

Supporting Active Aging through Value-Driven Accommodation Types for Bangkok's Self-Reliant Elderly

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Abstract

As Thailand approaches “Super-Aged Society” status by 2031, addressing the housing needs of self-reliant pensioners has become crucial to supporting independence and quality of life for the aging population. This study examines accommodation models that support active aging, allowing retirees in Bangkok to maintain autonomy, well-being, and social engagement. Through focus groups with near-retirement individuals, key concerns such as accessibility, environmental safety, space utilization, and affordability were identified, emphasizing the importance of housing options that meet diverse income levels and lifestyle preferences. Based on these insights, three housing models; **Detached/Semi-Detached Homes, Apartments/Condominiums, and Lodges**, are proposed to address the varied needs of elderly residents across four essential dimensions: **functional, emotional, life-changing, and social impact**. Each model provides practical amenities, community integration, and supportive environments that foster active aging and enhance quality of life. By aligning housing features with **the Elements of Value Pyramid**, this study assesses the feasibility and impact of each model, with measurable outcomes such as resident satisfaction, social engagement, and accessibility. This research contributes to the development of sustainable, age-friendly accommodations that holistically address the functional, emotional, life-changing, and social needs of Thailand's elderly population.

Keywords

Pensioner, active aging, residential community for pensioners, affordable housing, The Elements of Value

Introduction

With Thailand set to transition into a Super-Aged Society with 20 and 30 percent of the total population being aged citizens, respectively by 2031 by 2031 (KPMG in Thailand, 2019) addressing the specific housing needs of its growing elderly population has become increasingly critical. Despite this demographic shift, most existing housing models remain ill-suited to meet the accessibility, adaptability, and social integration requirements of self-reliant pensioners, particularly in urban centres like Bangkok (Mnea & Zairul, 2023). In addition, many housing communities are disconnected from essential services such as healthcare, social support, and community amenities, which are vital for maintaining the health and well-being of the elderly (Jacqueline et al., 2012).

This study investigates accommodation models that promote active aging by enabling retirees to maintain their independence and quality of life through appropriate housing options (Thaiger, 2024). By examining the preferences and needs of retirees nearing the end of their careers through focus groups, this research proposes housing models tailored to meet the diverse aspirations of this demographic (“Retirement homes”, 2023). Emphasising the integration of private living spaces with essential community amenities, these models aim to enhance the well-being and social engagement of Bangkok’s elderly population, aligning with global initiatives that support active and dignified aging. Therefore, this study seeks to identify residential accommodation models most compatible with the needs of self-reliant pensioners in Bangkok.

Literature Review

A “pensioner” refers to an individual who retires due to age or health and consequently experiences physical, mental, social, and economic changes that require careful planning (Surakul, 1991). In developed countries, age 65 is often the threshold for “elderly.” In Thailand, this designation is tied to when individuals begin receiving pensions, marking a significant transition to fixed income and increased health needs. This shift influences housing requirements, as many elderly in Thailand seek affordable, supportive environments that offer both accessibility and social support to maintain a stable quality of life within their financial constraints (Foundation of Thai Gerontology Research and Development Institute, 2019; National Statistical Office of Thailand, 2018).

The United Nations defines elderly populations by calendar age, typically setting the threshold at 60 years (World Health Organization [WHO], 2002). Globally, the

population aged 60 and older is growing more rapidly than other age groups due to advancements in public health and declining birth rates (Bloom et al., 2011). In response to this demographic shift, the World Health Organization introduced the “Active Aging” concept in 1996 to improve the quality of life for elderly individuals by addressing their physical, mental, environmental, and economic needs alongside essential community amenities (WHO, 2002).

In Thailand, the number of older adults living alone has increased significantly, reaching 10.8% in 2017 from 3.6% in 1994, reflecting social changes that impact elderly living arrangements and further emphasising the need for supportive housing options (National Statistical Office, 2018). Studies by Thanakwang and Soonthorndhada (2006) indicate that life satisfaction among the Thai elderly is influenced by physical health, family support, and social engagement. These values align with the WHO’s Active Aging framework, highlighting independence and social interaction as essential for elderly well-being (Ingersoll-Dayton et al., 2001).

Research into elderly housing models in Thailand shows that 14.5% of near-retirement individuals with independent incomes prefer living in retirement communities, where they can reside among peers with access to health services and social activities (Supawadee B. & Terdpong B., 2022). These communities meet both physical and environmental needs, offering comfort and accessibility through adaptive design, such as naturally ventilated spaces suited to Thailand’s hot, humid climate (Sudprasert, 2020). Furthermore, integrating green spaces and pedestrian-friendly layouts within these communities fosters social interaction, reduces isolation, and promotes environmental safety, aligning with Thai cultural expectations for elderly housing (Koerniawan & Gao, 2016).

Cultural studies underscore the influence of family structures and intergenerational support on housing choices for Thai elders. For instance, Knodel and Saengtienchai (2005) observe that rural parents often rely on urban-dwelling children, shaping housing dynamics and caregiving arrangements in rural and suburban areas. This cultural preference aligns with findings that Thai seniors favor single-family homes, followed by one-bedroom apartments and single-story townhomes, with separate bedrooms required when cohabiting. Such preferences underscore the importance of privacy, independence, and flexibility in cohabitation arrangements with family members or peers, reflecting Thailand’s unique social and cultural landscape in elderly care (Supawadee B. & Terdpong B., 2022).

Research Methodology

The research study, within the defined scope, follows this methodology

1. Qualitative Research

This research employed a qualitative approach to explore and develop **housing models that support active aging among near-retirement individuals with independent incomes in Bangkok and the surrounding areas**. The study commenced with a comprehensive review of existing **literature and studies focused on**

- aging populations
- active aging
- environments suitable for elderly individuals

The insights gained from this document review provided a foundational understanding of the target demographic's specific needs and preferences. These findings were instrumental in shaping accommodation models that align with the principles of active aging.

Following the document review, the research team designed housing models to promote active aging. These models were carefully developed to address the functional, emotional, life-changing, and social impact needs of elderly residents to enhance their overall quality of life.

The research team planned a series of focus group discussions to validate and refine these housing models. All necessary materials, including discussion guides and consent forms, were meticulously prepared for these focus groups. The research project was then submitted to the Human Research Ethics Committee for ethical consideration, and approval was granted on February 2, 2022, under the project code KMUTT-IRB-2022/0201/052.

Nine participants for the focus groups were recruited. These individuals shared similar demographic, social, economic, and cultural backgrounds and were familiar with communication technologies like Line or Zoom. These specific criteria were chosen.

- **promoting an active aging society**
 - Thai nationals aged 51-59 residing in Bangkok or nearby provinces.
 - Healthy and capable of engaging in various activities independently.
- **living independently and affordably**
 - expressing an interest in the proposed elderly accommodation types
 - making independent decisions regarding accommodation options
 - willing to pay at least 5,000 THB per month for accommodation and services after retirement.

The focus group, with nine participants, provided in-depth insights into the current issues surrounding elderly housing and offered valuable opinions on **developing new housing models**. These discussions **aimed to guide the design of housing that would improve the quality of life for elderly residents and motivate the target group to consider relocating**.

Finally, the data collected from the focus group discussions were transcribed in detail to ensure completeness and accuracy, with care taken to avoid researcher bias. The transcribed data were then analysed to identify key themes and insights, subsequently used to refine the proposed housing models. This ensured that the models aligned closely with the needs and preferences of the elderly population.

2. Data Analysis

To tailor housing models to the specific needs of the elderly population, target groups were segmented based on psychographic and demographic characteristics, including lifestyle, personality, values, religion, traditions, and culture. These characteristics were chosen for their relevance to elderly housing preferences, as they reflect essential aspects of daily life that significantly impact the desirable and practical housing environments. For instance, culture and tradition influence preferences for family-oriented or community-based living arrangements, while lifestyle and values can shape needs for independence, social interaction, and wellness.

To ensure thorough and accurate analysis, the research team collaborated with focus group assistants, reviewing and discussing all content collected. In cases of disagreement, recordings were revisited to clarify and align interpretations of participants' responses.

The study examined participants' housing preferences and concerns using **the Elements of the Value Pyramid** (Eric et al., 2016), which identifies **30 core elements that provide value to consumers**. Applying this framework to housing models adds depth to the analysis by allowing each element to reflect a specific need, aligning housing features with Maslow's hierarchy of needs. The Value Pyramid organises these elements into four levels that progressively address **functional, emotional, life-changing, and social impact needs**, thereby guiding the creation of housing models that fulfill a wide range of consumer values.

This comprehensive approach ensures that the final housing models address a full spectrum of participant needs, from basic functional elements to values encouraging life-changing and socially impactful experiences. The data analysis, aligned with the Value Pyramid, will lead to concrete recommendations for housing models that provide accessibility, comfort, independence, and community engagement, as shown in Table 1.

This methodology is designed to gather comprehensive data for developing housing models that enhance the well-being and autonomy of Bangkok’s elderly population.

Result

According to the Supportive Living Accommodation Standards report by Alberta Seniors and Community Supports (Alberta Seniors and Community Supports, 2006), elderly accommodation standards are divided into three main categories: Home Living, Supportive Living, and Facility Living. These categories provide a framework to guide suitable housing options for elderly individuals across different levels of independence and care requirements as shown in Table 2.

Table 1: The Application of housing models to the basic functional Layers

| Layers: (Elements) | Applicating to housing models |
|--|--|
| Functional: (Reduce Effort, Avoid Hassles, Reduce Cost, Quality, Variety, Sensory Appeal, Inform, Save Time, Simplifies, Make Money, reduce risk, Organise, integrate, and Connect.) | The Basic elements that help individuals achieve practical goals include saving time, reducing effort, and enhancing safety. For elderly housing, core functional values include accessibility (ease of mobility within the housing environment), affordability (sustainable costs suited to fixed incomes), ample space (for personal belongings and comfortable movement), and proximity to transportation (to enable independence and ease of travel). |
| Emotional: (Wellness, Therapeutic, Fun/Entertain, Attractive, Provide Access, Reduce Anxiety, Reward, Nostalgia, Aesthetic, and Badge value) | These elements address the need for comfort, anxiety reduction, and overall wellness. In housing design, this includes creating a secure and relaxing atmosphere through private bedrooms, soothing architectural features, and dedicated areas for rest and wellness activities. Emotional comfort can be further supported by quiet environments, private spaces that allow for reflection, and aesthetically pleasing design elements that provide a sense of warmth and home. |
| Life Changing: (Motivating Life, Heirloom, Affiliation, Provide Hope, Self-Actualization) | These values encompass personal growth, self-actualisation, and a sense of belonging. For elderly residents, these needs are reflected in opportunities for independence, active lifestyles, and personal transformation. Housing models should incorporate outdoor spaces, community areas, and supportive services that allow residents to engage in physical activities, socialise, and pursue hobbies, facilitating ongoing personal growth and connection to the community. |
| Social Impact: (Self-Transcendent) | The elements that contribute positively to society and foster community-building are elderly housing, shared spaces for community activities, green environments that promote environmental responsibility, and accessible healthcare services within or near the housing facilities. These elements reflect a desire among elderly residents to stay connected with others and to contribute positively to their community, enhancing both personal fulfilment and communal well-being. |

Table 2: elderly accommodation standards for elderly individuals

| Home Living | Supportive Living | Facility Living |
|---|--|---|
| Places where elderly individuals can take care of themselves, live independently, and have access to social and healthcare services: <ul style="list-style-type: none"> - House - Apartment - Condominium | Elderly individuals live with others, such as relatives or other elderly people, and have access to social and healthcare services: <ul style="list-style-type: none"> - Group Homes - Lodges - Enhanced Lodges - Assisted Living - Apartments or Condominiums with healthcare services | Elderly individuals reside in long-term care facilities that provide amenities and healthcare services: <ul style="list-style-type: none"> - Nursing Homes - Elderly Care Units in Hospitals |

With these standards, research on residential care communities for pensioners aiming to foster an active aging society in Bangkok revealed specific accommodation preferences. Detached houses emerged as the most favored option (43.6%), aligning with the ‘Home Living’ category where elderly individuals maintain independence within private residences. Following this, one-bedroom apartments (18.8%) and single-story townhomes (18.1%) were also preferred, reflecting the demand for accessible, low-maintenance living spaces. Additionally, 43.1% of respondents preferred living alone, while 38.8% preferred a shared arrangement, typically with a spouse or relative, which corresponds to the ‘Supportive Living’ model, where social and healthcare services are readily available to promote both independence and companionship. In addition, one-bedroom apartments (18.8%) and single-story townhomes (18.1%) were preferred, aligning with ‘Supportive Living’ typologies. These options meet the demand for accessible, low-maintenance living spaces, providing elderly residents with the privacy of their unit but within a setting that can offer essential community and health services. Additionally, 43.1% of respondents preferred living alone,

emphasising autonomy, while 38.8% favored a shared arrangement, typically with a spouse or relative. This preference further underscores the suitability of Supportive Living, where social and healthcare services can promote independence and companionship, ensuring that residents maintain a high quality of life with social support when needed (Supawadee B. & Terdpong B., 2022).

Focusing on **supportive accommodations**, this research highlighted the need for housing that addresses key aspects of autonomy, well-being, and active engagement for near-retirement individuals. Informed by the Elements of the Value Layers, the study identified three accommodation models designed to enhance active aging by addressing core concerns identified in focus groups, such as space utilization, environmental safety, travel accessibility, cost of living, and care availability. Each accommodation reflects specific needs within the Home and Supportive Living categories, offering various levels of independence, accessibility, and support tailored to Bangkok’s aging population.

• Homes (Detached/Semi-Detached Houses)

| Layers | Guidelines |
|---------------|---|
| Functional | These homes primarily address consumers’ functional needs by offering privacy and space for personal activities such as gardening and relaxation. The unobstructed views and surrounding areas meet practical goals like safety, comfort, and convenience, allowing residents to enjoy the benefits of a larger living environment. |
| Emotional | Detached houses provide an emotional value through their ability to offer a personal retreat. The privacy and ability to engage in individual activities within one’s own space add to the sense of emotional security and contentment. The peaceful environment fosters a homelike atmosphere , which reduces stress and contributes to overall emotional well-being. |
| Life Changing | For residents who value independence and personal growth, detached and semi-detached houses offer the opportunity to maintain an active lifestyle . Space for outdoor activities like gardening encourages autonomy and contributes to a higher quality of life. |
| Social Impact | Some individuals are willing to share their living space with others to reduce costs . This decision reflects a social responsibility , as sharing resources can reduce the environmental footprint and foster a sense of community. This aligns with the social impact value of helping individuals contribute to society through sustainable living practices. |

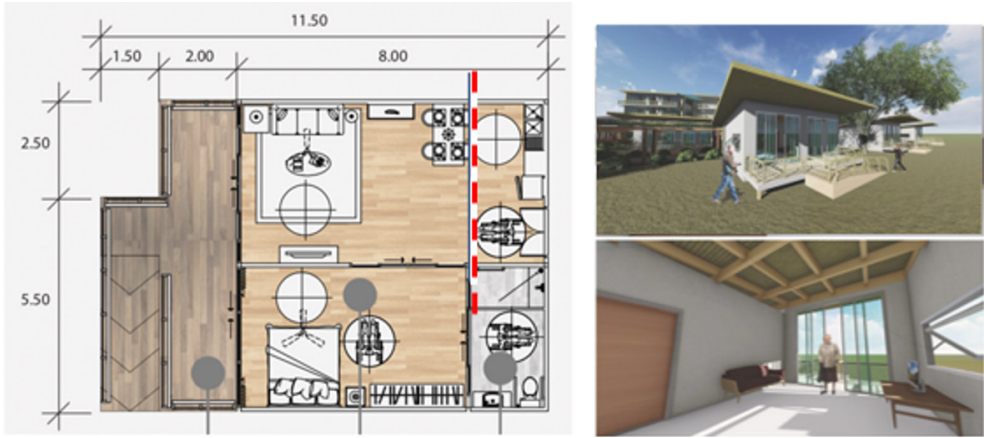


Figure 1: Characteristics of Detached/Semi-Detached Houses -Style Housing

• Apartments or Condominiums

| Layers | Guidelines |
|---------------|--|
| Functional | Apartments and condominiums are designed to meet the functional needs of those with a modest budget . These low-rise buildings provide easy access to public transportation and amenities , making them practical for individuals who seek convenience in their day-to-day activities. Including two bedrooms allows for flexibility, whether hosting friends, relatives, or personal caregivers. |
| Emotional | The emotional appeal of condominiums comes from maintaining a sense of community and connection with loved ones while still having personal space . The views of green spaces and the compact but comfortable living environment provide emotional comfort, promoting well-being. |
| Life Changing | Condominium living can facilitate personal transformation by providing a setting that encourages independent living while accommodating future needs, such as the presence of caregivers. This supports individuals in maintaining their autonomy as they age, contributing to life-changing value. |
| Social Impact | Living in condominiums, residents contribute to urban density solutions, which can have a positive environmental impact by reducing urban sprawl. This choice reflects a socially responsible lifestyle, balancing personal needs with broader societal benefits. |



Figure 2: Characteristics of Condominium-Style Housing

- **Lodges:** These are large homes with multiple private bedrooms in each unit, equipped with essential services and amenities for elderly residents, such as kitchen facilities, living rooms, and caregiver quarters.

| Layers | Guidelines |
|----------------------|---|
| Functional | Lodges balance independent living with the availability of care services . Their functional value is significant, as these large homes provide essential amenities such as kitchens, living rooms, and caregiver quarters, all designed to support elderly residents' comfort and safety. |
| Emotional | Lodges aim to provide a home-like atmosphere while ensuring elderly individuals can live independently with the necessary support. This setup reduces anxiety about safety and well-being, creating a sense of emotional security and comfort. |
| Life Changing | Lodges' life-changing value is evident in their active aging and personal transformation promotion. By offering space for social interaction, activities, and personal growth, these homes empower elderly residents to maintain a fulfilling and autonomous lifestyle even in later years. |
| Social Impact | Lodges also contribute to social value by fostering a sense of community. Shared spaces and green areas encourage social interaction and support , allowing residents to feel connected and to contribute positively to their community. |



Figure 3: Characteristics of Lodges Style Housing

The focus group discussions identified the following key housing issues for the elderly, which informed the design of new housing models that aim to improve quality of life and motivate the target audience to move into new accommodations. The findings are as follows:

| Layers | key housing issues for the elderly |
|---------------|---|
| Functional | <p>- Space Utilization Issues The Living spaces are too small and lack areas for hobbies or green spaces for gardening that could help reduce expenses. Most urban residential areas are multi-story buildings, such as townhomes or shophouses, where the ground floor is often used for business or as a communal family area. These areas tend to be chaotic and overly exposed to external noise. As a result, elderly residents often have to live on higher floors, making it difficult for them to go up and down the stairs.</p> |
| | <p>- Environmental and Safety Concerns The current residential community consists of diverse neighbours, making it feel unsafe for daily living. The residences are in a crowded area with narrow streets, a high density of residents, and heavy traffic. The air quality is polluted, making it hazardous to venture out into the surrounding public areas.</p> |
| | <p>- Travel Difficulties Walking from the main road to their homes is challenging and exhausting for those living deep within alleys. Constant traffic congestion causes stress every time they travel. Additionally, in an emergency, it would be difficult to access medical care. These travel difficulties have led some individuals to leave their long-term residences.</p> |
| | <p>- Cost of Living in Urban Areas The cost of living in the city is high and continues to rise, while their income is expected to decrease in the future. This has made them consider moving to suburban or rural areas instead.</p> |
| Emotional | <p>- Lack of Care When Self-Support Is No Longer Possible Individuals who live alone or separately from their children are concerned that if they become unable to care for themselves or an accident occurs, no one will assist or take care of them. This concern makes them prefer living in elderly communities rather than relying on family members for care.</p> |
| Life Changing | <p>- Travel Difficulties The feeling of being burdened by their children or grandchildren with constant transportation causes them to lose their self-esteem, independence, and activeness.</p> |
| Social Impact | - |

The focus group provided in-depth insights into developing elderly accommodation models:

| Layers | Guidelines |
|------------|---|
| Functional | <p>- Pricing and Ownership</p> <p>Rental Almost all target individuals are more interested in long-term rentals than outright purchases because if they cannot fully repay the debt, the debt burden will fall on their children. Additionally, suppose they purchase the property for future investment. In that case, they might face difficulties finding a buyer when it comes to selling, or they may not be in good enough physical or mental condition to manage the sale. Most of the target group suggests that</p> <ul style="list-style-type: none"> • The rental prices should be tiered based on the lease length, starting at 5 years, 10 years, and up to 30 years, with the rent decreasing for more extended lease periods. • The affordable long-term rental price range depends on the living space's type and size is between 12,000 - 15,000 THB per month and from 15,000 - 20,000 THB per month, if the rent exceeds 20,000 THB per month, the target group indicated that as they age, they may not be able to afford it, or their savings might not be sufficient. Those who expressed interest in a short-term 5-year lease mentioned that they are unsure of their lifespan and do not want to spend unnecessary money on a lease that is too long. <p>Outright Purchase Most people interested in outright purchase prefer single detached houses. Purchasing a property outright allows it to be passed on as an inheritance to their children and gives a greater sense of ownership than long-term rentals. The affordable price range for outright purchases is between 3 and 4 million THB.</p> <p>Maintenance Fee The monthly maintenance fee, which covers the maintenance of the premises and staff costs, should not include personal recreational activity fees since everyone has different needs. The affordable range for monthly maintenance fees is between just over 1,000 THB to nearly 2,000 THB per month, with the price adjusting according to the residence size.</p> |

| | |
|---------------|--|
| | <p>- Residential Density The target group could not specify the expected number of residences, as they could not imagine the appropriate number. However, there should not be too many residents sharing the common areas, as this could lead to a feeling of overcrowding. The project's overall design should not make residents feel cramped or overly crowded. If there are many residents, the usage of common areas should be</p> <ul style="list-style-type: none"> • well-proportioned • Provide enough green spaces to prevent feelings of being too confined. • divided into several spots to allow residents to spread out and use them without feeling crowded. <p>- Living Space Most of the participants in this research placed the living space design within their private rooms as a lower priority, as they expect to spend more time in the project's common areas with fellow residents rather than staying in their private rooms, assuming they are not bedridden. They also expect that the private living spaces should already be designed to suit the lifestyle of the elderly and enable them to help themselves as a basic requirement. The details presented by the target group are as follows:</p> <p>- Bedroom Most participants preferred a bedroom separated by walls from other areas to ensure privacy and prevent smells from eating food in the living room or cooking in the kitchen. The bedroom should be directly connected to the bathroom for convenience and have enough space for a wardrobe, bed, and shelves.</p> <p>- Bathroom The bathroom should be connected to the bedroom, have non-slip floors, separate wet and dry areas with grab bars to assist with balance and prevent slips, and have good ventilation to avoid dampness.</p> <p>- Kitchen Most participants indicated that a full kitchen is unnecessary because they do not cook or may need more energy to cook for themselves. However, the living space should include a small counter for warming food, a microwave, and a refrigerator for storing drinks and food. Those who desire a personal kitchen mentioned that if a private kitchen is unavailable, it could be replaced by a shared kitchen equipped with cooking appliances, where they could cook together with neighbours and share meals, fostering closer relationships.</p> <p>- Multipurpose Area within the Private Room This area should be suitable for sitting, watching TV, eating, hanging out with friends, or engaging in hobbies. It should be well-ventilated, making it comfortable to stay in for extended periods if it is difficult for the resident to leave the room. Some participants mentioned that the living room could be in the common area, allowing the private room to focus more on personal activities.</p> <p>- Balcony Participants expressed a desire for a balcony to change the atmosphere, reduce the feeling of confinement within the building, and avoid the need to use common areas. The terrace should be spacious enough for sitting, relaxing, reading, or enjoying the view and the outdoor environment.</p> <p>- Convenience Equipment The furnishings should be customised according to individual needs. Some participants prefer a living space fully furnished with essential items and ready for immediate occupancy. In contrast, others prefer a space to bring their furniture, creating a familiar environment reminiscent of their previous home.</p> <p>- Clothes Drying Rack The drying rack should be designed for easy use. Some participants mentioned that having a washing machine with a built-in dryer would be even better.</p> |
| Emotional | <p>- Building Design A modern style with high ceilings enhances emotional well-being by providing a more open, airy environment that promotes relaxation and comfort.</p> |
| Life Changing | <p>- Project Overview Housing development supports active aging and promotes personal growth and transformation.</p> |

| | |
|-----------------------------|---|
| <p>Social Impact</p> | <p>- Common Areas Most of the target group favours projects with shaded common areas with cool, comfortable air provided by trees and water sources. A well-designed garden should include various tree types and sizes, blending different elements such as flowering plants for beauty, colour, and fragrance, small shrubs, climbing plants to create a cooling canopy, and large trees to provide shade, allowing the elderly to enjoy outdoor activities comfortably. These green, shaded common areas support social interaction and environmental sustainability, adding social value to the project by encouraging community engagement.</p> <p>- Project Overview Although this project aims to cater to retirees who still have an income to support an active aging society, the design must also accommodate the later stages of life when the elderly may no longer be able to care for themselves, ensuring they can continue to live comfortably. The target group has indicated that this residence would be their last home, and relocating to a new place later in life would be extremely difficult. Additional considerations exist for a project designed for retirees with an income to support an active aging society. Many elderly individuals who are still physically strong or able to work have indicated that it is not time for them to move into a senior-specific housing project. They prefer to stay in familiar surroundings with their spouse, relatives, or children. They would consider moving into such a project only when they are no longer able to work or care for themselves, when their spouse has passed away, or when they no longer have children to care for them. Therefore, the project needs to offer other incentives to attract this target group before they reach that stage. These incentives should go beyond simply providing senior housing. Adding commercial areas can help make the space more vibrant, and allowing private businesses to open shops and services within the community could generate income, thereby reducing residents' living costs."</p> |
|-----------------------------|---|

Discussions

The focus group discussions revealed several critical concerns among elderly residents, including space utilisation, environmental safety, accessibility, and affordability. These findings align with previous studies on elderly housing preferences, emphasising the importance of designing environments catering to physical and psychological needs (Mnea & Zairul, 2023; Sudprasert, 2020).

For **space utilisation**, participants noted that limited space can restrict opportunities for hobbies, relaxation, and social interactions, underscoring Maslow’s hierarchy of needs, which places a high value on environments that promote self-actualisation and social engagement. Addressing these needs, flexible living spaces and dedicated communal areas for recreational and social activities could enhance the quality of life for elderly residents, enabling them to engage in personal growth and community-building activities.

Environmental safety emerged as another key concern. Participants reported feeling unsafe in crowded urban settings, a finding supported by urban design research that suggests well-integrated greenery and pedestrian-friendly layouts contribute to perceived safety and promote outdoor activity (Koerniawan & Gao, 2016). Incorporating green spaces within residential complexes could, therefore, address safety concerns and align with WHO’s Active Aging framework, which encourages outdoor engagement to enhance physical and emotional well-being.

Accessibility was also highlighted, with participants expressing a need for housing near essential services such as healthcare facilities and grocery stores. Studies have shown that proximity to these services plays a vital role in supporting the autonomy and independence of elderly residents (Fu, 2021). Integrating essential services within or adjacent to housing projects could ease daily tasks and foster independence, aligning with the elements of functional value in the Value Pyramid theory (Eric et al., 2016).

Affordability remains a pressing concern, particularly in the context of long-term housing stability. Previous research has identified financial insecurity as a significant barrier to stable housing for elderly populations (Division of Elderly Potential Promotion, Group for Enhancing and Developing the Potential of Elderly Networks, 2021). Implementing tiered rental pricing structures or subsidies for middle- and low-income elderly could alleviate financial pressure and make quality housing more accessible. This contributes to economic stability as a core value within supportive living models.

Participants also valued **social interaction, green spaces, and architectural designs that promote emotional well-being**. The WHO Active Aging framework supports these preferences, advocating for environmental and social factors that reduce stress and promote well-being among the elderly. To foster a supportive atmosphere, housing designs can incorporate shaded green areas, gathering spaces, and aesthetic features that encourage relaxation and community-building.

Lastly, **urban navigation challenges** for elderly residents, particularly in dense or polluted areas, highlight the need for thoughtfully planned housing projects. Research indicates that well-designed living environments reduce anxiety and provide emotional reassurance (Sudprasert, 2020). Housing prioritising comfort and safety through careful layout and design would address residents' physical needs and contribute to their emotional well-being, supporting a holistic approach to active aging.

Conclusion

Thailand's transition into a **Super-Aged Society** by 2038 (Thailand Development Research Institute [TDRI], 2023). demands the development of innovative housing models that address the comprehensive needs of the elderly population. This research highlights three key accommodation models designed to foster active aging.

- **Detached/Semi-Detached Homes**
These homes offer a private, spacious environment that enables residents to engage in gardening, outdoor hobbies, and personal activities, fostering independence and privacy. Detached homes provide the flexibility to create adaptable spaces, such as ramps and safety installations, that accommodate evolving physical needs.
- **Apartments or Condominiums**
Ideal for those seeking convenience, these low-rise buildings prioritise accessibility to public transportation and community amenities. The design includes compact, efficient layouts with shared common spaces, encouraging social interaction among residents while ensuring privacy in personal spaces.
- **Lodges**
These larger residences are structured to support both independent living and access to essential care services. They have private bedrooms and communal areas that foster a sense of community. The design emphasises a homelike environment with supportive infrastructure, making it easier for residents to transition to assisted living if necessary.

These models incorporate the four **layers of the Elements of the Value Pyramid: Functional, Emotional, Life-Changing, and Social Impact**; each plays a crucial role in improving the quality of life for the elderly.

- **Functional Layer:** Each housing model meets essential needs, such as **safety, accessibility, and convenience**. Features like non-slip flooring, grab bars, and well-placed lighting contribute to residents' independence and dignity, while communal spaces and green areas ensure comfort and ease.
- **Emotional Layer:** Thoughtful design elements promote **emotional well-being by creating a homelike atmosphere, reducing anxiety, and fostering a sense of security**. Green spaces, modern designs, and private living areas enhance emotional comfort and peace of mind, allowing elderly residents to feel at ease within their community.
- **Life-Changing Layer:** To encourage **personal growth and independence by incorporating outdoor activities, hobby rooms, and social events, which support an active aging process**. Programs such as group exercise classes, gardening, and art workshops empower residents to pursue personal interests and maintain an active lifestyle, positively impacting both physical and mental health.
- **Social Impact Layer:** Focusing on community-building and sustainability fosters a sense of belonging and encourages **elderly residents to remain socially engaged**. Shared spaces, green environments, and eco-friendly infrastructure contribute to environmental responsibility and enhance social interaction, allowing residents to participate meaningfully in their communities.

These four layers can be integrated into the design of elderly housing. These models holistically address the diverse needs of the elderly, ensuring a higher quality of life as Thailand moves toward a super-aged society.

Recommendations

1. Affordable Housing Focus

Given that over 80% of Thailand's elderly fall into the middle to lower-income brackets (Econ Digest, 2021), project developers should **prioritise affordable housing to broaden access to supportive living accommodations**. Strategies could include subsidised units, smaller modular apartments to reduce material costs or a focus on building in suburban areas where land is less costly. Affordable housing initiatives may also include public-private partnerships or government subsidies for developers, making such projects viable while keeping rents affordable.

2. Tiered Rental Models

Developers should **implement tiered rental pricing**, where longer-term leases offer reduced monthly costs. This approach provides financial relief for elderly residents and ensures stable occupancy rates. To balance financial flexibility and occupancy, designs could incorporate modular spaces that can be easily adjusted or expanded based on tenant needs, potentially reducing costs over time for long-term residents. Privacy concerns can be addressed by providing soundproofing in individual units and well-designed private entrances to each unit, ensuring residents' comfort and security.

3. Post-Retirement Employment Opportunities

Incorporating employment opportunities within residential communities allows capable elderly individuals to earn income, enhance self-worth, and reduce the risk of depression (Renukarn Thongkamrod, 2002). Consider creating community-based roles, such as facility management support, gardening, or activity coordination, which align with residents' abilities and interests. This supports residents' mental health and reduces community costs, benefiting everyone involved.

4. Optimizing Thermal Comfort and Community Engagement in Elderly Housing: The Role of Green and Shaded Communal Spaces

To enhance the quality of life for residents and foster community spirit, it's essential to design green, shaded communal spaces. These areas should prioritise comfortable temperature regulation and inviting layouts that encourage social interaction, as Koerniawan and Gao (2016) suggested. Specific strategies include using native shade-providing plants, shaded walkways, and water features to naturally cool outdoor areas. Privacy can be maintained by incorporating screened sections within these spaces, allowing for both communal and private relaxation areas in an open, comfortable environment.

5. Commercial Integration

Including **commercial and retail spaces within residential developments helps reduce housing costs** by generating revenue while ensuring that essential services are within easy reach. For example, small grocery stores, pharmacies, and cafes can provide conveniences while fostering a vibrant, self-sustaining community. To address privacy concerns, zoning within the development can ensure that residential areas remain separate from commercial spaces, with distinct pathways and noise barriers.

6. Smart Technology Integration

Incorporating smart technologies enhances safety, convenience, and adaptability for elderly residents.

Examples include health monitoring systems, automated lighting, temperature controls, and voice-activated assistance, which can support independent living and provide peace of mind for both residents and caregivers. Privacy concerns related to data security and personal monitoring can be mitigated by ensuring that these systems comply with local data protection regulations and by offering residents control over privacy settings, such as adjustable monitoring options and consent-based data sharing

By incorporating these design strategies and addressing privacy concerns, future housing projects can better meet the evolving needs of Thailand's aging population, promoting active aging, independence, and social engagement in a secure, inclusive environment.

CRediT Authorship Contribution Statement

Terdpong Boonpan: Conceptualization, Methodology / Study design, Software, Validation, Formal analysis, Investigation, Data curation, Writing – review and editing, Visualization. **Supawadee Boonyachut:** Conceptualization, Methodology / Study design, Validation, Investigation, Resources, Writing – original draft, Writing – review and editing, Supervision, Project administration, Funding acquisition



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