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Sustainable living environment in retirement villages: What matters to residents?

Abstract: In responding to the requirements of the sustainable development movement, many retirement village developers endeavor to provide a sustainable living environment for their residents. However, this cannot transpire until a thorough understanding of retirement village residents' preferences for various features of a sustainable living environment is known. The aim of this paper, therefore, is to reveal retirement village residents' perceptions of the importance of 23 sustainable living environment features through a questionnaire survey of 81 residents from 15 retirement villages. The survey results reveal that independent and convenient living, justice and fairness, being respected and valued, and privacy protection are the most preferred sustainability features, all of which are in the triple bottom line dimension of social sustainability, whereas capital gain sharing, community diversity, and care and service provision are the least important. In addition, it is found that the residents of different age, gender, living experience, and retirement village nature have significant different preference towards various sustainability features. The findings of this study contribute to the management and development of sustainable retirement villages, which will eventually lead to an improved quality of life for older people.

Key words: Sustainable development, retirement villages, sustainable retirement villages, resident perceptions, Australia

1. Introduction

Sustainability is an increasingly common target for practitioners in various fields. Its plain concept is that sustainability requires managing a resource in a way that its contribution to human well-being should be conserved and promoted for the next generations. The triple bottom line (TBL) of sustainability was coined by John Elkington in 1994 to measure sustainability by an accounting framework comprising social, environmental (ecological), and economical (financial) dimensions – a comprehensive accountability that goes beyond the conventional economic and financial aspects of a business (Rogers & Ryan, 2001). In the housing industry, Blair et al (2003) observe that “there is a growing desire to provide housing that offers a comfortable standard of living, reduces environmental impacts and simultaneously achieves a degree of affordability”.

Despite this, what has been to a large extent missing from the current body of research is a developed understanding of older people’s preferences and expectations and the way in which they will impact on the uptake of future environmental housing offerings (Pillemer et al. 2011). These issues are particularly pronounced in the Australian retirement village (RV) industry, which has been largely static and unresponsive to the movement of sustainable development, with the main focus of the industry to date being on economic gains (Buys, 2001; Simpson and Cheney 2007; Zuo et al., 2014).

Retirement villages (RVs) are one of the accommodation options for older people, where a range of services and amenities are provided to address residents’ later-life requirements. Older people have reported a lack of adequate financial ability, poor physical health, and reduced recent neighborhood cohesion as their most likely reasons to re-locate to retirement villages (Crisp et al., 2013). Australian retirement villages are generally either not-for-profit villages (mainly supported and managed by religious or charitable organizations) or commercial

villages (mainly invested by property developers and open to all retirees) (Lederbauer & Matthews, 2016) and are normally urban complexes and contain an age-segregated community. Despite their discrepancies, there are many similarities in their structure and operational format.

Although Australia has witnessed a growing number of older people moving into retirement villages in recent years, the current retirement village industry only accommodates 5-6% of Australia's older population. Specially, retirement village occupancy rates have dropped steadily in recent years, from 93% in 2017 to 89% in 2019 (PwC, 2019). It should be also noted that retirement villages have been developed from the traditional aging framework of 'disengagement theory of aging', with the underpinning assumption that withdrawing from society and living in age-segregated (normally gated) communities is natural and acceptable (Ebersole et al., 2005). Retirement villages are thus commonly perceived as places for 'old people' and are viewed by the general public as being places for those 'fragile' enough to be in need of care. The current Australian retirement village industry falls short of meeting the unique housing requirements of potential residents mainly in terms of affordability, environmental friendliness, and social life-style (Buys et al., 2015; Hu et al., 2017a; Xia et al., 2015a).

To address these mentioned issues, prior studies have demonstrated that retirement village developers need to provide a sustainable living environment for their residents, whose social, economic, and environmental sustainability needs should be fully addressed (Xia et al., 2014; Zuo et al., 2014). Rogers and Ryan (2001) allege that the global response to the sustainability movement shows there are opportunities for communities to commit to social and environmental sustainability as well as economic development, with retirement villages being no exception. In addition, an increasing number of retirement village providers in Australia are committed to delivering a sustainable living environment to attract potential residents by

incorporating various sustainable practices into village development and operation (Xia et al., 2015b; Hu et al., 2017b).

However, although the provision of sustainable retirement villages is unlikely to be realized without a thorough understanding of the preferences of retirement village residents' for various features of sustainable living environment, there is little to be found in the current body of knowledge. Nevertheless, many retirement village residents recognize the importance of sustainable development and possess sufficient sustainable literacy (Xia et al., 2014). Therefore, this study aims to identify the key sustainable environment features that are emphasized and highly valued by retirement village residents by a survey of their perceptions of the importance of sustainable living environment features. The findings of this study contribute to the better understanding of the post-retirement living environment requirements of older people and provide practical implications for improving the quality of life of senior Australian citizens.

2. Sustainable retirement villages

The population of older people in Australia is growing rapidly. Over the past two decades, the percentage of 65+ year-old people rose from less than 12% to 15% and increased at double the rate of the other population groups (ABS, 2014). In addition, the Australian Bureau of Statistics (ABS) (2017) forecast that, by 2056, approximately one in four Australians will be over 65. This demographic feature illustrates the potential demand for more accommodation for older people because housing quality is a critical measurement of well-being in later life. Especially with the aging of the baby boomer generation, the approach to accommodation and care of older people is of particularly significant interest to practitioners and policymakers (Ma and Reed, 2018).

Retirement villages have the potential to accommodate and care for many ageing Australians if sustainable features can be integrated into their development to deliver a liveable environment. According to Hu et al. (2015), the TBL principle is suited to gauge the level of sustainability of retirement villages. The application of the TBL framework to retirement villages in pursuing sustainable development (i.e. sustainable retirement villages) shall involve the consideration of all three dimensions.

From the aspect of the environmental sustainability, this involves reducing the adverse impact on the eco-system surrounding retirement villages and enabling their residents to live well now and in the future. The element of environmental sustainability relates to such widespread issues as resource efficiency, and decreased impact of climate change on the ecological system (Xia et al., 2015). Specific routes towards environmental sustainability in the residential community include retaining the natural environment, innovative design and construction solutions for energy saving, using renewable energy to reduce CO₂ emissions and energy use, and continual environment maintenance and improvement. Previous studies indicated that current and prospective retirement village residents are acutely aware of unsustainable resource consumption and wish their residences to be more environmentally friendly (Zuo et al., 2014). Environmental sustainability can offer older adults friendly living conditions due to the beneficial effects of the environment on their health (MaloneBeach & Zuo, 2013).

Economic sustainability concerns saving construction costs, offering affordable purchasing or leasing schemes to enable prospective residents to afford to move in, and emphasizing other cost-savings in the village's operation and maintenance, as one of the major obstacles to the provision of affordable retirement villages is the higher costs involved. In addition, older people normally experience a reduced financial capability after retirement. To relieve the

financial burden on older people, a popular practice embodying this environmental attribute in an aging community is to build green buildings, which are based on the original considerations of economy, utility, and comfort, with both additional emphasis on energy management and environmental impact throughout the building's entire lifetime. A study conducted by Zuo et al. (2014) identified a number of significant measures related to green retirement villages (such as adoption of thermally efficient building materials, orientation of windows, installation of water harvesting and recycling systems, and water conservation fittings), which together can enable sustainable retirement development to be accomplished without significant additional capital costs.

Finally, social sustainability means accessibility for social interaction, independent living, emotional relaxation, and a flexible lifestyle (Zuo et al., 2014; Xia et al., 2015). As Greenfield & Frantz (2016) observe, in addition to these intangible features, the most prominent community practices in aging are various modes of supportive service programs. Some residents worry about being isolated as they age and see relocating to a retirement village as an antidote (Omoto & Aldrich, 2006), while Rogers & Ryan's (2001) development of social well-being takes nine human needs into account: sustenance, protection, affection, leisure, creativity, freedom, understanding, participation, and identity. Socially sustainable retirement villages therefore need to address the needs of their residents with the ultimate purpose of improving their quality of life.

3. Research methods

This study conducted a questionnaire survey (in both postal and face-to-face manner) in existing Australian retirement villages to investigate older people's perceptions of

sustainability of their living community. First, with the permission of the village managers, 168 questionnaires were placed in the community centers of three retirement villages in Brisbane between 2018 and 2019 with a cover letter explaining the purpose of the research. 42 respondents returned the completed questionnaires, providing an overall response rate of approximately 25%. When collecting the completed questionnaires from the retirement villages, some residents mentioned they had some difficulty in completing the questionnaire due to physical limitations such as poor eyesight, and some questions might need further explanation. To address these issues, in the following data collection stage, the questionnaire was completed face-to-face with 39 residents in 12 retirement villages, with the researchers physically present to ask the survey questions and to assist the residents in answering them. The advantage of conducting the questionnaire survey in a face-to-face manner is that the researchers can read the questionnaire to residents to address any questions the residents raise. Finally, a total 81 questionnaires were completed (42 from the postal survey and 39 from the face-to-face survey).

The questionnaire was developed based on prior work related to retirement village developers' perceptions of sustainable living environment in retirement villages (Hu et al., 2017b) where 39 sustainability features were obtained and grouped into social, environmental, and economic sustainability categories through a comprehensive content analysis of developers' official websites. Adjustments were then made to make the survey suitable from the residents' perspectives. Eventually, a total of 23 sustainability features of retirement village living were used in the design of questionnaire. The questionnaire comprises two main parts. The first concerns the respondent's profile information and the second determines his/her preference towards the sustainability features. The respondents rated the importance of the sustainability features on a 5-point scale from 1 (least important) to 5 (most important). At the end of the

questionnaire, respondents were also encouraged to add new sustainability features not covered in the list provided.

4. Results and analysis

The 81 respondents are from 15 retirement villages operated by 7 developers. Of these, 10 are for-profit or residents-funded, and the remaining 5 run by not-for-profit organizations. Table 1 summarizes the respondents' profile information, which shows that the majority (63%) are female, around half (53.1%) are below 80 years old, and 42% have been living in retirement villages for more than 5 years. The overall sample distribution of this study aligns closely with the 2019 PwC/Property Council Retirement Census, which is the biggest annual survey of the Australian retirement living industry (PwC, 2019).

Table 1. Summary of respondents' profiles

Respondents information		Count	Percent
Retirement village type	For-profit	68	84%
	Not-for-profit	13	16%
Gender	Male	29	35.8%
	Female	51	63%
	Unknown	1	1.2%
Age range	65-70	7	8.6%
	70-75	10	12.3%
	75-80	26	32.1%
	80+	36	44.4%
	Unknown	2	2.5%
Living period	< 5 years	46	56.8%

	>= 5 years	34	42%
	Unknown	1	1.2%

The questionnaire survey assesses the respondents' perceptions of the importance of 23 sustainability features of the retirement village living environment, 14 of which are related to social sustainability, 6 to environmental sustainability, and 3 to economic sustainability. To test the reliability of the questionnaire, i.e. whether the data are true and reliable and whether the research sample truthfully answered the question, Cronbach's reliability analysis is carried out on 23 sustainability features of the 3 sustainability dimensions. Table 2 shows that Cronbach's α is greater than 0.70 for each sustainability dimension and 0.878 overall, indicating the reliability of the questionnaire is high and the questionnaire data have high stability.

Table 2. Reliability tests of questionnaire sustainability features

Sustainability features	Cronbach's α
All sustainability features (23)	0.878
Social sustainability features (14)	0.848
Environmental sustainability features (6)	0.757
Economic sustainability features (3)	0.730

Many respondents did not answer this question for the sustainability feature of *religious and spiritual support* as it only applies to retirement villages operated by churches (or church-related organizations), and it was therefore omitted in the data analysis.

Table 3 shows perceived importance of the sustainability features. Of the 23 involved, 17 have mean scores of over 4.0, which can be regarded as "very important". Of the five highest scored sustainability features, *independent living environment* (4.57) is regarded as the most

important, followed by *convenient living* (4.55), *justice and fairness towards residents* (4.54), *being respected and valued* (4.51), and *residents' privacy protection* (4.48). In addition, it is worth noting that all six highest scored sustainability features belong to the category of social sustainability.

Six sustainability features have mean scores below 4.0: *environment of maintaining personal interests*, *reduced energy consumption*, *capital gains sharing*, *community diversity*, *care and service provision*, and *religious and spiritual support*. It is worth noting that the *community diversity* (3.37) of the living environment (where residents have diversified cultural and demographical backgrounds) is rated much less than a *living environment of like-minded residents* (4.38). It is also interesting to see that the *environment of maintaining personal interest* (3.97) was perceived as less important than *ensuring social interaction* (4.15), which indicates a greater preference of residents for participation in retirement villages and broad community activities. The economic sustainability feature of *capital gains sharing* (3.79) is rated much less than *transparent financial arrangement* (4.23).

Table 3. Perceived importance of sustainability features in retirement village environment

Rank	Sustainability features	Mean	SD	Sustainability category
1	Independent living environment	4.57	.690	Social Sustain.
2	Convenient living (e.g. with hairdresser, coffee available on site)	4.55	.733	Social Sustain.
3	Justice and fairness towards residents	4.54	.730	Social Sustain.
4	Being respected and valued (e.g. residents' dignity ensured)	4.51	.744	Social Sustain.
5	Residents' privacy protection	4.48	.776	Social Sustain.
6	Residents being kept informed	4.42	.703	Social Sustain.
7	Affordable living	4.40	.944	Econ. Sustain.
8	Public transportation accessibility (e.g. nearby bus stop, train station)	4.39	.898	Environ. Sustain.
9	Environment of like-minded residents	4.38	.802	Social Sustain.
10	Lower maintenance of living environment	4.32	.829	Environ. Sustain.

11	Community belonging (e.g. know the neighbors, have friends)	4.31	.801	Social Sustain.
12	Waste management (e.g. recycling, prompt with waste bin disposal)	4.31	.778	Environ. Sustain.
13	Continued improvement of village management and operation	4.28	.845	Social Sustain.
14	Transparent financial arrangement (e.g. clear contract term/condition)	4.23	.981	Econ. Sustain.
15	Quiet environment (e.g. noise free environment)	4.22	.989	Environ. Sustain.
16	Ensuring social interaction (e.g. participate in community activities)	4.15	.857	Social Sustain.
17	Habitat and wildlife protection of village surrounding areas	4.07	.984	Environ. Sustain.
18	Environment of maintaining personal interests (e.g. remain hobbies)	3.97	.841	Social Sustain.
19	Reduced energy consumption (e.g. use renewable & recyclable energy)	3.83	1.057	Environ. Sustain.
20	Capital gains sharing (e.g. share in sale profit upon exiting retirement villages)	3.79	1.333	Econ. Sustain.
21	Community diversity (e.g. residents of different culture, demographics)	3.73	1.089	Social Sustain.
22	Care and services provision	3.54	1.312	Social Sustain.
23	Religious and spiritual support (deleted)	3.10	1.401	Social Sustain.

As the sustainability features were divided into dimensions of social, environmental, and economic sustainability; the mean scores for each dimension is calculated and shown in Table 4. On average, social sustainability features are regarded as more important than environmental and economic sustainability features. This aligns with prior findings that such social sustainability features as community interaction, independent living, and an active aging lifestyle are highly valued (Zuo et al., 2014; Xia et al., 2015). However, it should be noted that there is no statistically significant differences between the mean values of these three dimensions based on Kendall's W test ($p=.210>.05$).

Table 4. Mean score of each sustainability category

Sustainability category	Mean	Rank
Social sustainability (14 features excluding religious support)	4.26	1
Environmental sustainability (6 sustainability features)	4.19	2
Economic sustainability (3 sustainability features)	4.14	3

Finally, most respondents did not add new sustainability features, which demonstrates the general comprehensiveness of the sustainability features provided. The new features that were suggested – mainly from the face-to-face survey – include being easy for a family visit, availability of facilities for physical exercise, and the availability of parking space. Future research needs to add these new features to form a more comprehensive questionnaire.

In order to better understand whether residents with different profile backgrounds have different perceptions, group comparisons between gender (male vs female), age ranges, living period (less than 5 years vs no less than 5 years), and retirement village nature (for-profit vs not-for-profit) were conducted using nonparametric tests. Accordingly, the Mann-Whitney U test and Kruskal-Wallis H test, rank-based nonparametric tests, were used to determine if there are statistically significant differences on perceived importance of sustainability features between two or more groups of respondents respectively. The tested null hypotheses (H0) are that there are no statistically significant differences of perceived importance of sustainability features between respondents groups of different age ranges, living periods, gender, and retirement village natures. The null hypotheses will be rejected when the significance value (p) is smaller than 0.05. In other words, it would be reasonable to believe that respondents of different demographic groups have significantly different perceptions on the importance of sustainability features if $p < .05$.

Table 5 gives the results of a statistical analysis aimed at better understanding whether residents with different profile backgrounds have different perceptions, group comparisons between gender (male vs female), age ranges, living period (less than 5 years vs no less than 5 years), and retirement village nature (for-profit vs not-for-profit). This shows that residents of different age ranges perceived the importance of *maintaining personal interests* quite differently: 65-70 year-old residents (the youngest cohort) rate this statistically significantly lower (less importance) than the older cohort. This is reasonable given that many residents are still very socially active or even remain in the job market at the age of 65-70, as with the fact that the average age of residents entering retirement villages is 74 (Property Council of Australia, 2019).

Residents living a shorter period of time in retirement villages (less than 5 years) perceive *justice and fairness to residents* to be significantly more important than others. One reason for this obtained from the face-to-face survey is that residents who newly move into retirement villages normally have much higher expectations than those with more experience. Clearly, the underlying discrepancy needs further exploration in future research.

Table 5. Significant differences in perceptions of the importance of sustainability features

Group comparison	Sustainability features with significant differences	Group means	Significance (<i>P</i> value)
Age ranges	Maintaining personal interest	3.00 (65-70 years)	0.035* (Kruskal-Wallis H test)
		4.16 (70-75 years)	
		4.16 (75-80 years)	
		4.00 (80+ years)	
Living period	Justice & fairness to residents	4.67 (< 5 years)	0.040* (Mann-Whitney U test)
		4.34 (>= 5 years)	
Gender	Residents' privacy protection	4.67 (Female)	0.003** (Mann-Whitney U test)
		4.14 (Male)	

	Being respected and valued	4.67 (Female)	0.015* (Mann-Whitney U test)
		4.24 (Male)	
Retirement village nature	Residents being kept informed and empowered	4.00 (Not-for-profit)	0.016* (Mann-Whitney U test)
		4.51 (For-profit)	

Note: * and **, significant at the 5% and 1% level, respectively.

That female residents perceive *residents' privacy protection* significantly more important than male residents may be attributed to Grant's (2006) assertion that moving into a retirement village creates a sense of community for some and concern for a loss of privacy by others, and that privacy protection is regarded as more important by female residents. Similarly, that *being respected and valued* is also regarded as more important to female than to male residents may be due to female residents normally having longer and healthier lives than male residents, thus requiring more dignity in a later life stage. However, this is only a conjecture at this stage and the underlying reasons need further exploration in future.

Finally, that the for-profit retirement village residents rated *residents being kept informed and empowered* significantly higher than not-for-profit retirement village residents is to be expected, as for-profit retirement villages – also known as “residents-funded retirement villages” – are privately owned and offer more facilities and services with higher cost than not-for-profit retirement villages (Xia et al., 2015). Accordingly, for-profit retirement village residents normally expect to have more involvement and bargaining power in the operation and management of retirement village businesses, such as being kept informed and empowered, and their needs being fully addressed.

5. Discussion

Of the five most important sustainability features perceived by the residents, all of which are concerned with social sustainability, the high ranking of independent and convenient living

align closely with the nature of retirement villages, where older people or residents reside in independent living units or serviced units. In addition, various previous research indicates that maintaining independence as long as possible is one of the most dominant reasons for people moving into retirement vilalges (Golden et al., 2009; Grundy and Read, 2012). To facilitate their independent living, a convenient living environment providing various such support facilities as coffee and hairdressing are normally expected and provided (Xia et al., 2015). Koh et al. (2015) also pointed out when designing more livable environment for the aging population, more interaction areas and shops should be planned within the immediate neighborhood of the residence. The remaining three features (i.e. justice and fairness, being respected and valued, and privacy protection) reflect the social requirements of older people, i.e. when getting older, they do not want to be separated from mainstream society and regarded as an old and fragile cohort, but wish to be respected and valued, and retain their dignity when aging. The results echo the findings from a similar study in New Zealand, where privacy (“Staff knock & wait before entering”) and dignity (“Staff treats you politely”, “Staff treats you with respect”, “Staff takes time to listen to you”) were regarded as the most important factors contributing to subjective well-being among older people living in retirement villages (Yeung et al., 2017).

It is worth noting that, although *care and service provision* is the most frequently mentioned/advertised feature of sustainability by retirement village operators on their websites (Hu et al., 2019) to attract potential residents, it is not regarded very important by the residents (ranked second last in this study). Care and service provision in retirement villages is a current area of debate in the industry. On the one hand, having access to various services (such as food, room service, and medical service) can benefit residents in many aspects, such as security and maintaining independence (Nathan et al. 2014; Hu et al., 2017a).

On the other hand, a service-rich environment can also be too convenient, discouraging residents to lead an active life such as in social participation (Gardner 2005). It is thus suggested that the care and services provided in retirement villages should accord with the residents' competencies to improve their living satisfaction (Kennedy and Coates, 2008).

In the category of environmental sustainability, *public transportation accessibility* (4.39) is the most highly appreciated. Indeed, the transportation sector brings negative externalities to the environment, such as pollution, noise, landscape decay, congestion, and lack of safety (Vreeker and Nijkamp, 2005). The public transport system offers potential to achieve environmental sustainability of urbanization because it can reduce CO₂ emissions, minimize consumption of non-renewable resources, and reduces the use of land and the production of noise (Miller et al., 2016). It has thus been widely accepted that compared with private transportation, the public transportation is more sustainable from an environmental perspective (Kennedy 2002). More importantly, it has been widely recognized that mobility and the capacity to leave the residence to carry out daily activities and get access to healthcare services are among the most essential aspects of older people's quality of life and there is a need for information and enhancement of the service (Hjorthol 2013; Du et al., 2020). According to Stimson and McCrea (2004), access to public transport is the most important location factor compared with such other location factors as proximity to social activities and recreational facilities, proximity to the coast or water, climate, and familiarity with the area from holidaying there.

Of the three economic sustainability features, *affordable living* (4.40) is the most important and ranks 7th of all the sustainability features. As Stimson and McCrea (2004) state, affordability is one of the most important factors that attract potential retirement village

residents; however, it is always challenging to provide an affordable retirement village living while still providing a sufficient and attractive investment return for the industry. This is especially the case with not-for-profit retirement villages – although the majority of residents indicate they would prefer to live in a more sustainable environment, affordability is always a concern for developers and residents (Zuo et al., 2014). Another highly regarded economic sustainability feature is that of transparent financial arrangements (4.23), which is to be expected given that most legal disputes between residents and retirement village developers arise from the contracts signed by residents when entering retirement villages (Keogh and Bradley, 2002; Malta et al., 2018). Moreover, as Craddock and Blake (2012) observe, irrespective of legislated disclosure requirements, retirement village contracts need to be more user-friendly as the gap between the level of documentation presented to prospective residents and their level of their documentary literacy is quite significant.

6. Conclusions

This study aimed to shed light on retirement village residents' perceptions of a sustainable living environment, with a particular focus on the Australian context. A questionnaire survey of 81 residents from 15 retirement villages (operated by 7 developers) was conducted to assess the importance of 23 sustainability features. The results indicate that social sustainability features are regarded as more important than environmental and economic sustainability. In particular, independent and convenient living, justice and fairness, being respected and valued, and privacy protection are the highest rated sustainability features, all of which belong to the social sustainability dimension. Affordable living and access to public transportation are the most important economic and environmental sustainability features, respectively. A group comparison analysis also indicates that the importance of individual features varies, with younger residents being significantly less interested in maintaining person interests, those less

experienced at retirement village living being significantly more interested in justice and fairness to residents, females being significantly more interested in residents' privacy protection and being respected and valued, and for-profit retirement village residents being significantly more interested in being kept informed and empowered, for reasons discussed in the previous section.

A limitation of the study is the relatively small sample size, which inevitably limits the generalizability of the findings, although the face-to-face survey proved to be of additional value – the researchers were able to go through individual questions with residents, addressing their questions raised, and understand the rationale behind their answers. A future study would benefit from a broader questionnaire survey incorporating new sustainability features from the current survey and cover more profile information of residents (such as education levels and marital status) to have a holistic picture of the residents' sustainability perceptions. Despite this, the findings do provide a number of valuable practical implications for the retirement village industry in Australia and other similarly placed countries. In particular, understanding the residents' preferences for sustainable living environment features is an important step for village operators and developers towards enhancing the retirement village industry's sustainable development and providing facilities and services that better cater for the residents' needs.

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