhoods (SC, 2020a). Due to poor construction standards and lack of daily maintenance, old neighborhoods generally suffer from "hardware"

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problems of aging buildings, dysfunctional facilities, and outdated infrastructure, as well as "software" problems of safety hazards, social alienation, and estrangement (Liu, Zhang et al., 2021). There are about 170,000 old neighborhoods in China, compromising the quality of life of over 100 million people. In response, since 2015, the government has spearheaded the top-down rehabilitation of these areas. District from projects focusing on economic growth and environmental improvement, such as urban village redevelopment and shantytown transformation, neighborhood rehabilitation prioritizes long-term social benefits. It aims to improve residential satisfaction, foster place attachment and social cohesion, raise residents' responsibility and capacity towards neighborhood issues, and thereby encourage their continued participation in neighborhood rehabilitation and future governance (SC, 2020a).

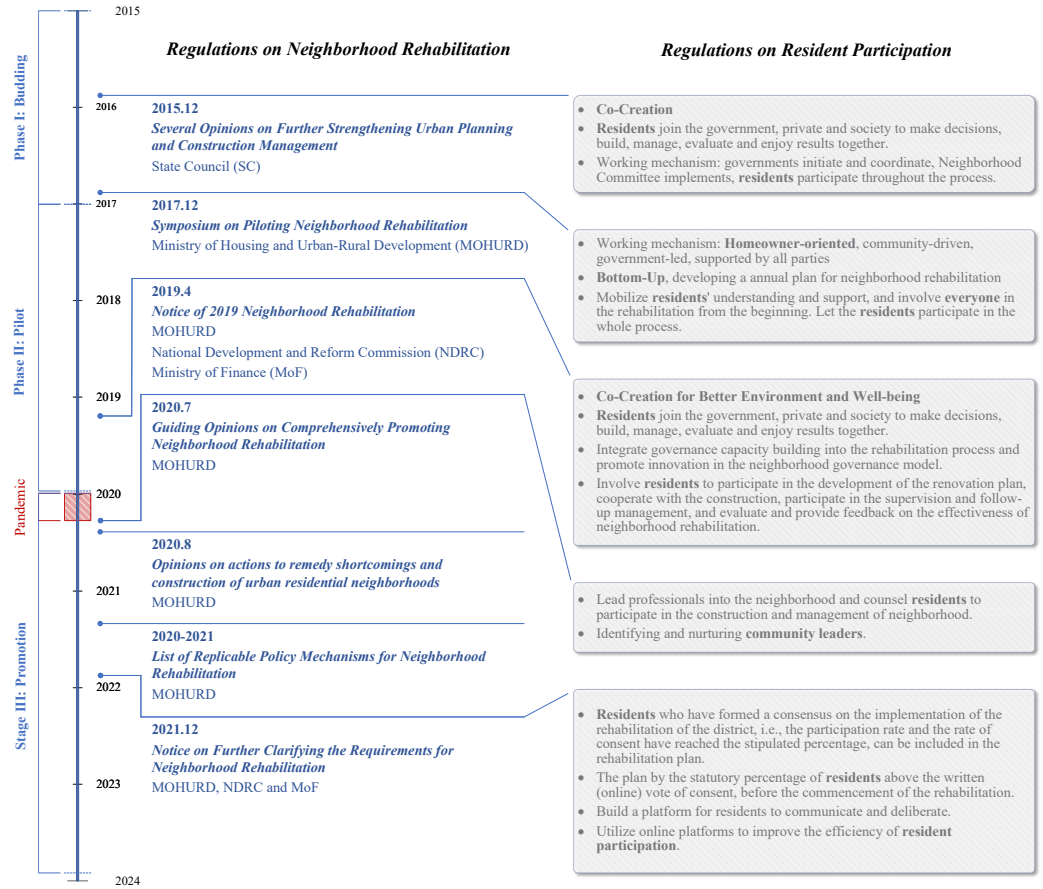

FIG. 5.3 Neighborhood rehabilitation and resident participation policies in China

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A pivotal development occurred in 2017 when the Ministry of Housing and Urban-Rural Development (MOHURD) hosted the symposium in Xiamen to pilot the 'Co-Creation' rehabilitation model in 15 cities. This initiative is underpinned by legal frameworks, including *Urban and Rural Planning Act* and *Civil Code of the People's Republic of China*, aiming to protect residents' legal rights in urban planning. Local governments have developed policies outlining the objectives, mechanisms, and methods of RP, as well as defining the roles and responsibilities of involved stakeholders. These policies aim to facilitate the seamless integration of RP into rehabilitation initiatives. FIG. 5.3 overviews the policies relevant to neighborhood rehabilitation and RP in China.

As noted in these policies, decision-making is the crux of RP in China's neighborhood rehabilitation. Residents participate to determine: 1) the necessity of rehabilitation; 2) areas that can be rehabilitated; 3) the scope and content of the rehabilitation; 4) design plans; and 5) construction schedule and management mechanism. Correspondingly, these five milestones subdivide the rehabilitation process into five sequential stages: 1) Intention and Setup; 2) Mapping and Diagnosis; 3) Assessment and Planning; 4) Design and Details; and 5) Implementation and Acceptance[21].

- **Intention and Setup:** Rehabilitation policies and practices are first disseminated to society and the residents of old neighborhoods. A survey is then conducted to gauge residents' interest in rehabilitating their neighborhoods. A neighborhood is only incorporated into the regional plan if the survey achieves certain participation and agreement thresholds. Thereafter, a working group, consisting of the sub-district administrative office and the implementation unit, is formed. RP Platforms and community-based organizations are established to facilitate the upcoming rehabilitation efforts.

- **Mapping and Diagnostic:** A public survey is conducted to pinpoint issues within the neighborhood and gather residents' expectations for rehabilitation. The results are compiled into a problem list, forming the foundation for subsequent decision-making processes.

- **Assessment and Planning:** A detailed rehabilitation plan is formulated using the problem list and resident preferences gathered earlier. This plan, outlining the scope, tasks, and breadth of rehabilitation, is then publicized for a set period, allowing

21 Operation and Maintenance is considered as the starting point for next round of rehabilitation or neighborhood governance, thus are excluded from the neighborhood rehabilitation process.

for multiple rounds of inquiries and modifications to align with residents' needs and expectations.

- **Design and Details:** This stage focuses on the planning and design of the rehabilitation tasks, encompassing style choices, product and material selection. Public notifications are issued, followed by inquiries and revisions until residents' objections are fully addressed.

- **Implementation and Acceptance:** Residents participate in prioritizing rehabilitation tasks, aiding in removing unauthorized building works (UBWs), overseeing construction processes, and ultimately providing their approval upon completion of the rehabilitation work.

5.4 Methodology

5.4.1 Case study area

Wuhan, as a representative second-tier and developing city in China, was selected as the study area (FIG. 5.4). The abundance of rehabilitation projects and the rich diversity in RP practices render Wuhan an intriguing study case. By 2023, Wuhan has successfully rehabilitated 1,318 old neighborhoods, providing a wealth of cases for detailed examination. The city's journey in RP commenced in 2008 with public polling for the renovation plan of Hongshan Square. In 2019, RP became an integral and institutionalized aspect of Wuhan's rehabilitation policies. Mandatory RP measures include propaganda, questionnaire surveys, and public notices. Collaborative workshops, participatory planning and community planner schemes are complemented as bottom-up RP strategies. Meanwhile, like many other Chinese cities, policies in Wuhan do not delineate the form or degree of RP or the extent of residents' influence on decisions. This affords the governments and practitioners considerable operational freedom. This also led to a diverse range of RP behaviors in practice (FIG. 5.4). Therefore, Wuhan provides an interesting case for exploring the relationship between residents' participation behaviors and their re-engage intentions in neighborhood rehabilitation.

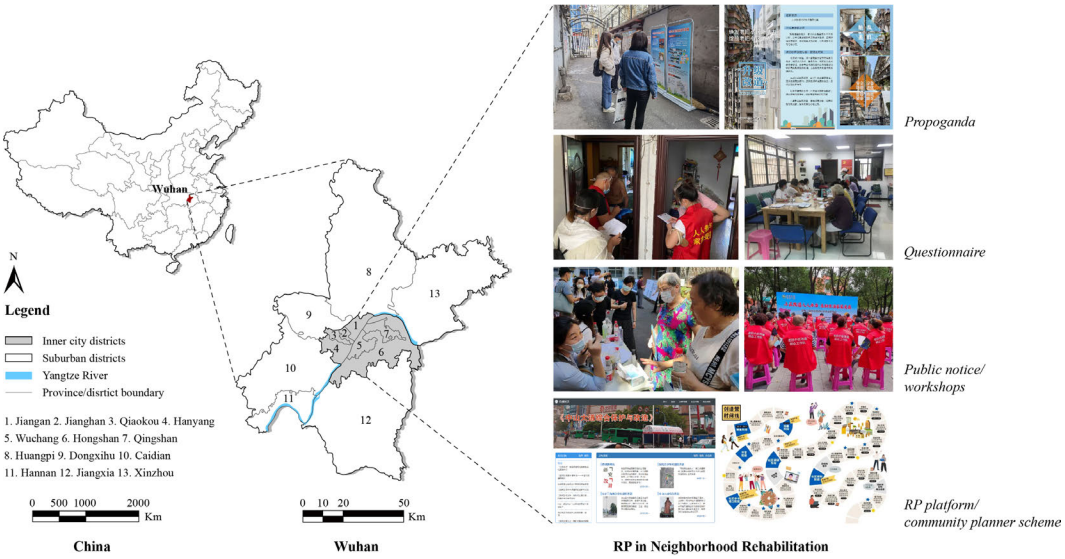

FIG. 5.4 Location and RP activities in Wuhan (Source: authors and interviewees)

5.5 Data collection

5.5.1 Semi-structured interview

Semi-structured interviews were conducted to develop a complete list of RP activities commonly used in China's neighborhood rehabilitation projects. Additionally, the interviewees were asked open-ended questions to elicit their understanding of the ACM variables and the relationships between them (FIG. 5.5). Interviewees were included in the analysis if they had experience in neighborhood rehabilitation and directly interacted with residents during the rehabilitation. Consequently, 22 respondents were recruited using snowball sampling, including 3 government officials, 4 community workers, 2 designers, 3 contractors, 2 consultants, and 9 residents. Appendix A details the interviewee profiles. One of the authors conducted the interviews individually in a face-to-face manner. Each interview lasted

between 30 and 60 minutes and was recorded, noted, and transcribed with the interviewees' consent.

A total of 23 RP activities were identified during the interview. As shown in FIG. 4.2, these activities were further linked to five *Type of Activities*, and specific stages of neighborhood rehabilitation with the help of the interviewees. Moreover, government interviewees provided input on the categorization criteria for the variable *Level of Investment*. In Wuhan's neighborhood rehabilitation, the average investment per household typically falls into three tiers: low (< 10,000 RMB), middle (10,000-30,000 RMB), and high (> 30,000 RMB).

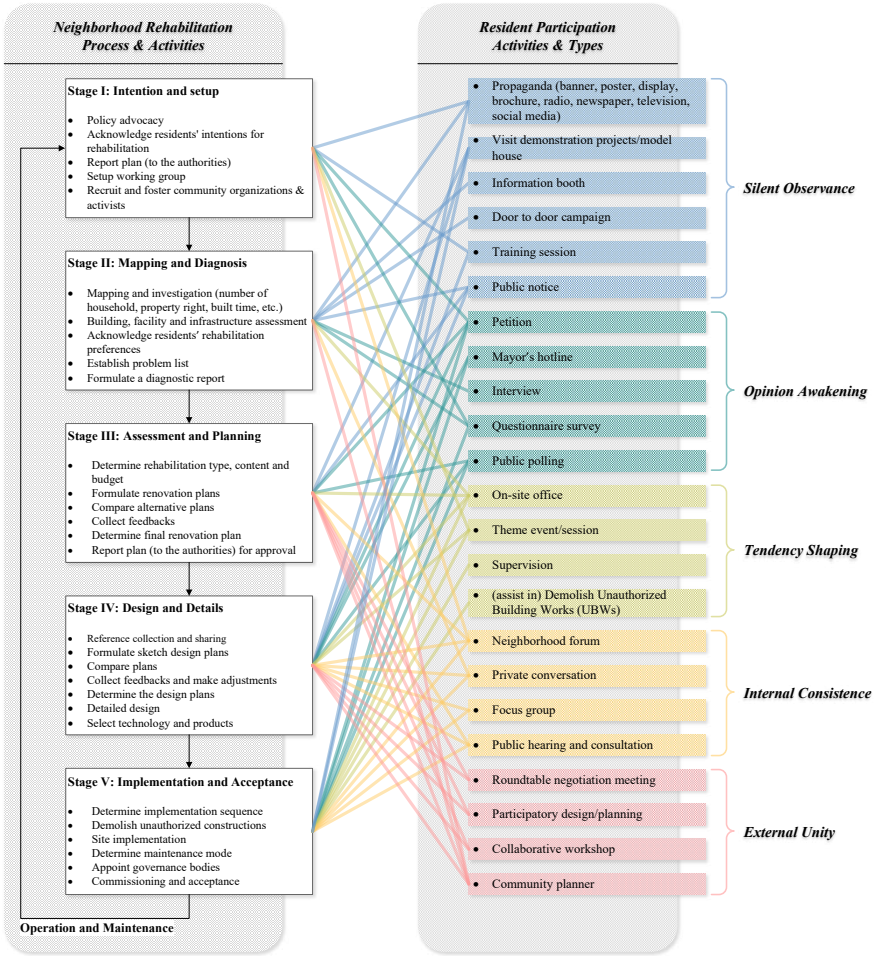

FIG. 5.5 Neighborhood rehabilitation and resident participation in China

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5.5.2 Questionnaire survey

Based on the proposed ACM for Resident Participation and interview results, we developed a questionnaire survey with three sections. **Section I** gathered background information from the respondents. This included the name of their neighborhood (to determine the Level of Investment) and their personal details. **Section II** captured residents' *acceptance participation experience*, including *Number of Activities*, *Type of Activities*, *Number of Stages*, *Initial Stage*, and *Level of Influence*. **Section III** focused on residents' subjective perceptions of their *acceptance participation experience*, including their *Participation Satisfaction*, *Perceived Usefulness of Participation*, and *Intention to Re-engage*. Items and scales used in the questionnaire are detailed in Table 5.1.

The questionnaires were sent in print and digital versions in Wuhan. The street intercept method was used to recruit survey prospects for print questionnaires. It enabled us to exclude unsuitable respondents and conduct necessary confirmation or follow-up interviews. One of the authors handed out the questionnaires near COVID-19 testing sites in rehabilitated neighborhoods, targeting peak hours: weekdays from 5 pm to 9 pm, and weekends from 9 am to 9 pm. The testing sites proved ideal for questionnaire distribution, as they were frequently visited by a large and varied group of nearby residents, ensuring a broad reach within a limited timeframe. Concurrently, to enhance the response rate, a digital version of the questionnaire was circulated in neighborhood WeChat groups with the assistance of community workers.

Residents were considered suitable for the survey if: 1) their neighborhood had completed the rehabilitation work; 2) they had participated in at least one rehabilitation-relevant activity; and 3) they had already lived in the old neighborhood before the rehabilitation. Between 23rd May and 20th July 2022, 144 paper-based and 293 digital questionnaires were returned. 70 copies were discarded due to a short filling time (<5 minutes[22]) or answering the trap questions incorrectly. This resulted in 367 valid questionnaires used in this study (validity rate 84%). The final sample consists of 280 homeowners and 87 tenants.

22 The online questionnaire website records the time respondent spend on the questionnaire.

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TABLE 5.1 Survey questions and scales used

Questions	Variables	Scales		References
Section I: Background information				
What neighborhood do you live in?	**Level of Investment**	1	Low (<10,000 RMB)	Government interviewees
		2	Medium (10,000-30,000 RMB)	
		3	High (>30,000 RMB)	
Section II: Acceptance Participation Experience				
Which of the following ACTIVITIES (Figure 4.2) have you been involved in during the rehabilitation process? Please select all the options that apply to you.	**Number of Activities**[23]	1	1	Interviewees
		2	2	
		3	3-5	
		4	6-8	
		5	≥ 9	
	Type of Activities	1	Silent Observance	(Fung, 2006; Reed, Vella et al., 2018; Rowe and Frewer, 2005)
		2	Opinion Awakening	
		3	Tendency Shaping	
		4	Internal Consensus	
		5	External Unity	
Which STAGES have you been involved in during the rehabilitation process? Please select all the options that apply to you.	**Number of Stages**[24]	1	1	Interviewees
		2	2	
		3	3	
		4	4	
		5	5	
	Initial Stage	1	Intention and Setup	Interviewees
		2	Mapping and Diagnosis	
		3	Assessment and Planning	
		4	Design and Details	
		5	Implementation and Acceptance	

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23 Scoring is based on the total number of activities in which residents participate.

24 Scoring is based on the total number of stages in which residents participate.

TABLE 5.1 Survey questions and scales used

Questions	Variables	Scales		References
In your opinion, to what extent did you INFLUENCE neighborhood rehabilitation?	**Level of Influence**	1	Inform, I know little except the neighborhood was going to be rehabilitated.	(Arnstein, 1969; IAP2)
		2	Consult, I was asked to provide my expectations and suggestions on rehabilitation.	
		3	Involve, the working group adjusted the decisions according to my suggestions/feedback.	
		4	Collaborate, through negotiation, the working group and I made the decision together.	
		5	Empower, I made the final decisions. The working group can provide recommendations, but it is up to me to decide whether to adopt them.	
Section III: Re-engage Intention				
Having participated in various rehabilitation-relevant activities, in your opinion, to what extent can resident participation IMPROVE the performance of neighborhood rehabilitation?	**Perceive Usefulness of Participation**	1	Useless, RP is a pure waste of effort and time.	Bhattacherjee (2001)
		2	It is not a good idea, RP has limited contribution to neighborhood rehabilitation.	
		3	It is hard to say, RP can have both positive and negative impacts on rehabilitation.	
		4	Useful, RP benefits residents, the neighborhood and the rehabilitation project.	
		5	Very useful, RP has tremendous positive benefits in any way.	

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TABLE 5.1 Survey questions and scales used

Questions	Variables	Scales		References
How SATISFIED are you with the following items from your previous participation in neighborhood rehabilitation? 1) Overall satisfaction 2) Method for participation 3) Used technology 4) Timing to participate 5) Staffing 6) Venues and equipment	**Participation Satisfaction**	1	Extremely dissatisfied	(Li, Qian et al., 2021; Liu, Wang et al., 2018)
		2	Dissatisfied	
		3	Neither satisfied nor dissatisfied	
		4	Satisfied	
		5	Extremely satisfied	
To what extent do you agree with the following statement: I will CONTINUE participating in community affairs rather than discontinue participation.	**Re-engage Intention**	1	Completely disagree	Mathieson (1991)
		2	Disagree	
		3	Neutral	
		4	Agree	
		5	Completely agree	

5.5.3 Data analysis

Path analysis was used to explore the link between acceptance experience and continuance intention, as well as the impact of external factors on these constructs. This method is particularly suited for our study for several reasons: Firstly, it effectively handles complex causal models with multiple variable groups, and allows variables to be both dependent and independent (Streiner, 2005). Secondly, it disentangles the direct and indirect relationships between variables, visualizing the chain of influence (Lleras, 2005). Lastly, it enables the estimation of the paths in one action, minimizing errors that could arise from multiple data-handling steps. These advantages render path analysis a preferred and widely employed method in behavioral research (Bhattacherjee and Premkumar, 2004; Jiang, Feng et al., 2017; Liu, Wu et al., 2017).

This study employed six items to measure *Participation Satisfaction* to minimize measurement errors. The Confirmatory Factor Analysis (CFA) was conducted to evaluate the effectiveness of these six items in measuring *Participation Satisfaction* and to determine if they could be averaged (Streiner, 2006). Composite Reliability (CR) and Average Variance Extracted (AVE) typically measure these two aspects. Table 5.2 shows that six items' factor loadings (FL) are significant and exceed 0.7,

CR ≥ 0.7, and AVE ≥ 0.50[25]. This indicates that the six items can be merged into an overall score for *Participation Satisfaction*. Finally, the path model was analyzed through AMOS 25 in SPSS. The maximum likelihood (ML) method was used to estimate the path coefficients.

TABLE 5.2 CFA results

Construct	Item	Factor loading	S.E.	SMC	CR	AVE
Participation Satisfaction	Overall	0.943***		0.889	0.954	0.808
	Method	0.939***	0.028	0.882		
	Technology	0.906***	0.031	0.821		
	Timing	0.922***	0.030	0.850		
	Human resource	0.783***	0.039	0.613		
	Venues and equipment	0.914***	0.032	0.835		

5.6 Results

5.6.1 Descriptive analysis

Demographic profile

Table 5.3 shows the demographic characteristics of the respondents. In general, the sample was generally old, with 29.4% of the respondents above 60 years old. 59.4% of the respondents are female, and 37.1% had retired before the survey. The sample received a limited income, with 83.1% earning less than 5,000 RMB and 8.2% less than 2,000 RMB. The length of education was short, with only 19.9% possessing a bachelor's degree and above. While their length of residence was relatively

25 For the selection of reasonable thresholds please check Hair (2009).

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long. 37.3% of respondents have lived in the neighborhood for over 20 years. Considering the unique characteristics of residents in old neighborhoods, the findings of similar studies are preferred to the census data for checking the sample's representativeness. Overall, the demographic characteristics presented in this sample, such as older, lower income, more retirees, and a longer length of residence, are consistent with the findings of similar Chinese studies (Jiang, Feng et al., 2017; Li, Gu et al., 2020a; Li, Zhang et al., 2019). In this sense, the research sample is considered representative of the residents in old neighborhoods of urban China.

TABLE 5.3 Demographic characteristics of the respondents

	Percentage		
	Total (N = 367)	Homeowner (N = 280)	Tenant (N = 87)
Age			
≤ 30	11.2%	7.9%	21.8%
31-40	15.0%	13.6%	19.5%
41-50	25.1%	21.8%	35.6%
51-60	19.1%	20.7%	13.8%
> 60	29.7%	36.1%	9.2%
Gender			
Female	59.4%	55.7%	71.3%
Male	40.6%	44.3%	28.7%
Monthly income per capita (RMB)			
≤ 2000	8.2%	8.9%	5.7%
2001-3000	18.3%	14.6%	29.9%
3001-4000	33.8%	35.0%	29.9%
4001-5000	22.9%	23.2%	21.8%
5001-10000	13.9%	15.0%	10.3%
> 10001	3.0%	3.2%	2.3%
Education level			
Middle school & below	23.4%	23.6%	23.0%
High school	32.7%	33.9%	28.7%
Junior college	24.0%	22.1%	29.9%
Bachelor's degree & above	19.9%	20.4%	18.4%
Occupation			
Public sector	12.8%	15.0%	5.7%
Private institute/enterprise/organization	10.4%	9.3%	13.8%
Retired	37.1%	44.3%	13.8%
Others (unemployed/self-employed/ freelancer)	39.8%	31.4%	66.7%
Length of residence (years)			
2-5	22.6%	12.9%	54.0%
6-10	17.4%	15.0%	25.3%
11-20	22.6%	25.4%	13.8%
≥ 20	37.3%	46.8%	6.9%

Acceptance Participation Experience and Continuance

Table 5.4 summarizes the respondents' *acceptance participation experience*, *Perceived Usefulness*, *Satisfaction* regarding this experience, and *Re-engage Intention*. Homeowners and tenants displayed similar patterns in acceptance participation. In general, most of the respondents (90.4%) were involved in the rehabilitation process from the first two stages. They participated in between 2 and 5 RP activities during rehabilitation. Their participation spanned 2 to 3 stages, with an Inform to Consult degrees of participation, indicating a limited influence on the rehabilitation. Nevertheless, homeowners had a more significant impact on rehabilitation than tenants. Of the homeowners, 17.1% reported a Cooperate level and 2.5% an Empower level of influence in neighborhood rehabilitation, compared to 11.5% of tenants with Cooperate influence and none with Empower influence.

Meanwhile, the sample shows a positive perception of acceptance participation. 76.5% of respondents either perceived acceptance participation as useful or very useful. Besides, there is little difference in the perceived usefulness between homeowners and tenants (4.07 vs. 3.93). As for *Participation Satisfaction*, only 13.2% of the sample expressed dissatisfaction with their acceptance participation. Tenants were more likely to be satisfied than homeowners (3.84 vs. 3.60). A mere 2% of tenants were dissatisfied. This percentage is 16.4% among homeowners. 38.2% of the respondents would like to continue participation. Although homeowners are more likely to participate again than the tenants (50.7% vs. 40.9%), the difference is slight (3.54 vs. 3.37).

TABLE 5.4 Summary of residents' acceptance participation experience and re-engage intention

Variables	Percentage			Mean		
	Total	Owners	Tenants	Total	Owners	Tenants
Number of activities				2.89	2.92	2.79
1	14.7%	13.9%	17.2%			
2	16.6%	16.8%	16.1%			
3-5	42.0%	41.8%	42.5%			
6-8	18.3%	18.2%	18.4%			
≥ 9	8.4%	9.3%	5.7%			
Type of activities				3.76	3.86	3.42
Silent Observance	10.6%	8.9%	16.1%			
Opinion Awakening	9.5%	9.3%	10.3%			
Tendency Shaping	9.3%	7.9%	13.8%			
Internal Consensus	35.1%	35.0%	35.6%			
External Unity	35.4%	38.9%	24.2%			
Number of Stages				2.47	2.51	2.34
1	24.0%	23.2%	26.4%			
2	30.0%	29.6%	31.0%			
3	27.2%	26.4%	29.9%			
4	12.5%	14.3%	6.9%			
5	6.3%	6.4%	5.7%			
Initial Stage				1.48	1.50	1.40
Intention and Setup	71.9%	71.8%	72.4%			
Mapping and Diagnosis	18.5%	17.9%	20.7%			
Assessment and Planning	3.3%	3.2%	3.4%			
Design and Details	2.2%	2.5%	1.1%			
Implementation and Acceptance	4.1%	4.6%	2.3%			
Level of Influence				2.12	2.19	1.90
Inform	35.7%	33.9%	41.4%			
Consult	36.5%	35.7%	39.1%			
Involve	10.1%	10.7%	8.0%			
Collaborate	15.8%	17.1%	11.5%			
Empower	1.9%	2.5%	0.0%			
Perceive usefulness of participation				4.04	4.07	3.93
Useless	3.3%	3.2%	3.4%			
Not a good idea	7.4%	7.5%	6.9%			
Hard to say	12.8%	11.1%	18.4%			
Useful	35.4%	35.4%	35.6%			
Very useful	41.1%	42.9%	35.6%			

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TABLE 5.4 Summary of residents' acceptance participation experience and re-engage intention

Variables	Percentage			Mean		
	Total	Owners	Tenants	Total	Owners	Tenants
Participation satisfaction				3.66	3.60	3.84
Extremely dissatisfied	6.1%	7.9%	0.0%			
Dissatisfied	7.1%	8.5%	2.2%			
Neither satisfied nor dissatisfied	37.7%	35.0%	45.9%			
Satisfied	30.1%	30.0%	29.8%			
Extremely satisfied	19.3%	18.6%	21.8%			
Re-engage intention				3.50	3.54	3.37
Completely disagree	4.4%	5.0%	2.3%			
Disagree	8.7%	7.1%	13.8%			
Neutral	38.7%	37.1%	43.7%			
Agree	28.9%	30.0%	25.3%			
Completely agree	19.3%	20.7%	14.9%			

5.6.2 Path analysis

In reference to similar studies (Jiang, Feng et al., 2017; Liu, Wu et al., 2017), three indices were used to measure the path model's goodness-of-fit, namely chi-square to df ratio (CMIN/DF), root mean square error of approximation (RMSEA), and comparative fit index (CFI). The CMIN/DF, RMSEA, and CFI were 2.584, 0.066, and 0.996 for the model. All the indices exceeded the recommended thresholds (CMIN/DF<3, RMSEA<0.08, and CFI>0.95)[26], indicating a good model fit.

26 For thresholds selection, please check Hu and Bentler (1999).

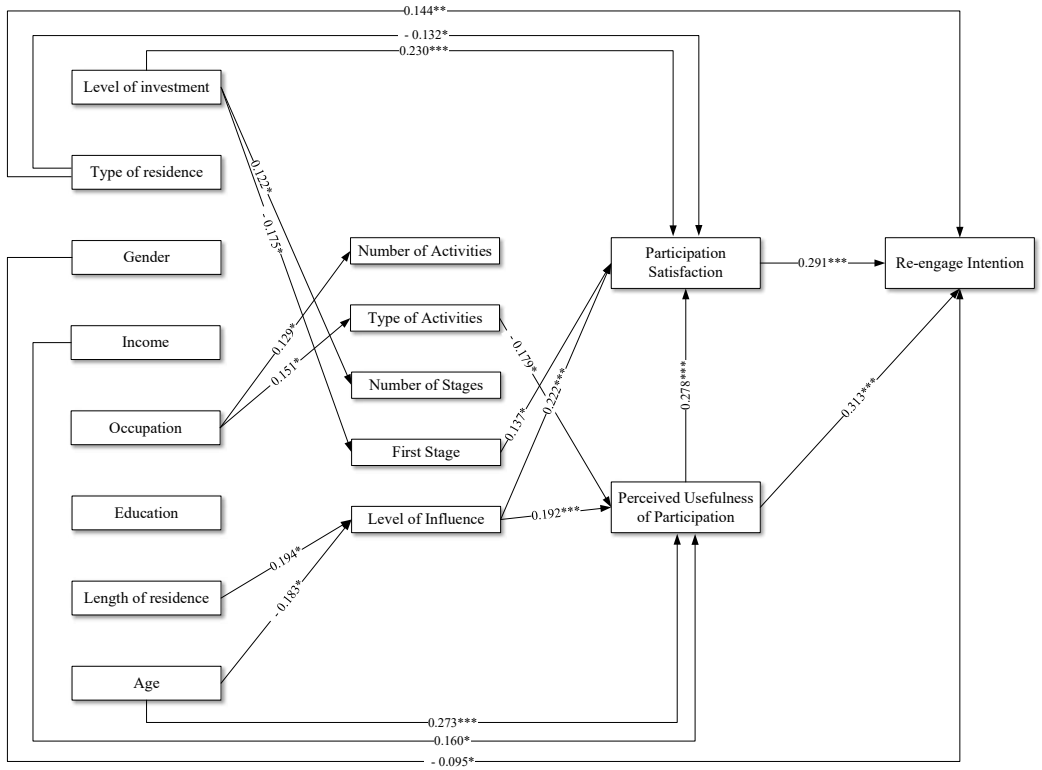

FIG. 5.6 Path analysis results

Notes: 1. *p < 0.05, **p < 0.01, ***p < 0.001; 2. Insignificant relationships were omitted to maintain clarity in the figure; 3. All coefficients were standardized.

The Influence of Acceptance on Continuance

FIG. 5.6 and Table 5.5 illustrate the statistical relationship between the variables in the ACM for Resident Participation. Residents' *acceptance participation experience* directly influences their *Perceived Usefulness of Participation* and *Participation Satisfaction*, and indirectly influences *Re-engage Intention*. Among the five aspects of participation experience, *Type of Activities* has a negative direct impact on *Perceived Usefulness of Participation*, and a negative indirect impact on *Participation Satisfaction* and *Re-engage Intention*. *Initial Stage* directly but negatively influences *Participation Satisfaction* and indirectly influences *Re-engage Intention*. *Level of Influence* has a positive direct impact on both *Perceived Usefulness of Participation*

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and *Participation Satisfaction*. *Number of Activities* and *Number of Stages* do not significantly impact other endogenous variables.

TABLE 5.5 Influence of Acceptance Participation on Continuance Participation

Variables (J)	Effect (I → J)	Variables (I)				
		Acceptance Participation Experience			Perceived Usefulness of Participation	Participation Satisfaction
		Type of Activities	Initial Stage	Level of Influence		
Perceived Usefulness of Participation	Direct	- 0.179*		0.192***		
	Indirect					
	Total	- 0.179*		0.192***		
Participation Satisfaction	Direct		- 0.137*	0.222***	0.278***	
	Indirect	- 0.050*		0.053***		
	Total	- 0.050*	- 0.137*	0.275***	0.278***	
Re-engage Intention	Direct				0.313***	0.291***
	Indirect	- 0.070*	- 0.040*	0.141***	0.081***	
	Total	- 0.070*	- 0.040*	0.141***	0.394***	0.291***

*Note: 1. Number of Activities and Number of Stages are not presented here, as they are found to have no significant interactions with other endogenous variables. 2. *p < 0.05, **p < 0.01, ***p < 0.001; 3. A blank box indicates an insignificant effect*

External Factors' Influence on Acceptance and Continuance

Table 5.6 shows that, in terms of total effects, Level of Investment significantly positively affects *Number of Stages, Participation Satisfaction,* and *Re-engage Intention*, and negatively influences *Initial Stage*. That is, the higher investment allows residents to participate in more stages and get involved earlier. Second, Age negatively impacts residents' *Level of Influence*. In contrast, its impact on *Perceived Usefulness of Participation* is positive. These correlations indicate that although older residents are less influential in decision-making, they perceive participation as more useful, satisfactory, and more likely to re-engage than the younger generations. Gender negatively impacts *Re-engage Intention*. Women are more active in neighborhood activities than men. Income affects *Perceived Usefulness of Participation* positively and significantly. Residents in more flexible jobs tend to be more active and prefer communication-intensive activities. Length of Residence appears to affect *Level of Influence* positively and significantly. Finally, although Type of Residence does not significantly impact residents' acceptance participation, it affects *Participation Satisfaction* negatively, and *Re-engage Intention* positively. This indicates that although homeowners are harder to please, they are more likely to participate again.

TABLE 5.6 Standardized effects of the external factors on acceptance participation and continuance participation

Resident participation (J)	Effect (I→J)	External factors (I)						
		Age	Gender (Female = 0)	Income	Occupation	Length of Residence	Type of Residence (Tenant = 0)	Level of Investment
Number of Activities	Direct				0.129*			
	Indirect							
	Total				0.129*			
Type of Activities	Direct				0.151*			
	Indirect							
	Total				0.151*			
Number of Stages	Direct							0.122*
	Indirect							
	Total							0.122*
Initial Stage	Direct							- 0.175*
	Indirect							
	Total							- 0.175*
Level of Influence	Direct	- 0.183*				0.194*		
	Indirect							
	Total	- 0.183*				0.194*		
Perceived Usefulness of Participation	Direct	0.273***		0.160*				
	Indirect	- 0.035*			- 0.027*	0.037*		
	Total	0.238***		0.160*	- 0.027*	0.037*		
Participation Satisfaction	Direct						- 0.132*	0.230***
	Indirect	0.026***		0.045*	- 0.008*	0.050*		0.024*
	Total	0.026***		0.045*	- 0.008*	0.050*	- 0.132*	0.254***
Re-engage Intention	Direct		- 0.095*				0.144**	
	Indirect	0.059***		0.063*	- 0.011*	0.027*	- 0.038*	0.074***
	Total	0.059***	- 0.095*	0.063*	- 0.011*	0.027*	0.106**	0.074***

Note: 1. Education is removed as it has insignificant effects on other variables; 2. p* < 0.05, p** < 0.01, p*** < 0.001; 3. A blank box indicates an insignificant effect.

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5.7 Discussion

5.7.1 Influence of Acceptance on Continuance

Level of Influence - Consulting and Involving are Satisfying

Consistent with numerous urban renewal studies in China (Li, Zhang et al., 2019; Li, Krishnamurthy et al., 2020; Xian and Gu, 2020; Zhuang, Qian et al., 2019), RP in Wuhan's neighborhood rehabilitation operates at the degrees of Inform and Consult, indicating a minimal influence on decisions. The prevailing top-down model ensures the government retains decision-making authority, with the power even to alter decisions initially made by residents: *"…we were satisfied with the gate design. However, government leaders felt that it did not reflect the cultural background of our neighborhood. The designers took their feedback and redesigned"* (RS4).

Despite this, an encouraging trend toward genuine participation was identified. 1.9% of the questionnaire respondents indicated an Empower level of influence in rehabilitation decisions. As RS2 noted: "*…there was a designer who put up a plan to place a slide in the community square. But when we voted, everyone was against the plan. We suggested he design a community canteen instead.*" Nevertheless, this trend towards more significant resident influence seems exclusive to homeowners; no tenant reported having significant control over the final decisions.

Yet, does increased influence necessarily lead to more desirable RP? Our study indicates that residents with greater influence perceive their participation as more useful, satisfying, and desirable. However, descriptive analysis shows that beyond a certain level of influence, the positive impact on participation satisfaction becomes less marked. Instead, the effort required to achieve significant impact increases exponentially. Regarding the law of diminishing returns, beyond a certain threshold of inputs, residents might experience diminished satisfaction (Shephard and Färe, 1974), as depicted in FIG. 5.7. Interestingly, our study also finds that residents with Inform and Consult influence levels report comparable satisfaction levels. Interview data imply that the observed diminishing returns in satisfaction could be attributed to the therapeutic and pacifying effect of participation (Arnstein, 1969) — residents primarily engage in expressing their concerns and safeguarding their personal interests. As interviewee CD2 noted, "*…residents simply need a platform*

to express their feelings. They find it acceptable if their feedback receives some response, regardless of whether the design plan is altered as per their suggestions."

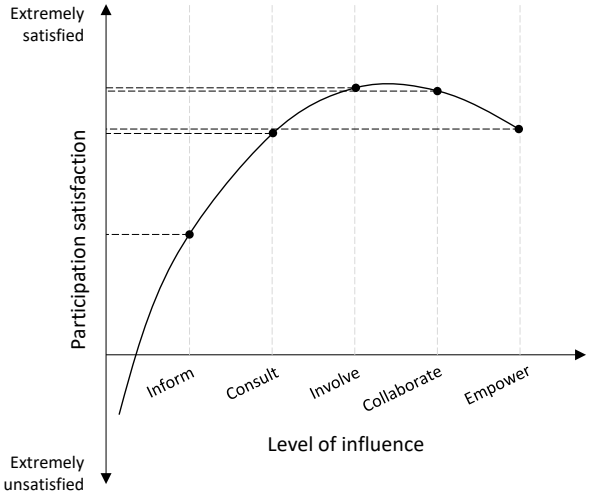

FIG. 5.7 The correlation between Level of Influence and Participation Satisfaction based on the law of diminishing returns

Therefore, aligning with Zhuang, Qian et al. (2019)'s advocacy, intensifying the empowerment of residents does not invariably yield positive outcomes. We specifically propose that, Consult and Involve may be appropriate levels of empowerment for residents in neighborhood rehabilitation, in context with emerging participation cultures and awareness, such as in China.

Initial Stage - Early Participation Brings Loyal Participants

Early participation is increasingly recognized as a crucial aspect of effective RP, offering residents greater opportunities and influence in decision-making and thereby enhancing their support for RP and rehabilitation decisions (Aitken, 2017; Uittenbroek, Mees et al., 2019). Compared to the Western contexts, where residents participate from the inception of projects, in China, resident involvement typically occurs after key decisions have already been made (Li, Krishnamurthy et al., 2020; Sun, Zhu et al., 2016; Zhou, 2014). Nevertheless, our study of Wuhan reveals a promising trend following the institutionalization of RP in rehabilitation policies: a substantial majority of residents (90.4%) are now participating from the initial two stages of the rehabilitation process. Path analysis results further suggest that earlier

involvement correlates with heightened participate satisfaction, thereby promoting their re-engagement.

For residents, participation activities in the initial stages, such as propaganda, questionnaire surveys and visiting demonstration projects, are more manageable and less demanding, allowing them more significant control over the decisions. FIG. 4.2 illustrates this dynamic: during the Intention and Setup stage, the government initiates information campaigns to educate residents about the rehabilitation's scope, benefits, and potential inconveniences. In the Mapping and Diagnosis stage, the (dis)advantages of various rehabilitation strategies are thoroughly explained and compared. Rehabilitation is an iterative process, with insights and consensus from early stages as the foundation for later decision-making. Those joining at later stages face the challenge of quickly assimilating all the information previously gathered. As a result, residents may hesitate to participate as they perceive the process as overly complex and challenging to control (Coenen, 2009; Tang, Gong et al., 2022). In our case, CO3 observed: *"...some residents who did not participate later showed interest. However, they lacked the necessary background knowledge, which led to frustration for both them and early participants. Often, these latecomers attended once and then ceased participating"*.

Type of Activities – Comprehensive but not Arduous

As civic awareness and capacity grow in China, RP is evolving from informative to communicative and collaborative models, emphasizing inclusiveness and fostering deeper stakeholder interactions (Hu, de Roo et al., 2013; Li, Zhang et al., 2020; Zhou, 2014). Notable examples from cities like Beijing, Guangzhou, and Wuhan highlight the effectiveness of inclusive dialogue in diminishing skepticism and negative perceptions (Liu, Zhang et al., 2015), fostering mutual understanding and trust (Sun, Zhu et al., 2016), and promoting sustained involvement in neighborhood governance (Luo, Wu et al., 2020). However, our study uncovers a potential downside of this interaction-intensive approach: when RP activities become demanding and dependent on resident initiative, participants may find their involvement less useful and satisfying, diminishing their likelihood of ongoing engagement.

Brandt and Svendsen (2013) address this negative correlation by arguing that the costs of achieving consensus can easily outweigh the benefits as interaction increases. This hypothesis finds support in our case study in China. Here, the government initiates and manages less interactive RP activities like propaganda, surveys, and door-to-door campaigns. Although communication in these cases

is one-directional and infrequent, it demands minimal effort from residents. Furthermore, the influence of RP on rehabilitation decisions is tangible and effectively communicated in the rehabilitation and design plans. However, as RP evolves towards more sophisticated models, such as Internal Consensus and External Unity[27], residents face an influx of information from diverse sources, requiring additional effort to sift through and evaluate data. These advanced RP models also necessitate complex interactions, calling for skills in articulation and negotiation, which many Chinese residents may lack (Sun, 2015). Moreover, transitioning from government-led to resident-initiated participation increases organizational responsibilities for residents, including gathering resources and coordinating attendance, all without a clear personal benefit. This disproportionate investment with uncertain outcomes takes the charm out of RP.

The Influence of External Factors: Higher Level of Investment is the Silver Bullet

The case of Wuhan suggests that higher investment leads to better practices—residents participate earlier, longer, satisfier, and are more likely to participate again. This aligns with Li, Krishnamurthy et al. (2020)'s observations in 11 cases across China and many other urban studies (Fang, Perc et al., 2022; Li, Zhang et al., 2020; Luo, Wu et al., 2020), where additional investment led to more innovative rehabilitation processes. In Wuhan, it also brings about richer administrative resources and stricter oversight. Consequently, RP in higher investment projects often faces less resistance and requires fewer compromises, leading to performance that surpasses the average. Besides, for neighborhood rehabilitation in China in general, higher investments are translated into the extensive coverage of neighborhood issues, and the adoption of advanced technologies and public services (SC, 2020a). For the residents, it is reflected in a dramatic improvement in neighborhood appearance, and greater living comfort and convenience (Liu, Hu et al., 2018). A greater return for a similar effort makes residents in high-investment programs more likely to be satisfied than those in low ones.

Our case further contributes by revealing the differences in the mechanisms by which Level of Investment impacts residents' acceptance participation and their continued involvement. In terms of acceptance participation, our results are consistent with Tang, Gong et al. (2022)'s findings in Shanghai and other international studies

27 For specific activities, please see Figure 4.2.

(Dekker and Van Kempen, 2008; Hall and Hickman, 2011; Uittenbroek, Mees et al., 2019), which indicate that higher investment levels, by providing abundant resources and opportunities, bolster residents' perceived control over their actions and motivate their initial participation. Regarding continued participation, increased investment levels improve the performance of acceptance participation and enhance residents' satisfaction with it. These two factors, in turn, significantly strengthen residents' intention to re-engage.

5.7.2 From Acceptance to Continuance: Policy Implications

Drawing from the significant findings of this research, we propose policy recommendations to foster sustained resident participation in neighborhood rehabilitation of urban China. One key strategy involves aligning participation objectives with both the macro-environment and micro-preferences of residents. In Wuhan, influenced by the lingering effects of Confucianism, government paternalism, and autocratic leadership styles, residents participate with the goals of Consultation and Placation. In this context, a baseline of Consult and an endpoint of Involve is viable to satisfy most residents. Questionnaires and door-to-door campaigns should be mandatory to ensure that residents have official channels to express their concerns. In addition, neighborhood forums, workshops, and participatory design[28] should be conducted in a way that residents know whether their requests are included in the decision and the underlying considerations. To attain higher degrees of participation, conducting a pre-participation study could prove instrumental. This would entail a mapping phase to discern residents' diverse attitudes and expectations, followed by careful evaluation and segmentation. Aligning the participation degree closely to residents' preferences can help circumvent the drawbacks of overzealous and hasty implementations.

Shifting the focus from quantity to quality is imperative. Although institutionalization has mitigated issues of delayed and insufficient RP in neighborhood rehabilitation, the case shows that the quality of RP remains largely uncertain. Establishing technical standards and an evaluation framework is crucial to enhance this aspect. The frameworks should focus on the process's transparency, equality, and fairness rather than the participation rate. For example, the accuracy of information, the timeliness of feedback, and the coverage of vulnerable and marginalized groups.

28 There are many other RP activities that enable residents to exert a Consult or Involve level of influence. The examples provided here are just a few of them.

Moreover, performance metrics could be incorporated into the assessment criteria for rehabilitation projects and official performance appraisals. Last, third parties, such as scholars and NGOs with a focus on social affairs, can be involved to provide real-time monitoring, evaluation and modification of RP policies in a bottom-up manner.

Since intensive RP may diminish residents' intentions to re-engage, a streamlined participation process is advised. For example, decomposing the overall design into manageable tasks, such as determining the theme of the neighborhood fence, to specify goals, thus a greater sense of control felt by residents. To alleviate residents' perceived difficulty initiating participation, reference can be made to the community planner system recently explored in Guangzhou and Xiamen (Hui, Chen et al., 2021; Li, Zhang et al., 2020). However, our study suggests a slight modification: recruiting recently retired female homeowners could be beneficial. These individuals often possess a higher sense of responsibility and neighborhood attachment, coupled with substantial relational capital and trust within the community. Their involvement can ensure that RP efforts are both efficient and effective.

The final recommendation emphasizes the need to increase investment intensity and precision. Our interviews reveal that a lack of funding and unclear usage guidelines have diminished motivation and capability to undertake RP initiatives. Furthermore, the "reward instead of subsidizing (*Yijiang Daibu*)" incentive mechanism may inadvertently polarize participation practices. Neighborhoods that initially show poor participation results may find it increasingly challenging to secure the necessary funds and resources to rectify ineffectiveness. Regarding this, governments could mandate RP as a condition for eligibility to apply for extra funding (Uittenbroek, Mees et al., 2019). Additionally, investments in Information and Communication Technology (ICT) and related platforms are recommended (Li, Feng et al., 2020). Such measures could alleviate the financial and staffing limitations, thus ensuring the thorough and effective implementation of RP initiatives.

5.8 Conclusions

It is increasingly evident that the long-term viability and ultimate sustainability of neighborhood rehabilitation hinge on residents' continued participation. Extant research has focused on residents' first-time participation, leaving their continued

participation largely unexplored. Using the ECM, this study provides an initial exploration of resident's continued participation. By analyzing questionnaire data obtained from 367 experienced residents in Wuhan, China, the study shows that only 38.2% of respondents intended to continue participation in future rehabilitation endeavors. Overall, residents' *Re-engage Intention* is influenced by the *Acceptance Participation Experience* indirectly and directly through *Participation Satisfaction* and *Perceived Usefulness of Participation* developed from this experience. Specifically, the *Re-engage Intention* is most influenced by *Level of Influence* (positively), followed by *Initial Stage* (negatively), and *Type of Activities* (negatively). Among the external factors, Type of Residence was the most influential factor. Additionally, in rehabilitation projects with higher investment, residents tend to participate in more RP activities and earlier, enhancing residents' *Participation Satisfaction* and ultimate *Re-engage Intention*.

Nevertheless, this research also presents several limitations worth exploring in the future. Firstly, the study's exploratory nature should be noted. Utilizing the case of Wuhan serves as a preliminary validation of the ACM for Resident Participation and does not aim to draw broad generalizations. Future research could extend this work by applying the ACM in regions with varied socio-political backgrounds, enhancing the model's validation and offering comparative insights. Secondly, the relatively small sample size (n = 87) restricted us from performing a separate pathway analysis to investigate tenants' cognitive processes behind their re-engage intentions. Subsequent studies might explore tenants' re-engage intentions using the ACM, comparing and contrasting these findings with those of homeowners. Thirdly, this study is informed by the 'acceptance-discontinuance anomaly'. It hypothesizes that past participation experiences shape residents' re-engage intentions. However, residents' willingness to participate is also closely related to their subjective perceptions, such as beliefs, moral obligations, neighborhood attachment, and trust in the community and government (Chang, Chen et al., 2022; Russ and Takahashi, 2013; Wu, 2012). Future research could integrate these variables and other theories with the ACM to comprehensively understand residents' re-engage intention. Alternatively, the ACM constructs can be compared with these variables to yield additional insights. Lastly, this study concentrates on re-engage Intention instead of actual re-engage behavior. Despite intentions often being strong predictors of behavior, the gap between intention and action is well-documented (Sheeran and Webb, 2016). Longitudinal and follow-up studies are thus recommended.

References

Aitken, D. (2017). The Influence Fallacy: Resident Motivations for Participation in an English Housing Regeneration Project. *Planning theory & practice*, *18*(4), 549-565.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of planners*, *35*(4), 216-224.

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS quarterly*, 351-370.

Bhattacherjee, A., & Premkumar, G. (2004). Understanding changes in belief and attitude toward information technology usage: A theoretical model and longitudinal test. *MIS quarterly*, 229-254.

Brandt, U. S., & Svendsen, G. T. (2013). Is local participation always optimal for sustainable action? The costs of consensus-building in Local Agenda 21. *Journal of environmental management*, *129*, 266-273.

Brown, H. L., Bos, D. G., Walsh, C. J., Fletcher, T. D., & RossRakesh, S. (2016). More than money: how multiple factors influence householder participation in at-source stormwater management. *Journal of Environmental Planning and Management*, *59*(1), 79-97.

Chang, K.-C., Chen, H.-S., & Hsieh, C.-M. (2022). Effects of relational capital on relationship between place attachment and resident participation. *Journal of Community & Applied Social Psychology*, *32*(1), 19-41. https://doi.org/https://doi.org/10.1002/casp.2531

Coenen, F. (2009). Public participation and better environmental decisions. *The promise and limits of participatory processes for the quality of environmentally related decision-making*, *209*.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

Dekker, K., & Van Kempen, R. (2008). Places and participation: comparing resident participation in post-WWII neighborhoods in Northwest, Central and Southern Europe. *Journal of Urban Affairs*, *30*(1), 63-86.

Fang, Y., Perc, M., & Zhang, H. (2022). A game theoretical model for the stimulation of public cooperation in environmental collaborative governance. *Royal Society Open Science*, *9*(11), 221148.

Fu, X.-m., Zhang, J.-h., & Chan, F. T. (2018). Determinants of loyalty to public transit: A model integrating Satisfaction-Loyalty Theory and Expectation-Confirmation Theory. *Transportation Research Part A: Policy and Practice*, *113*, 476-490.

Fung, A. (2006). Varieties of participation in complex governance. *Public administration review*, *66*, 66-75.

Ginsburg, N. (1999). Putting the social into urban regeneration policy. *Local Economy*, *14*(1), 55-71.

Gu, T. (2019). *Research on Residents' Engagement in Governance of Sponge-style Old Community Renewal: Taking Spone Cities in Yangtze River Delta as An Example* Southeast University].

Hair, J. F. (2009). Multivariate data analysis.

Hall, S., & Hickman, P. (2011). Resident Participation in Housing Regeneration in France. *Housing Studies*, *26*(6), 827. https://doi.org/10.1080/02673037.2011.593127

Hindhede, A. L. (2016). Neighbourhood renewal, participation, and social capital in deprived areas: unintended consequences in a Nordic context. *European Societies*, *18*(5), 535-559. https://doi.org/10.1080/14616696.2016.1226375

Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, *6*(1), 1-55.

Hu, Y., de Roo, G., & Lu, B. (2013). 'Communicative turn' in Chinese spatial planning? Exploring possibilities in Chinese contexts. *Cities*, *35*, 42-50. https://doi.org/https://doi.org/10.1016/j.cities.2013.05.001

Hui, E. C.-m., Chen, T., Lang, W., & Ou, Y. (2021). Urban community regeneration and community vitality revitalization through participatory planning in China. *Cities*, *110*, 103072.

Hunt, H. K. (1977). CS/D-overview and future research directions. *Conceptualization and measurement of consumer satisfaction and dissatisfaction*, *158*.

IAP2. *IAP2 Code of Ethics for Public Participation Practitioners*. https://www.iap2.org/page/ethics#:~:text=We%20define%20public%20participation%20as,of%20the%20public%20participation%20process.

Itard, L., & Klunder, G. (2007). Comparing environmental impacts of renovated housing stock with new construction. *Building Research & Information*, *35*(3), 252-267.

Jiang, W., Feng, T., Timmermans, H., & Li, H. (2017). A gap-theoretical path model of residential satisfaction and intention to move house applied to renovated historical blocks in two Chinese cities. *Cities*, *71*, 19-29. https://doi.org/https://doi.org/10.1016/j.cities.2017.06.021

Li, D., Gu, T., & Zhu, S. (2020). Influencing Factors of Residents Intention to Participate in the Governance of Old Community Renewal: A Case Study of Nanjing. *Modern Urban Research*(02), 19. https://doi.org/10.3969

Li, D., Zhang, M., Guan, N., Zhang, L., & Gu, T. (2019). Research on the Influencing Factors of Residents' Participation in Old Community Renewal: A Case Study of Nanjing. *Construction Economy*, *40*(3), 93-99. https://doi.org/10.14181/j.cnki.1002-851x.201903093

Li, J., Krishnamurthy, S., Pereira Roders, A., & van Wesemael, P. (2020). Community participation in cultural heritage management: A systematic literature review comparing Chinese and international practices. *Cities*, *96*, 102476. https://doi.org/https://doi.org/10.1016/j.cities.2019.102476

Li, W., Feng, T., Timmermans, H. J., Li, Z., Zhang, M., & Li, B. (2020). Analysis of citizens' motivation and participation intention in urban planning. *Cities*, *106*, 102921.

Li, X., Zhang, F., Hui, E. C.-m., & Lang, W. (2020). Collaborative workshop and community participation: A new approach to urban regeneration in China. *Cities*, *102*, 102743. https://doi.org/https://doi.org/10.1016/j.cities.2020.102743

Li, Y., Qian, Q. K., Mlecnik, E., & Visscher, H. J. (2021, 30 August - 3 September). *Critical Success Factors for Effective Resident Participation in Community Retrofit: A Systematic Review* ENHR 2021Unsettled Settlements: Housing in Unstable Contexts, Online.

Li, Y., Tao, Y., Qian, Q. K., Mlecnik, E., & Visscher, H. J. (2024). Critical factors for effective resident participation in neighborhood rehabilitation in Wuhan, China: From the perspectives of diverse stakeholders. *Landscape and Urban Planning*, *244*, 105000. https://doi.org/https://doi.org/10.1016/j.landurbplan.2023.105000

Liu, B., Hu, Y., Wu, X., Yu, J., Yu, Z., & Wang, A. (2018). Critical Factors of Effective Public Participation in Sustainable Energy Projects. *Journal of Management in Engineering*, *34*(5). https://doi.org/10.1061/(ASCE)ME.1943-5479.0000635

Liu, B., Wang, X., Xia, N., & Ni, W. (2018). Critical success factors for the management of public participation in urban renewal projects: Perspectives from governments and the public in China. *Journal of Urban Planning and Development*, *144*(3), 04018026.

Liu, G., Zhang, X., & Xie, F. (2021). Current Situation of the Renovation of Old Residential Communities in Chongqing. *Journal of Engineering Management*, *35*(1), 77-82. https://kns.cnki.net/kcms/detail/detail.aspx?doi=10.13991/j.cnki.jem.2021.01.014

Liu, W., Zhang, J., Bluemling, B., Mol, A. P. J., & Wang, C. (2015). Public participation in energy saving retrofitting of residential buildings in China. *Applied Energy*, *147*, 287-296.

Liu, Y., Wu, F., Liu, Y., & Li, Z. (2017). Changing neighbourhood cohesion under the impact of urban redevelopment: A case study of Guangzhou, China. *Urban Geography*, *38*(2), 266-290.

Liu, Z., Lin, S., Shen, Y., & Lu, T. (2021). Collaborative neighborhood governance and its effectiveness in community mitigation to COVID-19 pandemic: From the perspective of community workers in six Chinese cities. *Cities*, *116*, 103274. https://doi.org/https://doi.org/10.1016/j.cities.2021.103274

Lleras, C. (2005). Path analysis. *Encyclopedia of social measurement*, *3*(1), 25-30.

Luo, J., Wu, H., & Peng, Y. (2020). Research on Community Planning under the Concept of Co-Governance and Sharing - A Case of the Micro-Reconstruction of Shuilu Community in Wuhan. *Urbanism and Architecture*, *17*, 52-59.

Mathers, J., Parry, J., & Jones, S. (2008). Exploring resident (non-) participation in the UK new deal for communities regeneration programme. *Urban Studies*, *45*(3), 591-606.

Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information systems research*, *2*(3), 173-191.

Mo, W. (2014). A Classification Study of Western Public Participation Approaches in Urban Planning: Based on the Theoretical Perspective. *Urban Planning International*, *29*, 76. https://oversea.cnki.net/KCMS/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2014&filename=GWCG201405013&uniplatform=OVERSEA&v=3Y51naUjyLugZ2SP9Y6f5v7VaQ5M5Gkqg2K9dY7XV11htA4YYo1Jold71Tku48TD

Nienhuis, I., Van Dijk, T., & De Roo, G. (2011). Let's collaborate! But who's really collaborating? Individual interests as a leitmotiv for urban renewal and regeneration strategies. *Planning theory & practice*, *12*(1), 95-109.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of marketing research*, *17*(4), 460-469.
Oliver, R. L. (1981). Measurement and evaluation of satisfaction processes in retail settings. *Journal of retailing*.
Pérez, M. G. R., Laprise, M., & Rey, E. (2018). Fostering sustainable urban renewal at the neighborhood scale with a spatial decision support system. *Sustainable Cities and Society*, *38*, 440-451.
Reed, M. S., Vella, S., Challies, E., De Vente, J., Frewer, L., Hohenwallner-Ries, D., Huber, T., Neumann, R. K., Oughton, E. A., & Sidoli del Ceno, J. (2018). A theory of participation: what makes stakeholder and public engagement in environmental management work? *Restoration ecology*, *26*, S7-S17.
Rowe, G., & Frewer, L. J. (2005). A typology of public engagement mechanisms. *Science, Technology, & Human Values*, *30*(2), 251-290.
Russ, L. W., & Takahashi, L. M. (2013). Exploring the influence of participation on programme satisfaction: Lessons from the Ahmedabad slum networking project. *Urban Studies*, *50*(4), 691-708.
SC. (2020). *Guiding Opinions on Comprehensively Promoting Neighborhood Rehabilitation*. (000014349/2020-00061). Retrieved from https://www.gov.cn/zhengce/content/2020-07/20/content_5528320.htm
Sheeran, P., & Webb, T. L. (2016). The intention–behavior gap. *Social and personality psychology compass*, *10*(9), 503-518.
Shen, T., Yao, X., & Wen, F. (2021). The Urban Regeneration Engine Model: An analytical framework and case study of the renewal of old communities. *Land Use Policy*, *108*, 105571.
Shephard, R. W., & Färe, R. (1974). The law of diminishing returns. Production Theory: Proceedings of an International Seminar Held at the University at Karlsruhe May–July 1973,
Steinberg, F. (1996). Conservation and rehabilitation of urban heritage in developing countries. *Habitat International*, *20*(3), 463-475.
Streiner, D. L. (2005). Finding our way: an introduction to path analysis. *The Canadian Journal of Psychiatry*, *50*(2), 115-122.
Streiner, D. L. (2006). Building a better model: an introduction to structural equation modelling. *The Canadian Journal of Psychiatry*, *51*(5), 317-324.
Sun, L., Zhu, D., & Chan, E. H. (2016). Public participation impact on environment NIMBY conflict and environmental conflict management: Comparative analysis in Shanghai and Hong Kong. *Land Use Policy*, *58*, 208-217.
Sun, Y. (2015). Facilitating generation of local knowledge using a collaborative initiator: A NIMBY case in Guangzhou, China. *Habitat International*, *46*, 130-137. https://doi.org/https://doi.org/10.1016/j.habitatint.2014.11.005
Susanto, A., Chang, Y., & Ha, Y. (2016). Determinants of continuance intention to use the smartphone banking services: An extension to the expectation-confirmation model. *Industrial Management & Data Systems*, *116*(3), 508-525.
Tang, D., Gong, X., & Liu, M. (2022). Residents' behavioral intention to participate in neighborhood micro-renewal based on an extended theory of planned behavior: A case study in Shanghai, China. *Habitat International*, *129*, 102672.
Uittenbroek, C. J., Mees, H. L., Hegger, D. L., & Driessen, P. P. (2019). The design of public participation: who participates, when and how? Insights in climate adaptation planning from the Netherlands. *Journal of Environmental Planning and Management*, *62*(14), 2529-2547.
Webler, T., Tuler, S., & Krueger, R. (2001). What is a good public participation process? Five perspectives from the public. *Environmental management*, *27*(3), 435-450.
Wu, F. (2012). Neighborhood Attachment, Social Participation, and Willingness to Stay in China's Low-Income Communities. *Urban Affairs Review*, *48*(4), 547-570. https://doi.org/10.1177/1078087411436104
Wu, L. (2023). Effects of informal institutions on stakeholder and public participation in public infrastructure megaprojects: A case study of Shanghai. *Journal of Environmental Planning and Management*, *66*(8), 1655-1674.
Xian, S., & Gu, Z. (2020). The making of social injustice and changing governance approaches in urban regeneration: Stories of Enning Road, China. *Habitat International*, *98*, 102149. https://doi.org/https://doi.org/10.1016/j.habitatint.2020.102149
Yau, Y. (2010). Sense of community and homeowner participation in housing management

TOC

A study of Hong Kong. *Urbani Izziv*, *21*(1), 126-135. http://www.jstor.org/stable/24920518
Zheng, H. W., Shen, G. Q., & Wang, H. (2014). A review of recent studies on sustainable urban renewal. *Habitat International*, *41*, 272-279.
Zheng, S., Fu, X., Zhuang, T., & Wu, W. (2023). Exit, voice, loyalty, and neglect framework of residents' responses to urban neighborhood regeneration: The case of Shanghai, China. *Environmental Impact Assessment Review*, *100*, 107087.
Zhou, Z. (2014). Towards collaborative approach? Investigating the regeneration of urban village in Guangzhou, China. *Habitat International*, *44*, 297-305.
Zhuang, T., Qian, Q. K., Visscher, H. J., Elsinga, M. G., & Wu, W. (2019). The role of stakeholders and their participation network in decision-making of urban renewal in China: The case of Chongqing. *Cities*, *92*, 47-58.
Zolotov, M. N., Oliveira, T., Cruz-Jesus, F., & Martins, J. (2018). Satisfaction with e-participation: A Model from the Citizen's Perspective, Expectations, and Affective Ties to the Place. Trends and Advances in Information Systems and Technologies: Volume 1 6.

6 Conclusions

6.1 Introduction

Despite policy improvements and the advent of Co-Creation concept have boosted resident participation in China, evidence suggests that these practices often fail to achieve their full potential. Addressing this shortfall, this doctoral research endeavored to deepen the understanding of resident participation for neighborhood rehabilitation in post-pandemic China, facilitating a transition in residents from episodic to continued participation, thereby promoting socially sustainable urban renewal. The central research question was: **How to improve resident participation for neighborhood rehabilitation in post-pandemic China?**

Drawing on foundational work in public participation and the unique characteristics of neighborhood rehabilitation, this thesis established a conceptual framework founded on three key elements of public participation: stakeholder concerns, power dynamics, and information sharing. It also explored the mechanisms that foster ongoing resident involvement in these initiatives. The research framework necessitated conducting four distinct studies, each addressing one of the following sub-questions:

- Sub-Question 1: What are the concerns of different stakeholders for resident participation in neighborhood rehabilitation of urban China?
  Study 1: Critical Factors for Effective Resident Participation in Neighborhood Rehabilitation in Wuhan, China: From the Perspectives of Diverse Stakeholders

- Sub-Question 2: How do power dynamics influence resident participation in neighborhood rehabilitation of urban China?
  Study 2: Understanding Stakeholder Influence on Resident Participation in Neighborhood Rehabilitation: The Case of Wuhan, China

- **Sub-Question 3:** How does stakeholder information sharing influence resident participation in neighborhood rehabilitation in China?
  Study 3: Dissemination, Manipulation or Monopolization? Understanding the Influence of Stakeholder Information Sharing on Resident Participation in Neighborhood Rehabilitation of Urban China

- **Sub-Question 4:** How to promote residents' continued participation in neighborhood rehabilitation of urban China?
  Study 4: From Acceptance to Continuance: Understanding the Influence of Initial Participation Experience on Residents' Intentions to Continue Participation in Neighborhood Rehabilitation

The four sub-questions (SQs) and research aim are addressed in the subsequent two sections.

6.2 Summary of the research results

SQ1: What are the concerns of different stakeholders for resident participation in neighborhood rehabilitation of urban China?

Using data from 30 interviews and 255 questionnaires collected in Wuhan, China, Chapter 2 identified and compared the concerns of six stakeholder groups in neighborhood rehabilitation: local government, community-based organizations (CBOs), planning and design professionals, implementation and construction units, consulting groups, and neighborhood residents. Thirty-seven factors were identified and clustered into eight groups: A. External environment; B. Project benefit and impact; C. Participation scheme and approach; D. Resource and support; E. Information and communication; F. Power distribution and relationship; G. Leadership and team organization; H. Local perceptions and expectation.

The results revealed that *Financial incentives* (for participation organizers) emerged as the most critical concern across the six stakeholder groups, followed by *Information disclosure and transparency*, and *Trust*. Delving into the specific concerns of each stakeholder group, community-based organizations and designers identified *Financial Incentive* as their primary concern. The local government

prioritized *Information Disclosure and Transparency*. Contractors expressed the most significant concern over *Trust* (from residents). Residents viewed *Equity and Justice* (in the participation process) as their most crucial concern. For consulting parties, the main concern *was Reward and Punishment* (for residents).

The one-way ANOVA results indicated significant conflicts among stakeholder concerns regarding effective resident participation in neighborhood rehabilitation. Out of 37 concerns evaluated, consensus was reached on only 12. There was agreement on the considerable impact of *Financial incentives* (for participation organizers) and *Rewards and punishments* (for residents) in fostering effective participation. Additionally, six stakeholder groups concurred that the influences of *Previous experience* and *Resident characteristics* on participation were minimal. However, conflicts among stakeholders were particularly pronounced regarding two concerns: *Participant Education* and *Prejudice against the working group*. While *Trust* (from residents) emerged as a crucial concern for most stakeholders, the extent to which it was valued varied significantly. Constructors, for instance, placed high importance on *Trust*, whereas it was less of a priority for government officials and residents. Notably, the two-way ANOVA results suggested that their priorities shift as stakeholders accumulate more rehabilitation experience. This evolution was particularly evident in the growing emphasis on *Trait and Capacity* (of the working group) and *Participation-assistance technologies*.

SQ2: How do stakeholders influence resident participation in neighborhood rehabilitation in China?

Leveraging Stakeholder Theory, Chapter 3 identified four direct and seven indirect strategies through which stakeholders can influence resident participation in urban rehabilitation projects. Stakeholders exert direct influence via four channels: *Assets*, *Knowledge*, *Traits*, and *Position*. Indirectly, they influence through seven distinct pathways: *Direct withhold/usage, Indirect withhold/usage, Resource building, Coalition building, Conflict escalation, Communication and credibility building,* and *Direct action.* Empirical data was gathered through 44 interviews and a four-month participant observation in Wuhan, China. The findings from deductive content analysis indicated that no single stakeholder group was able to manage resident participation independently. Instead, they often blend direct and indirect strategies to guide participation toward desired outcomes. Specifically, the local government utilizes its direct power—*Assets*, *Position*, and *Knowledge*—while favoring indirect methods such as *Direct usage*, *Resource building*, and *Coalition building* to influence resident participation. Drawing on their *Knowledge*, designers leverage indirect influence through *Coalition building* and *Resource building*.

As the rehabilitation project progressed, there was a notable shift in power dynamics, with authority being delegated from the local government to CBO and residents. This redistribution of power highlighted the beneficial effects on resident participation. Specifically, the diversity, depth, and efficiency of resident participation were significantly enhanced, and residents' willingness to engage was also stimulated. Despite the considerable direct power possessed by the local government, it often chose to influence residents indirectly through other stakeholders. As the project evolved, CBO was entrusted with more responsibilities and power. This empowerment allowed it to build up its resources and authority and innovate its participation strategies. By the middle and late phases of the rehabilitation process, CBO emerged as the most influential stakeholder in the project environment, equipped with substantial direct influence resources and the flexibility to deploy various indirect strategies.

Residents also experienced a marked increase in power, transitioning from passively accepting decisions at the project's outset to eventually playing a dominant role in the decision-making process. This shift in empowerment was facilitated by the CBOs, which played a pivotal role in shaping residents' participation behavior. While the local government implemented measures to allow residents to communicate directly with one another, aiming to dilute the power concentrated in the CBOs, these efforts proved inadequate in addressing the power imbalances. Furthermore, power distribution among the residents themselves remained uneven and often skewed. Residents with closer ties to CBOs or greater social resources tended to accumulate more power, dominating communication topics and exerting substantial influence over decision-making. This power dynamic resulted in the marginalization and underrepresentation of vulnerable groups, exacerbating existing inequalities. Additionally, some well-informed residents purposely controlled the dissemination of information, obstructing the involvement of others with differing interests and viewpoints. This behavior not only compromised the transparency of the participation process but also raised significant concerns about the overall fairness and effectiveness of resident participation in the rehabilitation project.

SQ3: How does stakeholder information share influence resident participation in neighborhood rehabilitation in China?

Combining social network analysis (SNA) and ecological network analysis (ENA), Chapter 4 investigated how stakeholder information sharing evolves over the project lifecycle and its consequent impacts on resident participation in neighborhood rehabilitation. A representative neighborhood rehabilitation project in Wuhan, China, served as the study case, with data sourced from 10 interviews, 35 questionnaires, and 3 focus groups. The study identified 31 stakeholders and categorized nine types of information shared during the rehabilitation process.

The SNA results indicated that the district bureau of housing management, sub-district administrative office, CBO, architect, implementation unit, homeowner, and the media played influential roles in information sharing, particularly information dissemination and circulation. Specifically, the implementation unit and neighborhood committee were the principal information holders, whereas local media and tenants were less informed. The results also underscored the pivotal role of the CBO in managing information flow, demonstrating considerable autonomy and control over the dissemination process, sometimes even manipulating information sharing across different phases of the project. On the other hand, homeowners showed significant dependence and a lack of control, particularly during the planning and design phase. The ENA results suggested that the network was generally mutualistic and synergic. Despite this, competitive relationships were evident throughout the project lifecycle, reflecting underlying conflicts or rivalries that could disrupt collaborative processes. The district bureau and the CBO were identified as the primary information contributors, while the sub-district administrative office was highlighted as the primary information beneficiary.

Effective information sharing significantly enhanced resident participation throughout the various phases of the rehabilitation process. Central to this dynamic were CBO and local media. CBO served as a crucial communication bridge among stakeholders, adeptly aggregating and disseminating information. This role strengthened its capacity to forge horizontal connections between residents, designers, and implementation units, while also facilitating hierarchical interactions with the government. CBO also acted as advisors to residents, transforming those previously disengaged into active contributors. Similarly, the local media played a critical role in inducing resident participation, though its impact varied across demographic groups. For the general public, media coverage increased awareness and spurred actions to enhance living conditions. Conversely, for residents of rehabilitated neighborhoods, it deepened their appreciation for improved living conditions, thereby boosting their residential satisfaction and willingness to re-engage in future initiatives.

The rehabilitation process also saw a notable increase in residents' empowerment, underscored by enhanced discourse. This shift was partly fueled by the government's innovative communication strategies, including creating a mayor's hotline and official social media accounts. These strategies allowed residents to extend their communication beyond the project's immediate information network, reaching higher government levels and individuals with significant social clout. Simultaneously, residents evolved from mere contributors to active beneficiaries within the information network. Their proactive engagement in gathering and leveraging information and knowledge empowered them to challenge unsatisfactory decisions and effectively advocate for their proposals to be adopted by other groups.

SQ4: How to promote residents' continued participation in neighborhood rehabilitation of urban China?

Inspired by the Expectation-Confirmation Model (ECM), Chapter 5 assumed that residents' intention to re-engage is influenced by their initial participation experiences. Further, drawing from established public participation literature, this study categorized participation experience into five dimensions: 1) number of activities, 2) types of activities, 3) number of stages, 4) initial stage, and 5) level of influence. According to ECM, these dimensions collectively shape residents' acceptance participation experiences, impacting their satisfaction and perceived usefulness. These two components, in turn, determine residents' intention to participate again.

Analyzing questionnaire responses from 367 experienced residents in Wuhan, China, the primary issue identified was the low intention to re-participate, with only 38.2% of respondents expressing a willingness to re-engage. Path analysis revealed the underlying mechanisms that promote re-engagement: *Perceived usefulness* emerged as the most critical determinant, followed by *Participation satisfaction*, both of which directly and positively influence residents' intentions to re-engage. Residents' initial participation experiences had an indirect effect on their re-engagement intentions. Specifically, more straightforward participation activities, earlier involvement in the process, and greater influence on decision-making all enhanced residents' willingness to participate again. Yet, the number of activities and stages involved did not significantly affect their re-engaging intention.

Regarding personal attributes, younger residents, homeowners, females, and those with higher incomes, flexible work types, and longer tenure in the neighborhood were more likely to re-engage. Education level, however, did not significantly affect re-engagement intentions. Among project-related factors, the level of investment warrants additional attention. Higher investment in rehabilitation projects can feasibly promote re-engagement, as it typically involves residents in more activities and at earlier phases, leading to greater participation satisfaction and, consequently, a stronger intention to participate again.

6.3 General conclusion and suggestions

FIG. 6.1 summarizes the root causes of uncertainty in the effectiveness of resident participation, as well as possible ways to promote residents' continued participation, as identified by this doctoral study. Specifically, to ensure effective **Initiation Participation**, the first pressing issue that requires urgent attention is the inadequate focus on and intervention in the conflicting interests and expectations among stakeholders. This oversight was found to cause geographically unequal participation opportunities, diminished resident awareness, and exclusivity in the participation processes. Secondly, an excessive delegation of governmental responsibilities and authorities had resulted in a pronounced concentration of power within community-based organizations (CBOs), leading to an irrational and unequal distribution of power among residents. Lastly, the management of information sharing was problematic, characterized by an over-reliance on and exploitation of CBOs for information accumulation and dissemination. This dependence marginalized other vital social entities, particularly local media, which introduced vulnerabilities into the information network and led to a homogenization of its content, ultimately undermining the diversity and resilience of the participation process. Meanwhile, to promote **Continuation Participation**, bridging the significant gaps between theoretical assumptions and actual practices is crucial. This entails addressing the discrepancies between scholarly expectations of empowerment levels and process sophistication and the actual preferences of residents.

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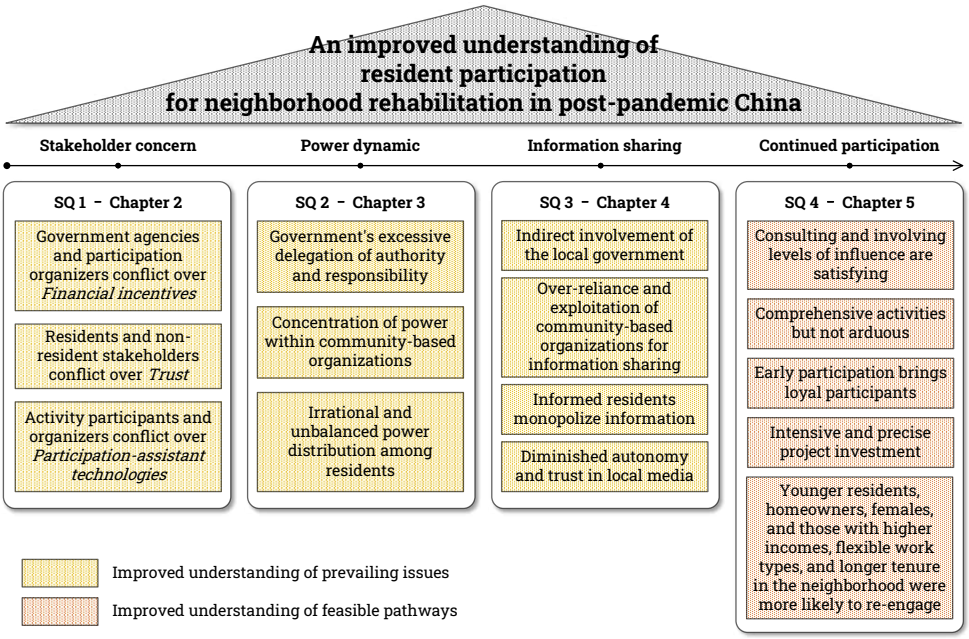

FIG. 6.1 An overview of the primary findings of this thesis

The findings from four empirical studies have been synthesized to address the main research question of this thesis: **How to improve resident participation for neighborhood rehabilitation in post-pandemic China?**

This thesis argues that improving resident participation in neighborhood rehabilitation requires responsible behavior of and the constructive relationships among organizers and, to a lesser extent, the active cooperation of the public. To this end, strategies were proposed to improve the behaviors and relationships among four key stakeholder groups crucial to resident participation organization: local government agencies (LG), community-based organizations (CBOs), design and construction practitioners (DC), and consulting parties (CP).

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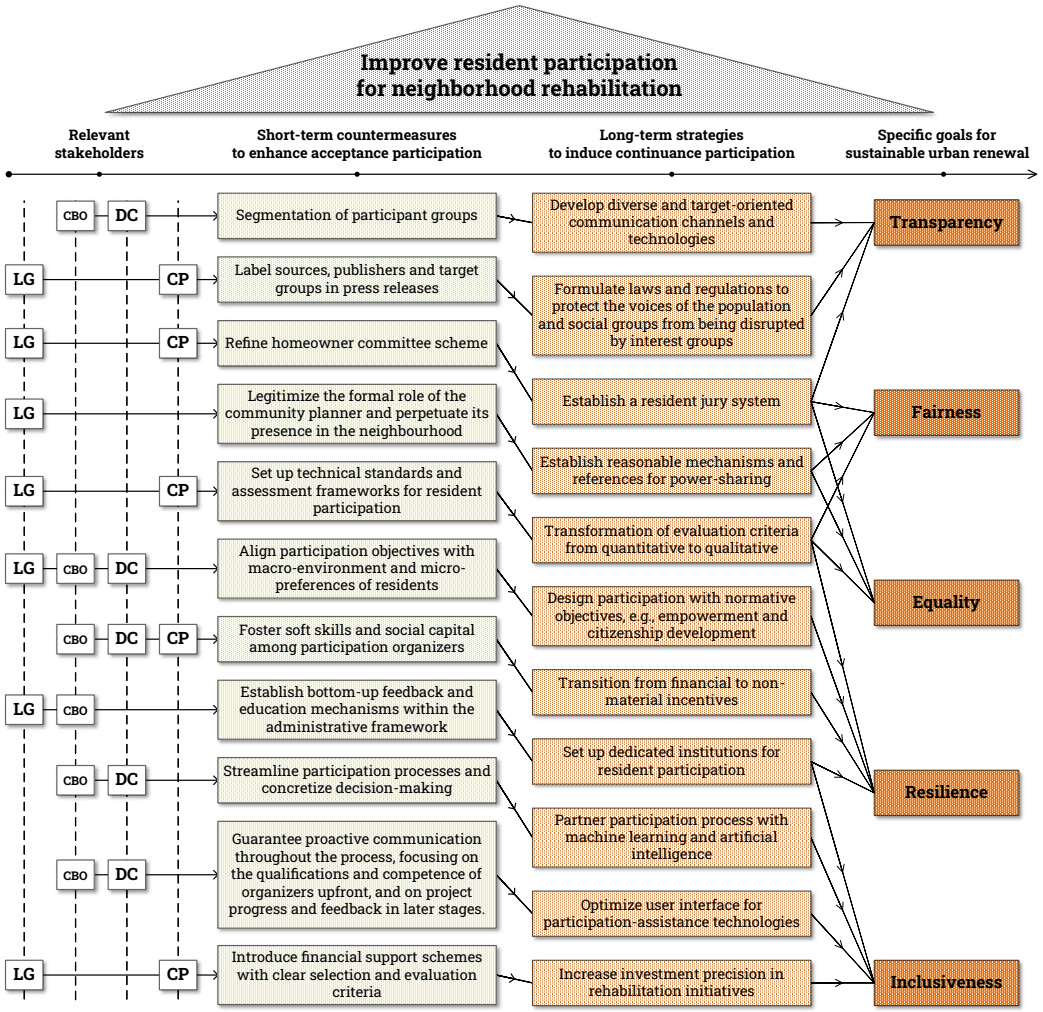

FIG. 6.2 Strategic roadmap for improving resident participation in neighborhood rehabilitation
Note: LG-government agencies, CBO-community-based organizations, DC-design and construction practitioners, and CP-consulting parties.

As depicted in FIG. 6.2, the proposed strategies consist of short-term countermeasures and long-term approaches, requiring constructive inter-group collaboration. Governments (LG) play multiple critical roles in this framework, encompassing visioning, legislation, policy formulation, opinion-shaping, resource pooling, and power allocation. Community-based organizations (CBOs) are essential for their expertise in operational knowledge, social capital, resource

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allocation, and coordination with residents and other stakeholders. In contrast, consulting parties (CP) and design and construction practitioners (DC) are tasked with more specialized functions. Consultants are primarily responsible for spearheading conceptual, intellectual, and technological innovations. Practitioners, on the other hand, concentrate on the practical implementation aspects. This delineation of responsibilities ensures that the expertise of each group is leveraged effectively, enhancing the practicability and feasibility of the strategies for effective resident participation.

Regarding the specific strategies, the short-term tactics aim to refine and enhance existing systems to improve residents' acceptance and experiences of participation. Specific measures include providing economic incentives for organizers, refining community planner systems, and specifying the responsibilities and authority of neighborhood and homeowner committees. The long-term strategies, on the other hand, advocate for comprehensive, transformative changes in both the philosophical and operational mechanisms to foster sustained resident involvement. This includes the recommendation to establish dedicated institutions across various administrative levels and create specialized channels for horizontal and vertical communication. Furthermore, the thesis recommends a paradigm shift in the objectives of resident participation from a substantive to a normative rationale, emphasizing empowerment and the development of citizenship over merely achieving project success. It also advocates transitioning from quantitative to qualitative measures in evaluating participation, incorporating subjective criteria such as satisfaction, usefulness, and reliability into the assessment framework. By synthesizing these short-term and long-term strategies, this thesis seeks to facilitate a shift in resident participation from episodic involvement to sustained engagement. Such improved participation is anticipated to enhance urban development processes, making them more transparent, equitable, fair, inclusive, and resilient.

6.4 Limitations and Directions for Future Research

This PhD study presents several limitations that open avenues for future research:

First and foremost, it is crucial to acknowledge that resident participation is by no means a panacea for achieving successful and sustainable neighborhood rehabilitation and wider urban renewal efforts. When participatory mechanisms lack clear objectives, robust planning, well-defined responsibilities, and effective coordination, they can undermine project timelines, intensify conflicts, erode social cohesion, and deplete trust. In some instances, these negative outcomes may surpass the challenges posed by the absence of public involvement. Consequently, further investigation is warranted to scrutinize the objectives, depth, and empowerment mechanisms of resident participation, with the aim of developing context-specific and evidence-based participatory frameworks.

Second, insufficient professional knowledge, narrow perspectives, individual interest orientations, and bounded rationality frequently constrain the quality of residents' contributions. These factors render community demands and decision-making susceptible to short-term thinking and bias. Moreover, resident attributes, such as income level, educational background, housing tenure, age cohort, and life stage, can amplify these disparities. Future studies might thus concentrate on illuminating the diverse behavioral patterns and underlying rationales of individual residents, alongside designing and evaluating targeted interventions.

Thirdly, this doctoral research employs the case of Wuhan, an economically constrained setting marked by a relatively conservative administrative style and emerging public engagement capacities, to extract insights from post-pandemic co-created urban renewal efforts. The recommendations offered in this thesis necessitate context-specific adaptation by policymakers and practitioners in different national and international environments, who are suggested to carefully assess local conditions before adopting or modifying these strategies. Additionally, it is advisable to apply the analytical frameworks proposed in this study to particular regions and stakeholder groups, thereby facilitating the formulation of focused and resilient enhancement strategies.

Finally, rapid but uneven urbanization has profoundly impacted China's rural landscape. With the continuous exodus of the rural population, many rural areas face significant challenges, as exemplified by the phenomenon of 'rural hollowing.' Addressing these issues presents an opportunity for future research that leverages the theoretical frameworks and methodologies developed in this doctoral study. Engaging rural residents in county development and governance could mitigate the adverse effects of rural flight, boosting the shared prosperity of China's urban and rural societies.

6.5 Reflections

6.5.1 Reflections on methodology

Data collection

As a doctoral research project that integrates various stakeholder perspectives and assumptions, interviewing is a pivotal tool. It facilitates the calibration and interpretation of data from other sources, such as literature reviews and questionnaire surveys. More crucially, it aids in understanding the antecedents and consequences of research findings. The empirical study conducted in Wuhan, China, validates the effectiveness of interviews in terms of validation, calibration, interpretation, induction, and deduction. Despite the ultimate success of interviewing a substantial number of participants across different chapters, the process was fraught with challenges during the preparation and execution phases.

During the preparation phase, significant challenges included recruiting and selecting non-resident interviewees. Initial attempts to identify contacts through the internet encountered a high rejection rate, primarily due to the absence of official endorsement from local organizations, leading to mistrust among potential participants. Additionally, employing the snowballing method to recruit non-resident interviewees proved problematic. Occasionally, recommenders lacked sufficient knowledge about the work experience of their nominees, or failed to convey the aims of the study. This resulted in nominees misunderstanding the research intentions, perceiving the questions as too sensitive, and opting not to participate.

During the interviews, common challenges included interviewees dropping out midway and providing overly general responses. The interview questions were intentionally broad to allow flexibility, but this sometimes led to difficulties in understanding the questions, causing some interviewees to drop out, deeming the study meaningless. Additionally, while some interviewees were responsive, their contributions often consisted of policy recaps or simplistic descriptions, lacking deeper personal insights. To address these challenges, several strategies were implemented:

1 **Clarifying Contribution Potential:** Recommenders were asked to explain their recommendations and discuss their nominees' potential contributions to the research.

2 **Refining Interview Questions:** The interview questions were continually revised to be more concise and direct. Additionally, feedback on the interview questions was solicited from interviewees at the end of each session to make further improvements.

3 **Guiding Specific Responses:** In response to vague answers, questions were refined to elicit more specific responses. For instance, instead of asking broadly about the benefits of resident participation, interviewees were prompted to provide real-world examples and elaborate on their personal experiences and observations.

The design and collection of questionnaire surveys were generally successful. This took place after the interviews, allowing for careful adjustments to address the issues encountered during the interview phase. To enhance the precision and professionalism of the questions, feedback was solicited from experts and academics. Special adjustments were made to the resident questionnaire based on input from community workers, ensuring clarity and comprehensibility across various educational levels. The questionnaire length was significantly reduced to accommodate the residents' willingness and ability to complete the survey. This adjustment was particularly important considering the high proportion of elderly and less educated residents in old neighborhoods.

For questionnaire collection, a dual approach was employed: paper questionnaires, distributed at COVID-19 testing sites frequented by residents during the outbreak control period; and electronic questionnaires, promoted through WeChat groups of rehabilitated neighborhoods with the help of neighborhood committees. This dual strategy proved effective, yielding 278 and 437 completed questionnaires for Chapters 2 and 5, respectively. Trap questions were included in both sets of questionnaires. These not only helped identify invalid responses but also acted as a deterrent against careless completion. As a result, the validity rates achieved were significantly higher than typical surveys in construction research, which usually see valid rates of 20-30% (Akintoye, 2000), reaching 78.4% and 84%, respectively. Moreover, analysis of the final samples revealed that participants in the online questionnaire were predominantly under 50, with incomes above the city median, indicating a potential bias towards younger, more affluent respondents. The hardcopy questionnaire effectively counteracted this bias, ensuring a more representative demographic spread.

Reflecting on lessons learned from data collection and thesis writing, the author advocates for the use of mixed research methods in interdisciplinary quantitative studies, even for seemingly straightforward inquiries like “Does A affect B.” Interviews enrich these studies, adding depth and context to numerical data and experimental research findings. Additionally, the design of the research process itself is crucial. The author recommends adopting an iterative research design, where early findings inform and refine subsequent research methods and questions. In this research, employing an iterative approach not only expedited the data collection process but also enhanced the relevance and quality of the findings.

Regarding research subjects, the author suggests that studies on resident participation could broaden their focus to include organizers such as community workers, designers, constructors, NGOs, and the media. Existing research centers on the interaction between residents and the government, neglecting the pivotal role these organizers play in facilitating participation activities. This PhD study reveals that the government’s role in directly facilitating resident participation is limited. Instead, residents’ behaviors and attitudes are significantly shaped by their interactions and relationships with these organizers. Therefore, a detailed exploration and analysis of organizers’ behaviors is essential for effectively translating government policies from theory into practice.

Data analysis

This PhD research showcases the effective application of various analytical methods across its chapters. Chapter 2 illustrates the capability of one-way and two-way analyses of variance (ANOVAs) to detect differences in perceptions among stakeholder groups. This statistical method proved essential in understanding the varied perspectives that different groups held.

Chapters 3 and 4 highlight the utility of ATLAS.ti, a robust tool for data collation and synthesis. This software facilitated inductive and deductive content analysis of qualitative data, streamlining the extraction of pertinent information from diverse sources, including papers, government documents, project reports, interview transcripts, audio recordings, and photographs. ATLAS.ti significantly reduced the labor involved in the tripartite validation of data, enhancing efficiency in data handling.

In Chapter 4, the limitations of Social Network Analysis (SNA) in describing the nature of relational influences were successfully addressed by integrating Ecological Network Analysis (ENA). This combination improved the explanatory power of

SNA, with findings from both methods corroborating each other. While SNA can be conducted using various established software tools like UCINET, NetMiner, Gephi, Pajek, and VOSviewer, ENA lacks dedicated computational and visualization software. To address this gap, custom scripts in Python and advanced mapping techniques were employed to perform the ENA effectively.

Chapter 5 applied path analysis to investigate how acceptance participation experiences affect residents' intentions to re-engage in neighborhood activities. The path analysis demonstrated its efficacy and accuracy in processing complex relational data, with Amos Graphics used for visual representation. However, enhancing the visualization and user interface of Amos Graphics is recommended to better present and interpret study results, thus improving readability and user experience for researchers and their potential audience.

6.5.2 Reflections on theories

Public participation research occupies a unique niche, functioning more as an initiative and paradigm than a standalone theoretical framework. This field does not generate theories independently but utilizes established theories from management, sociology, psychology, and economics to tackle specific empirical challenges. In line with this standing point, this doctoral research integrates the success factor concept, social network theory, stakeholder theory, and expectation-confirmation theory to probe issues and strategies within the Chinese context.

Notably, this study deliberately avoids an economic perspective, primarily due to concerns about the transient nature of financial incentives and their potential to foster superficial rather than substantive behavioral changes. This decision is also informed by concerns about the prevalent free-riding issues in China's current educational and literacy levels. Furthermore, using financial incentives might prove counterproductive, particularly for individuals whose participation is driven by a sense of social responsibility or ethical considerations. Consequently, this research opts to identify challenges and devise solutions from managerial, sociological, and psychological perspectives, aiming to foster genuine behavioral change. However, constrained by time and resources, the investigation into psychological aspects remains limited to expectancy-confirmation theory, which is acknowledged as a preliminary exploration. Despite these limitations, the study advocates applying social psychological theories and concepts to understand and enhance public participation practices.

6.6 Contributions

6.6.1 Contributions to Knowledge

The theoretical contributions of this PhD research are summarized below:

A Definition of concept

This PhD research offers a clear definition of "effective participation," a concept that has previously suffered from a lack of clarity and precision, especially within the context of Chinese research. This contribution addresses and rectifies the ambiguities and deficiencies noted in prior studies, providing a foundational definition that can inform future research and practice in the field of public participation.

B Introduction of various analysis frameworks

- **A list of resident participation objectives.** In Chapter 2, the thesis presented a list of objectives for resident participation (Table 2.1). This enhances and adapts the framework initially proposed by Glucker, Driessen et al. (2013) for environmental impact assessments (EIA) to the context of urban renewal. This adaptation broadens the applicability of the original framework, extending its scope and confirming its relevance and effectiveness in a new domain.

- **A list of critical success factors for effective resident participation.** In Chapter 2, this thesis also compiled a comprehensive list of factors influencing resident participation (Table 2.2) and explored potential correlations among the factors. This list offers a clear overview of the critical variables and examines their interrelationships, providing a robust foundation for further research into public participation.

- **Stakeholder Influence Model (SIM)**. In Chapter 3, the thesis introduced the SIM to analyze both the direct and indirect influences exerted by stakeholders, as depicted in FIG. 3.1. This model also explores stakeholders' objectives for exerting influence and the anticipated effects of their actions. The SIM's utility extends beyond its initial case study, offering valuable insights into various social phenomena characterized by significant stakeholder dynamics, where identifying stakeholders and governing their behaviors is crucial. The potential applications of the SIM are vast, spanning multiple management disciplines, including project management, process management, risk management, and organizational management.

- **Participation Description Framework (PDF)**. In Chapter 5, the thesis proposed the PDF, which delineates the participation experience across five dimensions. PDF enables a structured description and comparison of public participation or broader stakeholder engagement, addressing a significant challenge where such experiences have historically been difficult to quantify and assess systematically. Additionally, the versatility of the PDF extends far beyond its use in urban renewal projects. It can be applied to any area that involves human engagement. The model can be applied in energy transition, circular economy, transportation planning, climate policy, environmental assessments, and public policymaking.

- **Acceptance-Continuance Model (ACM).** In Chapter 5, this study introduced the ACM to explore how initial participation experiences influence subsequent re-participation, as illustrated in FIG. 5.1. Similar to the PDF, the ACM is not confined to applications in urban renewal. It has broader potential applications in any field requiring sustained public participation and contribution. This includes areas such as waste segregation, forest conservation, poverty alleviation, wasteland development, and public health. The versatility of ACM makes it a valuable tool for researchers aiming to understand sustained engagement across various critical social and environmental initiatives.

C Application of longitudinal analysis methodology

In Chapters 3 and 4, this study utilizes a longitudinal analysis methodology to examine the evolution of stakeholder behaviors throughout various phases of the project lifecycle. This approach, which is less common in research on resident participation and urban renewal, offers critical insights into the long-term dynamics and changes in stakeholder interactions and influences. By observing these patterns over time, the study provides a deeper understanding of how interventions and developments in the early phases can impact outcomes in later stages, offering a comprehensive view that enhances strategic planning and decision-making in urban renewal projects.

D Broaden the scope of urban renewal studies

This thesis represents a pioneering exploration of residents' re-engagement in urban renewal projects, providing critical insights into the continuity of participation. It introduces a novel quantitative approach for analyzing residents' intentions to re-engage, a methodology not previously explored in depth. The survey findings shed light on various cognitive and contextual factors that influence residents' decisions to participate again. By deciphering these mechanisms, this thesis substantially contributes to enhancing the engagement experience and improving resident satisfaction. This improved understanding is crucial for fostering sustained participation among residents in urban renewal efforts. Consequently, this research enriches the field by introducing new boundaries and perspectives, paving the way for future studies to build upon these foundational insights.

6.6.2 Contributions to Society

This doctoral research not only broadens the scope of theoretical studies but also delivers crucial insights applicable to practical scenarios:

A Appealing for Social Sustainable Urban Practices

By pinpointing and addressing gaps in resident participation, the study contributes to the development of socially resilient neighborhoods. The insights and recommendations encourage the creation of urban environments that prioritize the well-being and active participation of residents, ensuring that urban renewal efforts align more closely with the needs and expectations of its inhabitants.

B Uncovering Diversified Stakeholder Perceptions

The study conducts an in-depth analysis of the varying objectives of stakeholders involved in urban renewal projects. Understanding these varied perspectives assists stakeholders in better evaluating the advantages and drawbacks of their decisions, facilitating negotiations and actions that lead to mutually beneficial outcomes. This understanding can help streamline project implementation and enhance cooperation among parties, leading to more effective and inclusive urban renewal initiatives.

C Unveiling Mechanisms Underlying Re-Engagement

The research conducts a thorough analysis of the mechanisms influencing residents' willingness to re-engage in urban renewal activities. It identifies several reliable pathways through which this willingness is formed. Based on these insights, the study offers recommendations for governments and practitioners on designing and organizing participation activities. These activities foster long-term participation habits and promote substantive behavioral changes among residents.

Overall, this PhD research offers a robust empirical foundation and strategic guidance for enhancing resident participation in neighborhood rehabilitation. It is particularly relevant for regions still grappling with financial constraints resulting from significant disruptions like the 2008 economic crisis or the COVID-19 pandemic. This includes countries in Western societies, various cities in China, and developing urban areas in other developed nations. Through its comprehensive analysis and tailored recommendations, this research intends to be a stepping stone for partitioners seeking to foster sustained and meaningful resident involvement in urban renewal initiatives.

References

Akintoye, A. (2000). Analysis of factors influencing project cost estimating practice. *Construction Management & Economics*, *18*(1), 77-89.

Glucker, A., Driessen, P. P. J., Kolhoff, A., & Runhaar, H. (2013). Public participation in environmental impact assessment: Why, who and how? *Environmental Impact Assessment Review*, *43*, 104–111. https://doi.org/10.1016/j.eiar.2013.06.003

Appendices

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APPENDIX A

Profiles of the interviewees in this doctoral research

TABLE APP.A.1 Profiles of the interviewees in this doctoral research

Group	Position	Affiliation	Interview time (DD/MM/YY)	Interview data was used in Chapter							
				2	Cd.	3	Cd.	4	Cd.	5	Cd.
Local government (LG)	Section director	Department A at Wuhan Municipality	01/05/22	√	LG1	√	LG1			√	LG1
	Officer	Department B at Wuhan Municipality	03/06/22	√	LG2						
	Officer	Department C at Wuhan Municipality	29/04/22			√	LG2				
	Section director	Department A at District level	27/04/22	√	LG3						
	Section director	Department B at District level	10/05/22	√	LG4						
	Section director	Department C at District level	08/08/22					√	LG1	√	LG2
	Section director	Department D at District level	17/08/22					√	LG2		
	Section director	Department E at District level	27/09/22			√	LG3				
	Section director	Department F at District level	26/09/22			√	LG4				
	Section director	Department G at District level	22/09/22			√	LG5				
	Section director	Department H at District level	27/09/22			√	LG6				
	Officer	Department A at Sub-district Administrative Office	15/04/22			√	LG7	√	LG3		
	Officer	Department B at Sub-district Administrative Office	20/04/22	√	LG5			√	LG4		
	Section director	Department C at Sub-district Administrative Office	20/04/22	√	LG6	√	LG8	√	LG5		
	Section director	Department D at Sub-district Administrative Office	13/07/22			√	LG9			√	LG3

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TABLE APP.A.1 Profiles of the interviewees in this doctoral research

Group	Position	Affiliation	Interview time (DD/MM/YY)	Interview data was used in Chapter							
				2	Cd.	3	Cd.	4	Cd.	5	Cd.
Community-based organization (CBO)	Director	Neighborhood Committee A	21/04/22	√	C01	√	C01	√	C01		
	Director	Neighborhood Committee B	22/04/22	√	C02	√	C02				
	Director	Neighborhood Committee C	22/04/22	√	C03	√	C03				
	Director	Neighborhood Committee D	12/05/22			√	C04			√	C01
	Director	Neighborhood Committee E	02/08/22							√	C02
	Director	Neighborhood Committee F	15/08/22							√	C03
	Director	Neighborhood Committee G	20/08/22							√	C04
	Member	Neighborhood Committee A	26/12/23					√	C02		
	Member	Neighborhood Committee A	26/12/23					√	C03		
	Director	Homeowner Committee A	03/05/22	√	C04	√	C05	√	C04		
	Member	Homeowner Committee B	03/05/22			√	C06				
	Member	Homeowner Committee C	10/04/22								
	Director	Homeowner Committee D	07/04/22								
	Member	Homeowner Committee A	26/12/23								
	Member	Homeowner Committee A	26/12/23								
Planning and design professional (PD)	Chief planner	Design and Planning Institute A	18/04/22	√	PD1	√	PD1			√	PD1
	Planner	Design and Planning Institute A	22/04/22					√	PD1	√	PD2
	Team leader	Design and Planning Institute A	30/04/22								
	Architect	Design Company A	19/04/22	√	PD2	√	PD2				
	Chief architect	Design Company B	19/04/22	√	PD3	√	PD3				
	Chief architect	Design Company C	18/06/22			√	PD4				
	Senior architect	Design Company D	29/04/22					√	PD2		
	Planner	Design Company D	29/04/22			√	PD5				
	Designer	Design Company D	29/04/22								
	Section head	Design and Planning Institute B	29/06/22			√	PD6				
	Designer	Design and Planning Institute C	04/05/22	√	PD4						
	Surveyor	Construction Company A	17/08/22			√	PD7				
Implementation and construction unit (CD)	Section director	Local District Development Group A	23/04/22	√	DC1	√	DC1			√	DC1
	Manager	Local District Development Group B	24/04/22	√	DC2					√	DC2
	Manager	Construction Company A	15/05/22	√	DC3	√	DC2				
	Senior manager	Construction Company B	20/05/22	√	DC4	√	DC3				
	Vice manager	Construction Company C	07/07/22			√	DC4				
	Section head	Construction Company D	01/09/22			√	DC5	√	DC1		
	Team leader	Construction Company D	01/09/22					√	DC2		
	Team leader	Construction Company D	01/09/22								

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TABLE APP.A.1 Profiles of the interviewees in this doctoral research

Group	Position	Affiliation	Interview time (DD/MM/YY)	Interview data was used in Chapter							
				2	Cd.	3	Cd.	4	Cd.	5	Cd.
Consulting party (CP)	Professor	Local University A	15/04/22	√	CP1	√	CP1			√	CP1
	Researcher	Local University A	22/04/22								
	Researcher	Local University A	23/04/22			√	CP2				
	Professor	Local University B	16/04/22	√	CP2	√	CP3				
	Lecturer	Local University C	25/04/22			√	CP4				
	Director	NGO for Neighborhood Building	29/04/22	√	CP3	√	CP5			√	CP2
	Staff	Social Service Organization	05/05/22	√	CP4	√	CP6				
	Section head	Local Newspaper	05/05/22								
	Journalist	Local Newspaper	28/04/22			√	CP7				
	Journalist	Local Newspaper	15/05/22	√	CP5			√	CP1		
Neighborhood resident (NR)	Homeowner	Rehabilitated Neighborhood A	22/05/22	√	NR1			√	NR1	√	NR1
	Tenant	Rehabilitated Neighborhood A	22/05/22	√	NR2			√	NR2	√	NR2
	Homeowner	Rehabilitated Neighborhood A	26/12/23					√	NR3		
	Homeowner	Rehabilitated Neighborhood A	26/12/23					√	NR4		
	Homeowner	Rehabilitated Neighborhood B	27/05/22	√	NR3	√	NR1			√	NR3
	Tenant	Rehabilitated Neighborhood B	27/05/22	√	NR4	√	NR2				
	Shopkeeper	Rehabilitated Neighborhood B	27/05/22							√	NR4
	Shopkeeper	Rehabilitated Neighborhood B	28/05/22	√	NR5					√	NR5
	Homeowner	Rehabilitated Neighborhood C	02/08/22			√	NR3				
	Homeowner	Rehabilitated Neighborhood C	02/08/22					√	NR5		
	Tenant	Rehabilitated Neighborhood C	03/08/22			√	NR4				
	General public	Neighborhood D	30/05/22			√	NR5	√	NR6		
	General public	Neighborhood E	20/04/22			√	NR6			√	NR6
	General public	Neighborhood F	17/04/22	√	NR6	√	NR7				
	General public	Neighborhood G	18/04/22	√	NR7					√	NR7

APPENDIX B

Chapter 2

TABLE APP.B.1 Codebook of Interview Data: Data categorization

Data collection question	Role	Objective	Importance of factor			
			Whether	Why	How	To what extent
What is your role in neighborhood rehabilitation?						
What is your role in RP?						
What do you expect from organizing RP?						
Does this factor influence effective resident participation? How? To what extent? Why?						

TABLE APP.B.2 Codebook of Interview Data: Data coding

Question	Theme	Code
What is your role in rehabilitation? What is your role in RP?	Stakeholder group	Local government
		Community-based organization
		Planning and design professional
		Implementation and construction unit
		Consulting party
		Neighborhood resident
	Role	Role in rehabilitation
		Role in RP
What do you expect from organizing RP?	RP objective	See Table 2.1
Does this factor influence effective resident participation? How? To what extent? Why?	How	Motivate
		Hinder
	To what extent	Extremely unimportant
		Unimportant
		Neither unimportant nor important
		Important
		Extremely important
	Why	

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TABLE APP.B.3 General Ranking

Cd.	Influencing factors	Mean	SD	Rank
D1	Financial incentives	4.13	0.97	1
E1	Information disclosure and transparency	4.11	0.94	2
F1	Trust	4.1	0.93	3
D2	Rewards and punishments	4.06	0.99	4
G3	Credibility	4.02	0.87	5
E2	Intra-group communication	3.96	0.85	6
G2	Attitude	3.96	0.85	7
G1	Traits and capacity	3.96	0.9	8
B1	Appearance change	3.91	0.94	9
E3	Inter-group communication	3.89	0.85	10
B3	Environmental and ecology impact	3.88	0.9	11
F3	Equity and justice	3.84	1.01	12
H7	Community attachment	3.84	0.86	13
H4	Perceived benefits	3.8	1.18	14
F2	Empowerment	3.77	0.89	15
D4	Human inputs	3.76	0.94	16
D3	Equipment and infrastructure	3.74	1.01	17
B2	Economic impact	3.72	1.08	18
B4	Sociocultural impact	3.69	0.96	19
D7	Time allowance	3.68	1.01	20
C1	Goal setting	3.68	0.93	21
C5	Representation of the participant	3.66	1	22
E4	Evaluation criteria	3.65	0.96	23
C4	Participation approach	3.61	0.88	24
H6	Participation-related knowledge and skills	3.6	0.96	25
H2	Previous experience	3.6	0.9	26
H8	Resident characteristics	3.59	1.03	27
H5	Consistency with self-identity	3.58	0.91	28
H3	Perceived constraints	3.56	1.07	29
H1	Prejudice against the working team	3.53	1.17	30
A1	Policy environment	3.52	1.11	31
D5	Participation-assistance technologies	3.48	1.15	32
D6	Participant education	3.48	1.05	33
C3	Timing to participate	3.45	1.12	34
C2	Task allocation	3.33	0.92	35
A2	Administration arrangement	3.31	1.08	36
A3	Sociocultural environment	3.13	1.17	37

TABLE APP.B.4 Ranking of influencing factors stakeholders with different roles in neighborhood rehabilitation

Factors	Local government		Community-based organization		Planning and design professional		Implementation and construction unit		Neighborhood resident		Consulting party	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
E1	4.09	1	4.11	5	3.88	7	4.17	2	4.22	10	4.18	5
B1	4.06	2	3.77	25	3.58	19	4.00	7	4.02	22	4.06	15
E2	3.94	3	4.11	4	3.88	8	3.85	10	4.06	19	4.00	16
E3	3.88	4	4.14	3	3.69	12	3.75	11	3.96	26	4.00	17
D1	3.88	5	4.31	1	4.02	1	4.04	6	4.41	3	4.06	12
B3	3.79	6	3.94	15	3.67	13	3.96	8	4.13	16	3.67	29
H2	3.79	7	3.57	32	3.50	25	3.50	22	3.48	31	3.91	21
D2	3.76	8	3.91	18	3.96	2	4.06	5	4.24	8	4.36	1
F1	3.76	9	4.11	6	3.92	4	4.44	1	4.15	14	4.09	9
H4	3.73	10	3.94	14	3.92	3	4.13	4	2.98	35	4.36	1
G2	3.73	11	3.91	17	3.90	5	3.65	14	4.43	2	4.09	10
C1	3.70	12	3.51	33	3.46	28	3.29	25	4.26	7	3.82	24
G3	3.70	12	4.03	11	3.90	6	3.85	9	4.37	4	4.24	4
G1	3.70	14	4.06	7	3.73	11	3.65	13	4.30	6	4.36	3
D3	3.67	15	4.17	2	3.67	13	2.98	32	4.17	13	3.97	18
H7	3.64	16	4.03	9	3.50	25	3.62	16	4.19	11	4.15	6
H3	3.58	17	3.86	20	3.83	9	3.63	15	2.81	36	3.97	18
H8	3.58	18	3.86	20	3.54	21	3.58	19	3.43	32	3.67	30
B4	3.55	19	3.97	13	3.52	22	3.46	23	4.00	24	3.64	32
C3	3.55	19	3.49	34	3.40	30	2.69	36	3.87	28	3.91	22
B2	3.55	21	3.49	34	3.79	10	3.56	20	4.04	20	3.76	28
E4	3.52	22	3.89	19	3.52	22	3.23	28	4.11	18	3.67	30
A1	3.48	23	3.74	27	3.56	20	2.88	33	3.76	29	3.88	23
C4	3.45	24	3.69	28	3.31	33	3.23	27	3.98	25	4.12	8
C5	3.45	25	3.63	31	3.38	31	3.69	12	4.11	17	3.55	34
F3	3.42	26	4.06	7	3.63	17	3.27	26	4.52	1	4.15	7
F2	3.42	27	3.94	16	3.63	17	3.62	17	3.96	27	4.06	11
H1	3.39	28	3.69	28	3.50	25	4.17	3	2.61	37	4.06	12
H6	3.39	28	3.83	23	3.31	32	3.40	24	4.02	22	3.61	33
D4	3.33	30	3.86	22	3.65	15	3.54	21	4.17	12	3.91	20
H5	3.33	31	3.77	26	3.29	34	3.58	18	3.74	30	3.76	26
A2	3.30	32	3.66	30	3.65	15	3.00	31	3.11	34	3.27	37
D7	3.27	33	4.03	9	3.50	24	3.15	29	4.13	15	4.06	12
D6	3.24	34	3.83	23	3.00	37	2.79	35	4.30	5	3.79	25
A3	3.21	35	3.29	37	3.42	29	2.21	37	3.24	33	3.76	26
C2	3.21	36	3.43	36	3.13	36	2.81	34	4.04	21	3.33	36
D5	2.85	37	3.97	12	3.17	35	3.15	30	4.24	9	3.33	35

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TABLE APP.B.5 Test of Homogeneity of Variances for Group Comparison

Co	Levene Statistic	df1	df2	Sig.	Comparison method
A1	1.766	5	249	0.120	ANOVA
A2	1.223	5	249	0.299	ANOVA
A3	2.832	5	249	0.017	Games Howell
B1	3.064	5	249	0.011	Games Howell
B2	5.103	5	249	0.000	Games Howell
B3	0.688	5	249	0.633	ANOVA
B4	0.836	5	249	0.525	ANOVA
C1	1.037	5	249	0.396	ANOVA
C2	2.649	5	249	0.024	Games Howell
C3	1.446	5	249	0.208	ANOVA
C4	1.265	5	249	0.280	ANOVA
C5	0.230	5	249	0.949	ANOVA
D1	2.839	5	249	0.016	Games Howell
D2	2.448	5	249	0.034	Games Howell
D3	2.154	5	249	0.060	ANOVA
D4	0.407	5	249	0.844	ANOVA
D5	2.349	5	249	0.042	Games Howell
D6	1.012	5	249	0.411	ANOVA
D7	1.632	5	249	0.152	ANOVA
E1	1.170	5	249	0.324	ANOVA
E2	1.262	5	249	0.281	ANOVA
E3	1.106	5	249	0.358	ANOVA
E4	1.217	5	249	0.302	ANOVA
F1	0.513	5	249	0.766	ANOVA
F2	0.848	5	249	0.517	ANOVA
F3	3.902	5	249	0.002	Games Howell
G1	0.129	5	249	0.986	ANOVA
G2	0.775	5	249	0.568	ANOVA
G3	1.186	5	249	0.316	ANOVA
H1	2.933	5	249	0.014	Games Howell
H2	1.029	5	249	0.401	ANOVA
H3	3.795	5	249	0.002	Games Howell
H4	6.112	5	249	0.000	Games Howell
H5	0.721	5	249	0.608	ANOVA
H6	3.243	5	249	0.007	Games Howell
H7	1.328	5	249	0.253	ANOVA
H8	1.977	5	249	0.083	ANOVA

APPENDIX C

Chapter 4

TABLE APP.C.1 Questions used in in-person survey and focus group discussion

Section 1: Level of information possession							
Question		Response					
1	For the following types of information, to what extent are you informed? (1 - No knowledge, 2 - Poor knowledge, 3 - Average knowledge, 4 - Good knowledge, 5 - High knowledge)	1	2	3	4	5	
	a. Policy and regulations	☐	☐	☐	☐	☐	
	b. Administrative arrangement	☐	☐	☐	☐	☐	
	c. Project information	☐	☐	☐	☐	☐	
	d. Indigenous knowledge and experience	☐	☐	☐	☐	☐	
	e. Objectives and concerns	☐	☐	☐	☐	☐	
	f. Design information	☐	☐	☐	☐	☐	
	g. Construction information	☐	☐	☐	☐	☐	
	h. Management information	☐	☐	☐	☐	☐	
	i. Participation information	☐	☐	☐	☐	☐	
Section 2: Network questions							
In *Phase I* Intention and Setup:							
2	Please select from the following list of stakeholders with whom you exchanged project information:						
3	In what Direction? (R – receive, P – provide, RP – both occurred)						
4	How frequently was information shared? (1 - Shared only once, 2 - Shared two to three times, 3 - Shared multiple times, but not weekly, 4 - Shared once a week, 5 - Shared several times a week)						
	Stakeholder list (skip the row if no information was shared with this stakeholder)	Direction (Q3)			Frequency (Q4)		
		R	P	RP	1	2	3	4	5
	(1) Bureau of Housing Management	☐	☐	☐	☐	☐	☐	☐	☐
	(2) Bureau of Finance	☐	☐	☐	☐	☐	☐	☐	☐
	(3) Natural Resources and Planning Bureau	☐	☐	☐	☐	☐	☐	☐	☐
	…	☐	☐	☐	☐	☐	☐	☐	☐
	(29) Homeowner	☐	☐	☐	☐	☐	☐	☐	☐
	(30) Tenant	☐	☐	☐	☐	☐	☐	☐	☐
	(31) The public	☐	☐	☐	☐	☐	☐	☐	☐
In *Phase II* Mapping and Assessment:							
…							

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TABLE APP.C.1 Questions used in in-person survey and focus group discussion

In *Phase V* Operation and Maintenance:									
2	Please select from the following list of stakeholders with whom you exchanged project information:								
3	In what Direction? (R – receive, P – provide, RP – both occurred)								
4	How frequently was information shared? (1 - Shared only once, 2 - Shared two to three times, 3 - Shared multiple times, but not weekly, 4 - Shared once a week, 5 - Shared several times a week)								
	Stakeholder list (skip the row if no information was shared with this stakeholder)	Direction (Q3)			Frequency (Q4)				
		R	P	RP	1	2	3	4	5
	(1) Bureau of Housing Management	☐	☐	☐	☐	☐	☐	☐	☐
	(2) Bureau of Finance	☐	☐	☐	☐	☐	☐	☐	☐
	(3) Natural Resources and Planning Bureau	☐	☐	☐	☐	☐	☐	☐	☐
	…	☐	☐	☐	☐	☐	☐	☐	☐
	(29) Homeowner	☐	☐	☐	☐	☐	☐	☐	☐
	(30) Tenant	☐	☐	☐	☐	☐	☐	☐	☐
	(31) The public	☐	☐	☐	☐	☐	☐	☐	☐

TABLE APP.C.2 Centrality index of stakeholders in Jiaoweiyuan rehabilitation

	Out-degree					In-degree					Out-closeness					In-closeness					Betweenness				
	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V
Municipal Bureau of Housing Management	0.20	0.00	0.00	0.05	-	0.08	0.00	0.05	0.00	-	0.47	0.00	0.05	0.48	-	0.45	0.00	0.09	0.00	-	0.00	0.00	0.00	0.01	-
Municipal Bureau of Finance	0.00	-	-	-	-	0.00	-	-	-	-	0.00	-	-	-	-	0.00	-	-	-	-	0.00	-	-	-	-
Municipal Bureau Natural Resources and Planning	-	-	0.00	0.00	-	0.08	-	0.05	0.00	-	0.43	-	0.05	0.00	-	0.58	-	0.09	0.00	-	0.00	-	0.00	0.00	-
District Bureau of Housing Management	1.00	0.59	0.97	0.48	0.50	1.00	0.69	0.78	0.68	0.71	1.00	0.68	0.89	0.84	0.85	1.00	0.86	0.87	1.00	1.00	1.00	0.25	0.45	0.84	0.70
District Bureau of Finance	0.24	0.10	0.23	0.12	0.00	0.17	0.14	0.19	0.08	0.00	0.57	0.09	0.21	0.55	0.08	0.55	0.14	0.26	0.41	0.00	0.23	0.00	0.00	0.00	0.00
District Branch of Natural Resources and Planning Bureau	0.28	0.18	0.16	0.10	-	0.38	0.22	0.19	0.05	-	0.60	0.45	0.32	0.58	-	0.77	0.52	0.35	0.37	-	0.06	0.02	0.02	0.02	-
District Bureau of Administration and Approval	-	0.00	0.10	0.10	-	-	0.00	0.16	0.14	-	-	0.00	0.42	0.55	-	-	0.00	0.52	0.37	-	-	0.00	0.00	0.06	-
Commission of Development and Reform of the District	0.36	0.10	0.26	0.05	-	0.38	0.28	0.38	0.11	-	0.60	0.14	0.21	0.23	-	0.71	0.71	0.74	0.33	-	0.04	0.04	0.02	0.01	-

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TABLE APP.C.2 Centrality index of stakeholders in Jiaoweiyuan rehabilitation

	Out-degree					In-degree					Out-closeness					In-closeness					Betweenness				
	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V
District Bureau of Water and Lakes	-	0.18	0.19	0.17	-	-	0.14	0.14	0.19	-	-	0.50	0.21	0.71	-	-	0.48	0.22	0.63	-	-	0.00	0.00	0.01	-
District Bureau of Parks and Landscaping	-	-	0.10	0.02	-	-	-	0.00	0.00	-	-	-	0.21	0.45	-	-	-	0.00	0.11	-	-	-	0.00	0.00	-
Fire Rescue Brigade of the District	0.04	0.15	0.16	0.12	-	0.04	0.14	0.16	0.14	-	0.43	0.32	0.21	0.52	-	0.45	0.14	0.22	0.44	-	0.00	0.00	0.00	0.00	-
District Bureau of Public Security	0.04	0.15	0.16	0.12	-	0.04	0.14	0.16	0.14	-	0.43	0.32	0.21	0.52	-	0.45	0.14	0.22	0.44	-	0.00	0.00	0.00	0.00	-
Subdistrict Administrative Office	0.33	0.54	0.81	0.67	0.13	0.36	0.50	0.68	0.70	0.29	0.86	0.82	0.89	1.00	0.55	0.76	0.76	0.87	0.89	0.64	0.03	0.31	0.55	0.76	0.02
Subdistrict Branch of Urban Management and Law Enforcement	0.32	0.23	0.19	0.43	-	0.21	0.14	0.05	0.43	-	0.57	0.50	0.32	0.77	-	0.55	0.29	0.17	0.70		0.06	0.00	0.00	0.28	-
Neighborhood Committee	0.92	1.00	0.81	1.00	1.00	0.82	1.00	0.73	1.00	1.00	0.96	1.00	0.79	0.97	1.00	0.91	1.00	0.83	0.93	1.00	0.53	1.00	0.51	1.00	0.60
Community worker	0.48	0.36	0.39	0.62	0.70	0.33	0.36	0.14	0.51	0.57	0.57	0.32	0.11	0.68	0.75	0.48	0.38	0.13	0.33	0.64	0.01	0.04	0.00	0.11	0.34
Self-governance Group	0.24	0.28	0.29	0.33	0.43	0.08	0.25	0.14	0.30	0.33	0.60	0.27	0.05	0.48	0.58	0.39	0.33	0.13	0.22	0.45	0.00	0.01	0.00	0.00	0.00
Planner	0.52	0.10	0.16	-	-	0.71	0.11	0.14	-	-	0.83	0.36	0.58	-	-	0.97	0.29	0.61	-	-	0.30	0.05	0.18	-	-
Architect	-	0.05	0.71	0.36	-		0.14	0.51	0.22	-		0.18	1.00	0.77	-	-	0.57	0.87	0.52	-	-	0.02	1.00	0.08	-
Surveyor	0.20	0.38	-	-	-	0.25	0.42	-	-	-	0.77	0.64	-	-	-	0.81	0.52	-	-	-	0.08	0.23	-	-	-
Implementation unit	-	0.64	1.00	0.74	-	-	0.67	1.00	0.89	-	-	0.91	1.00	0.97	-	-	0.95	1.00	0.96	-	-	0.98	0.79	0.93	-
Constructor	-	-	-	0.57	-	-	-	-	0.92	-	-	-	-	0.77	-	-	-	-	0.81	-	-	-	-	0.27	-
Original property owner (work unit)	0.08	0.00	0.00	-	-	0.08	0.08	0.05	-	-	0.43	0.09	0.21	-	-	0.42	0.14	0.13	-	-	0.00	0.00	0.00	-	-
Property management company	-	-	-	-	0.70	-	-	-	-	0.71	-	-	-	-	1.00	-	-	-	-	1.00	-	-	-	-	0.64
Law firm	-	0.15	-	0.17	-	-	0.06	-	0.14	-	-	0.18	-	0.52	-	-	0.14	-	0.26	-	-	0.00	-	0.00	-
Non-government organization (NGO)	-	-	-	-	0.39	-	-	-	-	0.29	-	-	-	-	0.92	-	-	-	-	0.82	-	-	-	-	0.34
Local media	0.50	-	-	0.07	0.50	0.18	-	-	0.16	0.57	0.85	-	-	0.68	0.75	0.52	-	-	0.78	0.93	0.17	-	-	0.70	0.02
Research institute	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.38	0.57	0.60	0.86	0.18
Homeowner	0.50	0.28	0.10	0.45	0.63	0.55	0.33	0.46	0.62	0.71	0.79	0.41	0.00	0.94	0.85	0.67	0.71	0.61	0.52	0.86	0.08	0.15	0.01	0.26	0.23
Tenant	0.08	0.05	0.00	0.07	0.04	0.21	0.19	0.11	0.30	0.43	0.47	0.05	0.00	0.42	0.00	0.48	0.57	0.52	0.37	0.64	0.00	0.02	0.00	0.01	0.01
The public	0.00	0.00	0.00	0.06	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13	0.00	0.60	0.07	0.04

TOC

Curriculum Vitae

Yu LI (李钰)

Yu LI was born in 1994 in Wuhan, China. She completed her high school education at the No. 1 Middle School Affiliated with Central China Normal University in Wuhan. In 2017, she graduated with a bachelor's degree in architecture from Huazhong University of Science and Technology (HUST). Later this year, she traveled to the Netherlands and started her journey at the Delft University of Technology. In June 2019, Yu Li obtained her master's degree in Architecture, Urbanism, and Building Sciences. Following the COVID-19 pandemic's onset, she commenced her PhD studies in October 2020 at the Faculty of Architecture and the Built Environment, while transitioning from the Department of Architecture to the Management in the Built Environment (MBE). Under the supervision of Prof. dr. ir. Henk Visscher, Dr. Queena Qian, and Dr. ir. Erwin Mlecnik, her PhD thesis focuses on resident participation in neighborhood rehabilitation in China's post-pandemic era, employing managerial, sociological, and psychological perspectives, as well as cross-sectional and longitudinal approaches to improve understanding.

Publications

Journal articles

Li, Y., Tao, Y., Qian, Q. K., Mlecnik, E., & Visscher, H. J. (2024). Critical factors for effective resident participation in neighborhood rehabilitation in Wuhan, China: From the perspectives of diverse stakeholders. *Landscape and Urban Planning*, *244*, 105000. https://doi.org/10.1016/j.landurbplan.2023.105000

Li, Y., Zhuang, T., Qian, Q. K., Mlecnik, E., & Visscher, H. J. (2024). From acceptance to continuance: Understanding the influence of initial participation experience on residents' intentions to continue participation in neighborhood rehabilitation. *Cities*, *147*, 104788. https://doi.org/10.1016/j.cities.2024.104788

Li, Y., Zhu, P., Mlecnik, E., Qian, Q. K., & Visscher, H. J. (2024). Dissemination, manipulation or monopolization? Understanding the influence of stakeholder information sharing on resident participation in neighborhood rehabilitation of urban China. *Land Use Policy*, 147, 107359. https://doi.org/https://doi.org/10.1016/j.landusepol.2024.107359

He, S., & **Li, Y**. (2024). Understanding Impacts of Neighbourhood Micro-Renewal Through a Lens of Place Value: A Case Study of Wuhan, China. *Land*, 13(11), 1910. https://doi.org/10.3390/land13111910

van Bergeijk, H. D., Zhu, P., Zhu, Y., & **Li, Y.** (2023). The Problem of Meaning in Architecture: A Conversation with Herman Hertzberger (**建筑的意义：与赫尔曼·赫茨伯格的对话**.) *The Architect*, 2023/3(223), 69. https://kns.cnki.net/kcms2/article/abstract?v=e9e-pYHXmffAq1DoU9VNO1iZSsSp7QQAHymX263JlHtd71BUPpuXCaBDc4RrtR5-iIepf2KtuMwB6t9OcKunSxrbbqRFLAU_FdlGdkdO8kVYKrUqD8gKIUcrdUzctcli65844ocPno3uEJqWYnQV6Bg0_cBa6Bj4GcT5JN4UIfEv5zXNch-Yhp9psaNxVpYP&uniplatform=NZKPT&language=CHS

Li, Y., Zhu, P., Qian, Q. K., Mlecnik, E., & Visscher, H. J. Understanding Stakeholder Influence on Resident Participation in Neighborhood Rehabilitation: The Case of Wuhan, China. Review in progress for the journal *Environmental Science and Policy*.

Conferences

Li, Y., Qian, Q. K., Mlecnik, E., & Visscher, H. J. (2021). Critical Success Factors for Effective Resident Participation in Community Retrofit: A Systematic Review, European Network for Housing Research 2021, online, 30 Aug – 02 Sep 2021. https://pure.tudelft.nl/ws/portalfiles/portal/157494622/ENHR2021_Full_Paper_version_2_Yu_Li.pdf

Li, Y.(2024). Stakeholders' expectations in waterfront regeneration: systematic review and comparative study, 20th International Planning History Society (IPHS) Conference, 02 July – 05 July 2024.

25#05

Improving Resident Participation for Neighborhood Rehabilitation in Post-pandemic China

From Initiation to Continuation

Yu Li

In alignment with Sustainable Development Goal (SDG) 11, particularly Target 11.3 on inclusive and sustainable urbanization, many countries and regions now regard public participation as a cornerstone of human settlements planning. China's recent neighborhood rehabilitation initiatives likewise prioritize resident engagement, though the COVID-19 pandemic has introduced new obstacles and reconfigured participatory processes.Against this backdrop, this thesis investigates resident participation for neighborhood rehabilitation in post-pandemic China. Drawing on established theories of public participation and neighborhood revitalization, it proposes a conceptual framework centered on stakeholder concerns, power relations, and information sharing, and examines mechanisms that foster sustained resident involvement. Wuhan, a developing city and the initial epicenter of COVID-19, serves as the case study. Results identify 37 key concerns, each subject to varied stakeholder perceptions. Power operates through multiple channels, shifting across project phases. Despite frequent information sharing, exploitation and competition persist. Organizers, particularly community-based organizations, play a critical role but face resource constraints, shifting power dynamics, and information manipulation. Straightforward participatory activities, early engagement, and greater influence increase resident willingness to stay involved. Nevertheless, opacity and exclusion, amplified by power imbalances and selective information control, remain pressing issues. Synthesizing the lessons and insights, the thesis concludes with short- and long-term measures to "enhance inclusive and sustainable urbanization and capacity for participatory, integrated, and sustainable human settlement planning and management (SDG 11.3)."

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