

Behaviors of the Elderly at Shopping Malls and Facility Management to Address Their Needs

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Abstract

This research aims to study the demographic, social, economic, health, and behavior data of the elderly who spend their time at shopping malls. It also examines the physical condition of shopping malls' interiors in relation to the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005), as well as analyzing the management of the space to suit the use by elderly in Bangkok. Structured interviews and onsite surveys were employed for the sampled groups at MBK Center and Chamchuri Square. The findings showed the key quality that attracts the seniors to the shopping malls are their locations. The majority of the seniors spending time at the shopping malls are of retirement age (60 – 69 years) who often are found gathered in areas with more seats and without a time limit (e.g., food court), talking with friends, shopping, and relaxing. Overall physical conditions of the shopping malls were properly organized for elderly people as seen from availability of ramps, escalators, elevators. This research includes suggestions including: operators should design and improve facilities in accordance with the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005). The operator may consider setting up some co-working spaces to be specific areas for the elderly during times when they use the space in large numbers; or make it an intergenerational space suitable for the elderly and children to proactively create a point of sale for the mall.

Keywords

facility management; the elderly; shopping mall; behavior; aged society; Bangkok

1. Introduction

The ratio of elderly in Thailand has risen rapidly in the last 20 years till now (2019) as average life expectancy of the Thai population has increased significantly. More specifically, 40 - 50 years ago life expectancy was less than 60 compared with 75 today and is expected to reach 80 in the next 20 years (Department of Older Persons, 2019). Moreover, the lifestyle of Thai people has shifted such that getting married and having children are seen as a lower priority in modern families. The number of couples who voluntarily controlled birth tripled from 5.6 percent to 16.2 percent during the period 1987 - 2013 (Ongkulna, 2016) resulting in a rapid decline of Thailand's birth rate. The increased contraceptive rate also coincided with a dip in the number of females within the fertile age range, and also is associated with a declining birth rate since 1987.

Thailand, therefore, has become an ageing society since 2005 and is expected to turn into a complete aged society by 2025, with the number of senior citizens exceeding 20 percent of its overall population, and by 2035 Thailand will become a super aged society with over 30 percent of aged population. The population of 60-years and older in 1970 was 1.7 million. The number grew to 4 million in 1990 and 11.2 million in 2018. From the statistics, by 2038, the elderly population would nearly double and be equivalent to approximately 20 million. The sizes of population over 60 years and 80 years during the period 1970 - 2038 are illustrated in Figures 1 and 2.

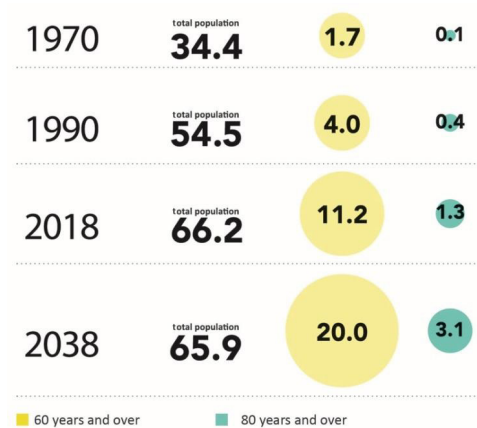


Figure 1 Size of population over 60 years and 80 years during 1970 - 2038 (million).

Note: From Department of Older Persons (2019)

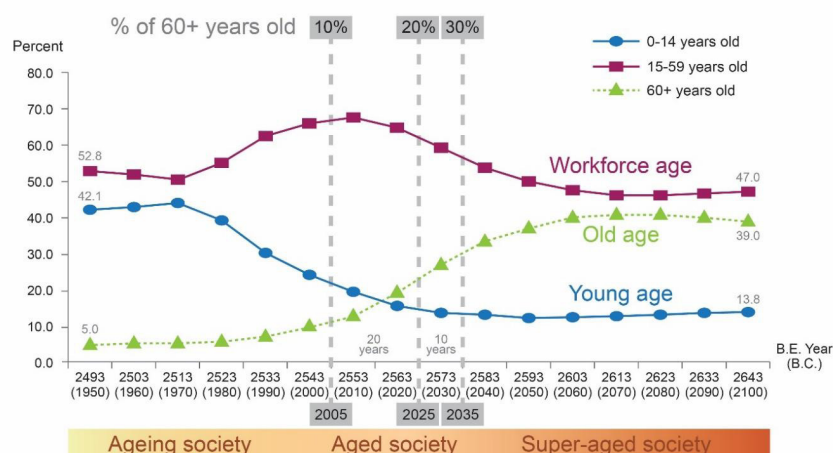


Figure 2 Statistics and projection of Thailand's aged population number during 1950 – 2100.

Note: Data from Center of Excellence in Universal Design, Chulalongkorn University, Thailand. Infographic by authors

A vast number of aged people in Thailand live in Bangkok City due to the urbanization effect in which more population shifts from living in rural to urban areas. The ratio of Thai population living in urban settings is larger than the other half living in rural areas (Ritchie and Roser, 2018). From a survey in 2019 (The Bureau of Registration Administration, 2019) the number of elderly people living in Bangkok City was 1,063,871, equivalent to 19 percent of the City's total population of 5,666,264 people. The rate shows that Bangkok City is about to turn into a complete aged society. With this accelerating growth of the number of elderly people in the City, the government recognized its importance and issued the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005) coming into effect since September 2003 on the construction of new buildings and those used regularly by the elderly e.g., hospitals, offices, hotels, theaters, commercial buildings, shopping centers, malls, etc

Many studies conducted on the elderly's behaviors show that those living in urban settings tend to spend their time in public spaces of the cities (Jackie, 2013) socializing and gathering with their group of friends. This observation is consistent with the concept of Third Place, referring to social surroundings where people gather, which are not homes (first place) or workplaces (second places). While Bangkok City keeps growing at a fast pace, its common spaces such as learning centers or parks have not matched this growth. As a result, shopping centers and malls have become a popular Third Place among urban people and therefore are major gathering points for the City's seniors by default. At present (2019), the total area of Bangkok's shopping malls is greater than that of the parks. This research, therefore, aims to explore the elderly's behaviors in conjunction with the shopping malls' physical conditions to analyze the behavior of the elderly who use the space in the shopping malls as well as analyzing the management of the space in the shopping malls to suit the use by the elderly.

2. Relevant Concepts and Theories

Concepts and theories relevant to this study are Active Ageing, Post-retirement Living, Third Place, Social Engagement, Universal Design, Age-friendly Cities, Ageing in Place, and Street for Life defined as follows:

2.1 Active Ageing

The World Health Organization (WHO, 2002) has adopted the term Active Ageing to refer to "the process of optimizing opportunities for health, participation, and security to enhance the quality of life as people age". From the definition, this concept consists of 3 pillars: health, participation, and security, of the elderly. Active Ageing people are characterized by the 5 qualities of lower incidence of disease and disability, good physical health, good memory, strong mental health that can cope with stress, and regular participation in activities. In this research, shopping malls are seen to provide activities that increase the participation of the elderly population. And if the shopping malls provide a suitable environment for the elderly, it will also promote life security. Active Ageing includes 6 determinants as shown in Figure 3.

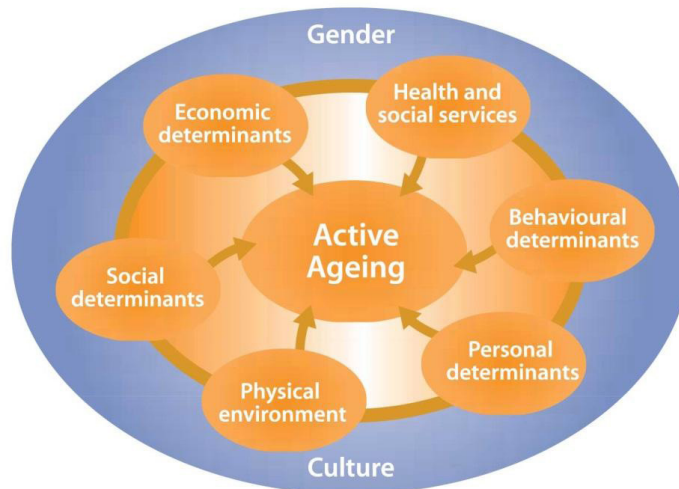


Figure 3 The determinants of Active Ageing.

Note: From World Health Organization (2002)

2.2 Post-retirement Living

Once retired, people should stay engaged with society and strive to maintain good physical health (Eisenberg, 2017) to achieve a physically and mentally healthy post-retirement living. Retirees should participate in activities, either paid work or volunteering. The concept also emphasizes that eating well, sleeping soundly, playing often, and regularly exercising are the keys to healthy post-retirement living. In this research, shopping malls are an important option for the elderly living in cities to gather to increase engagement with those around them, and society in general.

2.3 Third Place

The concept refers to informal social settings in good locations, that are not too crowded, but suitable for group activities or social gatherings. For retirees, the Third Place becomes vital as it allows them to engage in social activities where they earn a sense of fulfillment. Engagement in these activities helps the elderly to adjust themselves while living in the new context after their retirement and can create a sense of fulfillment (Cheang, 2002). In this research, shopping malls are the Third Place for the elderly, being a key location for social gathering in Bangkok City.

2.4 Age-Friendly City

The World Health Organization refers to the Age-friendly City (WHO, 2007) as the city where its citizens value age diversity and healthy living of senior citizens. The framework requires support, participation, and sharing for and by the elderly across all dimensions of community life to offer choices of lifestyle that helps to reduce the negative impact of urbanization. Topic areas of Age-friendly City include Housing, Social participation, Respect and social inclusion, Civic participation and employment, Community support and health services, Outdoor spaces and buildings Transportation, and Housing (see Figure 4). Key points applicable to the improvement of shopping malls include interior and exterior arrangements that address the needs of the elderly, reserved areas for the group's gatherings, and promotion of senior citizen employment.

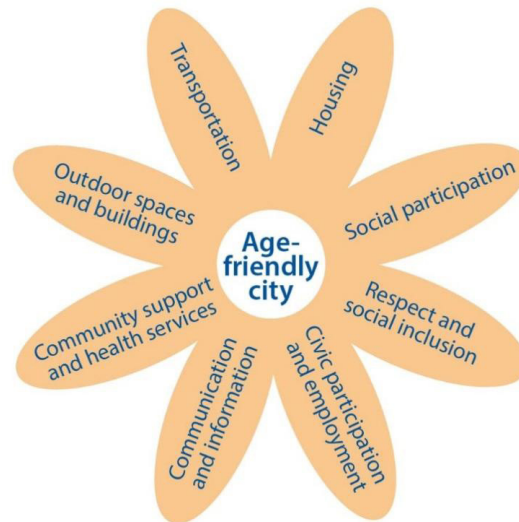


Figure 4 Age-friendly City topic areas.

Note: From World Health Organization (2007)

2.5 Street for Life

The concept revolves around facility arrangement to address the needs of all people at the city level. It highlights a facility management framework that has impact on urban living e.g., bus stops, crossings, public restroom, etc. (Jarutach, 2008). As for the elderly's needs, it suggests that a resting spot should be provided every 100 meters to address their declining physical fitness.

3. Research Objectives

The key objectives are as follows:

- (1) To study the elderly's demographic, social, economic, health, and behavior information concerning accessibility to the facilities provided for the group at two selected shopping malls in Bangkok.
- (2) To study physical conditions at two of Bangkok's shopping malls' interiors, specifically in reference to the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005).
- (3) To analyze the behavior of the elderly who use the space in the shopping malls and analyze the management of the space in the shopping malls to suit the use of the elderly in Bangkok.

4. Research Scope

This research is qualitative research. The scope of the study area includes shopping malls located in Pathum Wan district, Bangkok. This study area was selected because it is the district with the highest ratio of elderly population to total population compared to all districts in Bangkok. For the study, we also required the elderly population aged 60 or older to use the areas in the shopping malls, as well as access to population and data and being allowed access to storage from the owner of the premises. From the preliminary requirements, the team identified the appropriate shopping malls to be studied as MBK Center and Chamchuri Square. Sample sizes for each mall and locations of the study sites are shown in Table 1 and Figure 5, respectively.

Table 1 Population and sample sizes of the study

Sites	Population	Samples
MBK Center	∞	100 senior visitors
Chamchuri Square	∞	100 senior visitors

The sample used in the research, since the exact number of people who use the mall is unknown, is an Infinite population. Therefore, the researchers determined the size of the sample for this study using Yamane’s sampling table (Yamane, 1967). The sample size was set at a confidence level of 95 % ($Z=1.96$) with a tolerance (E) of 10%. As such, the appropriate sample size was calculated as 100 people.

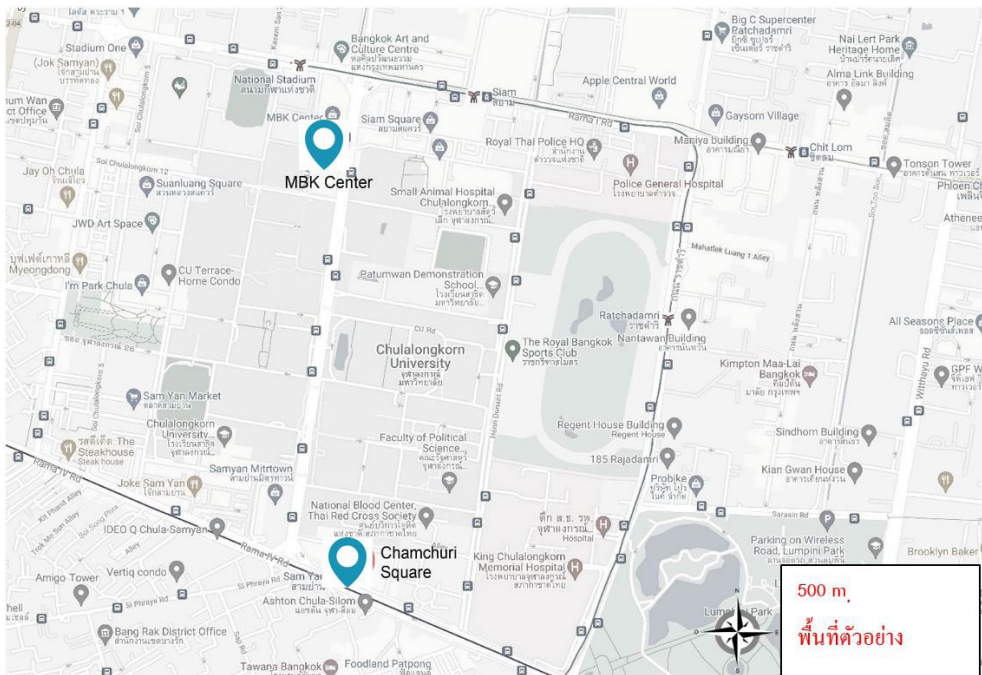


Figure 5 Locations of the research samples.

Note: Graphic by authors

5. Methodology

This descriptive research employs both primary and secondary data collection methodologies. Secondary data were obtained from papers studying the elderly behaviors regarding accessibility at shopping malls in Bangkok as well as relevant concepts, theories, and research. For the primary data collection, two research tools were selected as follows:

- (1) Structured interview - used to collect information from the elderly visiting the malls, including males and females of 60 years or older, that addressed basic personal information, behaviors and activities, objectives of visiting the malls, as well as relevant comments or suggestions.
- (2) Survey and observation employed for the areas provided by the building manager. The ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005) was used as reference for designing the survey based on the seven characteristics: 1) Signage indicating facilities 2) Ramps and elevators 3) Stairs 4) Parking space 5) Building entrances, walkways to next building, inter-building links 6) Doors and 7) Restrooms
- (3) Details from onsite data collection and activities are shown in Table 2.

Table 2 Details of the data collection process

Sample sites	Date of interviews with elderly mall users	Method	Onsite physical survey date
MBK Center	13-14 January 2020 (2 days)	MBK Center prepared the area and provided a set of table and chairs for the interview. The team of researchers conducted interviews at the table as well as approaching senior visitors offering a gift in return for the information.	2 and 8 February 2020
Chamchuri Square	2-5 January 2020 (4 days)	Approached senior visitors and asked for an interview offering a gift in return for the information.	5 and 18 February 2020

6. Limitations

(1) Some of the seniors were illiterate or had problems reading due to declining sight. Data collectors had to read the questions and took note of answers for them as they were unable to read themselves.

(2) When approached for the interview, the elderly tended to be highly suspicious and skeptical that it took much time to explain and convince them to cooperate resulting in longer hours for data collection.



(3) This research was conducted in 2020 and used the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005) as reference for designing the survey. If this research is continued, the current statutory standards include: the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly (No. 2) B.E. 2564 (2021)

(4) This research was conducted in interviews with seniors to collect data before the onset of the COVID pandemic in Thailand. This does not affect the mall access of the elderly and research teams.

7. Background

MBK Center and Chamchuri Square have been welcoming shoppers for many years. They are located in the heart of Bangkok City, highly accessible by personal vehicles and public transportation, making them great choices for meetings as a Third Place. Basic information for the shopping malls is shown in Table 3.

Table 3 Basic information for MBK Center and Chamchuri Square

		
Topics	MBK Center	Chamchuri Square
Opening year	1985 (previously known as Maboonkrong) Before enactment of the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005)	2008 After enactment of the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005)
Location	Pathum Wan District	Pathum Wan District
Number of floors	8	4
Nearby buildings or landmarks	<ul style="list-style-type: none"> - BTS Skytrain (National Stadium Station) - Education establishments - Parks - Religious place 	<ul style="list-style-type: none"> - Metropolitan Rapid Transit – MRT (Samyan Station) - Education establishments - Parks - Religious place
District of residence	1st: Ratchathewi District 2nd: Phaya Thai District 3rd: Bang Rak District	1st: Bang Rak District 2nd: Pathum Wan District 3rd: Samphanthawong District
Gathering spot	Food court on 6th floor	Food court on basement floor

MBK Center's gathering spot was the food court on 6th floor (Figures 6 and 7). The senior visitors come to MBK Center for various reasons, with the majority enjoying a walk, relaxing, and shopping. Some came for the special events organized at the halls. The food court on 6th floor was a popular choice for meals as it offers a variety of menus and had no time limit for sitting.

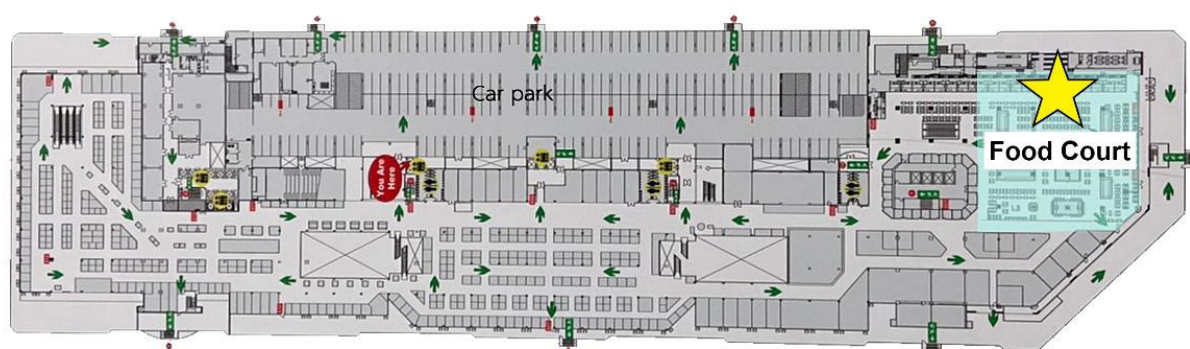


Figure 6 Plan of 6th floor, MBK Center, marking the gathering spot of the senior visitors

Note. The location of the gathering spot is marked with a yellow star. From MBK Center



Figure 7 Gathering spot in MBK Center

Note. Photo by authors

Chamchuri Square's gathering spot was also the food court, which was on the basement floor of the building (Figures 8 and 9). The food court was spacious, had plenty of tables and seats available and was air-conditioned. Activities of the elderly included having meals together, hiding away from the heat outside, relaxing, browsing through social media, waiting for their grandchildren to finish from school, or other activities.

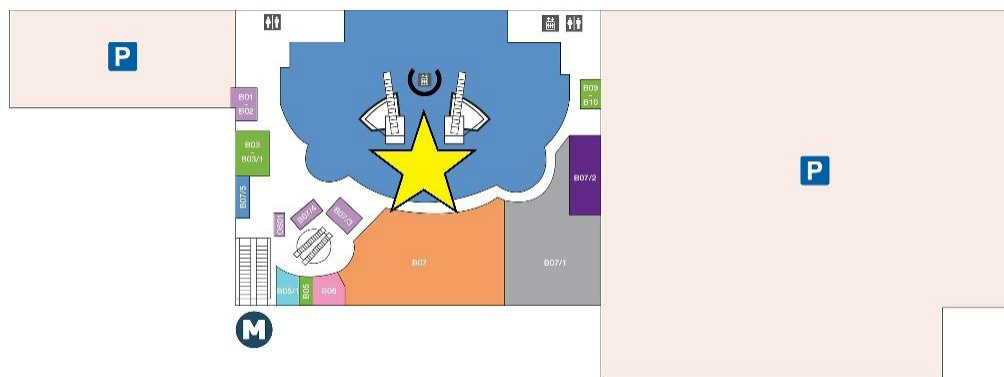


Figure 8 Plan of the basement floor, Chamchuri Square, marking the gathering spot of the senior visitors.

Note: The location of the gathering spot is marked with a yellow star. From Chamchuri Square

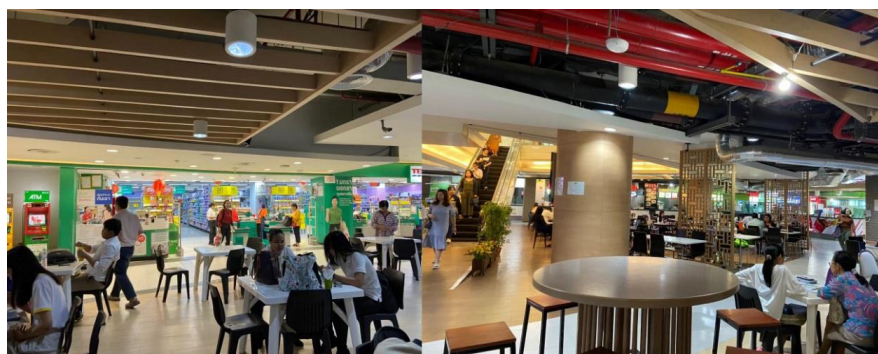


Figure 9 Gathering spot in Chamchuri Square

Note: Photo by authors

8. Findings

Findings are categorized into two dimensions to align with the key objectives of the study: 1. Demographic, social, economic, health, behavior data of the elderly relating to accessibility of areas and facilities provided by the shopping malls and use cases; and 2. Physical conditions of the malls' interior based on key sections stipulated by the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005). Details are as follows:

8.1 Demographic, social, economic, health, and behavior data of the elderly relating to accessibility of areas and facilities provided by shopping malls and use cases

From the surveys and interviews, findings are categorized as follows:

8.1.1 Age range of the elderly

From the interviews of the elderly visiting the sampled shopping malls, the majority were in early years of retirement (60 - 69 years of age), representing 69.0 percent of the respondents, and those in middle retirement period (70 - 79 years of age) representing 27.5 percent of the respondents, as shown in Table 4.

Table 4 Age range of the elderly participating in the structured interviews

Age range	Number of respondents		Percent total
	MBK Center	Chamchuri Square	
	<i>N = 100</i>	<i>N = 100</i>	<i>N = 200</i>
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
60 - 69 years	73.0	65.0	69.0
70 - 79 years	24.0	31.0	27.5
Over 80 years	3.0	4.0	3.5

8.1.2 Residential information of the elderly

As both sampled shopping malls are located in inner Bangkok, findings from the interview show that the majority of the interviewees also lived in the inner city, a total of 60.0 percent, compared to smaller numbers from more distant districts as shown in Table 5.

Table 5 Residential information of the elderly participating in the structured interviews

Zone of residence	Number of respondents		Percent total
	MBK Center	Chamchuri Square	
	<i>N = 100</i>	<i>N = 100</i>	<i>N = 200</i>
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Inner Bangkok	62.0	58.0	60.0
Urban fringe	13.0	22.0	17.5
Suburban Bangkok	11.0	7.0	9.0
Bangkok's perimeters	14.0	1.0	7.5
Other provinces	0.0	12.0	6.0

8.1.3 Education levels

The majority of the elderly visiting MBK Center possessed a high school education or equivalent, accounting for 37.0 percent of the respondents and those with a bachelor's degree or higher represented 30.0 percent of the sample. As for the interviewees at Chamchuri Square, the largest proportion (39.0 percent) had a bachelor's degree. Details are shown in Table 6.

Table 6 Education levels of the elderly participating in the structured interview

Level of education	Number of respondents		Percent total
	MBK Center	Chamchuri Square	
	<i>N = 100</i>	<i>N = 100</i>	
	<i>Percent</i>	<i>Percent</i>	
None	4.0	1.0	2.5
Lower than elementary school	1.0	3.0	2.0
Elementary school	29.0	11.0	20.0
High school or equivalent	37.0	27.0	32.0
Bachelor's degree	26.0	39.0	32.5
Higher than bachelor's degree	30.0	19.0	24.5

8.1.4 Income levels

The average income of the elderly in the survey was between 6,000 - 30,000 Thai Baht per month. At MBK Center, the level of income for the majority of respondents fell between 10,001 - 20,000 Thai Baht. At Chamchuri Square, most participants had a 20,001 - 30,000 Thai Baht monthly income. Details are in Table 7.

Table 7 Income levels of the elderly participating in the structured interview

Level of income per month (Thai Baht)	Number of respondents		Percent total
	MBK Center	Chamchuri Square	
	<i>N = 100</i>	<i>N = 100</i>	
	<i>Percent</i>	<i>Percent</i>	
Less than 6,000	15.0	1.0	8.0
6,000 - 10,000	24.0	18.0	21.0
10,001 - 20,000	28.0	13.0	20.5
20,001 - 30,000	13.0	29.0	21.0
30,001 - 70,000	13.0	19.0	16.0
70,001 - 100,000	0.0	7.0	3.5
100,001 - 300,000	0.0	10.0	5.0
Over 300,000	0.0	3.0	1.5
Unstable	1.0	1.0	1.0
Not specified	6.0	18.0	12.0

8.1.5 Source of income

Findings from the interviews at both sample sites were similar, with the elderly's source of income mostly from paid work, accounting for 33.7 percent of the responses, followed by support from their children or grandchildren with 19.0 percent of the responses. Details are shown in Table 8.

Table 8 Source of income of the elderly participating in the structured interview

Source of income	Number of respondents		Percent total
	MBK Center	Chamchuri Square	
	<i>N = 100</i>	<i>N = 100</i>	
	<i>Percent</i>	<i>Percent</i>	
Paid work	33.1	34.2	33.7
Savings	16.2	11.8	14.0
Spouse	9.2	2.7	6.0
Children/ grandchildren	24.6	13.4	19.0
Pensions	9.9	12.8	11.4
Investments	1.4	11.2	6.3
Returned interests	1.4	4.3	2.9
State welfare	3.5	9.6	6.6
Others	0.7	0.0	0.4

8.1.6 Chronic diseases or conditions

The elderly visiting the shopping malls were approximately evenly split between those that live with and without chronic disease, at 47.0 percent and 52.5 percent respectively, as shown in Table 9. The most common conditions were hypertension, diabetes, heart disease, and hyperlipidemia.

Table 9 Chronic diseases found in the elderly participating in the structured interview

With chronic disease	Number of respondents		Percent total
	MBK Center	Chamchuri Square	
	<i>N = 100</i>	<i>N = 100</i>	
	<i>Percent</i>	<i>Percent</i>	
Yes	40.0	54.0	47.0
No	59.0	46.0	52.5
Not specified	1.0	0.0	0.5

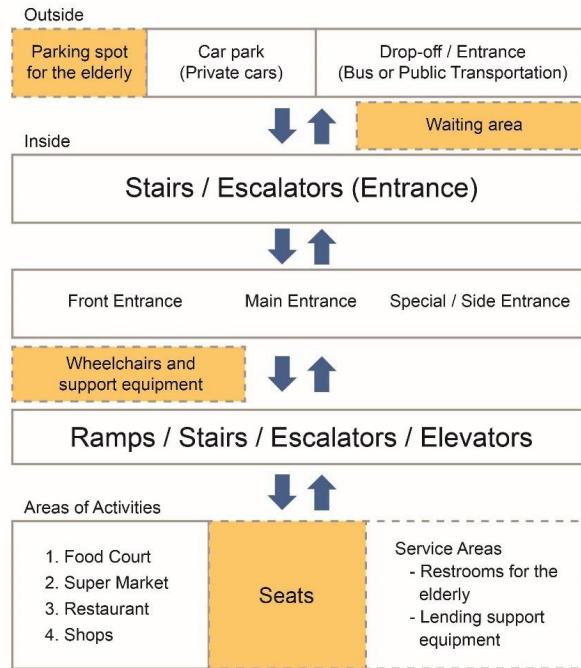


Figure 10 Behaviors of the elderly coming to the shopping malls by themselves.

Note: Graphic by authors

The group coming to the malls with families were found to have different purposes as they often came to have a meal with their families or were waiting for them to finish the shopping. From the interviews, based on behaviors and use patterns at the malls, the elderly can be categorized into two groups: those coming to the malls by themselves and those coming with families. Travel behaviors to and within the malls, as well as in-mall activities used by each group are shown in Figure 10 and Figure 11. The objectives of the group coming to the malls by themselves included meeting up with friends, working, shopping, relaxing, taking a stroll, having meals, and for other errands.

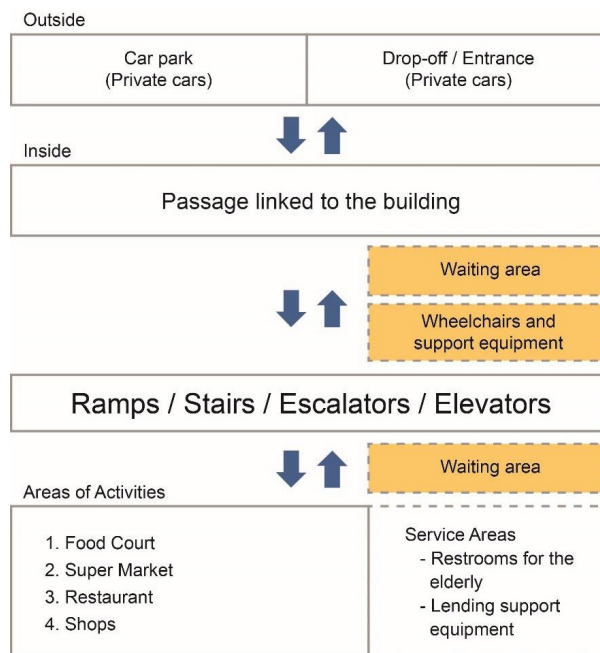


Figure 11 Behaviors of the elderly coming to the shopping malls with families

Note: Graphic by authors

Facilities used by the elderly included parking spaces, stairs, escalators, ramps, elevators, entrances and restrooms in accordance with the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005). For waiting area and service points, lending equipment is in line with the Street for Life concept.

8.2 Physical conditions of the shopping malls’ interiors

From the onsite physical survey of the facilities provided within the buildings with reference to the key components stipulated by the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005), areas of strength and improvement can be summarized by sections as follows: (1) Signage indicating facilities (2) Ramps and elevators (3) Stairs (4) Car park (5) Building entrances, walkways to next building, inter-building links (6) Doors and (7) Restrooms. Details are shown in Table 10.

Table 10 Overview of facilities provided within the buildings of MBK Center and Chamchuri Square




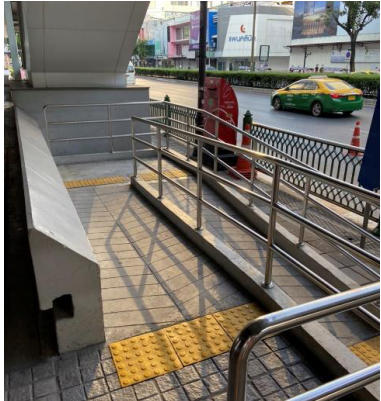


Sections	MBK Center	Chamchuri Square
Section 1: Signage indicating facilities	<p>Proper</p>  <p>Signage was available throughout the building with clear messages.</p>	<p>Proper</p>  <p>Signage was available throughout the building with clear messages.</p>
Section 2: Ramps and elevators	<p>Proper</p>   <p>Practical and standardized ramp with proper handrail is available at bus stop, appropriate for the elderly use.</p>	<p>Proper</p>   <p>Elevators were at the center of the building making it convenient for the seniors. A ramp was available at the main entrance linking with a bus stop. However, the proportion and length of the ramp could be more appropriate and a handrail could be added for more friendly use.</p>

Table 10 Overview of facilities provided within the buildings of MBK Center and Chamchuri Square (Continue).




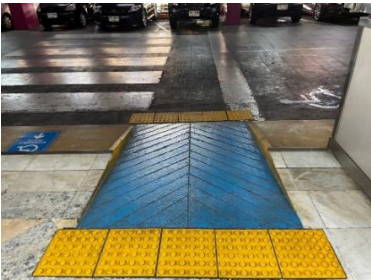
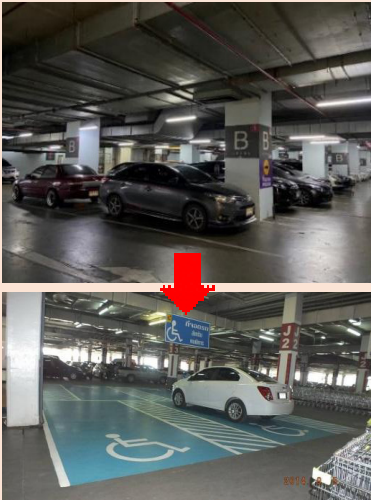
Sections	MBK Center	Chamchuri Square
Section 3: Stairs	<p>Proper</p>  <p>Linkages between floors inside and those to outside building were escalators. Awning/ roof was also provided, convenient for the use by seniors.</p>	<p>Proper</p>  <p>Escalators were available at the main entrance, from the subway, between floors throughout the building, highly convenient for senior visitors.</p>
Section 4: Car park	<p>Proper</p>   <p>Parking space for the elderly and the disabled were properly provided near the entrance. The spot was marked with distinct color and clear sign. A ramp from the car park to the entrance was also available for the use of the elderly.</p>	<p>For improvement</p>  <p>There is no reserved parking space for the elderly and the disabled, which should be provided. However, a parking spot was provided near the entrance, which led to the gathering spot of the elderly (food court) making it convenient and accessible for the senior visitors. Wheelchairs could also be borrowed for those in need.</p>

Table 10 Overview of facilities provided within the buildings of MBK Center and Chamchuri Square (Continue).

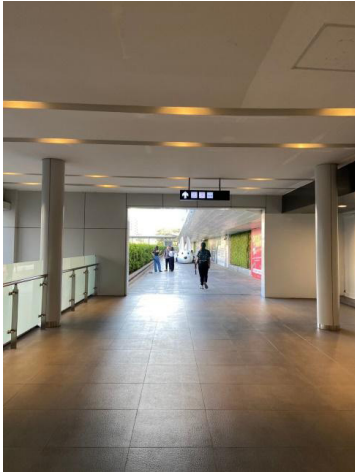



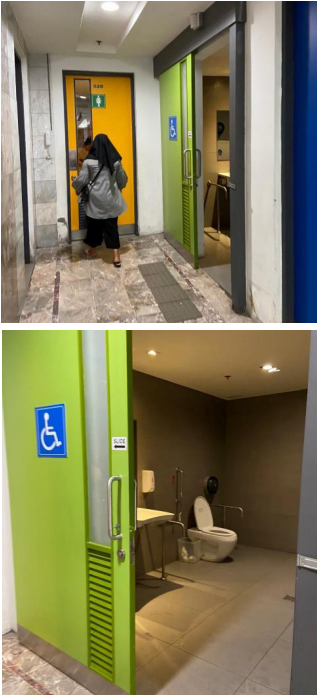

Sections	MBK Center	Chamchuri Square
Section 5: Building entrances, walkways to next building, inter-building links	<p>Proper</p>  <p>A walkway on the second floor linking to the crossover and the main entrance was well designed and practical with smooth surface, ramps, and escalators at junctions, convenient for the elderly.</p>	<p>Proper</p>  <p>Front of the mall was a vast open space offering a light and relaxed feeling. Ramps and escalators were provided at junctions, convenient for the elderly.</p>
Section 6: Doors	<p>For improvement</p>  <p>Some were heavy swing doors, which were not proper for use by the elderly. These should be replaced with automatic sliding doors for more convenience and also to accommodate the needs of the wheelchair.</p>	<p>Proper</p>  <p>The entrance was wide and installed with an automatic sliding door, which is appropriate for use by the elderly as well as the wheelchair.</p>

Table 10 Overview of facilities provided within the buildings of MBK Center and Chamchuri Square (Continue).

Sections	MBK Center	Chamchuri Square
Section 7: Restrooms	<p>Proper</p>  <p>Reserved restrooms for the elderly were provided with clear signage. Size and space of the restroom were properly designed to meet the needs of the elderly.</p>	<p>For improvement</p>  <p>Reserved restrooms for the elderly were not available. There was a 3-step stair at the entrance of the restroom on the basement floor. Initially, handrails were installed in each room for more convenience. However, reserved restrooms with a proper design for the needs of the elderly should be provided. (The restrooms in this basement cannot be improved to suit the elderly due to space restrictions. Therefore, a signpost should be added to the restrooms for the elderly)</p>

9. Conclusion

Considering our first objective, it was found that most of the elderly went outside every day and chose shopping malls as the place for their daily out-of-home activities, either by themselves or with families. Location was the key factor that makes shopping malls a popular choice among the elderly. The majority of the group came by public transportation such as bus, BTS Skytrain, MRT, etc., as the shopping malls in Bangkok, especially in the inner city, often are situated in the prime areas highly accessible by public and private transportation. As a result, shopping malls have become a key gathering spot for the elderly.

With respect to our second objective, it was found that the shopping malls' area was well managed to meet the elderly's needs such as entrances and linked passages. Setup of escalators on each floor and elevators were also convenient for use by the senior visitors. Some areas still have room for improvement such as doors, which should all be automatic sliding doors. Reserved restrooms for the elderly or the wheelchaired should also be added to some areas. Operators should design and improve facilities in accordance with the ministerial regulation prescribing accessible facilities for persons with disabilities and the elderly B.E. 2548 (2005). Furthermore, as the food court was highly popular among the senior visitors, because it is an area where there is no charge, suggestions for improvement include: the operator may consider setting up some co-working spaces to be specific areas for the elderly during times when the elderly are using the space in large numbers. In addition, an intergenerational space suitable for the elderly and children to proactively create a point of sale for the mall might be considered.

Considering our third objective, it is concluded that in terms of behaviors and use, the elderly need space for socializing with groups of friends as socializing is a basic human need (McLeod, 2007). Based on observed behaviors, most of the elderly tended to gather in areas with plenty of seats, such as a food court, which is consistent with the findings in “Third Place and older adults” (Cheang, 2002). This Third Place for the elderly was likely to be the place with plenty of seats and none of the limitations barring socializing activities, especially time limits. Such places are coffee shops and fast-food restaurants, as examples. Analysis based on the interviews resulted in recommendations for zoning to address needs of the elderly, as described in Figure 12. Areas could be organized into three zones of Mingle & Relax space for meeting up and socializing with friends and families, Extend Active Ageing for promoting health and energy of senior visitors that includes supervision by a physical therapist or person involved in controlling physical activity for the elderly, and Learning space for promoting learning and sharing among the elderly.

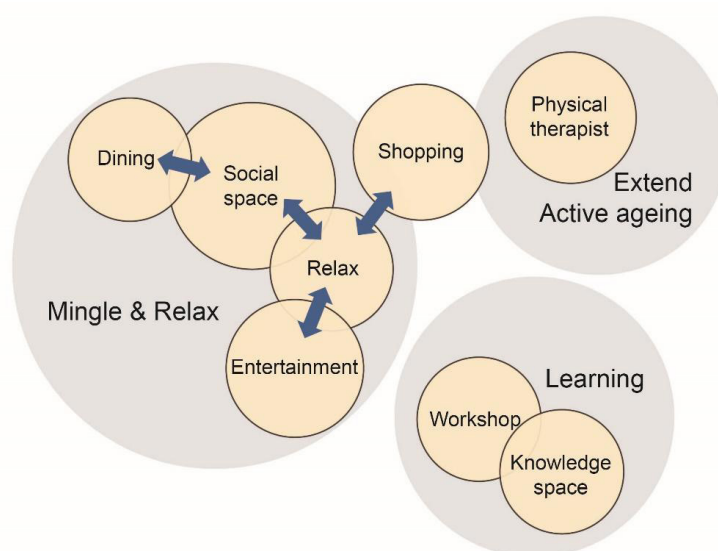


Figure 12 Layout of functional zoning to address needs of the elderly.

Note: Graphic by authors

This research provides an analysis of the behavior of shopping mall space by the elderly and the management of space for the elderly in MBK Center and Chamchuri Square. To further this research, the behavior of shopping mall use by older people should be studied in all regions of Thailand, with the objective to further improve mall areas to suit the elderly.

10. Authors Contribution

Author Contributions: Conceptualization, D.M.-Q. and J.R.-M.; methodology, D.M.-Q., J.R.-M. and A.C.R.; software, J.R.-M.; validation, D.M.-Q., J.R.-M. and A.C.R.; formal analysis, D.M.-Q. and A.C.R.; investigation, D.M.-Q., J.R.-M. and A.C.R.; resources, D.M.-Q. and A.C.R.; data curation, J.R.-M.; writing—original draft preparation, D.M.-Q., J.R.-M. and A.C.R.; writing-review and editing, D.M.-Q., J.R.-M. and A.C.R.; visualization, J.R.-M.; supervision, D.M.-Q.; project administration, D.M.-Q.; funding acquisition, D.M.-Q. All authors have read and agreed to the published version the manuscript.

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