

A FEASIBILITY STUDY OF DEVELOPING A RETIREMENT COMMUNITY PROJECT IN THAILAND

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ABSTRACT

Population aging is a global concern as many countries, including Thailand, have already become an aged society. However, most of the real estate developers are still focusing on conventional residential projects which are not suitable for the elderly due to a lack of facilities and services. Currently, the majority of Thai elderly must choose between living under family support or moving into a public-operated retirement community, in which their living condition can hardly be ensured. This study aims to explore the possibility of private sector real estate developers to engage in retirement projects by determining the financial feasibility of a privately-operated retirement project using cost benefit analysis. A market survey and semi-structured interviews were conducted prior to the analysis, while it was found that under the current market demand, a retirement project could generate a positive net at present values. However, the return on investment was lower than for conventional real estate projects. Hence, financial support from the public sector might be required in order to better motivate private developers to engage in retirement projects.

Keywords: Financial Feasibility, Retirement Community

INTRODUCTION

Population aging is a global demographic phenomenon affecting many countries around the world. The United Nations normally defines the elderly as aged 60 and over, while in most developed countries, the cut-off age is frequently extended to 65 years (Tantivejkul, 2018). The population is aging at an alarming rate due to a declining fertility rate, combined with increasing life expectancy. The extent of the elderly population in the world is at an all-time high (Share of aging population Thailand 2015–2100, 2021). In 2018, there were around 990 million people aged 60 and over in the world's population of 7.6 billion people,

accounting for 13% of the total population (Tantivejkul, 2018). This is projected to reach 2.1 billion by 2050 (Mba, 2010). An aging society refers to a society in which the population is aging, as seen by the steadily increasing proportion of the population over the age of 65. Aged society denotes a society in which the proportion of people aged 60 and over surpasses 10% of the overall population or 7 percent of the population being 65 and above. A completely-aged society has more than 20% of the total population aged 60 and over or 14 percent 65 years and over. A Super-aged society is one in which the proportion of people aged 60 and over surpasses 28 percent of the overall population

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or when 20 percent of the population is 65 and older (Tantivejkul, 2018). According to the United Nations Population Division, the countries that have the most severe aging population are in Asia and Europe. The top most aged population is in Japan with 28 percent of people aged 65 or above, followed by Italy with 23 percent. Finland, Portugal, and Greece fill out the top five at slightly below 22 percent. The world's most aged region is southern Europe, including Croatia, Greece, Italy, Malta, Portugal, Serbia, Slovenia and Spain, where 22% of the population are aged 65 and over. In the Association of Southeast Asian Nations (ASEAN), Thailand has the second-fastest aging population, behind Singapore (Share of aging population Thailand 2015–2100, 2021). The global trend shows the great potential of the retirement market on a global scale.

According to the World Bank, the total population of Thailand in 2020 was 69.8 million. Thirteen percent of the Thai population were older than 65 in 2020, of which 5,102,345 were female and 3,942,151 were male. Thailand has already become an aged society. It has been estimated that 35.1% of the total population will be 65 or over in Thailand in 2100. A decreasing fertility rate and increasing life expectancy at birth have led Thailand to become more aged. The fertility rate in 2022 was 1.476 births per woman, a drop of 1.01% from 2021. According to the United Nations Population Fund Thailand and the Office of the National Economic and Social Development Board, individuals choosing to stay single, delayed marriage, family planning, the financial burden of having more children, the impact of childbearing on career development, and the urban lifestyle, have all contributed to the lowering fertility rate in Thailand. Currently in 2022, the life expectancy at birth is 77.56 years, an increase of 0.24% from 2021. It has also been predicted that Thai people's life expectancy at birth will continue to rise, resulting in a greater number elderly citizens.

However, Thailand, along with many emerging economies, has become old before getting rich. People in Thailand who are 65 or

above have a slightly greater poverty rate than other age groups (Suwanrada, 2008). For the elderly in Thailand, 51 percent of income comes from their own personal income or their spouse. This is their main source of income. Alimony from children was the second principal source of income for the elderly, accounting for 35 percent. Meanwhile, 20 percent of elderly people reported that old-age allowance was their main source of income. Only 2 percent of older people were found to be totally dependent on their savings. A small number of those surveyed (18 percent) said their income was insufficient, while 6 percent of those surveyed said they could save money (Wongboonsin et al., 2020).

Currently, most of the Thai elderly live with their family and are taken care of by their children. However, this traditional model of family care arrangement is becoming more and more difficult due to the changing ratio of elderly to working-age Thais. According to Kasikorn Bank, the household size is decreasing; in 2014, there were almost 900,000 old people living alone in Thailand. The current situation shows a need for long-term elderly care which is increasing. Furthermore, Anantanasuwong and Seenprachawong (2012) indicated that one of the most important actions for improving the life satisfaction of Thai elderly is to create a pleasant environment with amenities for Thai seniors to engage in social activities and make new friends, proving that retirement communities are necessary for the elderly Thai population. This market should become prosperous in the near future (KasikornBank, 2018).

Internationally, retirement communities normally consist of four different types which cater to the different needs of the elderly, namely independent living facilities, assisted living communities, nursing homes, and Continuing Care Retirement Communities (Erskine, 2018). The independent living facility allows seniors to live in the community independently in private apartments or detached homes. Senior residents can participate in recreational

activities, and use facilities and services provided by the community, such as on-site spa, pub, and house-keeping services. This type of retirement community aims to satisfy the social needs of its senior residents (Brune, 2011). The second type, known as assisted living communities, offer all the services of an independent living facility, as well as offering full-time in-home care. This service is offered to those residents who require assistance with their daily activities or small tasks, such as remembering their medication or bathing. An assisted living retirement community would be likely to be a senior-friendly hotel. If senior residents require regular medical assistance, the third type, a nursing home would be more suitable. Medical and personal care are provided at nursing homes in a clinical setting, while assisted living communities offer personal care service in a home-like setting (Zimmerman et al., 2003). Residents in nursing homes normally suffer from disease and require medical care around the clock. Lastly, the Continuing Care Retirement Communities (CCRC) offer a combination of the services found in independent living facilities, assisted living communities and nursing homes. Residents of CCRCs can live with whatever degree of care they require, as a CCRC, provides a more complete range of services in the community. Residents can live as independently as they want, but at the same time, they can also receive more medical care and supervision without leaving the community (Doggett, 2017).

According to a Kasikorn Bank report on the retirement market, in 2018 Thailand had 950,000 dependent seniors with 143,000 bedridden elderlies. Additionally, nearly 70,000 foreign elderlies held a long stay retirement visa in Thailand in 2018 (KasikornBank, 2018), meaning that both Thai and foreign elderlies require careful elderly care in Thailand. This situation reveals that the Thai retirement market has great potential. Up to 2018, there were approximately 760 small and medium operators, with a maximum of 30 beds and approximately 40 large operators, with more

than 30 beds and several branches. The majority of the small and medium sized retirement communities were sole proprietorships of a medical professional while large operators were operated under private hospital groups. Large operators normally target the high-end markets, with an annual revenue of over 30 million baht per retirement community. The annual revenue of small and medium sized operators is around 4 to 16 million baht per operator. Generally, large operators are preferred due to providing a higher range of services (KasikornBank, 2018). For example, Vivobene village in Chiangmai has 80 living units in total with its own clinic and various personalized services. Elderly people can receive different levels of care and support according to their condition, such as some elderly people would like to live independently as much as possible while some seniors require 24-hour personal medical care. As such, Vivobene was operating as a CCRC. Meanwhile, Care Resort in Chiangmai was an assisted living retirement community, offering 58 villa rooms and a dementia unit with 5 bedrooms. Residents in Care Resort Chiangmai could live independently with care and support but if they required medical services, would have to leave the residence to attend a local hospital. Small and medium operators also provided a variety of choices. For example, Carewell Service company in Phuket, with 20 rooms, also operated as a CCRC, with services divided into 13 categories, such as assisted living, Alzheimer's, dementia and long-term care, and animal-assisted therapy. Prosana in Hua Hin was an assisted living retirement community with 7 houses and 12 care places. It was small but family-oriented offering daily assistance with small tasks, such as dressing and undressing as well as personal hygiene. Nursing homes have also become common in Thailand. There were around 3000 nursing homes in Thailand in 2017 (Jitplleecheep, 2019). Nursing homes focus on taking care of seniors with illness. The room type in nursing homes is generally similar to a standard ward. The services provided would be based on each nursing home.

Since 1986, the Thai government has continuously contributed efforts into improving the quality of life of the Thai elderly population by implementing public policies and strategies, such as appointing the Ministry of Social Development and Human Security to be responsible for the lives of the Thai elderly in accordance with the Madrid International Plan of Action on Ageing, also known as MIPAA (Anantanasuwong & Seenprachawong, 2012). However, the situation of public retirement communities funded by the government is not optimistic, due to the nature of publicly funded projects, the priority of public retirement communities is to cater for those with a relatively low income or those who have more difficulties in taking care of themselves, leading to a relatively lower quality of life in publicly funded retirement communities. Meanwhile, due to lack of funds and resources, there is constant state of under-provision within the public retirement communities and a lack of trained care labor force. At the same time, the existing private retirement communities, in particular the high-end ones, are targeting foreign retirees, hence they have very limited impacts on easing the pressure of the retirement life among Thais.

Therefore, a large proportion of Thailand's growing elderly care market has been left uncharted, as the majority of the aging population are in the middle-income class and are either unwilling to join the publicly funded retirement communities due to the low standard of living, or are unable to secure a place in the publicly funded retirement communities due to the lack of capacity. Hence, it is essential for the private sector to increase their engagement in the retirement community market, providing a much-needed remedy to the under-provision of this public good (Bank, 2020).

This study aimed to determine the financial sustainability for private sector real estate operators to develop a retirement community appropriate for the middle to upper income class retirees in Thailand by adopting a Cost-Benefit Analysis.

LITERATURE REVIEW AND METHODOLOGY

A cost-benefit analysis (CBA) is a systematic and analytical method of assessing the strengths and weaknesses in evaluating the feasibility of a project. It aims to answer problems such as whether a proposed project is valuable, what the project's optimal scale should be, and what its limitations. A CBA is commonly used for making decisions about the use of a society's scarce resources that are crucial to the government (Mishan & Quah, 2020). It estimates the value of a project, policy, or other government intervention, against the cost of the project (Hirst, 2018). A cost-benefit analysis can also be applied to make the best decisions for gaining benefits while upholding savings, for instance, in commercial transactions (David et al., 2013). In a CBA, the impacts of a project are classified as either benefits or costs and are given a dollar value in order to determine the net benefit of the project. The CBA strives to take into account all of the social costs and benefits to the society (Boardman et al., 2017). All in all, a CBA aims to improve the allocative efficiency according to the society's development (McIntosh et al., 2010).

Due to the various stages in the project life cycle, there are four types of CBA, namely the ex-ante CBA, ex-post CBA, in-medias-res CBA and one that compares input from more than one type, combining an ex-ante CBA with an ex-post CBA or an in-medias-res CBA for the same project. Ex-ante CBA refers to conducting the CBA before implementing the project. It is designed to answer whether resources should be allocated to the proposed project. In contrast, an ex-post CBA is a CBA conducted after completion of the project. The purpose of an ex-post CBA is to provide an evaluation and knowledge for the government and related stakeholders who are interested in the project. This type of CBA can provide valuable knowledge for carrying out similar projects in the future. In-medias-res CBA refers to conducting a CBA while the project is ongoing. It normally contributes to recommending whether the project should be

modified or terminated, especially for those projects which require significant ongoing investment. The last type of CBA is a comparison between an ex-ante CBA and an ex-post CBA or in-medias-res CBA for the same project. This type of comparative CBA aids in identifying past errors, understanding their causes, and avoiding them in the future (Boardman et al., 2018). A CBA can also be classified as either a Financial CBA (F-CBA) or an Economic CBA (E-CBA). F-CBA determines the financial suitability of a program or project by using cash flow estimates. The financial internal rate of return (F-IRR) and the financial net present value are both calculated (F-NPV) in a Financial CBA. An economic CBA determines a project's economic appropriateness by using projections of its economic cost and benefit flows. It entails calculating the economic internal rate of return (E-IRR) and the economic net present value (ENV) (E-NPV). In a Financial CBA, only monetary benefits and costs are included while in an Economic CBA, opportunity costs and benefits to the society are also included (McIntosh et al., 2010). This study utilizes a Financial CBA to conduct a project evaluation and management.

A generic Cost-Benefit Analysis could be divided into ten steps. The first step is to clarify the goal of the CBA. When market or government failure occurs, a CBA can suggest whether it is necessary to implement an intervention. The second step is to define the group of alternative projects. Viable potential alternatives should be compared and evaluated in the CBA. The third step is to clarify the different benefits and costs from various different perspectives. For example, if conducting a CBA analysis about whether a factory should be established, policy makers from the local area may only care about the local revenue and costs, however, adjacent municipalities who stand in the regional perspective may add environmental impacts into consideration, therefore, the decisions reached by stakeholders from the two perspectives may vary. Step four involves cataloguing all related impacts and choosing appropriate metrics to measure those impacts.

The selection of metrics is determined by the availability of data and the ease with which the project can be monetized. For example, if conducting a CBA to measure the number of crimes prevented as a result of a policy modification, it may not be possible to gain access to the data. However, analysts could select available metrics to measure the impacts, in this case, metrics could be adjusted to changes in arrest rates or changes in conviction rates, using these two metrics to indicate and measure the number of crimes avoided. Step five is necessary for analysts to forecast the impacts in the long term, especially regarding projects with long time horizons. For example, building a new and shorter highway is not only for reducing congestion of the old route, but it may also decrease serious accidents and save lives. The sixth step involves monetization of the impacts. Willingness to pay is commonly used when there is difficulty in attaching a dollar value to the benefits. The greater the demand for a project the greater the willingness to pay, indicating that the project is worthwhile. However, if no one is willing to pay for a project, the project has no value in its CBA. Step seven refers to obtaining the present value of the benefits and costs by discounting the future value. Assuming a project has an n-year life span, and s refers to the social discount rate, while B_t and C_t indicate the social benefits and social costs in year t , the formulas for calculating the present value of the benefits and costs are:

$$PV(B) = \sum_{t=0}^n \left(\frac{B_t}{(1+s)^t} \right) \quad (1)$$

$$PV(C) = \sum_{t=0}^n \left(\frac{C_t}{(1+s)^t} \right) \quad (2)$$

Step eight involves computation of the net social benefit, which is the difference between the present value of the benefits and costs :

$$NPV = PV(B) - PV(C) \quad (3)$$

If the net present value is positive, this project is worthwhile. If there are several mutually exclusive projects, the one that generates the highest NPV would be the best choice. However, there would be many uncertainties, such as doubt of the social discount rate, therefore, a sensitivity analysis and scenario analysis could be conducted in order to make sure that the selected project is the most appropriate. The last step is to make a recommendation. A project with a higher NPV may also have a higher risk; consequently, different analysts may have different recommendations. Hence, the internal rate of return and the benefit-cost ratio could be also proposed as evaluation rules. However, the NPV rule is always the priority when making recommendations (Boardman et al., 2017).

The project's Internal Rate of return (IRR), also known as the breakeven discount rate, is the discount rate resulting when the NPV equals zero (Boardman et al., 2017). If the IRR is equal to or higher than zero, then the project is probably acceptable. The internal rate of return is given by r , the formula for calculating IRR is given by equation (4).

$$NPV = \sum_{t=0}^n \left(\frac{B_t}{(1 + IRR)^t} \right) - \sum_{t=0}^n \left(\frac{C_t}{(1 + IRR)^t} \right) = 0 \quad (4)$$

However, the IRR may be misleading for decision-making as well. Firstly, the NPV may be 0 for more than one IRR when cash flow changes signs. Secondly, when selecting projects with different sizes, the IRR, as a ratio, is not suitable as the scale of the investment may lead to an incorrect judgement (Boardman et al., 2017).

The benefit-cost ratio, as suggested by the name, indicates the relationship between the benefits and costs of one project. The present value of all benefits created by a project or asset is compared to the present value of all costs. The function of the benefit-cost ratio is given by equation (5):

$$NPV = \sum_{t=0}^n \left(\frac{B_t}{(1 + r)^t} \right) \div \sum_{t=0}^n \left(\frac{C_t}{(1 + r)^t} \right) \quad (5)$$

The BC ratio can be a good starting point for decision making; however, it can also have a scale problem, meaning that the BC ratio suggested not to be the only criteria for evaluating the feasibility of a project without knowing the size of the project (McIntosh et al., 2010).

Sensitivity analysis is an important part for a cost-benefit analysis, helping people to predict the uncertainty and risk with analyzing how the project's NPV will change by moderating the cost and benefit factors. Sensitivity analysis recognizes uncertainty in the values of the crucial factors in the prediction (Boardman et al., 2017). A sensitivity analysis can thus be used to evaluate a project's net value under alternative scenarios and can be used to report the relative importance of several parameters (Loucks & Van Beek, 2017). There are three approaches to conducting a sensitivity analysis, namely the partial sensitivity analysis, worst-and-best-case analysis and Monte Carlo simulation. The partial sensitivity analysis is the most widely used. A partial sensitivity analysis could help to find out the value of numerical assumptions. The second most widely used approach is the worst-and-best-case analysis. By addressing the worst-case scenario with the lowest NPV and the best-case scenario with the highest NPV, a decision maker can know more about what might happen in order to better finalize the project. The third approach is a Monte Carlo simulation, which is used to forecast the likelihood of several consequences with the presence of random variables (Boardman et al., 2017).

In this study, all four methods were applied for evaluation while NPV was used as the main technique. A CBA has several advantages and limitations. One of the advantages is in helping decision makers to be as objective as possible. It helps to monetize the impacts and effects of a project, providing a quantitative indication of the costs and

benefits to society. It guides people to know about the actual value of a specific project, especially regarding the social impacts which have no market price. A CBA helps the society to achieve a pareto analysis, allowing improvement through taking advantage of the resources most efficiently. A CBA is quite flexible as it can be conducted at any point during any project if decision makers believe it was worthwhile. It is not only used for providing oversight of the balance of costs and benefits, but also helps to construct the project preparation. By performing a cost-benefit analysis, project leaders can have a more complete understanding over the whole project. An unclouded view can be presented regarding the desirability of the project for its future development and the society.

However, the CBA also has some constraints. A CBA can only provide vague information of low reliability and significance if the size and/or valuation of one or more major effects of a project is unknown (McIntosh et al., 2010). Furthermore, many project leaders are not aware of the significance of CBA. It is considered as just a factor in the discussion. The quality and accuracy of CBA is sometimes doubtful due to the lack of information, or if the information is generated or offered too late in the decision-making process. Many decisions are made well before the result of a CBA, due to the high cost of labor and time devoted to conduct a thorough analysis. The benefit may not be sufficient to justify the expenditures of conducting a cost-benefit analysis, especially regarding large and complex projects which are particularly costly. Most importantly, there is also the possibility of a conflict of interest due to the fact that ever so often, the group of staff who are delegated to conduct the cost-benefit analysis are the same group in charge of shepherding the project to broad acceptance. There are not enough positive incentives to perform a careful cost-benefit analysis (Ward, 2019). Additionally, in practice, CBA has massive pressure to adapt to the demands of several interest groups, which could affect the objectivity of the result.

DATA COLLECTION

This study first set out to explore the market demand by conducting a market survey during August 2022 to October 2022. 1,000 questionnaires were distributed to Thai respondents during the period of August to October 2022. Both online and offline channels were utilized for the distribution of questionnaires with 700 responses being collected online and 300 being collected offline – mainly from the Siam and Chang Wattana regions. 111 out of the 1,000 responses contained incomplete or contradictory information and were consequently deemed to be invalid and removed from the data set. Among the 889 valid responses, only 317 responses gave a positive answer to the screening question “Are you willing to move into a retirement community after your retirement?”. Hence only 317 responses were analyzed further. Table 1 summarizes the demographic characteristics of the respondents.

The majority (65%) of responses preferred a location in or close to the Bangkok municipality, which includes Bangkok, Hua Hin, and Pattaya. 20.82% of the respondents preferred Chiangmai, which was the second most preferred location next to Bangkok. This could be due to the fact that the survey was primarily conducted in Bangkok and most of the respondents would prefer not to move far away from their current residential location. Table 2 summarizes the location choices made by all respondents. Being close to family and close to their current residential location was important to 90% of the respondents, many of whom had also orally expressed their unwillingness to relocate to cities or regions they were not familiar with. Hence, due to the fact that many respondents still expected to live together with or to receive regular visits and stays from their children, they tended to prefer a larger size of residence with a higher number of bedrooms: 40.69% would prefer a residential size of more than 3 bedrooms and over 120 square meters.

Table 1: *Demographic Characteristics of the Respondents*

Gender	Count	Percentage
Male	95	29.97%
Female	222	70.03%
<i>Total</i>	<i>317</i>	<i>100.00%</i>
Age		
<40	66	20.82%
40 – 50	79	24.92%
50 – 60	58	18.30%
60 – 70	71	22.40%
70+	43	13.56%
<i>Total</i>	<i>317</i>	<i>100.00%</i>
Income		
<30k	72	22.71%
30k – 50k	78	24.61%
50k – 100k	66	20.82%
100k – 150k	54	17.03%
150k+	47	14.83%
<i>Total</i>	<i>317</i>	<i>100.00%</i>
Occupation		
Government/Public Services	45	14.20%
Business Owner/Self Employed	36	11.36%
Medical/Health Care	34	10.73%
Education/Training	41	12.93%
Technology/Engineering	39	12.30%
Finance/Business Professional	35	11.04%
Employee of Private Firms	52	16.40%
Retired	35	11.04%
<i>Total</i>	<i>317</i>	<i>100.00%</i>

Table 2: *Choices of Location*

	Count	Percentage
Bangkok	119	37.54%
Hua Hin	42	13.25%
Chiangmai	66	20.82%
Pattaya	45	14.20%
Phuket	31	9.78%
Other	14	4.42%
Total	317	100.00%

The next section of the market survey aimed to elicit the affordability of the Thai elderly regarding the retirement community as well as its services. Table 3 reported the willingness to pay of the Thai elderly for residential rent and service packages.

Average affordability of purchasing in a retirement community is approximately 30k THB per month. Calculated by:

$$\frac{\sum[(\text{middle point of each group}) * (\text{frequency of each group})]}{\text{Sum of frequency}}$$

Table 3: Willingness to Pay

<i>Affordable Rental (monthly)</i>	Count	Percentage
<10k	39	12.30%
10k – 20k	64	20.19%
20k – 30k	50	15.77%
30k – 40k	31	9.78%
40k – 50k	24	7.57%
50k – 60k	17	5.36%
60k – 70k	15	4.73%
70k – 80k	9	2.84%
80k – 90k	7	2.21%
90k – 100k	4	1.26%
100k+	4	1.26%
Will not consider renting	30	9.46%
Total	317	100.00%
Average: 29,790		
<i>Affordable Price for Meal Plan</i>		
<10k	30	9.46%
10k – 20k	34	10.73%
20k – 30k	48	15.14%
30k – 40k	27	8.52%
40k+	21	6.62%
No meals	157	49.53%
Total	317	100.00%
Average: 11,830		
<i>Affordable Service Plan</i>		
<20k	123	38.80%
20k – 30k	81	25.55%
30k – 40k	36	11.36%
40k – 50k	24	7.57%
50k – 60k	14	4.42%
60k – 70k	15	4.73%
70k – 80k	9	2.84%
80k – 100k	11	3.47%
100k+	4	1.26%
Total	317	100.00%
Average: 25,611		

To better understand the nature of real estate projects, a semi-structured interview was also conducted on four real estate developers. The interview questions were mainly focused on the cost of construction, and duration of construction, as well as the operating cost of residential buildings. All developers being interviewed had adept

knowledge in developing middle to high end condominiums for sale and rent in Thailand. The objective of the semi structured interview was to 1) understand the Thai real estate market and 2) estimate the cost and profit margin of the project. Table 4 reported some basic information about the interviewees.

Table 4: Information of the Interviewees

Code	Type of Developer	Main Operation Location	Main Focus
R1	Public	China	Luxury villa, Luxury condominium
R2	Private	China	Residential complex
R3	Private	Thailand	Condominium
R4	Private	Thailand	Middle to high end condominium

The interview was structured into four different sections: the first section asked the opinion of the interviewees on current Thai real estate and their general opinion about developing a retirement community; the second section focused on the choices of location; the third section asked about the cost of developing a project, while the final section was intended to understand the time required to develop a real estate project in Thailand.

All four respondents agreed that the Thai real estate market was recovering from the influence of the 2-year pandemic. Although the demand trend is on the rise, the market is still suffering from the recession and the loss of foreign home buyers due to the lockdown policy in 2020 and 2021. All respondents showed mild interest in a retirement project as the population aging intensifies. They felt that a project aimed at improving the quality of life of the elderly would come in trend. However, two respondents also voiced their concerns regarding the “elderly only” set-up, as they felt that most elderly people under Chinese or Thai culture would prefer to stay with their family and would not feel “isolated and special” if they were to live in a retirement specific community. Such feeling was well aligned with our findings from the market survey and should be carefully evaluated if the project is to be put into action.

Although the Thai residential real estate market is known to be dominated by several public listed companies such as Sansiri, Ap, Land and Houses, Supalai, etc., one interviewee pointed out that for real estate projects, the main competitors were not other real estate companies but rather other projects with a similar nature and opening time, regardless of who developed them. Moreover, they all indicated that as long as the project

itself did not have any serious flaws, competition would rarely be a factor affecting sales, as the selling rate of any project should be expected to be above 80%.

Due to the large heterogeneity of their backgrounds and understanding of the project, the four respondents provided very different suggestions regarding the desired location for the projects. However, all selected Bangkok, as the capital city of Thailand, to be one of the top locations, with their primary reason being the population density and high purchasing power. All respondents saw Bangkok as a less risky choice of location, even though it may not be the most cost-effective choice.

Considering the size of the project, most project managers suggested to begin with a relatively small size (approximately 40 units or less) to reduce the market risk, as they were not confident about the market demand if the project was specifically designed and limited in sales to elders. One respondent also suggested that if the project was for elders only, a villa type would be more appropriate since high-rise condominiums would not suit the need of elders due to the limitation of elevators.

Regarding the cost of construction, all respondents mentioned that the common practice in the industry was to undergo a public bidding to select the contractor(s) and the contractor(s) would determine all materials, labor, and construction costs, by themselves, joining the bidding by providing a plan that included the cost per square meter. Although the respondents estimated the cost of project in a different way, their estimations for the construction costs were similar at the per square meter level, varying between 15,000 and 25,000 THB per square meter for villas, or 10,000 and 17,500 THB per square meter for condominiums. All four

respondents also estimated that an attractive price of fully furnished residential units in Thailand should range between 30,000 and 60,000 THB per square meter, where one respondent particularly pointed out that if the price goes beyond 80,000 THB, there would be a potential difficulty in selling out. They also estimated the profit margin from sales of real estate to be between 25% and 35% percent.

Regarding the construction duration, Chinese developers reported much shorter construction times due to labor effectiveness in China. However, all four respondents believed that in Thailand, a typical real estate project would take approximately 4 years from planning to completion.

DATA ANALYSIS AND RESULTS

The market survey revealed that the majority (more than 60%) of Thai elders preferred a larger retirement community, mainly due to their desire to stay with family. According to the interviews with the developers, an ensuite suitable for a small family would normally consist of 3-4 bedrooms, 2-3 bathrooms, 1 living room, and 1 kitchen, plus a spare room, totaling approximately 160 square meters. During the interview with the real estate developers, it was suggested to begin with a smaller project of no more than 40 units in total, while Kasikorn Bank (2018) also reported that the majority of the existing retirement projects in Thailand were commonly of this size. Hence, the size of the project would be set at 40 units.

Rental Price

Based on the market survey, the acceptable rental price per month was averaged at 30,000 THB per month

Service Charge

Service Charge includes housekeeping, personal laundry, and support or assistance in dealing with the service providers. The service charge was set at 100,000 THB per

month, according to the market survey.

Medical Service

The market survey revealed that most of the respondents preferred a medical service package which included room services, arranging medical appointments, 24-hour standby and first aid services from a medical team, medication control, and a hospice service. Based on the average willingness to pay for the medical services package from the market survey, the price of the service charge was set at 25,000 THB per month.

Meal Plans

Approximately half of the respondents preferred to prepare all meals by themselves, due to health and/or flexibility concerns; a quarter of the respondents preferred meal plans which provided one meal a day, while another 20% preferred two meals a day. Only 5% of respondents picked three meals a day, while the average willingness to pay for meal plans was 300 THB per meal. The weighted average was adopted to compute the revenue of the meal plans.

Cost of Land

In Thailand, the cost of land varies largely based on the location and time of purchase, while the market price of similar locations during the same period may also vary due to terms of negotiation, hence it was difficult to estimate the cost of land based on the market price. To be more standardized, the appraisal price of land issued by the Thai Treasury Department was adopted as the approximate cost of the land. In the market survey, more than 70% of respondents chose their desired location of retirement to be in Bangkok, Chiangmai, or Pattaya. The appraisal price of land in Bangkok suburbs ranges between 5,000 and 100,000 THB per square wah³ with an average of 75,000 THB per square wah, while the average appraisal price in Chiangmai and Pattaya were similar, at approximately 60,000 THB. To simplify the estimation, the location of the project was

³ One square wah equals to four square meters

set to be in Bangkok, which received 37% of the votes during the market survey and the approximate price of land was set at 75,000 THB accordingly.

Cost of Construction

All four developers interviewed stated that the construction of a real estate project in Thailand was commonly handled by contractors, who would submit blind bids to the developers based on the nature of the project. The bidding price would cover all labor, materials, equipment, and any other cost associated with the construction, while the developers would pay a lumpsum. Although the construction cost of houses differed greatly from the construction cost of common areas which includes roads, parks, green area etc., all developers estimated the construction cost for a villa-type residential project to be around 15,000 THB per square meter, which was also similar to the estimation by thaiappraisal.com.

Cost of Operation

The cost of operation for a real estate project after the completion of construction could be categorized into labor cost and capital cost. Labor costs were primarily associated with the marketing and sales of the project, the service provided, and maintenance of the project and the administrative activities. The interviewees reported that the average cost of labor for marketing and sales was approximately 300,000 THB per person per annum, the cost of service and maintenance staff was on average 450,000 THB per annum per person and the administrative staff cost approximately 300,000 per annum per person. For the capital required, two minivans costing 1.5 million THB each would be required to provide transportation within the community, plus 300,000 THB per year for office equipment and other supplies.

According to the market survey, the potential customers mainly preferred to prepare meals by themselves due to concerns over taste, healthiness, and ingredients, only less than 6% of respondents preferred to have meal plans attached to the service package.

The majority of respondents preferred only simple services such as maintenance, house-keeping, and a laundry station, which was not different from the standardized service provided by most residential apartments or villages. For the medical services, Thai customers had very little interest in most of the medical services that could be provided due to concerns over the selection of hospital as some of their pensions and health insurance only provided coverage for a selection of hospitals while others had their preferred medical doctors from specific hospitals. The only service that received over 50% of the votes was a 24-hours first aid on-call service. Hence, the cost of a functional medical clinic was not included.

Stages of the Project

Based on the interviews with developers, the project construction duration was estimated to be 4 years, during which the total cost of construction would be paid in equal installments. To simplify the calculation, it was assumed that the cost of land was to be paid before the start of the project in full.

After the construction completion, it was estimated that three additional years would be required to reach the 90% occupancy rate, as estimated by the interviewees. The project would then be in the operational stage, with approximately 5% of people moving out before the rental contract expired – in which case, the differed management fee, equal to three months' rent would be charged and it would become the revenue of the operator.

Cost Benefit Analysis

The discount rate was estimated by the current bank loan rate at 5.5% (Bank of Thailand, 2022). Table 5 demonstrated the NPV, IRR and B/C ratio of the current estimation. As can be seen, the project was financially profitable, generating a 48.5 million THB net present value. However, the internal rate of return, which was a key indicator of the return on investment for the developers, was merely 7.521%. Although Thailand currently has a relatively low bank loan interest rate, the 7.521% IRR could hardly be

Table 5: *Results from the Cost Benefit Analysis*

NPV	IRR	B/C Ratio	Payback Period
48,590,935.85	7.521%	1.152	22.5 Years

attractive to most developers from the private sector, as Global Property.com reports that the return on investment for a conventional real estate project in Thailand ranges between 10% to 12%, indicating that generally the conventional residential project is more attractive to developers than the retirement project would be. The finding is also in line with the findings of Tang (2015) and Hao (2021), where both scholars pointed out that if without government support in land acquisition, retirement projects would not be the first choice by private developers, and many developers only become involved as a form of social responsibility or public relations gain.

Sensitivity Analysis

Table 6 reports the results of the sensitivity analysis on the three variables: the occupancy rate, the selling price, and the service charge. As reported in the table, the factors that would lead to significant changes

in the financial feasibility of the project were the size of the project, the rental price, and the occupation rate: a 10% variation in occupancy rate would lead to an approximately 75% change in the project's NPV, while the size of the project would lead to a 60% change in the NPV. Meanwhile, the rental price and the medical service charge had a moderate impact on the project's financial position, where a 10% change in both factors results in a 20% to 24% change in the NPV. However, the service charge and the cost of land did not have a significant affect the feasibility of the project, as a 10% change in these two factors only affected the NPV by less than 10%.

The result suggests that the financial feasibility of a retirement community project is highly sensitive to the market demand, when there is a higher demand for the project, the total number of units being rented will increase, enabling a larger project size as well as a higher occupancy rate.

Table 6: *Results of the Sensitivity Analysis*

Variable	Value	% Change	NPV	IRR	B/C Ratio
Occupancy Rate	100%	+10%	79,698,435.05	8.676%	1.242
	90%	0	48,590,935.85	7.521%	1.152
	80%	-10%	17,483,436.65	6.264%	1.056
Rental Price	33,000	+10%	60,663,891.38	7.981%	1.188
	30,000	0	48,590,935.85	7.521%	1.152
	270,000	-10%	36,517,980.32	7.047%	1.115
Service Charge	11,000	+10%	52,615,254.36	7.676%	1.164
	10,000	0	48,590,935.85	7.521%	1.152
	9,000	-10%	44,566,617.34	7.365%	1.140
Medical Service	27,500	+10%	58,651,732.13	7.905%	1.182
	25,000	0	48,590,935.85	7.521%	1.152
	22,500	-10%	38,530,139.58	7.127%	1.121
Project Size	50	+25%	77,822,165.46	8.130%	1.198
	40	0	48,590,935.85	7.521%	1.152
	30	-25%	19,359,706.24	6.549%	1.078
Cost of Land	82,500	+10%	45,890,935.85	7.385%	1.142
	75,000	0	48,590,935.85	7.521%	1.152
	67,500	-10%	51,290,935.85	7.661%	1.162

CONCLUSION

Population aging is a global concern as many countries, including Thailand, have already become an aged society (Tantivejkul, 2018). However, most of the real estate developers are still focusing on conventional residential projects which are not suitable for the elderly due to a lack of facilities and services. Currently, the majority of the Thai elderly must choose between living under family support or moving into a publicly-operated retirement community, in which their living conditions cannot be assured (KasikornBank, 2018). This study aimed to explore the possibility of private sector real estate developers to engage in retirement projects by determining the financial feasibility of a privately-operated retirement project using a cost benefit analysis.

A market survey was conducted during August to October, 2022. The market survey mainly targeted people who lived in Bangkok or Chiangmai, and uncovered that 317 out of 889 Thai elderlies were willing to move to a retirement specific community. It was also found that most Thai retirees preferred a large size residence due to their desire to be able to stay with their family members during their visits, for a 3-bedroom and 2-bathroom ensuite, their average willingness to pay for the rent was approximately 30,000 THB per month, the average affordability of meal plans was around 10,000 THB per month and 25,000 THB per month for the additional medical and supportive services.

Semi-structured interviews were also conducted prior to the analysis in order to investigate the developers' perspectives regarding the retirement project, as well as to estimate the cost of developing the project. The interviewees exhibited mild interest in retirement projects as all of them agreed that retirement projects would become essential to Thai society in the near future, while they all agreed that the retirement project had potential financially and socially.

Through the Cost Benefit Analysis, it was found that under the current market situation, a retirement project could generate

a positive net present value, however the return on investment was lower than for conventional real estate projects. Hence, financial support from the public sector might be necessary in order to better motivate private developers to engage in retirement projects. However, this study was limited by the availability of data, especially concrete data regarding the operating costs of a retirement project. Due to this limitation, it is not possible to capture the reduction of cost as a result of economies of scale.

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