Understanding stakeholders' concerns of age-friendly communities at the briefing stage: A preliminary study in urban China

Abstract:

Purpose: This study aims to identify the stakeholders and critical factors (CFs) of promoting age-friendly communities (AFCs), discuss the relationship between the stakeholders and CFs, and develop a preliminary framework for the briefing stage of promoting AFCs in urban China.

Design/methodology/approach: Stakeholders and CFs were identified through literature review and document analysis. The Delphi method was used to screen the extracted stakeholders and CFs. The focus group methodology was applied to obtain evaluation matrices of relationships between stakeholders and CFs. A two-mode social network was formed to analyse the evaluation matrices generated.

Findings: Results of the analyses indicate that local governments and policymaking institutions, together with project investors, obtained high prioritisations in the stakeholders' group, whilst senior citizens and caregivers appear to rank last. For CFs, communities' environmental factors receive the most attention from stakeholders.

Research limitations/implications: Results of the analyses can only show similarities of the participating stakeholders' opinions on their concerns, and provide researchers and practitioners with initial ideas on analysing stakeholders and CFs at the briefing stage of promoting AFCs. For a specific project, the concerns and prioritisations would change. Diverse voices are necessary and case studies are in need.

Practical implications: Challenges in promoting AFCs in urban China are discussed, and a preliminary framework of the briefing stage is developed for practitioners to follow when promoting AFCs.

Originality/value: This study discusses which CFs should be considered priorities and what consensuses are generally reached by stakeholders. CFs are utilised to interpret stakeholders' relationships, influences and concerns on AFC projects when conducting the social network analysis (SNA).

Keywords: Age-friendly community (AFC), Briefing stage, Critical factor (CF), Focus group discussion, Social network analysis (SNA), Stakeholder

1 Introduction

Rapid ageing has become one of the greatest global challenges in the 21st century, thereby urging urbanised cities to make changes accordingly. The United Nations et al. (2017) predicted that senior citizens will outnumber children aged 0 to 9 by 2030, and the trend will continue when people aged 60 or over outnumbers young people aged 10 to 24 in 2050. Globally, making cities and communities age-friendly will facilitate the achievement of the sustainable development goals of the World Health Organisation (WHO), and develop cities and communities into inclusive and equitable places for vulnerable groups, such as senior citizens, to live in. Consequently, this development will benefit everyone in the near future (WHO, 2018).

For developing countries, such as China, promoting age-friendly communities (AFCs) is considerably critical because medical care, welfare system and urban-rural integration issues have not been substantially addressed (Sun et al., 2017). Moreover, the Chinese society relies on the young generations regarding social and economic development in the past decades; hence, the infrastructure development and provision

of social services are generally formed on the basis of young people's needs (Wu and Qu, 2015). Therefore, the special requirements of senior citizens are likely to be overlooked. Currently, *The Global Network for Age-friendly Cities and Communities* (Global Network) contains 18 Chinese members. Membership in the Global Network is a commitment to making cities and communities age-friendly, rather than merely achieving a designation (WHO, 2018). Given that the Chinese government has released guidelines on promoting age-friendly environment in 2016, such cities in Mainland China as Shanghai, Wuhan, Hangzhou and Qingdao also exert efforts to promote AFCs apart from the Global Network members.

In the past decade, China has promoted AFCs at the central and local levels, in which Chinese guidelines have also indicated the basic principles, developing goals, major tasks and supporting measures (China National Committee on Ageing, 2016). To build AFCs in urban China, efficient cooperation from many sectors is needed, including governments, service providers, civil societies and senior citizens (Garon et al., 2014; Menec et al., 2014; Chan and Cao, 2015; Cho and Kim, 2016; Sun et al., 2017; Greenfield, 2018). Although stakeholders' roles and critical factors (CFs) that may influence the performance of AFC projects have been discussed, the majority of the studies related to promoting AFCs have focused on either stakeholders' or CFs' perspectives. Limited studies have been conducted to analyse the two aspects as a whole, for example, different priorities over CFs that stakeholders would make, similarities of stakeholders regarding their considerations over CFs. Besides, scholars have yet to reach a consensus on the standard classification of CFs (Liang et al., 2015). Given that no detailed guidelines have been proposed regarding stakeholders' responsibilities, fostering active collaborations amongst various stakeholders also lacks sufficient consideration.

To address the previously discussed research gaps, this study analyses the relationship of stakeholders and CFs, identifies the specific characteristics of Chinese stakeholders and their considerations towards CFs in building AFCs, discusses the challenges of promoting AFCs under a Chinese background and proposes potential strategies to mitigate the conflict amongst stakeholders at the briefing stage. The outcomes of this study indicate not only relationships between stakeholders and CFs, but stakeholders' influences and concerns on AFC projects. The results can serve as references to understand the relationship between stakeholders and CFs, thereby improving AFC constructing management processes in urban China.

2 Overview of stakeholders and CFs in promoting AFCs

A stakeholder can be defined as a group of people or an organisation that has direct or indirect influences on the construction process of AFC projects (Freeman, 2010). Meanwhile, CFs are considered as factors related to the performance of AFC projects and should be took into consideration when promoting these projects in urban areas.

2.1 Identification of key stakeholders and their roles in AFC projects

A long list of stakeholders is typical during a certain construction project, including but not limited to contractors, investors, owners, and the general public (Hu et al., 2015). This situation is also true when promoting AFC projects. Chan and Cao (2015) clarified the main stakeholders in promoting AFCs under an Eastern background are elders, policymaking institutions and advisory boards, district councils, universities and research institutions, business and/or private sectors, as well as NGOs and other social groups, when discussing the implementation of age-friendly initiatives in Hong Kong. Sun et al. (2017) compared two different promotion modes of AFCs in Hong Kong and Chiayi City in Taiwan, and indicated the major role of academic institutions. Cho and

Kim (2016) used Jangsu village in Seoul, South Korea as an example in elucidating the contributions of neighbourhood social capital when coupling age-friendliness with urban regeneration and discussing local-specific problems. Experiences from Western countries, such as Canada, the US, the Netherlands and Belgium, also highlighted the power of senior citizens and some local communities (Garon et al., 2014; Menec et al., 2014; Hu et al., 2015). Table 1 lists the key stakeholders engaged in AFC projects.

<Table 1 Key stakeholders included in AFCs projects>

The corresponding details of each stakeholder are explained as follows.

S1-Senior citizens: People aged 60 years old or over, live at their own home in the community and rely on both family care and community-based services.

S2- Caregivers: Caregiver can be professionals, such as doctors or nurses who are familiar with geriatric diseases and knows how to take care of seniors with limited *Activities of Daily Living* (ADL) levels. Additionally, caregivers can be non-professionals, such as relatives or friends of senior citizens, and should be typically at least 18 but below 60 years old. In this study, caregivers should also spend at least three months annually to live with senior relatives in the same city.

S3-Government, policymaking institutions: This stakeholder contains members from the national and/or local Committee on Ageing, Home Affairs Bureau, Planning and Natural Resources Bureau, amongst others.

S4-Research institutions: These institutions involve researchers who engage in real estate, affordable housing, construction management, gerontology, geriatrics, geriatric nursing, sociology and other related studies.

S5-Project investors and real estate developers: This stakeholder includes institutions or groups of people who provide financial support for AFC projects, companies or

groups of people who are responsible for real estate development work of AFCs.

S6-Urban planners, architects and interior designers: These professionals form companies or groups who are responsible for the planning and designing work of AFCs.

S7-Non-governmental organisations (NGOs): Members from the Ageing Development Foundation, Retired Staff Committee, Volunteer Association, or other community-based groups.

2.2 Importance of stakeholder analysis at the briefing stage

Briefing, which is also known as architectural programming in the US, is the first step in the design and construction process, in which the different stakeholders' project requirements are defined, clarified and articulated, and major commitments of resources are made (Kelly and Duerk, 2002; Olatokun and Pathirage, 2015; Yu and Shen, 2015). The participants in the briefing stage are typically from different parties because this session comprises communication and information exchange amongst clients, developers, architects, consultants and users of facilities (Olatokun and Pathirage, 2015). They are familiar with their fields of specialisations but not with all aspects related to projects. However, each party may need to make decisions out of their speciality in many cases (Kelly and Duerk, 2002). Even though consensus has been reached, in which the briefing stage is critical, limited time and attention have been allocated to this stage (Olatokun and Pathirage, 2015). Therefore, project performance has constantly been impacted by inadequate scope definition (Yu and Shen, 2015).

To ensure positive outcomes for construction projects, stakeholders should be understood and managed carefully (Yang et al., 2009). Therefore, stakeholder analysis at projects' briefing stage, which is as an essential component of the stakeholder management process, should be conducted because the decisions made according to the

analysis results would profoundly affect the following construction process (Jepsen and Eskerod, 2009; Freeman, 2010; Hu et al., 2015; Silverstein et al., 2019). Mitchell et al. (1997) proposed stakeholder theory, which indicates that in the stakeholder analysis, the legitimacy of relationships, urgency of demands, and power to influence are considered three important attributes of stakeholders. For AFC projects, stakeholder analysis enables developers to understand the requirements from other stakeholders and determine which requirements should be prioritised; Stakeholder analysis also provides opportunities to stakeholders to mitigate potential conflicts and avoid negative impacts. Furthermore, stakeholder analysis at the briefing stage would compensate limited information generated at the initial stage of constructing AFCs.

Although studies regarding stakeholder analysis have not depicted a complete image of practical methods, various approaches have become beneficial in facilitating the analysis process, such like focus group discussions, interviews, snow-ball sampling and social network analysis (Yang, 2014). Several methods, such as problem seeking, strategic needs analysis, strategic choice approach, scenario planning and design quality indicators, have been developed to assist in the briefing stage (Nina, 2014). These methods can also be utilised when conducting stakeholder analysis in the briefing stage.

2.3 CFs related to AFC project performance

CFs are typically treated as the inputs to the management system that would either directly or indirectly affect the level of project success, and such factors can be categorised into aspects including but not limited to technology, cash-flow management and quality management (Zuo et al., 2018; Chan et al., 2019). In this study, CFs represent the factors that have influences on the performance of AFC projects. Through the focus group studies in 33 cities in all WHO regions, eight major areas of age-friendly cities were identified as early as 2007, thereby eventually comprising a

checklist for cities and communities worldwide (WHO, 2007). WHO (2015) built a framework, which comprises equity, input, output, outcome and impact indicators, to measure the age-friendliness of cities and communities. Equity, accessibility of the physical environment and inclusiveness of the social environment are treated as the most important indicators (Lui et al., 2009; Neal and Wernher, 2014; Novek and Menec, 2014; Yu et al., 2019; Chen et al., 2020).

Apart from the framework and indicators built by WHO, which were normally applied when evaluating the age-friendliness of cities and communities, studies have also identified several factors that would influence the performance of AFC projects. Worldwide cases have indicated that political support consistently becomes a prerequisite. The absence of such support would eventually have repercussions on financial and human resources (Garon et al., 2014). Several studies have discussed having a common vision to enable stakeholders determine their directions (Garon et al., 2014; Menec et al., 2014; Arentshorst and Peine, 2018). Such factors as workload distribution, information sharing, and the public's levels of acceptance also play important roles in successfully promoting AFC projects.

According to the standards released by some cities in China, the indicators in measuring AFC projects can be typically categorised as follows: physical and social environments of communities, conditions of auxiliary facilities, provision of services for residents and management of human and resources (Harbin Municipal Civil Affairs Bureau, 2017; Shanghai Municipal Bureau of Quality and Technical Supervision, 2017; Jiaxing Municipal Bureau of Quality and Technical Supervision, 2019). Given the aforementioned guidelines, academic studies and Chinese standards, CFs that influence on the performances of AFC projects are divided into four categories in the current study: (1) financial, (2) policy, (3) coordinating and managing and (4) communities'

environmental factors. Table 2 lists the detailed CFs and the references to generate them.

<Table 2 CFs related to the AFC project performance>

3 Research methods

In addition to the literature review and document analysis, this study applied a combination of empiricism and rationalism perspectives (Yang, 2014) to analyse stakeholders' concerns of AFCs at the briefing stage. The empiricism perspective relies on the Delphi method and the focus group methodology, which were beneficial for collecting opinions according to the experts' and participants' experiences. By contrast, the rationalism perspective counts on the social network analysis (SNA) conducted to analyse the relationship between stakeholders and CFs.

3.1 Literature review and document analysis

A targeted literature review to identify and obtain an improved understanding of stakeholders and CFs in relation to promoting AFC projects was conducted. Scopus was selected for literature search as it is a reputable international database that facilitates access to wide coverage and high-quality of research publications (Meho and Rogers, 2008; Ekanayake et al., 2019; Wuni et al., 2019). The terms used for the literature search are: 'age-friendly community' + 'stakeholder' or 'critical factor'. The 'document type' is limited to 'article' and 'review' in Scopus, whist the 'language' is limited to 'English'. A total of 25 related publications were generated (as of February 2019). The snowballing method was also applied to generate 11 additional related publications from the reference lists of the searched ones.

Additionally, document analysis was carried out as a systematic procedure to obtain information from text and images that have been recorded generally without researchers' interventions (Bowen, 2009). In this study, documents released by international

organisations (e.g., WHO, UN, AARP Livable Communities in the US), standards and guidelines released by central and local governments in China were collected and analysed to cross-check the stakeholders and CFs identified from the literature review.

3.2 Delphi method

The Delphi method is accepted as an approach to achieve convergence of opinion from experts within certain topics, and it has been applied in a variety of fields such like needs assessment, program planning, and policy determination; One of the notable characteristics of the Delphi methods is that the process is subject anonymity so that effects from dominant individuals would be reduced (Hsu and Sandford, 2007).

After the targeted literature review and document analysis were conducted to identify stakeholders and CFs, the initial lists of six key stakeholders and 28 CFs were extracted and categorised by the authors in February 2019. Thereafter, 15 experts were invited to join a Delphi panel for screening the extracted key stakeholders and CFs. They were asked to add what they considered was missing, remove or combine what they thought was repetitive or unimportant and evaluate whether the four categories were suitable to accommodate the CFs identified. Eight of the invited experts returned their feedback by the end of March 2019, either through email, telephone or face-to-face discussion with the authors. The eight experts have over ten years of experience in construction management, urban planning or social policy. After the first-round screening by the eight responsive experts, the authors adjusted the stakeholders and CFs according to the comments collected and sent the revised list for a second-round screening. Two lists of seven stakeholders (Table 1) and 22 CFs (Table 2) were finalised in mid-April 2019.

A pilot study was conducted with four PhD candidates and one research assistant from a university on April 18, 2019 after the two-round Delphi-panel screening. The

participants are familiar with AFCC-related topics and their research areas contain construction management, urban planning, architecture and social science. The five participants' mother tongue is Chinese, and they have the good command of English. They were asked to read the instructions and complete the evaluation of the relationship between key stakeholders and CFs (results generated from the pilot study were not used for further analysis). Potential misunderstandings of the key stakeholders' roles and CFs were highlighted, whilst how to clarify them were discussed thereafter. Given that the survey would be conducted in Mainland China, the pilot study participants were also asked whether the Chinese translations of the key stakeholders and CFs were accurate.

3.3 Focus group methodology

Focus group methodology is widely used in qualitative research, not only because it can generate complex information at low cost and with the minimum amount of time, but due to the capacity of encouraging a variety of responses that provide better understandings of participants' attitudes regarding the proposed research topic (Liamputtong, 2011).

In this study, three focus groups were formed separately from May to July 2019. According to practical difficulties, not all stakeholders can be involved in the focus groups. The first focus group discussion was conducted in Shenzhen on May 18 with seven participants from various institutions whose occupations are urban planners and researchers. The second one was conducted in Guangzhou on May 31 with seven participants from the same architecture and engineering design company. This company has been responsible for several construction projects in communities and facilities for senior citizens in the past ten years, and the company mainly participates in the architectural and interior design tasks. The third one was organised in Qingdao

on July 20 with seven participants: one senior citizen, one caregiver, one urban planner, two architects and two real estate researchers.

All participants were asked which description of the seven listed stakeholders could best indicate their roles in AFC projects according to their research and practical experiences. Given that some participants had worked in more than one institution, they were encouraged to make two choices and highlighted the most suitable one. Table 3 show the details of the participants' occupations and their choices pertaining to the description of stakeholders.

<Table 3 Details of participants in the focus group discussions>

The relationship between the 7 stakeholders and 22 CFs identified was evaluated using a 7×22 matrix with 154 interactions. A five-point Likert Scale was used to indicate the extent by which CFs will be considered by the stakeholders when making decisions during the briefing stage of AFC projects. The participants were asked to use 1 to 5 when evaluating the relationship (1 = stakeholders 'will not consider CFs in most cases'; 2 = stakeholders 'will not consider CFs in some specific cases'; 3 = stakeholders 'hold a neutral attitude towards CFs'; 4 = stakeholders 'will consider CFs in some specific cases' and 5 = stakeholders 'will consider CFs in most cases').

Each focus group discussion typically last three hours and included the following steps. Firstly, the Delphi method was applied to collect individual evaluations from the participants regarding CFs considered by different stakeholders. This step would take one hour. Secondly, an open discussion was conducted to reach consensus amongst the participants. This step would take two hours, depending on how different the evaluation results were made during the individual session. Thirdly, the evaluation matrices of the relationships between stakeholders and CFs were obtained.

3.4 SNA

A two-mode social network model is beneficial to represent the relationship between two groups, and has been proposed to evaluate the relationship between individuals and their attributes (Liang et al., 2017). Yang (2014) summarised a five-step process of conducting SNA in construction management: (1) identifying the stakeholders of networks, (2) assessing meaningful and actionable relationships, (3) visualising the network through various software packages, (4) analysing network data using quantitative analysis methods and (5) presenting the results. Liang et al. (2015) (2017) followed this five-step process and conducted a two-mode SNA to integrate critical success factors analysis with the stakeholders, and discussed the stakeholders' influences on the energy retrofit projects in China. Lin et al. (2017) applied a two-mode SNA to investigate the powers of seven stakeholders with 35 social responsibility issues amongst the Hong Kong construction industry practitioners, and classified the seven stakeholders into five hierarchies according to power status rankings. Gan et al. (2018) explored 15 stakeholders' power over 13 barriers to the off-site construction adoption. Accordingly, the two-mode SNA results showed that the government and developers have the highest degree, betweenness and eigenvector centralities; Therefore, the two stakeholders in Chongqing, China are the most influential in the network.

The two-mode data involve two analytical techniques (Borgatti and Everett, 1997): The first converts the two-mode network into one-mode by projection matrix, for which the full range of analytical methods can be applied. The other uses techniques that could directly work with the two-mode data. Although some studies have assumed that the former causes information loss, Everett and Borgatti (2013) showed that data are not necessarily lost, provided dual-projection methods are used; Besides, such approaches often have conceptual advantages over direct ones. Liang et al. (2017) conducted a case

study of green retrofit in China by using the projection methods to analyse the two-mode network. They indicated that these methods are generally safe to use.

Therefore, this study adopted the projection method when converting the two-mode network data into one-mode. The degree, betweenness and eigenvector centralities were used to analyse the stakeholders' concerns on CFs. Cluster analysis was applied to categorise the stakeholders, particularly by considering their similarities at the briefing stage of AFC projects. The commercial software, *NetMiner 4.3* was used to analyse and visualise the collected data.

4 Results

A two-mode network of stakeholders' concerns on CFs was established according to the stakeholders and CFs identified in the literature review and document analysis, Delphi-panel screening session, and the links evaluated in the three focus group discussions. After conducting SNA, the results can be interpreted from the perspectives of stakeholders and CFs, as well as their relationships.

4.1 From the perspective of stakeholders

The stakeholders' concerns indicate that their prioritisation can be represented by the three types of centrality. That is, if a certain type of centrality values regarding different stakeholders are the same, then the ranks of stakeholders are calculated using the other types of centrality values. Table 4 shows the rankings. Hierarchical cluster analysis is also performed to categorise stakeholders according to their similarities. Figure 1 shows the tree diagrams generated using Ward's method (Milligan, 1981) through *NetMiner*. The results from the first and third round of discussions have some commonalities because S1 and S2, S3 and S7, S4 and S5 are grouped together as similar stakeholders, particularly according to their concerns in the briefing stage. Three stakeholder groups

are formed, although the locations of S6 are different. In the first round, the participants thought concerns of S6 are similar to those of S1 and S2. In the third round, the participants considered S4, S5 and S6 to be substantially similar to one another. In the second round, results show that two larger clusters are formed: S2, S7, S1and S4 are grouped as one cluster, whilst the remainder stakeholders are grouped as the others.

<Table 4 The prioritisation of stakeholders according to different types of centrality>

<Figure 1 Tree diagrams of stakeholders>

Although some differences exist amongst the three rounds of focus group discussions, the rankings of local governments and policymaking institutions (S3), project investors and real estate developers (S5) are considerably higher than others. These results are understandable because the central and local governments in China normally speak louder than other stakeholder groups, which is also true in developed countries, including but not limited to Canada, the US and South Korea (Greenfield et al., 2012; Chan et al., 2016; Cho and Kim, 2016). The reason is that the governments and policymaking institutions are working to provide financial support for AFC projects and facilitate communications between various agencies and organisations (Chan and Cao, 2015).

The rankings of research institutions (S4), urban planners, architects and interior designers (S6) in the first two rounds come after S3 and S5. For the third round, S6 ranked first. One possible reason is that three of the participants chose S6 as their first or second occupation and according to previous practical experiences, their suggestions were seriously considered by the governments and investors, thereby possibly affecting their opinions on the prioritisation of S6.

NGOs (S7) ranked fifth. The participants in the focus group discussions stated that although some associations, such as the ageing development foundations and

community-based services groups, may provide valuable ideas on the promotion of AFCs, the impact of NGOs are typically limited. The reason is that only a few organisations can receive sufficient social and financial resources or popularity, which would make a substantial difference. The majority of NGOs in Mainland China are governed and directed by local governments, thereby possibly limiting their influences.

Although senior citizens (S1) and caregivers (S2) are the actual 'end users' of AFCs, they were at bottom two rankings. This result is due partially to the fact that numerous senior citizens in Mainland China are relatively passive or do not receive sufficient information on how to be involved in civic affairs. Therefore, they are typically optimistic that policymakers can notice their requirements and make them satisfied (Xiang et al., 2020). Participants considered caregivers the offspring of senior citizens or paid domestic workers, instead of professional family doctors or nurses who are familiar with geriatric diseases. Thus, caregivers typically consider their parents' concerns. Accordingly, S1 and S2 show the highest similarities compared with all the other stakeholders. However, caregivers occasionally fail to completely understand seniors' real concerns even they exert every effort to ensure the healthy and happy lives of the latter. This outcome can explain the reason caregivers rank last.

4.2 From the perspective of CFs

The three types of centralities are also used to represent the importance of CFs to stakeholders. If a certain type of centrality values regarding the different CFs are the same, then the ranks of these CFs are calculated using the other types of centrality values. Table 5 shows the ranks of CFs. Although the ranks are not precisely the same, all seven stakeholders' concerns come to the communities' environmental factors because the ranks of these CFs are above ninth. The project objectives and target groups (CF11), which belongs to the category of coordinating and managing factors, was also

considered a priority by stakeholders. Particularly, the participants ranked CF11 third, eighth, and fifth in the three rounds.

The participants from the three-round discussions reached a consensus on the implementation of policies and strategies (CF6), which belongs to the category of policy factors, and ranked ninth. Although some stakeholders would consider factors belong to the financial or coordinating and managing categories priorities, the overall prioritisation of the two categories (except CF11) is relatively low when considering all stakeholders' opinions.

<Table 5 The prioritisation of CFs according to different types of centrality>

4.3 From the relationship between stakeholders and CFs

Figure 2 shows the macro view of the distribution of stakeholders and their concerns, where the square points in blue are stakeholders and the circular nodes in different colours indicate the four CF categories. After applying the projection method to convert the evaluation matrices, the results indicate a similarity of the stakeholders based on their concerns of CFs. In the correspondence map generated through *NetMiner* using multidimensional scaling, the stakeholder points are located nearby if they have similar concerns over CFs, whereas the CFs points are nearby if similar stakeholders show concerns to them. The stakeholders and CFs are close to each other if they have considerably strong links.

Although some differences exist, the three correspondence maps generated from the evaluation matrices indicated the communities' environmental factors, including the conditions of infrastructure (CF16), convenience of transportation (CF17), access to essential living service facilities (CF18), conditions of care facilities for senior citizens (CF19), conditions of medical facilities (CF20), layout of housing and accessibilities

for senior citizens (CF21), conditions of barrier-free facilities (CF22), are senior citizens (S1) and the caregivers' (S2) main concerns. Research institutions (S4) and NGOs (S7) have some similar concerns like the implementation of policies and strategies (CF6), coordinating system of public strategies (CF7) and clarity of stakeholders' common vision (CF12).

<Figure 2 Correspondence analysis of stakeholder-CF network>

During the focus group discussions, the concerns expressed by the participants from the government (S3) are mostly related to policy factors, whilst financial factors in the briefing stage were considered important by those from investing or real estate developing companies (S5). However, this result does not mean that the government only cares about the financial factors. The participants explained that in many regions, promoting AFCs through specific measures, such as repairing barrier-free facilities and installing elevators for ageing buildings, are wellbeing projects that should be pursued even without return on investment. Therefore, governments will focus considerably on policy-related issues to ensure that AFC projects can proceeded. Consequently, this situation is where conflicts typically exist between governments and investors.

Compared with S3 and S5, the consensus from the participants indicated that research institutions (S4) and urban planners, architects and interior designers (S6) care more about coordinating and managing factors, which would affect the communication and collaboration between the different stakeholders. In addition, the participants from research institutions considered the communities' environmental factors priorities. The reason is that the good conditions of infrastructures and other facilities will be beneficial to senior citizens' physical health. Urban planners, architects and interior designers (S6) think that such factors are important because they need to follow the design guidelines and be aware of the type of facilities needed in AFCs. Such issues are also the main

concerns from S1 and S2. Therefore, the similarity degree between S4, S6 and S1, S2 are relatively high.

5 Discussions

Some implications are suggested both in theory and in practice, such as the importance of understanding stakeholders' concerns on CFs, the challenges in promoting AFCs in urban China, and the necessity of building a framework of the briefing stage. Moreover, the limitations, contributions of this study, and future research directions are discussed.

5.1 Challenges in promoting AFCs under the Chinese background

Developing age-friendly cities and communities has become a significant theme in public policy since WHO released the age-friendly concept (Scharlach, 2012; Fitzgerald and Caro, 2014; Phillipson, 2015). The *China National Committee on Ageing* (CNCA) proposed the 'liveable environment' concept and implemented pilot projects in several cities and communities as early as 2009. CNCA also suggested the creation of the 'warm family' for senior citizens as an extension of the age-friendly concept. On the basis of the pilot projects, the 2012 version (implemented in 2013) of the '*Law of the People's Republic of China on Protection of the Rights and Interests of the Elderly'* introduced a new chapter titled 'liveable environment', thereby making the construction of a liveable environment a requirement from the legal aspect.

Although a breakthrough is reached that only four years were taken for the 'liveable environment' to develop from a theoretical concept to legal clauses, the construction stage of AFCs in China remains in the early phase. Many problems on the connections between the '*Law of the People's Republic of China on Protection of the Rights and Interests of the Elderly'* and other laws remain, including policies or strategies in construction. For example, no clauses in the *'Urban and Rural Planning Law of the*

People's Republic of China' (revised in 2007, implemented in 2008) mention liveable or age-friendly cities and communities. In the '*Regulation on the Construction of Barrier-Free Environments'* (released and implemented in 2012), the focus is on how to protect the disabled persons' rights and interests, and minimal attention has been provided for seniors, particularly those with limited ADL levels (Hu, 2014; Wu and Qu, 2015). Therefore, difficulties are experienced in promoting AFC projects in urban China without clear guidelines from the legal and strategic levels. Experiences has indicated that without the governments and policy making institutions (S3) working as a central authority, promoting AFCs would be bogged down and become ineffective (Woo and Choi, 2020).

The latest results of the national sampling survey (started in 2015, completed in 2016) on the living conditions of China's urban and rural older persons indicated that 58.7% of seniors considered their accommodations insufficiently age-friendly (Dang, 2018). For community-based facilities, 59.9% and 61.6% of senior citizens expressed dissatisfaction with the fitness places and living facilities (including the supply of water, gas, heating and electricity), respectively; 62.4% were dissatisfied with signposts and 76.4% were discontented with the public washrooms (Cheng and Hou, 2018). Senior citizens expect healthcare service (e.g. doctors' house visits) and daily life assistance (e.g. room cleaning) from their communities (Dang, 2018). A previous questionnaire type research conducted by the authors also implied this trend (Xiang et al., 2020).

The development of AFC projects is unbalanced in the urban area. The practical experiences in coastal or megacities, such as Qingdao, Guangzhou and Shanghai are considerably more mature than those in inland or small and medium-sized cities. Even for a certain city, imbalanced issues of promoting AFCs also incur in newly-constructed and formerly-built regions, as well as central and marginal areas, since the rapid

urbanisation leads to disparities in old and new urban neighbourhoods (Yu et al., 2019). For the ageing communities, especially those built before the 1990s, barrier-free facilities, particularly elevators inside residential buildings and ramps at entrances are substantially needed. The lack of facilities limited senior citizens' participation in outdoor activities, caused safety problems to those with limited ADL levels and brought pressure to governments (S3), investors (S5) and the designers (S6) who will be in charge of the AFC project construction. The senior citizens' sense of belonging and influence they obtain from the traditional Chinese culture have prompted them to prefer to 'ageing in place' after retirement (Xiang et al., 2020). Therefore, understanding senior citizens' (S1) requirements and deciding how to renovate their current accommodations to become age-friendly becomes one of the main challenges when promoting AFC projects in urban China. The earlier stakeholders are aware of such conditions, the more likely efficient solutions would be proposed.

Moreover, real estate projects on housing for seniors focused on needs from the wealthy ageing group. That is, numerous middle- and low-income senior citizens' needs are likely to be overlooked. From the three focus group discussions, the participants from the governments, real estate companies and design institutions, mentioned this phenomenon as a challenge. Particularly, the participants in the second-round discussion, who are from the same architecture and engineering design company, indicated that although the costs of apartments in these projects are relatively high for most seniors living in the urban area, the sales conditions remain optimistic. However, the wealthy seniors accounted for only a small percentage of the entire ageing group. For the remainder of the senior citizens, the fact is that they become old before getting rich, thereby depriving them of the ability to purchase such apartments and enjoy the related care services.

5.2 Implications of promoting AFCs in urban China

Evidently, understanding stakeholders' concerns with CFs would balance diverse interests, values and objectives, and information resources could be expanded to support initial decision-making related to such projects (Hu et al., 2015; King et al., 2020). A long-term goal for conducting studies on AFC stakeholders and CFs is to build an interactive world map, which contains resident-collected data, project results and other resources that would be shared by multi-stakeholders (King et al., 2020). Collaborations between them would facilitate the advancement of WHO and other organisations' visions in exploring a true path to make cities and communities worldwide age-friendly.

Figure 3 illustrates stakeholders' influences in promoting AFCs at the community and city levels, specifically according to the SNA results and participants' perceptions generated from the three rounds of focus group discussions. The solid arrows represent the direct influences and the dotted arrows are for the relatively indirect impacts.

<Figure 3 Stakeholders' influences in promoting AFCs>

Urban China's current patterns of promoting AFC projects can be divided into four main types: (1) allocating elderly-care facilities in the newly-constructed communities, (2) developing *Continuing Care Retirement Community* for senior citizens, (3) inserting or renovating community-based elderly-care facilities in the built regions and (4) redesigning spare buildings, including but not limited to factories, office buildings, and guesthouses, into elderly-care facilities. According to practical experiences, the third type is widely accepted by senior citizens because this type of community-based facilities can satisfy their needs of 'ageing in place'; Furthermore, these facilities are typically small-scale and require minimal investment, and the pattern is also easily replicated (Zhou and Li, 2015). Therefore, more private capitals inclined to invest in

AFC projects are currently exploring opportunities related to building or renovating these facilities. From the focus group discussions, the participants also considered this pattern as ideal for promoting AFCs.

5.3 A Framework of the briefing stage in promoting AFCs

Figure 4 depicts the main steps in the briefing stage, with stakeholders involved and CFs which should be considered. Taking inserting or renovating community-based elderly-care facilities in the built regions mentioned before as an example, the first task to be completed is accessing senior citizens (S1) and their caregivers' (S2) needs on the social and physical environment of communities (CF16~CF22). The reason is that they are the 'end user' of AFCs and are capable of providing developers (S5) and designers (S6) with first-hand information on which component of their current accommodations and communities should be renovated. Moreover, engaging S1 and S2 in the briefing stage would enhance their perceptions of autonomy, empowerment and collective agency because they witnessed how such ideas would lead to tangible improvements to their living environments (Buffel, 2019; King et al., 2019; 2020). This is also consistent with WHO's objectives of pursuing the *Global Age-Friendly Cities* project to focus on senior citizens' 'lived' experiences (WHO, 2019).

<Figure 4 A framework of the briefing stage in promoting AFCs>

After obtaining users' opinions, senior citizens' needs should be clarified according to different ADL levels and income conditions at the briefing stage. As indicated by participants from the three focus group discussions, the objectives of projects and target groups (CF11) are the stakeholders' prioritised considerations in addition to the communities' environmental factors. By completing the classification, the standards for service provision, facility operation and construction management can be easily set in an early period of the project. This undertaking would be beneficial to S1 and S2, as

well as S5 and S6. On the basis of the clear objectives of the AFC projects, governments and policymaking institutions (S3) can offer preferential policies (CF5~CF10) to S5, thereby ensuring effective resource utilisations (CF1~CF4).

During the briefing stage, stakeholders should clarify their responsibilities (CF11~CF15). According to the prioritisation and clustering results drawn from the three rounds of focus group discussions, S3 and S5 would be the suitable stakeholders to facilitate meetings and discussions amongst different stakeholders. Research institutions (S4) and NGOs (S7), as comparatively neutral components, are suggested to be the consultants to facilitate the conduct of prophase investigations with S1 and S2. They could provide valuable suggestions to S6 because they are considerably professional and familiar with expressing user requirements. Through a comprehensive research on user needs (Step 1), the classification of the project objectives and target groups (Step 2), together with the assignment of stakeholders' responsibilities (Step 3), the strategic plan of promoting AFCs would be formed mainly by S5 and S6 as the last step of the briefing stage. Potential conflicts between stakeholders would be prevented and the management process of building AFCs in China is likely to be improved.

5.4 Applications, limitations and future research directions

In theory, the SNA results generated from the focus group discussions indicate the priorities and similarities of stakeholders according to their concerns. Researchers can have some initial ideas, such like local governments and policymaking institutions obtained high prioritisations in the stakeholders' group, whilst senior citizens and caregivers appear to rank last even they are the actual users of AFCs, before conducting similar studies to explore the reasons behind. This study also emphasised the importance of fostering effective collaborations by carrying out the analysis of stakeholders and CFs during the briefing stage, since the earlier stakeholders are aware

of others' concerns, the more likely efficient solutions would be formed.

In practice, practitioners would follow the four-step framework developed in this study to understand the relationship between stakeholders and CFs. The challenges for promoting AFCs in urban China discussed in this study also imply stakeholders to make changes. For example, central and local governments would focus more on making effective connections between legal clauses and constructing strategies, together with providing policy and financial support to deal with the imbalanced developing issues in different regions. While for project investors and designers, dealing with issues regarding insufficient barrier-free and elderly-care facilities would be their major tasks when promoting AFCs by renovating the built communities.

It should be noticed that as no participants from NGOs finally managed to join the focus group discussions, their concerns were generated from the other stakeholders' past experiences of working or communicating with them, thereby possibly leading to some misunderstandings. The caregiver who participated in this study is not a professional one and focuses considerably on seniors' daily life. By contrast, professional caregivers focus substantially on healthcare issues. Diverse voices are needed in future studies. In addition, results generated from this study are general. For specific projects, stakeholders' attributes and CFs can change. To determine the specific issues that stakeholders would face and mitigating measures that they apply, further studies may start from organising different stakeholders who have completed an AFC project together to participate in the focus group discussion. Case studies should also be conducted to validate the proposed framework of the briefing stage in promoting AFCs.

6 Conclusions

China's population is growing old at a faster rate than nearly all other countries. The

effect of 37 years of *One-Child Policy*, combined with the substantial improvements in healthcare, have contributed in increasing China's life expectancy and decreasing birth rate. Promoting AFCs in the urban settings of China requires an efficient collaboration of many sectors, and efforts should be exerted to deal with a variety of issues arising from the working period.

The results generated in this study indicated that during the briefing stage, local governments and policymaking institutions (S3), together with project investors (S5) obtained a comparatively higher prioritisations, whist senior citizens (S1) and caregivers (S2) appeared to rank last amongst all seven stakeholders. For the CFs, the communities' environmental factors received the most attention from stakeholders. The main challenges of promoting AFCs in urban China are the lack of connection between legal clauses and constructing strategies, imbalanced development situations in different regions and insufficient barrier-free and elderly-care facilities in the communities. This study proposed a four-step briefing stage framework to promote AFCs in urban China, which contains main concerns and key stakeholders involved in each step. In spite of the limitations, this study enables researchers and practitioners to understand stakeholders and CFs, which would also serve as references when promoting AFCs in urban China.

Figures

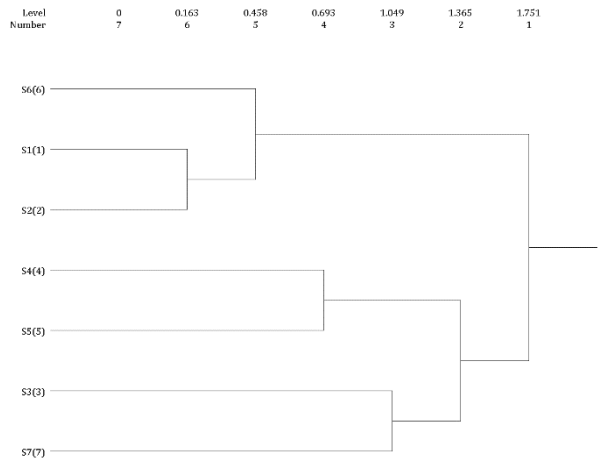

Figure 1-1 First-round focus group discussion

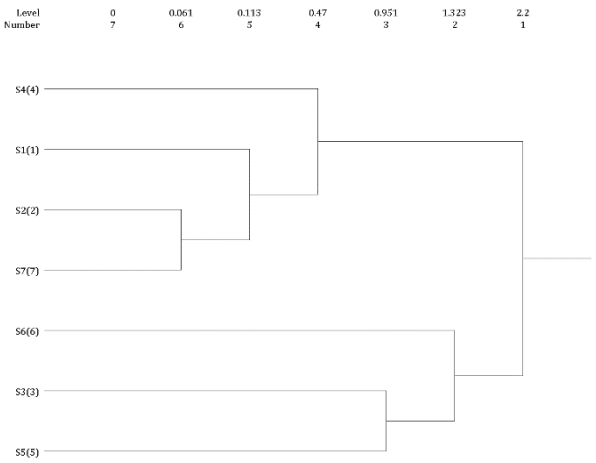

Figure 1-2 Second-round focus group discussion

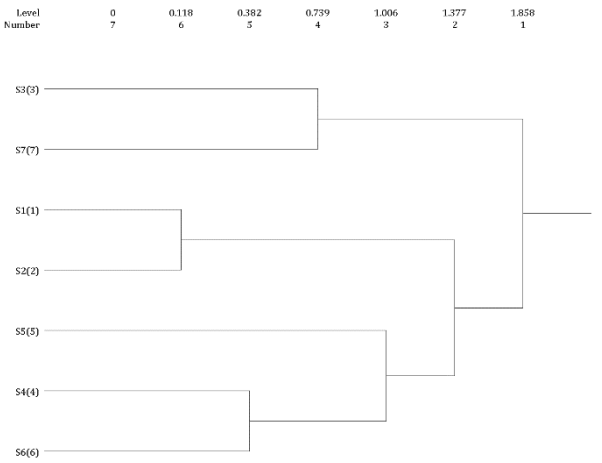

Figure 1-3 Third-round focus group discussion

Figure 1 Tree diagrams of stakeholders

1

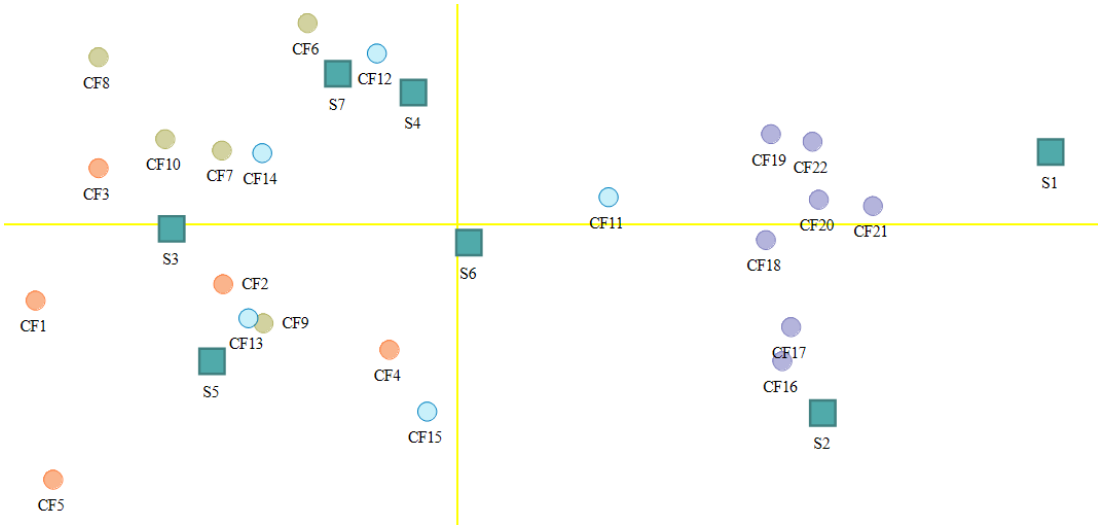

Figure 2-1 First-round focus group discussion

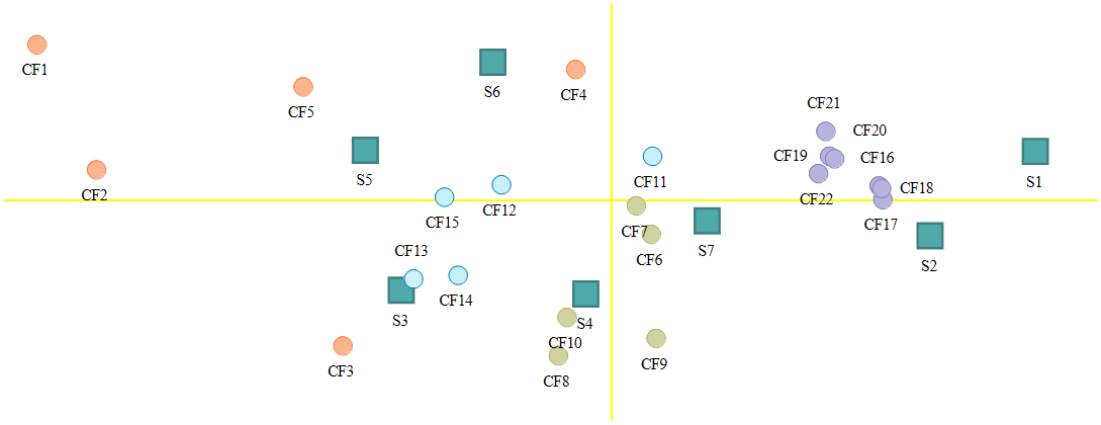

Figure 2-2 Second-round focus group discussion

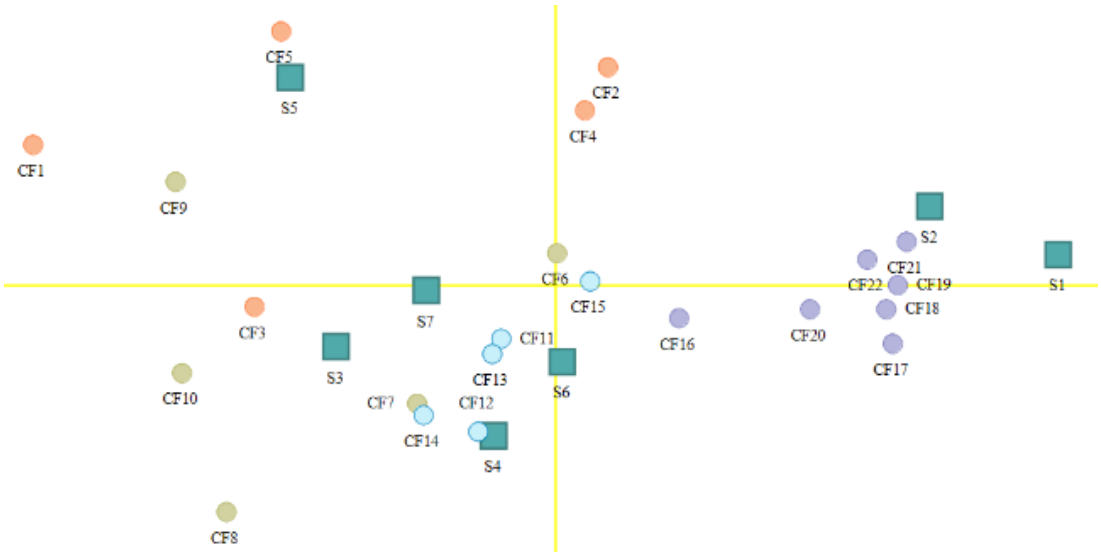

Figure 2-3 Third-round focus group discussion

Figure 2 Correspondence analysis of stakeholder-CF network

2

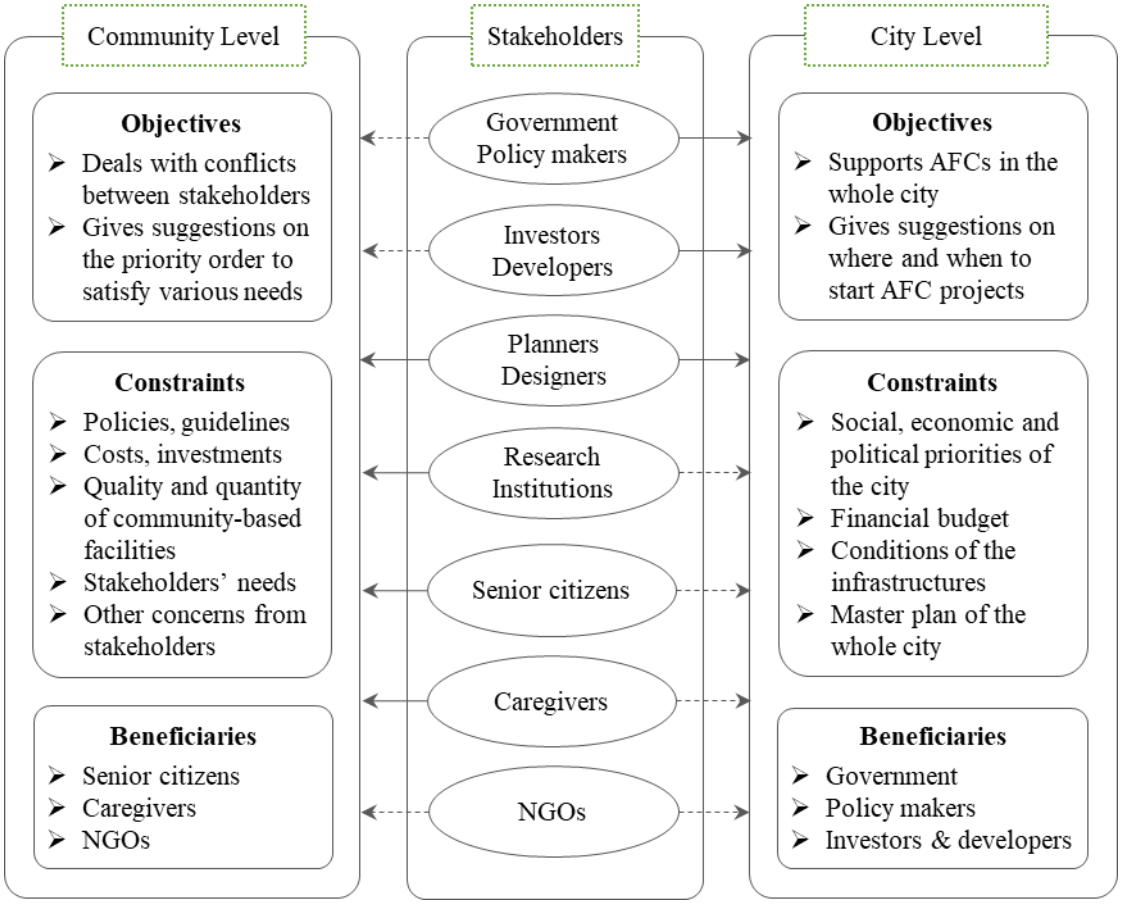

Figure 3 Stakeholders' influences in promoting AFCs

1

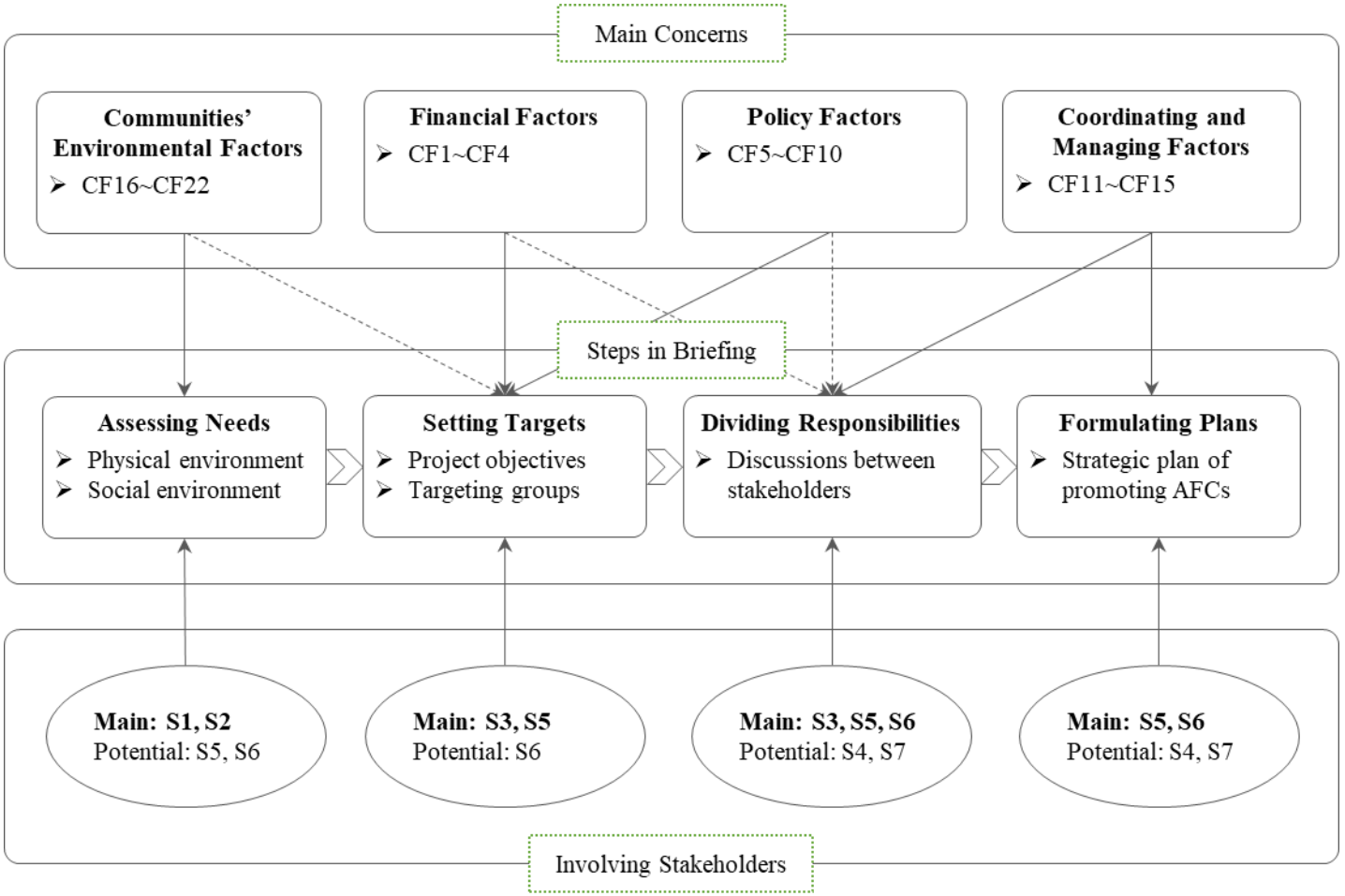

Figure 4 A framework of the briefing stage in promoting AFCs

1

Tables

Table 1 Key stakeholders included in AFCs projects

Code	Stakeholder	Source
S1	Senior citizens	Garon et al. (2014); Liddle et al. (2014); Chan and Cao (2015); Greenfield et al. (2015); Lowen et al. (2015); Moulaert and Garon (2015); Steels (2015); Chan et al. (2016); Cho and Kim (2016); Orpana et al. (2016); Sixsmith et al. (2017); Buffel and Phillipson (2018); Buffel (2019); Lin et al. (2019)
S2	Caregivers	Garon et al. (2014); Cho and Kim (2016); Sun et al. (2017)
S3	Local governments and policymaking institutions	Garon et al. (2014); Liddle et al. (2014); Menec et al. (2014); Chan and Cao (2015); Greenfield et al. (2015); Lowen et al. (2015); Moulaert and Garon (2015); Spina and Menec (2015); Steels (2015); Chan et al. (2016); Cho and Kim (2016); Orpana et al. (2016); Gudowsky et al. (2017); Sun et al. (2017); Greenfield (2018); Lin et al. (2019)
S4	Research institutions	Glicksman et al. (2014); Chan and Cao (2015); Moulaert and Garon (2015); Cho and Kim (2016); Orpana et al. (2016); Sun et al. (2017); Liddle et al. (2014); Neal et al. (2014); Lin et al. (2019)
S5	Project investors and real estate developers	Garon et al. (2014); Chan and Cao (2015); Greenfield et al. (2015)
S6	Urban planners, architects and interior designers	Cho and Kim (2016); Arentshorst and Peine (2018)
S7	NGOs	Garon et al. (2014); Menec et al. (2014); Chan and Cao (2015); Greenfield et al. (2015); Moulaert and Garon (2015); Steels (2015); Chan et al. (2016); Cho and Kim (2016); Orpana et al. (2016); Sixsmith et al. (2017); Sun et al. (2017); Greenfield (2018)

Table 2 CFs related to the AFC project performance

Code	Factors	Source	Category
CF1	Who will be the investor	Steels (2015); Cho and Kim (2016); Sun et al. (2017)	Financial factors
CF2	How much money will be invested in	Garon et al. (2014); Glicksman et al. (2014); Menec et al. (2014); Spina and Menec (2015); Steels (2015); Buffel and Phillipson (2018)	
CF3	Power of developing related industries	Wu and Qu (2015); Buffel and Phillipson (2018)	
CF4	Public's levels of acceptance and powers of purchasing	Hu et al. (2015); Sun et al. (2017); Arentshorst and Peine (2018)	
CF5	Return on investment	Arentshorst and Peine (2018)	
CF6	Implementation of policies and strategies	Garon et al. (2014); Spina and Menec (2015); Steels (2015); Chan et al. (2016); Gudowsky et al. (2017); Sun et al. (2017); Buffel and Phillipson (2018); Lin et al. (2019)	Policy factors
CF7	Coordinating system of public strategies	Spina and Menec (2015); Wu and Qu (2015)	
CF8	The soundness of promotion mechanism	Spina and Menec (2015); Wu and Qu (2015); Harbin Municipal Civil Affairs Bureau (2017); Lin et al. (2019)	
CF9	Subsidies / tax reduction	Cho and Kim (2016)	
CF10	Clarity of evaluation standards	Menec et al. (2014); Chan et al. (2016); Orpana et al. (2016)	

Table 2 CFs related to the AFC project performance (Continued)

Code	Factors	Source	Category
CF11	Objectives of projects and target groups	Spina and Menec (2015); Steels (2015); Wu and Qu (2015); Lin et al. (2019)	Coordinating and managing factors
CF12	Clarity of the common vision	Garon et al. (2014); Liddle et al. (2014); Steels (2015); Cho and Kim (2016); Arentshorst and Peine (2018); Lin et al. (2019)	
CF13	Clarity of workload distribution	Garon et al. (2014); Menec et al. (2014); Cho and Kim (2016); Sun et al. (2017); Arentshorst and Peine (2018); Lin et al. (2019)	
CF14	Effectiveness of communication and information sharing	Garon et al. (2014); Glicksman et al. (2014); Steels (2015); Sixsmith et al. (2017); Sun et al. (2017); Arentshorst and Peine (2018)	
CF15	Project organization and management	Menec et al. (2014); Sun et al. (2017); Arentshorst and Peine (2018); Lin et al. (2019)	
CF16	Conditions of infrastructure	Lowen et al. (2015); Steels (2015); Chan et al. (2016); Cho and Kim (2016); Harbin Municipal Civil Affairs Bureau (2017); Shanghai Municipal Bureau of Quality and Technical Supervision (2017)	Communities' environmental factors
CF17	Convenience of transportation	Glicksman et al. (2014); Hu et al. (2015); Lowen et al. (2015); Spina and Menec (2015); Cho and Kim (2016); Orpana et al. (2016); Harbin Municipal Civil Affairs Bureau (2017); Shanghai Municipal Bureau of Quality and Technical Supervision (2017)	
CF18	Access to essential living service facilities	Hu et al. (2015); Lowen et al. (2015); Spina and Menec (2015); Chan et al. (2016); Cho and Kim (2016); Harbin Municipal Civil Affairs Bureau (2017); Shanghai Municipal Bureau of Quality and Technical Supervision (2017)	

Table 2 CFs related to the AFCs project performance (Continued)

Code	Stakeholder	Source	Category
CF19	Conditions of care facilities for senior citizens	Lowen et al. (2015); Steels (2015); Wu and Qu (2015); Harbin Municipal Civil Affairs Bureau (2017); Shanghai Municipal Bureau of Quality and Technical Supervision (2017)	Communities' environmental factors
CF20	Conditions of medical facilities	Lowen et al. (2015); Spina and Menec (2015); Steels (2015); Chan et al. (2016); Harbin Municipal Civil Affairs Bureau (2017); Shanghai Municipal Bureau of Quality and Technical Supervision (2017)	
CF21	Layout of housing and accessibilities for senior citizens	Liddle et al. (2014); Chan et al. (2016); Cho and Kim (2016); Orpana et al. (2016); Harbin Municipal Civil Affairs Bureau (2017); Shanghai Municipal Bureau of Quality and Technical Supervision (2017)	
CF22	Conditions of barrier-free facilities	Glicksman et al. (2014); Wu and Qu (2015); Cho and Kim (2016); Orpana et al. (2016); Harbin Municipal Civil Affairs Bureau (2017); Shanghai Municipal Bureau of Quality and Technical Supervision (2017)	

Table 3 Details of participants in the focus group discussions

Participants' No.		Occupation / Years of Experiences	Roles as stakeholders in an AFC project	
			First choice	Second choice
First-round (May 18, 2019)	1	Urban planner / 3.5 years	S6	Not applicable
	2	Urban planner / 1.5 years	S6	Not applicable
	3	Research assistant in the real estate area / 2 years	S4	Not applicable
	4	Urban planner / 1.5 years	S6	Not applicable
	5	Strategic planner and policy researcher for the construction company / 1 year	S5	Not applicable
	6	Strategic planner and policy researcher for the municipal government / 0.5 year Researcher in the urban planning area / 3 years	S3	S4
	7	Researcher in the housing and construction management area / 3 years	S4	Not applicable
Second round (May 31, 2019)	1	Architect / 8 years	S6	Not applicable
	2	Interior designer / 8 years	S6	Not applicable
	3	Interior designer / 0.5 year	S6	Not applicable
	4	Architect / 4 years	S6	Not applicable
	5	Interior designer / 3 years	S6	Not applicable
	6	Architect / 6 years	S6	Not applicable
	7	Interior designer / 4 years	S6	Not applicable
Third round (July 20. 2019)	1	Urban planner / 7 years Lecturer in the architecture and urban planning area / 2 years	S6	S4
	2	Real estate developer / 5 years	S5	Not applicable
	3	Architect / 14 years	S6	Not applicable
	4	Retired administrative staff / 7 years Caregiver of an Alzheimer's patient (Non-professional) / 10 years	S2	S1
	5	Retired lecturer / 5 years	S1	Not applicable

Table 3 Details of participants in the focus group discussions (Continued)

Participants' No.		Occupation / Years of Experiences	Roles as stakeholders in an AFC project	
			First choice	Second choice
Third round (July 20, 2019)	6	Chinese People's Political Consultative Conference (CPPCC) member of a district / 4 years Associate professor in the architecture area / 8 years	S3	S4
	7	Lecturer in the architecture area / 10 years	S4	S6

Table 4 The prioritisation of stakeholders according to different types of centrality

Stakeholders	Round 1	Round 2	Round 3
S1: Senior citizens	6	6	6
S2: Caregivers	7	7	7
S3: Local government and policymaking institutions	1	1	2
S4: Research institutions	3	4	4
S5: Project investors and real estate developers	2	1	3
S6: Urban planners, architects and interior designers	4	3	1
S7: NGOs	5	5	5

Table 5 The prioritisation of CFs according to different types of centrality

Ranking	Round 1	Round 2	Round 3
1	CF19	CF16	CF22
2	CF16	CF20	CF20
3	CF11	CF17	CF21
4	CF20	CF19	CF19
5	CF18	CF22	CF11
6	CF22	CF21	CF16
7	CF21	CF18	CF17
8	CF17	CF11	CF18
9	CF6	CF6	CF6
10	CF14	CF7	CF12
11	CF15	CF9	CF7
12	CF12	CF10	CF2
13	CF7	CF4	CF15
14	CF4	CF8	CF4
15	CF9	CF12	CF14
16	CF2	CF15	CF10
17	CF10	CF5	CF3
18	CF8	CF13	CF13
19	CF3	CF3	CF9
20	CF13	CF14	CF8
21	CF1	CF2	CF1
22	CF5	CF1	CF5

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