

# Population Ageing in Thailand

## Business Opportunities in the Era of Population Ageing

**Volume 4**

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## Abbreviations and Acronyms

AI	artificial intelligence
AR	augmented reality
B2B	business-to-business
B2C	business-to-consumer
IT	information technology
VR	virtual reality

## Chapter 1

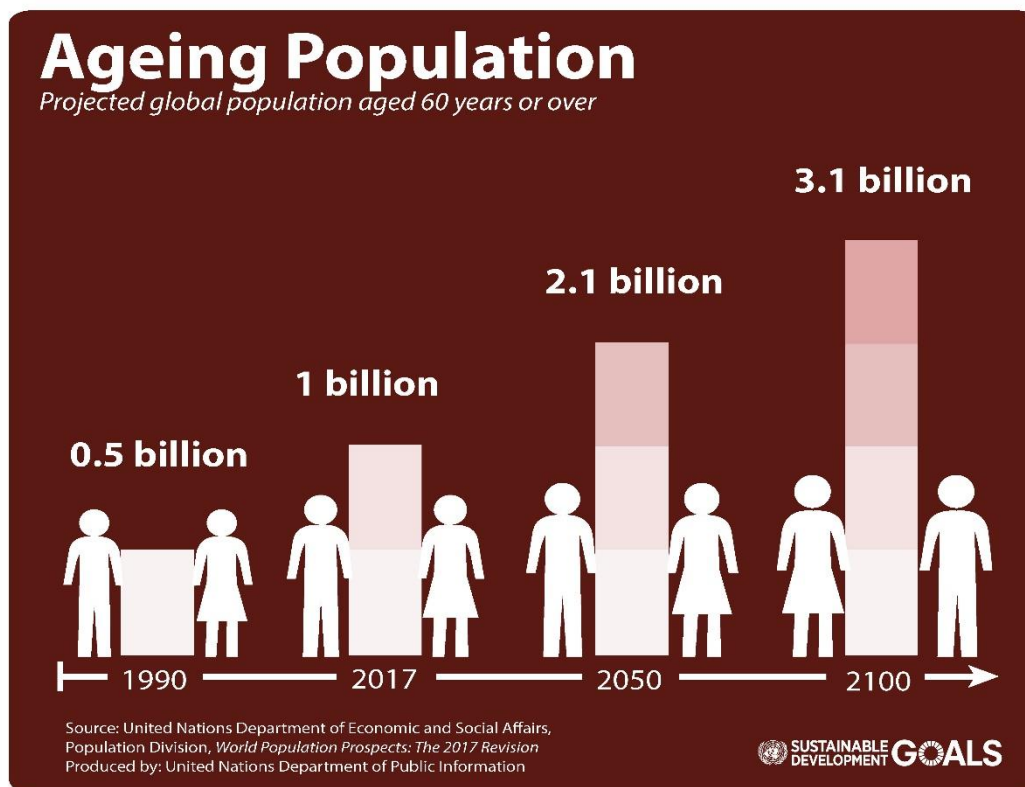
### Study 3: Risk Preference of Ageing Consumers: Evidence from Financial Decisions

*Surat Teerakapibal and Nipat Puangjampa*

#### 1. Introduction

The world has been ageing at an unprecedented rate. About 962 million people are 60 years or older, accounting for 13% of the global population (Figure 1) (United Nations, 2018). That figure was estimated to rise to 1 billion in 2017; it is estimated to rise to 2.1 billion in 2050 and to 3.1 billion in 2100. At least a quarter of the world population will be 60 years or older by 2050.

**Figure 1.1. Projected Ageing Population**



Source: United Nations Department of Economic and Social Affairs, Population Division (2018).

Thailand is one of the fastest ageing countries. In 2016, 11% of the population was 65 years or older. The World Bank (2016) estimated that the ageing population would rise to 25% by 2040. The total fertility rate declined from 6.1 in 1965 to 1.5 per woman in 2015 (World Bank, 2016). Thailand has the highest share of older people of any developing country in

East Asia and the Pacific and the fastest declining working-age population. The dependency ratio<sup>1</sup> is estimated to grow from 5.4:1 in 2020 to 2.4:1 in 2040, a demographic shift that presents several dire challenges. First, the shrinking labour force will pose significant threats to productivity. Service providers and infrastructure must be made available for the growing ageing population. Whilst it is vital for older people to have more money for their retirement, the saving rate reportedly decreased to 6.4% in 2019, the lowest since 2009 (Chk, 2019). Half of the population is in debt. Consequently, the government will inevitably shoulder hefty financial burdens in the form of pension and healthcare systems for older people. The government must encourage people to make smart financial choices to support themselves.

The senior population's allocation of funds plays a pivotal role in the ageing society. Based on empirical results derived from a conjoint choice experiment, this study investigates whether age influences risk preference when consumers make investment decisions, what the key determinants of risk aversion are, and whether the determinants amongst younger people differ from those amongst older people.

## **2. Literature Review**

### **2nd National Plan for the Elderly**

The government created the 2nd National Plan for the Elderly (2002-2021) to resolve issues resulting from population ageing. The main strategies tackle the demographic shift, support and socially protect older people, and aim to help them be financially independent. The government is boosting programmes that promote savings for older people, such as the Social Security Fund. Employers must register employees aged 15 years or older, withhold contributions from their wages, and transfer the contributions to the Social Security Fund on their behalf. Employers and the government contribute, as well. The insured receive benefits in case of unemployment, illness, disability, death, childbirth, and retirement. Upon turning 55, the insured receive a pension if they have contributed for at least 180 months. Otherwise, the insured will receive a lump-sum pension.

Integrating the pension system (Thai Health Information, 2017) is another project the government promotes under the Thai 2nd National Plan for the Elderly. The project aims to create income security for everyone, including informal workers and workers who are not members of the provident fund. The project is led by the National Pension Policy Committee, chaired by the Prime Minister.

The government has another system – the National Pension Fund – for formal workers 15–60 years old in the private and public sectors, including state enterprises. Employees

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<sup>1</sup> The dependency ratio is a measure of the number of dependents aged up to 14 years and over 65, compared with the total population 15–64 years old.



earning THB10,000 and more and their employers must contribute 3% of the wage, but not more than THB1,800 per month during the first 3 years of employment. The contribution rate gradually increases to 10% in the 10th year. Employees' benefits include either a 20-year pension or a lump-sum pension at the age of 60. Contributions, earnings from contributions, and the pension are exempt from personal income tax.

The government also established the National Savings Fund or the National Health Insurance Fund (Thai Health Information, 2016) under the National Savings Fund Act 2011 to ensure income security for older people in the informal sector, including self-employed farmers and part-time employees. After the abolition of Article 40,<sup>2</sup> relating to pension under the Social Security Act, the National Savings Fund was initiated in 2015, receiving contributions from members and the government. Members must save a minimum of THB50 per month but can accumulate no more than THB13,200 per year. The government pays 50%, 80%, and 100% of members' monthly accumulation depending on the age of the workers until they turn 60 years old. The government guarantees a return of not less than the 12-month fixed deposit rate specified by the Bank of Thailand.

### **Risk Preference and Goals of Older People**

The perception of time plays a fundamental role in the selection of social goals, which can change in any age group if it faces a time constraint. Time perception is linked to the time left in life and chronological age, but it is also malleable, depending on knowledge and emotion (Carstensen et al., 2003; Fung, Lai, and Ng, 2001; Lang and Carstensen, 2002; Yoon, Cole, and Lee, 2009).

Socio-emotional selectivity theory posits that time perspective heavily influences goal-directed behaviour (Carstensen, 1993; Carstensen, Isaacowitz, and Charles, 1999). Consequently, goals are often formulated within temporal contexts. That is, time plays an important role in determining preferred goals. According to the socio-emotional selectivity theory, psychological goals can be categorised into knowledge related and emotionally meaningful. Whilst knowledge-related goals are pursued for novel information or new skills, emotionally meaningful goals are pursued for their accompanying feelings (Carstensen et al., 2003). Early in life, individuals are more likely to focus their attention on acquiring novel knowledge and skills to prepare themselves for a long and unknown future. As individuals age, mortality is perceived as a pressuring constraint on time. Subsequently, they neglect to see the potential long-term benefits of knowledge-related goals and prioritise emotionally meaningful goals because achieving them brings a feeling of immediate satisfaction. Furthermore, impairment of cognitive function cripples older consumers' insight and results in reliance on emotion (Hasher and Zacks, 1988; Peters, 2010; Salthouse, 2006). Interestingly, the ability to understand and integrate emotional information has been shown to significantly improve with age (Labouvie-Vief, 1998). Fung

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<sup>2</sup> Article 40 of the Social Security Act states that a portion of monthly wages will be deducted from an employee's wages to contribute to the Social Security Fund. See ThaiLaws (1999).

and Carstensen (2003) showed that older consumers prefer advertisements with emotionally meaningful appeal to those with knowledge-related appeal. The finding was supported by Williams and Drolet (2005).

Not only does the type of goal change over consumers' lifespan but goal orientation also shifts as consumers age (Cole et al., 2008; Ebner, Freund, and Baltes, 2000). According to the selective optimisation with compensation theory, consumers must carefully allocate their limited internal and external resources to maximise gains and minimise losses at every point in time throughout their lives (Baltes and Baltes, 1990; Freund and Baltes, 2000). With increasing salience of resource limitations in old age, consumers will invest more in maintaining and preventing the loss of resources rather than in growing them (Baltes, 1987; Freund and Baltes, 2000; Heckhausen, Dixon, and Baltes, 1989; Staudinger et al., 1995). This claim is reinforced by the lifespan development theory, lifespan theory of control, and strategies of accommodation and assimilation (Cole et al., 2008).

### **Information Processing and Ageing Consumers**

Several studies (see Carpenter and Yoon (2011)) have shown that information-processing ability declines with age, starting as early as 20 years old. Salthouse (1996) illustrates how older participants take longer to complete pattern-matching tasks, suggesting that the decline of processing speed is the result of age-related differences in cognitive processing. Age has been found to be associated with decline in working memory as the sense of cognitive psychology (Moscovitch and Winocur, 1995). Because great working memory capacity is required to select what to buy out of wide range of options, deciding what to buy will be challenging for the elderly (Roedder and Cole, 1986; Cole and Houston, 1987). It is not as easy for older as for younger consumers to shift from one task goal to another, update the contents of working memory, or reject irrelevant information (Hedden and Yoon, 2006; West, 1996). Older consumers, therefore, should be provided with fewer consumption options to reduce the cognitive effort required for decision-making. In this experimental study, we offered alternatives that included making a financial planner available to support consumers in choosing a product in the choice set so we could investigate the effect of financial planners on older consumers' investment decisions.

## **3. Methodology**

### **Data**

We carried out a conjoint choice experiment and collected data from 500 participants aged 19-86 years. They mainly resided in Bangkok, but residents of other provinces participated. Participants were randomly intercepted at malls and wet markets. Each participant was asked to choose the financial product that he or she most preferred. The participants were presented with nine occasions that required them to choose, and each choice occasion had four financial product alternatives with the following attributes and levels:

Attribute 1: Risk and return level, consisting of three levels:

1. Low (e.g. savings)
2. Medium (e.g. bonds)
3. High (e.g. stocks)

Attribute 2: Financial advising service, consisting of two levels:

1. Yes (available)
2. No (not provided)

For instance, participants were asked to select their most preferred option from four alternatives:

- A. Risk and return level: high; financial advising service: no
- B. Risk and return level: low; financial advising service: no
- C. Risk and return level: medium; financial advising service: yes
- D. Risk and return level: high; financial advising service: yes

Choice sets were designed using SAS to be orthogonal with equal probability for each alternative to appear in the choice sets.

Respondents were asked for demographic information, which was incorporated into the analysis. The variables include gender, age, education, personal income, household income, and investment experience in years.

### **Model**

As the main dependent variable in this study is choice, the most appropriate model is the logit discrete choice model. In particular, the utility that an individual  $i$  received from choosing the financial product  $j$  in the choice occasion  $k$  is denoted by

$$U_{ijk} = \beta R_{jk} + \gamma C_{jk} + \delta R_{jk}Z_i + \eta C_{jk}Z_i + \lambda C_{jk}R_{jk}Z_i + \varepsilon_{ijk} \quad (1)$$

where  $R_{jk} = [M_{jk} \ H_{jk}]$  is a vector of two dummy variables indicating the risk and return level. As there are three risk and return levels (low, medium, and high), two dummy variables are required. Specifically, these are

$$M_{jk} = \begin{cases} 1 & \text{when the risk and return level is medium} \\ 0 & \text{otherwise} \end{cases}$$

$$H_{jk} = \begin{cases} 1 & \text{when the risk and return level is high} \\ 0 & \text{otherwise} \end{cases}$$

$C_{jk}$  is a dummy variable, which takes on the value of 1 if financial advising service is available and takes on the value of 0 if such service is not provided.

$Z_i$  is a vector of demographic variables, which includes investment experience in years  $investexp_i$  and the dummy variable  $aged_i$ , which takes on the value of 1 if the respondent is 50 years or older and 0 otherwise.

$\varepsilon_{ijk}$  is the random error term, which is assumed to be distributed Type I Extreme Value to render the logit discrete choice model.

The model explains and predicts what consumers will choose given discrete alternatives of financial products. The model is unique because the influence of each attribute on consumers' preference is allowed to be related to investment experience as well as age. This relationship is expressed in the model as the inclusion of interaction terms between financial product attributes and demographic variables. Parameter estimates of these interaction terms ( $\delta$  and  $\eta$ ) are analysed to determine their statistical significance.

The model as specified in (1) also allows for the impact of financial advising service on financial product preference to vary by risk and return level and age. In particular, the model includes the three-way interaction term between risk and return level ( $R_{jk}$ ), financial advising service availability ( $C_{jk}$ ), and the age dummy ( $aged_i$ ).

From (1), the choice probability can be derived as

$$P_{ik}^{logit}(j|\beta, \gamma, \delta, \eta, \lambda) = \frac{\exp(\beta R_{jk} + \gamma C_{jk} + \delta R_{jk} Z_i + \eta C_{jk} Z_i + \lambda C_{jk} R_{jk} Z_i)}{\sum_{l=1}^4 \exp(\beta R_{lk} + \gamma C_{lk} + \delta R_{lk} Z_i + \eta C_{lk} Z_i + \lambda C_{lk} R_{lk} Z_i)} \quad (2)$$

and the likelihood function can be defined as

$$\ln \mathcal{L} = \sum_i \sum_k \sum_j y_{ijk} \ln P_{ijk} \quad (3)$$

where  $y_{ijk}$  takes on the value of 1 if the individual  $i$  chooses the financial product  $j$  at the choice occasion  $k$ .

#### 4. Results

**Table 1.1. Parameter Estimates of the Logit Discrete Choice Model**

Variables	Parameter Estimate	Standard Error	Marginal Effects
<b>Risk and returns</b>			
Low	0	N/A	N/A
Medium	<b>0.389</b>	0.047	<b>0.073</b>
High	-0.009	0.051	-0.002
<b>Financial consulting</b>			
None	0	N/A	N/A
Yes	<b>0.611</b>	0.038	<b>0.114</b>
<b>Risk and returns*Investment experience</b>			
Medium*Investment experience	0.011	0.009	0.002
High*Investment experience	0.015	0.009	0.003
<b>Financial consulting*Investment experience</b>			
Yes*Investment experience	<b>0.014</b>	0.007	<b>0.003</b>
<b>Risk and returns*Age</b>			
Medium*Age	<b>-0.508</b>	0.107	<b>-0.095</b>
High*Age	<b>-0.606</b>	0.130	<b>-0.113</b>
<b>Risk and returns*Financial consulting*Age</b>			
Medium*Yes*Age	<b>0.437</b>	0.108	<b>0.082</b>
High*Yes*Age	0.116	0.138	0.022
<b>Model fit</b>			
LL		-5868.693	

\* boldface denotes statistically significance at alpha = 0.05

LL = log-likelihood, N/A = not available.

Source: Authors' calculation.

Results demonstrate that a medium level of risk and returns is significantly the most preferred choice (0.389), while older people are relatively much more risk averse. For older consumers, particularly, low risk and returns tend to be the most appealing option. This is warranted by the significantly negative parameter estimates for Risk and Return\*Age (-0.508 and -0.606). The parameter estimate shows that financial advising service will increase the likelihood of a choice being chosen (0.611). Interestingly, this effect is amplified for consumers who are highly experienced in investing (0.014), implying that amateurs do not yet know the importance and benefits of seeking professional advice on wealth management. Finally, results show that financial advising service would encourage the elderly to invest in assets with medium risk and returns (0.437) but not in those with high risk and returns.

## 5. Discussion

The findings reveal many avenues for policymakers to encourage the elderly to invest and ensure that their savings will last until they die, which is particularly important as people are living longer. The empirical results emphasise the fact that average customers compromise between risk and return. Older consumers, however, tend to choose financial instruments with low risk and returns. To vitalise the financial activities of older people, the government should encourage them to invest in moderately risky assets such as bonds.

Fortunately, the results suggest that the availability of financial advising service can increase risk tolerance amongst older investors. The government could require funds to provide the service, especially for older consumers. Results show that those with ample investment experience realise the importance of seeking advice from financial advisors more than those with limited investment experience, rather than the other way around. This implies that providing service alone will not be adequate. Awareness campaigns must be established so that those without much investment experience will understand the underlying benefits of seeking professional advice.

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## Chapter 2

### Study 4: Business Start-up Survey for the Healthcare Industry in Thailand

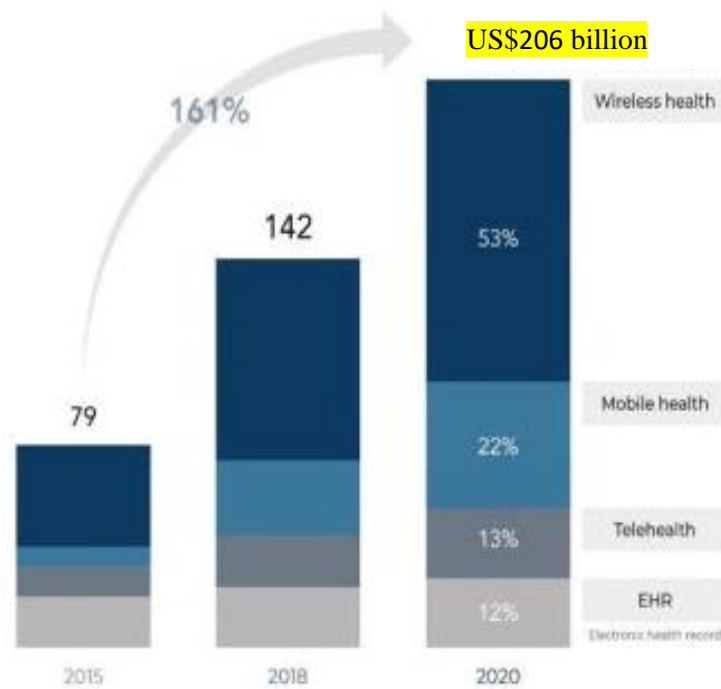
*Nopadol Rompho, Sakun Boon-Itt, and Sukrit Vinayavekhin*

#### 1. Introduction

It is estimated that the ratio of the world's working-age population aged over 50 years will increase from 20% to 30% by 2050 (Irving et al., 2018). The rapid ageing of Thailand's population will pose a challenge for the economy, forcing government, businesses, and individuals to adapt. Yet, the greying of society will also bring about business opportunities (SCB EIC, 2015). The ageing population was estimated to increase faster than other age groups. The ageing population – those 60 years and older – was estimated to be as high as 13 million or 19% of the total population in 2020 (United Nations, 2019) and more than 20% in 2025. In 2014, 300,000 caretakers were needed to look after 10 million senior citizens (Itthiphanuwat, 2019 [2562 BE]). The key policy of the current government is the Thailand 4.0 economic development model (Government Public Relations Department, 2016), which aims to transform the economy from one based on agricultural, light, and heavy industry into one based on value-based industry driven by innovation. The policy focuses on building up existing and potential industries [First S-Curve] related to the ageing population, such as health tourism, and the future digital technology industrial complex [New S-Curve], including the integrated medical care industry. To boost the value of these business sectors, the government has implemented policies to promote the development of advanced technologies and innovations related to public health. The policies encourage start-up businesses to be involved in healthcare technology (health tech), medical information technology (medi-tech), innovative industries, cultural capital, and high-value services highlighting start-up products for lifestyle businesses and enhanced healthcare services.

Private health tech and medi-tech start-ups are enjoying robust growth. Based on the data from Statista, a leading news agency in Thailand, the market value of global digital healthcare will reach US\$206 billion by 2020 (Figure 1).

**Figure 2.1. Global Digital Health Market**



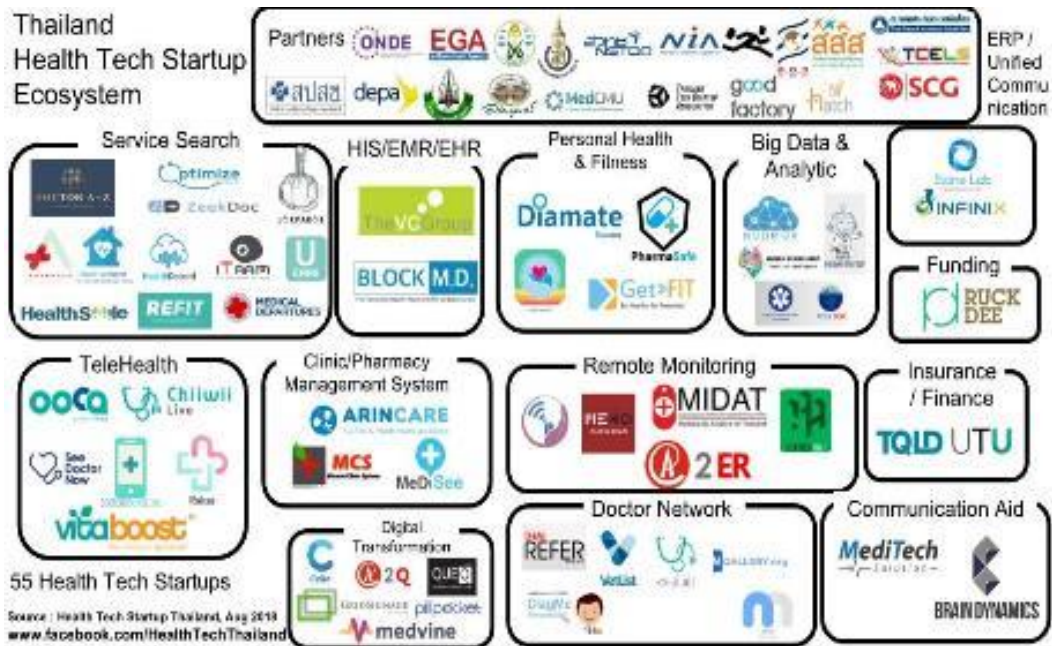
EHR = electronic health record.

Note: Mobile health refers to healthcare services provided using mobile devices. Telehealth refers to delivery of healthcare services via remote technologies.

Source: Statista (2019).

Health tech and medi-tech start-ups have been increasing rapidly and are cooperating to form a health start-up network. In August 2018, there were 55 health tech start-ups categorised into 14 groups (Figure 2.2).

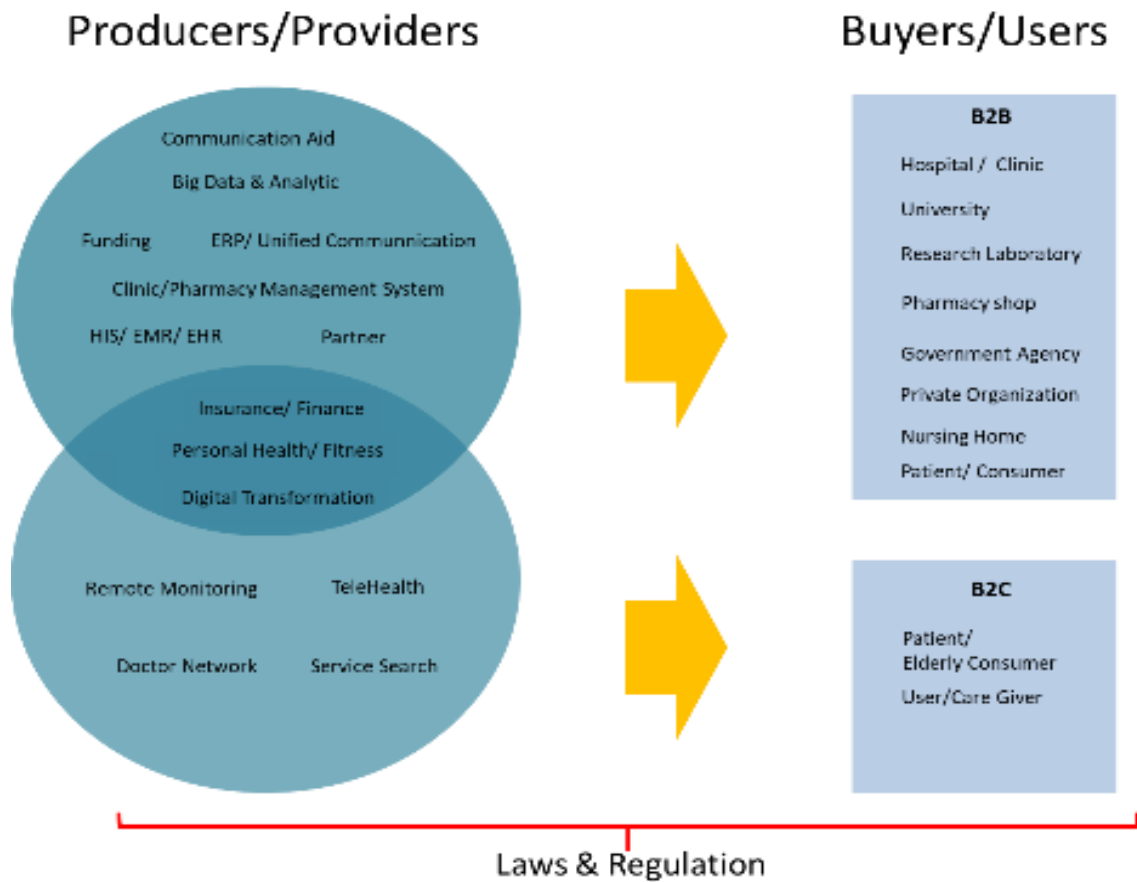
Figure 2.2. Ecosystem of Health Tech Start-ups in Thailand



Source: Health Tech Startup Thailand (2018).

An analysis of health tech start-ups' value chain reveals that buyers or end users of their products and services can be categorised into business-to-business (B2B) and business-to-consumer (B2C). Start-ups provide products and services for organisations or individuals or both (Figure 2.3).

**Figure 2.3. Health Tech Start-up Value Chain**



B2B = business to business, B2C =business to consumer, EMR = electronic medical record, ERP = enterprise resource planning, HIS = hospital information systems.

Source: Author.

## 2. Objectives

This study surveyed health tech start-ups with the following objectives:

1. Examine the market size of health tech start-ups, specifically in areas related to the ageing population and determine the different types of health tech start-ups with potential to grow in response to population ageing.
2. Explore innovations and health tech start-ups that help older people maintain their physical and mental functions so they can continue to participate in society and contribute to the nation.
3. Investigate the gap between the needs of older people and what existing health tech start-ups can provide.
4. Explore rules, regulations, laws, and practice guidelines for health tech start-ups to develop a knowledge base that supports their operations and efficient response to the needs of the ageing population.

### **3. Methodology**

The study relied on a qualitative research instrument, i.e. semi-structured interview, to collect data from health tech start-ups and employed the multi-case study technique. The technique helps researchers understand more deeply phenomena or cases in real-life situations (Yin, 2013). The study focused on the ageing population in terms of its market sizes, types of start-ups with potential to grow, and trends in innovations and health tech start-ups that develop the potential of older people and fill the gap between their needs and what health tech start-ups can provide. We designed the study to explore rules, regulations, laws, and practice guidelines for health tech start-ups. Our interview guide had 10 questions:

1. Describe your start-up (general information, value proposition, customer segments, channels to access customers, revenue model, etc.).
2. How does your company affect the ageing population?
3. What are some possible development trends for technologies and services in Thailand's healthcare industry?
4. What services and technological support does your start-up provide to the elderly and which are still lacking?
5. About how many customers do you have and what are their income levels?
6. Who are your target customers? Do you focus on the ageing population?
7. Do you plan to expand to support and respond to the needs of the ageing population? How?
8. What are the trends in innovations and health tech start-ups that can develop the potential of older people so that they can maintain their physical and mental functions and continue contributing to the nation?
9. What are the discrepancies between the needs of the ageing population and what existing health tech start-ups can provide?
10. Should any laws and regulations be adjusted? How?

The researchers selected 15 health tech start-ups representing 13 out of a total of 14 sectors. The founder, co-founder, or executive of each start-up was interviewed about the company's overall management, whether management is concerned about population ageing, and health tech start-up trends.

Appointments to meet with the interviewees were made in advance so they could prepare. Interview questions were sent to the interviewees if they asked for them. Each interview lasted 45-60 minutes and at least two interviewers were present during each interview. Before the interviews started, the interviewers introduced themselves, described the objectives of the research study, and asked if they could make an audio recording of the interview. The interviewers repeated their questions as necessary and allowed the interviewee to ask for clarification. Follow-up questions were used to ensure that the information provided by the interviewees was complete. Occasionally, the

interviewee's answers were repeated to allow him or her to confirm them. At the end of each interview, the interviewer told the participant that the interview had come to an end and that he or she could ask questions and/or provide any additional relevant information. Lastly, before ending the interview, the interviewers assured the interviewee that his or her information would be confidential.

The data from the semi-structured interviews were analysed by means of content analysis. The interview recordings were transcribed and checked for accuracy. The information was coded manually by the researchers to obtain the gist of the interviewees' answers to each question (Schreier, 2012). Then the coded information of all participants was combined to form an overall picture of their answers to each question. Finally, we reviewed the codes for accuracy, collaborated to create guidelines and types of information or themes and categories (Kurasaki, 2000) for each interview question, and wrote a report on the findings. We summarised and presented the research outcomes based on the interviews.

Table 2.1 shows the details of the samples of the study.

**Table 2.1. Detailed Descriptions of Samples**

<b>Start-up</b>	<b>Sector</b>	<b>Business Focus</b>	<b>Size (# Employees)</b>	<b>Service (Years)</b>	<b>Informants</b>	<b>Interview Date</b>
<b>A</b>	Service search	Home care	Small (16)	3	Founder	21 Dec 2018
<b>B</b>	Personal health and fitness	Personal life medication platform	Small (7)	4	Founder	13 Nov 2018
<b>C</b>	ERP and unified communication	Resource management system	Small (14)	2	Founder	14 Nov 2018
<b>D</b>	Telehealth	Psychological consultancy	Small (5)	2	Founder	19 Nov 2018
<b>E</b>	Digital transformation	Improve well-being	Small (35)	1	Head of customer living solution business	24 Jan 2019
<b>F</b>	Doctor network	Health consultancy	Small (7-8)	3	Founder	19 Mar 2019
<b>G</b>	Clinic and pharmacy management system	Drug store system	Small (12)	3	Founder	18 Mar 2019
<b>H</b>	Insurance and Finance	Insurance	Small (15)	3	Founder	18 Mar 2019
<b>I</b>	Funding	Matching and consulting	Small (5)	3	Marketing	15 Mar 2019



Start-up	Sector	Business Focus	Size (# Employees)	Service (Years)	Informants	Interview Date
					manager	
J	Remote monitoring	Medical monitoring and data warehouse	Small (10)	2.5	Founder	15 Mar 2019
K	Communication aid	Digital health	Small (8)	5	Founder	14 Mar 2019
L	Digital transformation	Elder community	Small (10)	2	Founder	15 Mar 2019
M	Digital transformation	Queuing solution	Large (100)	4	Founder	29 May 2019
N	Partner	Support (funding and consulting)	Medium N/A	N/A	Manager	1 Apr 2019
O	HIS, EMR, EHR	Research and development, software provider	Small (15-20)	N/A	Founder	18 Jun 2019

EHR = electronic health record, EMR = electronic medical record, ERP= enterprise resource planning, HIS = hospital information systems.

Source: Author.

#### **4. Research Outcomes and Discussion**

Data from the interviews can be summarised as follows:

##### **4.1. Target Customers, Market Size, Value Proposition, Major Source of Income**

The market size of health tech start-ups related to the ageing population can be measured by (1) the size of the ageing population and (2) the size of the industry in relation to the target customers of a specific start-up. The health tech start-ups provide the following services:

1. equipment and facility management;
2. platform to offer mental health counselling services;
3. websites and applications for the use of medication;
4. platform to search for caregivers for healthcare at homes or in hospitals;
5. extension of a retail business to provide products and services involved with housing, with an emphasis on comprehensively serving older people;
6. products that provide insurance for older people and retirees;
7. service to match start-ups with sources of funding;
8. system to organise activities for older people;
9. suggested solutions to patients about receiving medical services in the network of hospitals that serve as information centres;
10. provision of knowledge and funding for start-ups; and
11. research on and development of blockchain products to manage health information.

The direct buyers of these start-ups' products might not necessarily be the end users, i.e. the elderly or their caregivers, but may include corporate clients. We classified their business models into B2C and B2B.

##### **4.1.1. Older People in General and Older People Who Recently Left the Hospital (B2C Model)**

The target customers are the end users, who can be all older people throughout the country (as measured by the size of the ageing population). Thailand has 11 million people aged 60 or over, who comprise 20% of the total population; 20% of the population aged 60, or about 2 million, will need to be cared for. By 2031, the number of older people is estimated to rise to 19 million or about 28% of the population (*Matichon Online*, 2018 [2561 BE]). The products and services available are, for example, caregiving, medical and health counselling, management of residential places to fulfil the needs of older people or patients, procurement of devices for collecting and monitoring personal information of older people, and preparation of activities to promote good physical and mental health of older people, amongst others.

B2C start-ups approach their target clients through direct sales, and exhibitions. Alternatively, clients contact the start-ups after having searched the internet, e.g. using Google or other search engines and visiting online stores or receiving suggestions from doctors or nurses who have visited the start-up websites.

#### **4.1.2. Hospitals, Nursing Homes, Medical Clinics, Drugstores, and Organisations (B2B)**

B2B represents corporate clients. Buyers are not the end users. Potential buyers are more than 1,200 hospitals and nursing homes, about 24,800 medical clinics (Ninkitsaranont, 2019 [2562 BE]), and more than 20,000 drug stores throughout the country. The country has about 50,000 doctors. Interview data reveal that such potential clients have a firm intention to buy innovative products and services that include systems and applications to serve the needs of older people, e.g. an application that allows doctors to track how their patients take their medicine. Clients are mostly hospitals, whilst the individual older person or caregiver is the end user.

These start-ups approach their clients through public relations via various online and offline media, sales teams, personal networking, and word of mouth from hospitals. The informants said most customers get information through word of mouth, social media, or online media before deciding to contact the start-ups.

#### **4.2. Trends and Opportunities that Will Facilitate the Growth of Health Tech Start-Ups that Support and Respond to the Ageing Population's Needs**

The global digital health market has grown and will expand significantly. Its global market size was forecast to increase by 161% in 2020 compared with 2015, with wireless health technology taking the highest share (53%), followed by mobile health (22%), telehealth (13%), and electronic health records (12%). Mobile health refers to healthcare services provided using mobile devices. Telehealth refers to the delivery of healthcare services via remote technologies. Trends in the global digital health market will focus on providing health services remotely. Patients and other older people no longer need to travel to hospitals or clinics and will be able to receive medical care through various types of devices in the comfort of their own homes or other locations outside hospitals. Remote healthcare services will reduce travel expenses and time and the physical burden of queuing to receive healthcare. Such services are expected to provide enormous benefit to patients and other older people who have difficulty traveling because of their health.

The key to develop health tech start-ups that support and respond to the ageing population's needs includes changes in consumer behaviours and development of technology:

##### **4.2.1. Familiarity with Technology**

In the future, elderly consumers will be more familiar with information and communication technology because they are young consumers now, who have easy access to technology and make good use of it. This generation accepts technology easily, which will facilitate the spread of new technology.

#### **4.2.2. Advanced Information Technology and Artificial Intelligence**

Because the percentage of the younger population will decrease, the workforce of the future will be smaller. The development of information technology, however, will reduce demand for human labour. Information technology (IT) and artificial intelligence (AI) will play an important role in developing various kinds of products and services. Population ageing will create a shortage of caregivers, and IT and AI are expected to be utilised in elderly care.

#### **4.2.3. Integration of Data**

Almost all informants agreed that the Internet of Things has great potential for the development of health tech. For example, sensor systems that have internet connection can improve the efficiency of elderly care. The effective use of the Internet of Things requires a system to track, organise, and integrate information. For health tech start-ups to develop, a database of comprehensive client information is necessary; therefore, an efficient storage system is required. Most information has been kept locally. For example, once a patient's pulse is taken, the data are stored only where the activity took place. Without a link with other related data, locally stored data do not help create a complete picture of clients' health status and cannot be used efficiently. Comprehensive information on individual wellness, e.g. heart rate, metabolic rate (basal and exercise), blood sugar level, and blood pressure, should be collected and integrated.

#### **4.2.4. Job Creation**

The informants from the doctor network and telehealth sectors mentioned that IT has the potential to provide comfortable working environments for older people in their own homes. It can create jobs for older people, who will then feel they are contributing to society. Many older people remain capable and resourceful because of their extensive work experience. Older people have been discouraged from working for several reasons. Staying in an office for 8 or 9 hours per day is not easy for them. Traveling to work might not be an option because of their health. Innovations and technology, e.g. video calls and online tools, will provide opportunities for them to work from home. Older people can use their experience and give valuable advice through video calls and e-mail. In Thailand, using IT is new for most older people.

### **4.3. Innovation and Start-up Trends that Will Encourage Older People to Keep Contributing to Society**

#### **4.3.1. Innovation for an Active Ageing Population**

The informant from the digital transformation sector focusing on the senior community mentioned that older people have fewer opportunities to engage in activities because of their health. Innovations and start-ups will play an important part in offering activities suitable for older people and in allowing them to engage in activities that they were able to do previously. For example, older people who enjoy socialising can join a virtual community to share their lives and experience and to maintain their physical health.

#### **4.3.2. Financial Management Service**

According to the informant from the insurance and financial sector, most people are not well prepared financially for ageing. Thailand is one of many countries in South-East Asia facing rapid population ageing (Hsu et al., 2015). But a significant number of people will become senior citizens without having enough financial resources to support themselves (Jongudomkarn, and Camfield, 2006), and social welfare provided by the government will not be sufficient (Ruanto, Leucharusmee, and Chinnakam, 2017). Without financial security, older people will not have good quality of life and will unlikely live happily or engage in activities that promote good quality of life.

The same informant stated that retirement planning services will improve older people's quality of life in the long term. There should be financial services related to products or services for older people such as patients' beds or necessary but costly medical devices. Start-ups can help improve older people's quality of life by offering services for financial planning for retirement and health insurance. Start-ups may offer services after the elderly have passed away to relieve the burden of their children, e.g. expenses for cremation, transport to their hometowns, and inheritance management. However, to make these services readily available to the public, the government must fund start-ups.

#### **4.3.3. Cost of Technology**

The cost of health tech and innovation is anticipated to go down. Innovative products and services will become cheaper. Lower costs will give everybody, including the ageing population, access to these products and services and encourage older people to continue contributing as high-quality workers.

#### **4.3.4. Preventive and Mobile Healthcare**

Healthcare innovations, products, and services aim to help older people prolong their lives, e.g. through telehealth, service search, and doctor networks. Informants from the remote monitoring business, however, said that prevention of risks and diseases has not been sufficiently emphasised. The following are needed: (1) a storage system for health information to enable sharing of clients' information with caregivers, nurses, rehabilitation therapists, doctors, amongst others; (2) a warning system such as a medical wristband to prevent foreseeable dangers; (3) home delivery of essential medicines in response to clients' health information collected remotely, such as mobile blood tests collected by certified professionals; and (4) monitoring systems that can send alerts to hospitals if falls are detected, so that an ambulance can pick up the client.

#### **4.3.5. Augmented Reality and Virtual Reality**

The development of augmented reality (AR) and virtual reality (VR) is expected to create a boom in remote medical consultation services. AR and VR will particularly benefit patients who need psychiatric or psychological consultations because mutual recognition of facial expressions is crucial for counselling and diagnosis. AR and VR could open a new world of healthcare and medical services and, it is hoped, improve access to medical consultation services and, therefore, the quality of life of older people.

#### **4.4. Discrepancies between the Needs of the Ageing Population and Health Tech Start-Ups Available for Older People**

##### **4.4.1. Mobile Service**

Mobile medical services such as remote area or off-site medical services are still insufficient, whilst demand for mobile services is enormous from people with mobility problems, particularly older people. Alternative services such as visiting clinics or nursing homes are insufficient. Health tech start-ups are expected to fill the gap between demand and supply of mobile medical services.

##### **4.4.2. Barriers to Adoption**

Health tech start-ups have focused on advanced technologies that require advanced skills and knowledge to use rather than end-user-friendly products. To meet growing demand, health tech start-ups are expected to listen to older people to understand what products and services they need to ensure social inclusion. Some older people do not have the knowledge or skills to adopt cutting-edge technologies. If they want to target older people and expand their business, health tech start-ups should provide user-friendly products and services that older people can easily enjoy. Two factors should be considered: need and application. Gaps still need to be filled so that health tech start-ups can grow sustainably. This does not mean, however, that older people, who are diverse, are all unfamiliar with advanced technology. The suggestion reflects the opinions of the informants.

##### **4.4.3. Buyer vs. User**

Most older people have been cared for by their children or close relatives for generations (Klassen et al., 2018). Who decides what products or services should be purchased for older people? In most cases, the caregivers do: 'those who bought it don't use it; those who use it didn't buy it'. This is true in the case of purchasing high-tech products. As a result, the products and services likely do not meet the needs of those who use them. Start-ups must study the discrepancy of needs between buyers (family caregivers) and consumers (older people) to create products and services that respond to older people's needs. Start-ups should keep in mind that their customers now, who are children or caregivers of older people, may one day become the end users of their products and services. Start-ups can create products and services that respond to the needs of the elderly and the caregivers on the assumption that buyers and end users have similar preferences. Effective marketing, awareness raising, and brand loyalty are key to the success of start-ups.

#### **4.5. Laws and Regulations Should Be Adjusted to Support the Growth of Health Tech Start-Ups for Older People**

##### **4.5.1. Telemedicine**

Some entrepreneurs said that the government should support telemedicine or technology-enabled medical services, including an online prescription system, to allow patients to have real-time communication with medical personnel. The services have not

been approved officially, so they are not governed by laws and regulations. Introducing laws and regulations to approve the services will benefit start-ups as well as clients, especially those with limited mobility.

#### **4.5.2. Legislative and Process Barriers**

We recommend that the government relax legal restrictions on registration, e.g. laws and regulations on fundraising and registration of start-ups. Because of such restrictions, many start-ups registered abroad, where laws are more flexible and/or less complicated, e.g. in Singapore. Some start-ups offered employee stock ownership (Ittipanuvat, 2017 [2560 BE]).

#### **4.5.3. Roles of the Government**

We recommend that the government define its roles. For example, the government is expected to be an information centre. Government offices can be the source of information. A problem is that information needed to develop health tech start-ups is dispersed and sometimes information needed for business analysis cannot be found.

The government is expected to establish the standards for health tech start-ups. An informant from the communication aid sector doing business on digital health said that the government should establish clearer ethical standards for human experiments to develop medical devices to accelerate innovation.

The government should encourage new start-ups by providing essential support such as financial initiatives, business coaching, and tax exemption.

#### **4.5.4. Outdated Laws and Policies**

Start-ups face outdated laws and regulations, which fail to support the growth of health tech start-ups. In addition, the number of related laws which need to be reformed is huge. Once the first laws are considered and changed, they will affect others. Reform of the laws will be complicated and delayed. Outdated laws prevent the social enterprise from preparing for a time when such laws are not relevant to the needs of the private sector. All related laws and regulations must be reformed so that health tech start-ups do not miss opportunities.

#### **4.6. Recommendations for Policy Development**

The study's policy recommendations regarding laws and regulations can be summarised as follows:

1. There should be laws and regulations for telemedicine or medical services that use information and communication technology, including an online prescription system, to allow patients to have real-time communication with medical personnel.
2. Fundraising laws and regulations should be adjusted. Registration of health tech start-ups should be flexible and relevant to management of start-ups. Fringe benefits and incentives should be offered to employees, e.g. stock options.
3. Several related laws are overlapping and should be streamlined or completely overhauled because the business world changes quickly.

4. To help health tech start-ups grow sustainably, emphasis should be placed on preventing foreign start-ups from having an advantage over local ones. The government should foster health tech start-ups that are based in the country, e.g. tax exemption in the first year of business only for Thailand-based start-ups to enhance their ability to compete until they are strong enough to grow sustainably. Other measures should be in place to support start-ups' initial stage of operation and to shield them from difficulties.
5. Standards of various government institutions have different requirements, delaying health tech start-up innovation. The government should set clearer ethical standards for human experiments to develop medical devices and medical technology for hospitals and clinics so that the business sector can design guidelines for good practice.
6. Innovative services provided by health tech start-ups should be favoured in the reimbursement system of healthcare services. Services can include various forms of innovation, e.g. a device for brain analysis, a health monitoring device. Innovation in healthcare technology could ease access to patients' medical records, which must be shared free of charge, which can benefit businesses and patients.
7. The government is expected to be an information centre or data source to promote health tech start-ups. Precise and integrated information is crucial to conduct research, disseminate up-to-date information to stakeholders, and help the public understand new laws on health tech start-ups.

## **5. Summary**

The analysis of the interviews and secondary data reveals that the size of health tech start-ups can be measured by the size of the ageing population and of the industries. Customers are B2C and B2B, which affects how start-ups approach their target customers. The elements that facilitate the growth of health tech start-ups that meet the needs of the ageing population can be categorised as follows: familiarity of the elderly with technology, advances in IT and AI, integration of data, and creation of new jobs and value amongst senior citizens.

Regarding health tech start-ups' innovations that enhance the potential of older people to continue contributing financially, the study found that older people need more activities, financial planning services to be ready for later life, lower-cost technology, measures to prevent health problems, and the use of AR and VR in communications.

Discrepancies between the needs of the ageing population and the ability existing health tech start-ups to meet them can be summarised as follows: insufficient mobile medical services, barriers to older people adopting high technology, and the gap between buyers (mainly family caregivers) and end users (older people).

Lastly, the study recommends that laws and regulations related to health tech start-ups be adjusted to support the industry's growth and to benefit all stakeholders. In this way, the industry will grow efficiently and sustainably and eventually promote the well-being of all senior citizens in Thailand.



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## Chapter 3

### Study 5: Market for Products and Services Targeting Older People in Thailand

*Arune Tanvisuth*

#### 1. Introduction

This study explores products and services available to older people. The study's methodology consists of desk research and market surveys at supermarkets, convenience stores, and online stores such as Lazada and Shopee. Examples of keywords used are 'elderly', 'old people', 'golden age', '60+', 'retiree', the term 'products and services' in general, and specific names for products and services such as skincare, toothpaste, medical equipment, nursing home, health insurance, amongst others. The objective of the study is to (1) recommend ways that Thai entrepreneurs can capture great benefits from high-potential elderly markets in Thailand and abroad, and (2) improve the quality of life of older people with products and services.

The proportion of people aged 60 years or older will be more than 20% in 2025 and more than 30% in 2031. The population is ageing rapidly, but not many products and services target older people. Entrepreneurs ignore this market because it is considered small. Most entrepreneurs lack understanding of the behaviours of this group of consumers, who, although highly educated, health conscious, and internet savvy, are mostly 'silent consumers' online (Positioning, 2016 [2559 BE]). As a result, entrepreneurs are unaware of this group of consumers' unmet needs. The Kasikorn Research Center (2018 [2561 BE]) study on the market for elderly-targeted products and services found different behaviours amongst older people of different age groups:

1. 'Young-old' (60–69 years old) tend to be health conscious and open to new things, have modern lifestyles, increasingly use new technologies, and shop online.
2. 'Middle-old' (70-79 years old) tend to stay in and prefer to share activities with family members. Some may have underlying conditions that require care or precautions, may have declining physical capabilities, or face loneliness.
3. 'Oldest-old' (80 years and older) also tend to stay in and prefer to share activities with family members. They are more likely to have underlying conditions and become increasingly dependent. Some may become fully dependent and need care.

Products and services that target older people are categorised into nine groups, described in the following section.

## **2. Products and Services for the Elderly**

### **2.1. Health Food and Beverages**

The players in this category are large multinational firms such as Charoen Pokphand Foods, Fonterra (Thailand), Cerebos (Thailand), Abbott Laboratories (Thailand), and AB Food and Beverages (Thailand), and small and medium-sized firms such as Dairy Home and Kin Yoo Dee (บริษัท กินอยู่ดี จำกัด). Products include basic health food such low-fat food with no cholesterol, low- or no-sugar food, vegetarian food, health supplements, bird's nest soup, and chicken-extract soup, and more advanced functional food such as smart soups, smart drinks, and egg albumin (Positioning, 2019 [2562 BE]).

The Expert Centre of Innovative Health Food of the Thailand Institute of Scientific and Technological Research has invented many innovative foods and beverages targeting older people and health-conscious consumers and is willing to share its knowledge with entrepreneurs. Examples of products are ready meals for those with heart disease and arteriosclerosis, diabetes, gouty arthritis, and osteoporosis; probiotic fruit; and functional beverages from natural sources, amongst others.

### **2.2. Lifestyle Products**

The products include toothpaste, mouthwash, personal care, undergarments, shoes, and skin care and anti-ageing natural cosmetics. Major players are familiar companies such as P&G, Lion (Thailand), GlaxoSmithKline, and ICC International, amongst others. Thai entrepreneurs find adult disposable diapers the most attractive product because they are in high demand and there are a few brands in the market. Well-known brands are Lively from Unicharm, a Japanese personal care group; Certainty from DSG International (Thailand), which was recently acquired by Unicharm (*Asian Nikkei Review*, 2018); Harmony from Elynn Laboratory; and Secure, which is imported and distributed by the Marketing Intelligence Group (Prachachat, 2018 [2561 BE]). Thai entrepreneurs that can serve this market with more environmentally friendly products will be hugely profitable.

### **2.3. Real Estate**

Some stand-alone houses or condominiums have universal design and care facilities for older people. Some real estate companies provide additional services such as life insurance, testaments and wills, and inheritance management. Some companies offer a contract to repurchase the property at a predetermined price when the buyer passes away. Well-known projects are Sawangkanives, Bussayanives, Wellness City, and Villa Meesuk. Sawangkanives, owned by the Red Cross, asks for a one-time donation of THB650,000 to THB1.8 million and a fee of THB2,500 per month. Bussayanives, under the Foundation of His Holiness the Supreme Patriarch of Thailand, asks for a donation of THB200,000–THB250,000 and a fee of THB1,500–THB2,500 per month. Wellness City and Villa Meesuk sell stand-alone houses and condominiums for THB2.7 million–THB4.4 million

(Prachachat, 2017 [2560 BE]). Jin Well Being County, a retirement living complex under the Thonburi Healthcare Group, is a new project in Rangsit, which aims to meet all active-living and assisted-living needs of senior citizens and their families, including physical health, mental well-being, and financial stability..

Some real estate projects target high-income foreign elderly, such as Kamala Senior Living in Phuket, Sunplay Bangsaray and Scandinavian Village in Chonburi, Sansara in Hua Hin, and Prachuap Khiri Khan and Hospica Villa in Chiangmai. A unit costs THB5 million–THB30 million.

Overall, demand is much greater than supply and most projects target middle- and high-income buyers. In January 2017, the Treasury Department, Ministry of Finance received cabinet approval to invest in a project to establish Ramathibodi Hospital of Mahidol University, Thailand's first state-owned senior complex in Bang Phli, Samut Prakan province. Residents will pay a lump-sum fee of THB1 million for a 30-year stay and a monthly rent of not less than THB10,000 a month for services. However, the figures will depend on the designs submitted by winning contractors. The department is planning similar projects in Chiang Rai, Chiang Mai, Nakhon Nayok, and Chon Buri, with plans to offer a total of 400,000 residential units.

#### **2.4. Public and Home Renovation with Senior-friendly Equipment or Facilities**

As Thailand becomes an aged society, there will be increasing demand to renovate public and residential facilities to accommodate the needs and safety of older people. Major players such as Siam Cement Group, Boonthavorn, HomePro, and Hafele (Thailand) are already active in this market. Products are railings, electric beds, corner staircases, door bars, stair lifts, anti-slip sheets, motion-sensor lights, and impact absorption floors, amongst others. Siam Cement Group has introduced Eldercare Solution whilst HomePro has introduced Elder Living to offer products and consulting services for their customers.

#### **2.5. Medical and Therapeutic Equipment**

Firms such as Unity Meditec, Matsunaga (Thailand) offer medical and therapeutic equipment for hospitals, clinics, and residents. Their products are parallel bars, electric adult tilt tables, balance beams, hydrocollators, wheelchairs, and electric beds, amongst others.

#### **2.6. Mobility Products and Services**

This category includes elderly-friendly vehicles such as specially designed cars and vans with ramps and space for wheelchairs, and electric scooters. Eton Group is the leader in this market, importing cars for older people from Japan for more than 25 years. It offers multipurpose cars such as Alphard and Vellfire, costing THB3.5 million–THB4.0 million. In the past, the sales were not high because the cars are expensive. However, as Thailand

ages, Eton Group plans to launch more marketing campaigns to promote their products to Thai customers (*PostToday*, 2018 [2561 BE]). The category includes taxi service for older people who need transport to hospitals, department stores, and temples, amongst others. Senior Taxi Thailand, which has just changed its name to Go Mamma, is the first taxi company that targets older people. The company not only arranges transportation but also provides care helpers to accompany older people on their errands, if needed (*Thai Post*, 2018 [2561 BE]).

## **2.7. Investment, Life Insurance, and Health Insurance**

Many commercial banks and insurance companies have introduced products especially for older people, including savings, healthcare, accident, and life insurance for people aged 50, 55, and 60 years and older. Data from the Thai Health Promotion Foundation showed that more than 30% of Thais are not financially prepared for retirement. Only 15 million of working people save for retirement and their average savings might not be enough to support a good living standard (*Manager Online*, 2018 [2561 BE]). Thais need financial and insurance products to help them better prepare for post-retirement life.

## **2.8. Care Services for Older People**

According to the Department of Business Development, Ministry of Commerce, there are 800 registered care services in Thailand. The department has classified care service into six types of business; nursing homes have the highest market share at 62% whilst home care ranks as second with a 20% market share. Other types of business include day care, long stay, social welfare development centres such as Ban Bang Khae, and health promotion centres. A study by the Thailand Development Research Institute showed that there were about 12 home care providers in 2016 with a total revenue of THB74 million. The top-three market leaders are Junior & Senior Home Health Care, Kronus (Thailand), and Thai Riei. JS Home Health Care, a subsidiary of Kluaynamthai Hospital, had 42.44% market share. Kronus (Thailand), a joint venture of Thailand, Singapore, and Malaysia, had 33.89% market share, followed by Thai Riei, with 8.34% (Thailand Development Research Institute, 2019 [2562 BE]). With only three firms controlling more than 80% of the total market, sellers have more market power than buyers (oligopoly market structure). Firms compete mainly on quality and standard of service, not on price. The home care business is different from the nursing home business, which has more rules and regulations; therefore, we see international players in the home care business. Under this category, we include home helpers, caregivers, and training for these professionals.

## **2.9. Media and Entertainment**

Radio and TV have become less popular amongst younger people, and some channels cater mainly to older people, entertaining them and giving them health information. Since older people tend to stay home watching TV or listening to radio, Thai entrepreneurs can use these channels to sell their products. Tour companies that want to expand their

business to older people should focus on health or culture, with light activities, spend ample time at each destination, and install facilities for older people in tour buses.

### **3. Key Success Factors for Elderly-targeted Products and Services**

Based on the findings of the market survey and the author's teaching experience at Thammasat Business School, the following factors are key to succeed in businesses targeting older people:

1. attention to quality and standards;
2. elderly-friendly and safe designs;
3. reasonable pricing; and
4. attention to the preferences of older people's children or caretakers, who make buying decisions and are the main income sources.

### **4. Recommendations for Entrepreneurs Focusing on Older People**

- 1) Entrepreneurs should identify target market segments, according to age, characteristics, and socioeconomic status or income level, and propose products and services that meet the segments' needs.

For example, the high-income 'young-old' (60-69 years) want healthy and organic food or lifestyle and fashion products because they want to take good care of themselves, are still young at heart, and want to look young. However, products and services for the 'oldest old' (80 years and older) might be functional food, home helpers, or nursing home service.

- 2) The high-income 'young-old' should be targeted first. The segment is more financially independent than older segments and will need products and services for a longer time. Profits from the higher-income segment can subsidise lower-income segments.

A good example of the cross-subsidisation model is Siriraj Hospital of Mahidol University, the largest public hospital in Thailand. In April 2012, Siriraj Hospital opened Siriraj Piyamaharajkarun Hospital, positioned and operating as a private hospital, to serve high-income patients. An objective of Siriraj Piyamaharajkarun Hospital is to use its revenue and profit to subsidise the operation of Siriraj Hospital.

- 3) Products and services should target not only Thai older people. The world is ageing and foreign older people might have more purchasing power. Entrepreneurs should design their products for the global not just the Thai market.

Thailand has a competitive advantage and good reputation in two industries: food and hospitality. The government's goal is for Thailand to be a 'kitchen of the world' and a medical hub of Asia. Thai entrepreneurs should focus on healthy and organic

food and aim to serve the global market. Thai entrepreneurs should consider the home helper and nursing home businesses. Thais are known for their friendliness, generosity, and great service. As the 'oldest-old' segment increases, these two businesses will be in high demand. After saturating the domestic market, Thai entrepreneurs might consider sending professional caregivers abroad.

- 4) In some industries that lack expertise or state-of-the-art technology, Thai entrepreneurs might consider having foreign partners help them be more competitive.

An article (Quartz.com, 2018) ranked Norway, Sweden, the United States, the Netherlands, and Japan as the top-five best countries for older people to live in, because they are well supported in terms of (1) productivity and engagement, (2) well-being, (3) equality, (4) cohesion, and (5) security. Firms in these countries have more experience in providing advanced products and services for older people. By partnering with these foreign firms, Thai firms can learn a lot.

This study shows that the market for older people or the 'silver' market has high potential for growth; Thai entrepreneurs must not ignore this opportunity.

The study is preliminary and was conducted from November 2018 to June 2019. Further research on market size, competition, and major players is recommended for entrepreneurs interested in the market.



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