IDEAL DESIGN AND SERVICES FOR AGING HOUSING DEVELOPMENT

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DECLARATION

I hereby declare that:

(1) This Research Project is the end result of my own work and that due acknowledgement has been given in the references to all sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

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Abstract

Nowadays, Malaysia are having more and more aging population as mention by Samad and Mansor (2013). Malaysia will become aged nation when times come to 2030 where the aging population reach 30% of the whole population.

Therefore, it time for Malaysia to have studies on designs and services that can help or support aging to live independently. Many countries now are having aging housing development that change the designs of the resident and provide services to the aging that live independently, so that aging can live independently in a safe and comfortable environment.

The study will be conduct in Rawang area with 150 sets of questionnaire and 115 set of the respondents have been received. There are 15 sets of the questionnaire are used as pilot test in the research.The target of the respondents will be 100 sets in the conditions of 50 sets of aging respondents and 50 sets middle age respondents. The objectives of the research were investigate the designs and services provide in aging housing development and the perception of Malaysia Chinese about the designs and services provide to aging housing development.

The results may show us the differences of perception in between the middle age and aging. Their perception may be different due to age factor as middle age may have less concern on the designs and services that can support aging to live independently.

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Chapter 1

1.0 Introduction

According to the findings of World Population Prospects (2015), in the mid of 2015 the world population has reached 7.3 billion in the world. This showed us that the world population has increased approximately one billion in last 12 years. Nowadays the world populations are increasing about 1.18% per year or about 83 million people every year.

Aging is those people who aged 60 or above (World Population Aging, 2015). The world aging population are expected to have a 56% growth which from 901 million to 1.4 billion. Aging process will be more advanced in high-income counties. For example, Japan had the highest percentage of aging population which is 33% of their population that aged above 60. According to World Population Aging (2015), Latin America and Caribbean are expected to grow fastest in the world by increase 71% of aging population in the next 15 years, followed by Asia (66%), Africa (64%), Oceania (47%), Northern America (41%) and Europe (23%).

According to Samad and Mansor (2013), Malaysia will become an aged nation when the aging population which above 60 years old will reach 15% of the population in 2030. According to Sulaiman *et al.* (2006), Aging people will have a lower support need that helps them in something that needed support from others to accomplish. A suitable accommodation that fulfills the aging needs is also important for aging to stay in safely. Aging people may feel comfortable in live in an area with good security, it will make them feel safe and secure. Besides aging also need social network when live independently, so it good to have some group activities for them. Aging will need advice and information needs as some information their might need advice or

information like health problems and others. Therefore their might need some designs or services when there are living independently to provide them a safer and more comfortable environment to live in.

1.1 Problem Statement

Chand and Tung (2014) had review the United Nations World Population Aging Report in 2005 and found out that in human history in most country the elder population is only 3% to 4% of the country population. However today the world aging population has reach 15% of the whole human population and it might increase up to 25% by year 2050. 25% mean that there will be 2 billion of aging in the world and developed country might stand three quarter of it. Rashid *et al.* (2014) has state that Malaysia population had increase from 10.4 million to 28.3 million from year 1970 to 2010. The average life of Malaysian is increasing to 74 years old in year 2010. From year 1970 to 2010 the population that age under 20 years old has decrease from 55.6% to 37.3%, whereas the older age group of Malaysia is increase steadily. Samad and Mansor (2013) also state that Malaysia will become aged nation in year 2030 when Malaysia aging population reaches 15%. In World Population Prospect report (2015) has predict that Malaysia will have 27.2% of aging above 60 years old among the overall population in year 2050. This showed us that aging housing development has to take into consideration as Malaysia aging population are increasing every year and their might need designs and services to let them live safer and comfortable.

Samad and Mansaor (2013) stated that 22.7% of the aging in Malaysia are experiencing a high incidence of poverty. He also state that Malaysia government will help those poor aging by providing them benefits with in kind or cash. The second policy that helps aging is Seri Kenangan Home (RSK). RSK will provide medical care and shelter for those aging who are 60 years old and above under the condition of free of any infectious diseases, no family and unable to take care themselves. The numbers of RSK have increase to 1947 in year 2009. Malaysia government also will give pension to those who work for the government. Malaysia government

also have employees provident fund (EPF) to same portion of the salary with contribution from employer, and this money can only fully withdrawn when the employee reach 55 years old. However government does not have any regulations to support elderly who live alone. Besides RSK is for those aging that meet the requirement of government, however most of the aging people have family but not living with them as Guo *et al.* (2015) research.

Navaratnarajah and Jackson (2016) stated that aging will become weaker as most of the organ systems will have a physiological reduction when age goes up. Besides that the ability to recover will also reduce as time pass by. When aging grow older the health risk will be increase as the immune system of the aging have become weaker and increase the chances of having disease. Warren and Maguire (2016) have state that the health of an aging may deterioration because of the disease and environment and the factors of disease and environment. It might weaken the organ system of aging and cause them weaker. Dong *et al.* (2015) has mention that there is some connection in between depressive, suicide attempts and suicide mortality of Chinese older adults. Azam *et al.* (2013) also mention that aging may feel depression and loneliness; these feelings may lead aging to go suicide. Dong *et al.* (2015) state that depressive may cause by many factors like family problems, financial problems and others that can lead to suicide attempts. Aging may seek suicide when they feel that there are hopeless or become unbearable in life. Chow (2010) also state that Chinese aging may refuse send to nursing home because of feeling that they may be a burden to their child. To prevent become the burden of the family, aging may refuse to admit their health problem to the child. Aging people may become stress as they will worry about their financial resource are not enough for the treatment. This shows that aging people may need designs and services to help them in daily life in order to have a safer and comfortable living.

In Guo *et al*. (2015) research, it has showed us that only 58.9% of the aging are co-resided with their adult children and 8.9% of the family has hired a maid to help. It also showed that the Chinese aging are more prefer to live in their own way and co-resided with their adult child is the most prevalent living arrangement. Wong and Verbrugge (2009) has showed us that 38% of aging in Singapore are living alone because of no children or having bad relation with children. Guo *et al.* (2015) also showed us that some family has hired a maid to help them to take care of the aging and reduce their burden. However the offspring's thinking of elder care nowadays are changing, but the aging hold their traditional way. These different in aging and offspring's thinking may cause conflict and have a negative impact to the depressive symptom of both aging and offspring's. Because of these problems, offspring's nowadays will have thoughts of not living with parents. This showed us that nowadays there are more and more aging people are living with their adult child but live independently and because of the characteristic of aging, their house might have some designs and services that can help them to live safer and comfortable.

1.2 Research Question

1) What are the services provide in the aging housing development that can let the aging people stay independently in a safer and comfortable environment?

2) What is the designs use in the aging housing development that can let the aging people stay independently in a safer and comfortable environment?

3) What is the perception of middle age and aging of Malaysia Chinese people about the services and designs have in the aging housing development?

1.3 Research Objectives

1) To investigate which type of services can be provide in aging housing development for aging to live independently.

2) To investigate what designs can be used in aging housing development for aging to live independently.

3) To analysis Malaysia Chinese middle age and aging perceptions about the services and

designs have for midlife and aging people.

1.4 Methodology

In this research, qualitative content analysis method that mentioned by Graneheim and Lundman (2003) will be used for objective 1 and 2. From the secondary data, the researcher can reuse the finding of previous research and understand that what designs and services are having in aging housing development of other country. Whereas for objective 3, quantitative research design to collect data. In quantitative research design, questionnaire has been chosen as data collection techniques with a sampling size of 100. One way ANOVA will be used to analysis the data and evaluated whether there is any relations about age or gender to the perceptions of designs and services provided in aging housing development.

1.5 Significance of Study

By doing this research, the researcher hope that the developer in Malaysia will find out that aging housing development will be having more demand when times goes on as Samad and Mansor (2013) state that Malaysia will become aged nation in 2030. When the age population grows there will be more demand to aging housing development. The researcher hope that Malaysia developer can start to develop aging housing. This is to create an area for aging people a safe and comfortable environment for them to live independently as many Malaysian youngsters nowadays are not living with parents.

With this research, it will help us to know what type of services and designs are important in the perception of people in Selangor. This result will show us what their concerns about when they are having intention to buy an aging housing development. This research result may be used as guidelines for those developers who want to develop aging housing building by meeting the expectations of customers that want to purchase aging housing development.

Besides it also act as a business research that try to combine these two factors into the aging housing development as it can provide those aging a place to stay independently in a comfortable and safe environment. Building will become more valuable when the requirements of the customers are met. This research will show them which design and services people are concerning that will be more value added when they want to buy an aging house. Besides building management company may have some idea of planning a management system for these aging housing. The researcher hope this will help them to decide what type of services they should concern in the management system for the aging.

The researcher also hope that Malaysia government can have more policy that will benefits to aging people that live alone. Although Malaysia government already have policy like RSK, but it was not enough as many aging in Malaysia still have relative and it may reject by the RSK and cannot enjoy the policy. The researcher also hope that this research can be useful to the government to set the requirement for aging housing development in the future, and it can provide a safe and comfort environment for the aging that live alone.

At last, the researcher hope that this research can help those aging who live independently can live in a safer and comfortable environment by showing them there are designs and services that already have in overseas. Because of the different needs of different people, The researcher hope that this research can let them have an idea that which of these designs and services may actually help them to have a safer and comfortable environment to live independently.

Chapter 2

2.1 Malaysia Chinese Aging Population

From the department of Malaysia Statistics (2016), it has showed us that Malaysia is having 31.7 million of population in year 2016 which include 16.4 million of male and 15.3 million if female. 28.4 million are Malaysia citizens and 3.3 million is non Malaysia citizens. Among 28.4 million of Malaysia citizens, there are 68.6% of Malay, 23.4% of Chinese, 7% of Indians and 1% of others. Population in group above age 65 is 6%, although Ruhaini (2013) state that aging population are aging that are 60 years old above, however the Malaysia statistic department only have statistic for people below 15 years old, in between 15 to 64 years old and above 65 years old. Chai & Hamid (2015) have showed a report in DSM 2011 state that Malaysia Chinese that above 60 years old has reach 12.16% of the total Chinese population. department of Malaysia Statistics (2016) also show that life expectancy of Chinese is the highest among three races in year 2016 which is 77.3 years, whereas Malay is 73.6 years and Indians is 71.8 years. Chinese also having the highest mean income among the three races in year 2012 which is RM 6,366; whereas Malay has the lowest mean income which is RM 4,457 and Indian has RM 5,233 mean income.

2.2 Malaysia Policy for Aging

Ruhaini (2013) stated that people that are 60 years and above will be defined senior citizen in Malaysia. Populations of Malaysia nowadays are still young compared to others developed countries. In year 2012 the aging population in Malaysia was 8.2 percent in the Malaysia total population. Ruhaini (2013) has predicted that in year 2030, Malaysia will be categories into ageing nations that having more than 15 percent of aging in the total population. Sulaiman *et al*. (2006) has stated because of the amount of aging in Malaysia was increasing; Malaysia government would have to be careful and come out some policy plan to fulfilled the needs of aging citizens. Sulaiman *et al.* (2006) stated that Malaysia government has taken some actions to ensure that the needs of aging live in Malaysia would not be neglect.

As Sulaiman *et al.* (2006) mentioned from year 2000 to 2005, Malaysia government has establish 9 homes for aging people and 2 homes for those who are chronically ill. Ruhaini (2013) said that these was provided as the last place for these aging people to live in as she mentioned that family value was the best support systems for aging among the society. The objective of having these homes was to provide proper care and protection for those aging people who need it for a better treatment and quality of life. Ruhaini (2013) also stated that the 2 homes for chronically ill was to provide a comfortable environment that surrounding with care and treatment for those with chronic illness.

Ruhaini (2013) also statde that Malaysia government has provided transportation service for aging people to hospital or clinic for health treatment. Malaysia government also provides financial support to poor aging people for RM300 per month. The conditions to apply were

Malaysian that is 60 years and above with income lower than RM 720 per month in peninsular Malaysia; RM 830 for Sarawak and RM 960 for Sabah.

Ruhaini (2013) also showed us that government has RM 5000 tax relief for those who are taking care of their elderly. This amount of money was to include costs send on the aging such as salary to maid, daily user items, and others. Government also has policy to help those aging who are illnesses. This policy state that senior citizen will have exemption of the registration charge at all government hospitals and clinics. Besides 50 percent discount will be given to aging that stay at third class wards at government hospitals until RM 250, the maximum amount set by the government.

These were the policies that have in Malaysia for aging population. However Lim and Tareef (2012) have showed us that the policy and services provided by government was not enough to the elder citizen as many Malaysia people would like to live in their own house when they have become old. In this case, Pynoos (2001) has stated that aging in place might form an area of "ill-suited for aging in place". This is because of the needs of people change when they grow older and it will be costly to have renovation to have new design to fulfill the new needs of aging people. Pynoos (2001) also showed us there will be barriers that stop the mind of have changes to the house. These barriers were the cost involve will be huge and unaffordable, slow government response to approved the new house design, lack of laws and codes related to the accessibility of houses.

"In Home for A Lifetime" (n.d.) has come out thinking that help our client to design the building future. "In Aging in Place and Universal Design" (2015), it has stated that design the building that can fulfill the needs of aging, so that the building would not need to change and redesign. This may overcome the barriers that stated above by having good building design that

solve problems that may face by client in the future and it helps them to save money and time by having a comfort and safer environment to live in.

2.3 Aging House Design

"A Guild for Making Housing Decisions" (n.d.) stated that housing was one of the most important decisions to be made in their life. The house their bought have to think about the comfort and safety factors as it will affect the living of the aging. By understanding the needs of aging, there are some designs in the market can achieve the requirements and needs of aging. In this article, it also mentions that many aging people want to stay at their own house independently as long as their can. To achieve this requirement, the only solution was to have some changes of the design of the building to make it safer and comfortable for aging to live in. Different aging may have different requirement from the others as their physical condition may be different. Example give in this article was an aging people that need assistance may require a different type of housing requirement from the others. Universal Design was state in this article that it was one of the designs that suitable for aging and provides them a safer and comfortable environment to live in.

In ("Aging in Place and Universal Design", 2015), it stated that home can be different in how the design can achieve the needs of the residents and visitors of the building. In this article, the author said that "Universal Design" is an innovative solution to make the building easy to use for all people that are using the building. Annand (2012) also having the same opinion state above and mention house with this design can use for whole lifetime without major adaption and redesign. The principle of the design was to adapt people by increasing the building comfort, safety and ease of use. Therefore in this design concept, it will consider the needs of special populations like children, aging and disable people when design a building that are comfort to be used by all population.

"In Home for A Lifetime" (n.d.) also stated that in AARP study has in America, although the market wants their home to be more efficiency, convenience and comfort, but 70 percent of the respondents have state that safety was the first factor to be take into consideration during the house renovation. In this article, it state that America has done some research and it shows that falls was the main cause of injury death to many aging people that live alone. It was also the most common cause nonfatal injuries and trauma. Environment was one of the factors that can cause falls to aging people. There are many factors of the environment that can cause falls to people such as slippery floor, inadequate lighting system and others environmental issues. Client today may be young and do not have any physical problems, but problems may arise to client when client getting older or having physical illness in the future.

This concept is to design the building by taking care of most of the issue that may come into your life in every stage you are living ("Aging in Place and Universal Design", 2015). This design makes your home to welcome all users with different ages and abilities. Universal Design also will help you to save some money as you built your home with it as it will be easier and less costly to plan further. All people will become old and will encounter some physical problems to live independently, so it is good to build your home using Universal Design to your house. In "Home for A Lifetime" (n.d.) also agreed with "Aging in Place and Universal Design" (2015)that try to prevent changing of design, because that would cost more in the future, why not help the client to plan ahead before design the building. Understanding client future needs and prove them the design will be more beneficial to them when they grow older in the future.

According to Verwer (2012), he has stated that a livable housing design were to provide a safer and comfortable environment for those pregnant ladies, kids, disabilities and seniors' residents that live in the building. Verwer (2012) also agreed that it will be a better choice to

have a good housing design then only start to build the building. Build a building without proper planning will arise many problems when unplanned needs appear. Verwer (2012) has gone through some international research and found out that it will be 22 times more efficient to plan well at the planning stage of the project. Although the title of the article was how to reach a livable housing design, but the author has work this article up with some professionals of universal building design which means that most the design are come out from universal design. He has state that livable housing design was to create a safety, comfort and ease of access environment for people to live in. It was for those who are having physical problems to have an easier living environment. This concept has the same concept of universal design; therefore the reseacher think it was the same thinking that has a different name. In this article, the design state was dwelling access and entrance, car parking area and internal interior.

In these articles Verwer (2012) has stated that all doors that install in the building should have at least 820mm width and the corridor should have above 1 meter width for normal standards of housing design. This is to let people who are having mobility issue to live in more comfortable by having enough space to access through the door and corridor.

In these articles, some of them are having different design idea to improve the facility to suit aging and disability people. Verwer (2012) has come out an idea of design the toilet must have a space of 900mm width and 1200mm clear circulation space forward. This was enable those disability can have an easier access especially those who are using wheelchair. Besides Verwer (2012) also suggested that the tiles use in shower should be slippery resistant to reduce the risk of slippery and falls.In “Home for A Lifetime” (n.d.)has agreed with Verwer that a bathroom must have enough space for those who are using wheelchair as it has a wider width and would need space to access. Besides it has state out a lot of design that may be friendly use

to aging. These designs include a seating in the bathroom and shower room, install grab bar or safe hold at wet area, slip-resistance floor tiles and others. Aging in Place and Universal Design(2015) are have the same design with Verwer (2012) and "In Home for A Lifetime" (n.d.) although it has described the design of the grab bars and items in the toilet that hang at the wall should installed at a comfort height of people. "Aging in Place and Universal Design" (2015) also stated that a light switch should install at a lower height, so that children and disability people can open the light before go toilet. In these articles, the researcher will conclude that these designs were to provide space for people to access, reduce chance of falls, and increase the comfort and safety of users. The most design was space of the access, slippery resistant tiles, and grab bars at places that are wet.

Kitchen also an important area that need to be design as it was an area that people always use in our live. Verwer (2012) stated that a 1200mm width clearance should be provide in between the fixed benches and appliances. This space was to make the kitchen easier and safer to be use. Besides light should provide about work spaces and floor finishes should use slippery resistant materials. It was to provide a brighter workplace for users and reduce the risk of slippery. Whereas In "Home for A Lifetime" (n.d.), it has come out designs that having more floor cabinets than upper cabinets. The upper cabinets should not higher than 48 inch which around 1.2 meters from the floor. This design provides an easy storage area for those disability and aging people who are suffer from physical problems. "Aging in Place and Universal Design" (2015) are agreed with all the design stated above and having some other designs that are good for aging. Having a kitchen counter that have a height of 900mm height from the ground and can adjusted it manually or mechanically, provides countertops with heat-resistant with low glare and flat surface and others designs. Others design may be done by the house owner during the

renovation like having kitchen tables with round edges, having a fire extinguisher in the kitchen and using pullout or pull-down shelves and lazy susans to increase the accessibility of kitchen storage area.

Verwer (2012) has come out a design of laundry area. He stated that the laundry area should have a space that having 1200mm clearance in between the fixed benches and appliances, it was to create easy access for those aging and disability that using wheelchair. The floor finishes should using slippery resistant tiles to prevent people falls. Lighting system should provide in laundry area for people to work in a safer environment.

Bedroom is a place that people always use for 1/3 of a day. In this area, Verwer (2012) has come out design of providing a path of 1000mm width on the path of travel at the side of the bed from the door direction and "Aging in Place and Universal Design" (2015) agree with this design. If the bedroom has a closet, then the area in front should have a space that have at least 1540mm width. Whereas in "Home for A Lifetime" (n.d.), are giving out different design like using lower beds or electric bed that can adjust to have an easy access. This design was to enable aging and disability people can go onto the bed easier. "Aging in Place and Universal Design" (2015) are suggesting that having a cordless phone next to the bed, so that the people can call people for help if anything happen. The author of the article also suggests that install lighting system that can automatically on and off. This design was to let the aging and disability people to control the light easier without move to the switch.

"In Aging in Place and Universal Design" (2015), it has stated the design for flooring. In the article, it has mentioned that staircase should not use open risers and should keep straight and provide landing slab for stopping purpose. Handrails should be installing at both sides of the staircase as it may help those aging people to climb up the staircase easier. The author also

advised that do not use spiral stairways in the building as it will be problems for aging to climb up. The ramp can be design at a least possible slope that aging and disability can climb up easier. All flooring finishes should use materials that have texture surface, so the traction can help to reduce the risk and chances of slip and fall. Try to use materials that can resist stains and dirt by their nature, so that people would not need to clean it often.

In all these design, lighting system was one of the important designs. As mentions above, "Aging in Place and Universal Design" (2015) and "In Home for A Lifetime" (n.d.) have stated that many work places will need good lighting system. Work place mention above was laundry, bathroom, kitchen and others. Lighting system was to prevent shadow appears when there are people working in that area, this was to ensure that people working inside can see clearly the environment and prevent falls of stepping on things. Some place like bathroom can install lighting system with sensor, so that when the sensor sense there a people enter the bathroom, it will open automatic. "In Home for A Lifetime" (n.d.) also mentioned that staircase and corridor should install lighting system to enable people can see clearly when light is not enough.

2.4 Aging Services

Lim and Khan (2012) stated that health care service for aging citizens was important nowadays as the elderly population in Malaysia was growing and increasing today. Because of that having a more efficient service delivery to them was importance and Malaysia was found out that the aging population needs some planning retirement provisions. Long Term Care (LTC) can be a service that provides to aging this system will be integrated with aging health issues and issues those seniors citizens always faces. In Malaysia context, the aging are concern about their living arrangement and health care services as many of them were living independent. The aim of long term care was to enable the senior citizens can live independent with providing appropriate care facilities for them.

In the article of Lim and Khan (2012), the institutional care was provided by three parties in Malaysia. These three parties was long term care that under social welfare services, private section that making profit and non-government organizations (Ong, 2002). Ong (2007) also mentioned that future aging in Malaysia will having better education and more secure financial power, so that they will be more prefer to live independent to have their own lifestyle and privacy. New services demand will appear as the aging population increasing and the different lifestyle have in new generation of aging population (Hamid and Asnarulkhadi, 2006). Hamid and Asnarulkhadi (2006) also mentioned that new service demand will appear because of services provided nowadays cannot reach the needs of aging population in the future. As mentioned above, Lim and Khan (2012) stated that long term care will become necessary. Brodsky *et al.* (2003) has showed us that long term care was a system of a activities perform by family and professionals to make sure that people who cannot perform good self-care can remain their quality of life as high as possible. The objective of long term care was to let the aging

population that living independent has the highest level of independence, participation, autonomy, human dignity and personal fulfillment. Long term care are having services in two ways, which were the aging living arrangement and health care services needs for those who can perform well self-care. According to Palmore and Kivett (1977) health is the main factor that will direct affecting the senior citizen lifestyle because of his physical health and life satisfaction. Morelli and Dilani (2005) has stated that the health conditions of elder can be improve by using non-pharmacological approaches through having a psychosocially supportive environment design. Design of the psychosocially supportive environment was an important factor in the design of long term care design for aging population to live in. Lim and Khan (2012) stated that having physical environment in long term care design was not the only reason that it was important to the design, but also to increase the demand of services and senior citizen can change their lifestyle into congruent lifestyle as they age grow further. The role of the physical environment design was to support the aging health and they lifestyle. This was the reason of long term care can be provide to senior citizen that are increasing nowadays in Malaysia.

Ong (2007) has showed us that the current long term care have for Malaysian aging people was provided by our government, non-government organizations (NGOs) and private section that making profit. The services was an institutions that provide integral health care services to the aging by nurse work inside as a places for them to stay until life ends. Lawler (2001) has stated that the services provide in these institutions was inappropriately because of its rigid and large scale delivery system. This system has make the services provided to the aging was not what the senior citizen's needs. Lim and Khan (2012) has explained that because of the hierarchical structure, stiffness of general routine and rigid policy of the institutions, aging that

living in it will feel the services provide was not up to their needs and requirement which shows us the services provided to them was failure.

Congregate Housing Services Program should be another service found online that use in many countries to provide services to aging population and can introduce to all. Impact Northwest (2006) is a company that has been awarded to manage CHSP working together with the Housing Authority o Portland and Multnomah Country Aging and Disability Services, so the services mention will be taken in the reality and has been accepted by the Portland government. Impact Northwest (2006) has explained that congregate housing services program was designed to help aging and disabilities that live independently in their own house. Griffith *et al.* (1996) have further explained that Congregate Housing Services Program is services support system that designed to achieve the needs of aging and continue their living independent as long as possible when their age gone up. Griffith, *et al.* (1996) have stated that the major services provide by congregate housing services program was to prepare meals daily to aging, transportation, housekeeping, assistance with shopping, personal care assistance, home management, health-related support and personal emergency response systems. Impact Northwest (2006) has also stated out the same services provide in the article of Janet and others.

Griffith, *et al.* (1996) introduced that congregate housing services program was a program that combined housing services and community-based supportive services to aging and disabilities that live independently. Congregate housing services program will not provide any medical supportive services except professional service coordination state above. According to Griffith *et al.* (1996) findings there were four services that was most needed by the aging in congregate housing service program. The four services were meals provided, housework, shopping and transport. These four services were needed by 65 to 82 percent of the aging that

needs congregate housing services program. Personal grooming and care was found out that was needed by a small number of residents which having a result of 13 to 41 percent. Personal grooming and care services were services included hair washing, getting in and out of bathroom, bathing and dressing. Chau *et al*. (2013) also stated that in Hong Kong aging people will also need services in providing meals, housekeeping service and transport services. Griffith *et al.* (1996) explained that this service are less needed by aging because of even the residents are having difficulty in performing physical actions, they will still want to handle it themselves without any help from others.

Services like transferring, feeding and toileting will be needs by a little portion of the residents like 3 to 8 percent. This service is needed by little residents that are weak and unable to performing these actions and needed assistance from the others. The demand of this service will be increase as the same group of residents has become older and weak (Griffith *et al.*, 1996). Griffith, Greena *et al.* (1996) stated that although congregate housing services program does not provide medical care for residents, but preventive health services like health screening and education will still be provided. 42 percent of the residents will participate into this service from congregate housing services program or other programs.

According to Griffith, *et al.* (1996) there were varies frequency to performing varies services to the residents. Services that need to perform daily were those activities that needed by people daily like feeding, dressing, meals provided and others. Some services can be perform more or once in a week like shopping, housework, washing hair and others. Some of services will perform at a less frequency that less than once in a week. These services are health service, health education and health screening. The conclusion was the frequency of the services will be design according to the patterns of the resident's needs. Basic physical assistance may have to

provide daily, whereas other services that helps residents may design in a less frequency and it can be postponed if needed.

Chapter 3

3.1 Data Collection Method

In this research, the researcher will use qualitative content analysis method as mentioned by Graneheim and Lundman (2003) to collect data as some of the information are already done by other researcher in others country. In order to investigate objective 1 and 2 which was designs and services use for aging housing development, the researcher has use qualitative method to collect secondary data. According to Saunders *et al*. (2012) is often used as data analysis procedure to non-numerical data, which means that it cannot analysis through formula. The qualitative method that choose to use to investigate objective 1 and 2 was literature review, because of the designs and services use in aging housing development can be find through literature.

The data collection method that have been choose in this research for objective 3 was through quantitative method which is questionnaire and it was a primary data. As Sparrow (2012) stated that primary data was a process of collecting data that needed by researchers in the market and it was done by the researchers himself. Joop & Boeije (2005) had showed that primary data can be collected at several ways and one of it is questionnaire. Besides there are methods like interview, experiment, and others that can collected own use data. Sparrow (2012) mentioned that most of the primary data collected by the researcher after they have learned or having some knowledge through secondary data sources.

In Sparrow (2012) opinion, researchers are collecting primary data from because of the data have in secondary data was not fulfilling the requirement of the researchers needs. There are

two major types of primary data can be collected in the market, that is quantitative and qualitative method. In the process of collecting primary data can be done by the researchers himself or outsources to a person or organization which are specializes to do such research. Sparrow (2012) also mention that outsourcing the work may be a burden to the researcher as it will be lengthy and costly as they have to design a strategies that make the data collection successful and be useful to the researchers. If the researchers want to do it himself then he may have to take care of everything starting from questionnaire design until collecting the replies from all respondents.

3.11 Advantages and Disadvantages of Primary & Secondary Data

There are advantages and disadvantages using primary data in the research. As Sparrow (2012) mentioned there some advantages of using primary data. One of the advantage are the targeted issues are address, this is because the data collected can be control by the researchers as the questions ask are set to collect data they want (Sparrow, 2012). In the question design stage, researchers can ask the researching company to concentrate more on the specific information that need in the research. The next advantage is the process of data interpretation will be better as data collected by researchers in the market are according to what their needs rather than rely on the data collected on secondary data. These primary data can be examine and interpret by the researcher easily as the question was design according to the method that will be used in the interpret process.

Sparrow (2012) also mentioned that data are collect recently and it will be more accurate and useful to the researchers comparing to secondary data and it will be another advantage of using primary data in the research. Sparrow (2012) further explained that secondary data was collected from the past may not specific into what the researchers needs and the information may be outdated. If researchers are using secondary data in the research, they have to find relations from these secondary data with the research they are doing and it have some chances to have the information to proceed the research as the information was collect at the past.

The disadvantage of having primary data is high cost (Sparrow, 2012) as the researchers have to involve and design everything in the question design process and send out to the market to have response from the people. The next disadvantage is time consuming comparing to secondary data (Sparrow, 2012), this is because of the exhaustive nature of the exercise as it

might need more time on collecting back the response from the people. Inaccurate feedback may be another disadvantage of using primary data (Sparrow, 2012), having feedbacks from target people may have a high chances of the feedback was not correct because of their basic nature and just give answer for the sake of it. More resources will be require by using primary data to do research (Sparrow, 2012) as human resources and materials will be need a lot to do survey and collect large quantity of data.

According to Joop and Boeije (2005), secondary data is collect from other research data that collect by other researcher and Sparrow (2012) also came out with suggestion that researcher may have to think about the accuracy of the data as the way to analysis the data and method to collect data by the other researcher will become factors that affect the accuracy of the data. Researcher have to evaluate that whether the data is suitable to be use in the research. Saunders *et al.* (2012) has state that using secondary data may have an advantage of fewer resource requirement, as it can save time and money in the process of collecting data. Sparrow (2012) stated the same point that less effort will be used in collecting secondary data compare to primary data. Saunders *et al.* (2012) also stated that using secondary data may have the advantage of the researcher can comparing the data collect from different researcher and different regional. Saunders *et al.* (2012) also mentioned that by comparing the data, researcher may discover some unforeseen discoveries.

The disadvantages of using secondary data was the data of the researcher may not match your needs, as the researcher objective may different from yours and have a different types of data. The data was collected from time earlier and it may not fulfill your needs. Sparrow (2012) supported by the data collected by the researcher may be inaccuracy due to the lag of time which means the data was from historical or some time earlier and it will be some risk to be use in

current research. Saunders *et al.* (2012) also came out disadvantages of the researcher cannot control the data quality as it was collected by other researcher. Sparrow (2012) has come out a disadvantage of the copyrights of the data, researcher cannot use the data without their permission otherwise it may lead to legal action from the original data researcher. To overcome this problem, Saunders *et al.* (2012) stated that it might be costly to access these data as the researcher need to pay and have the permission to use the data in the research.

3.12 Advantages and Disadvantages of Questionnaire

According to Choudhury (n.d.) there will be many advantages to use questionnaire in the research. One on the advantage is economical, the cost of having questionnaire method in the research is consider low compare to others primary data collection method. The cost that needs to spend in questionnaire is just only the printing fee and posting fee. By using questionnaire method, the researchers no need to visit all the respondents, because they will post back to you, because of this there will be having a lower cost to do the research.

The next advantage of questionnaire is the wide coverage of data collection (Choudhury, n.d.). Choudhury (n.d.) state that it was one of the best methods to collect data, this is because the sample question can spread to a large area and gather more different opinions or data. Questionnaire is not only use on an individual person but also a group of respondents that have been targeted. Milne (1999) also agreed with Choudhury as he stated that information can be collected from a large portion of group. To compare with other primary data collection method like interview and observation, questionnaire can save cost and time by distribute the questions to many people at the same time and it might help to save cost and time. Moreover some of the people may not accept interview sections as it take time for an interview.

The following advantage to do question in a research is the respondents may respond to the question quickly and may reply it in short time (Choudhury, n.d.), however Milne (1999) stated that a long proceed may needed to design, apply and analyse the questionnaire question. According to Choudhury (n.d.) mail questionnaire is the quickest method compare to others method and it need not require the researchers to meet any respondent personally. Choudhury (n.d.) also stated that questionnaire can obtain some personal and secret information and this is

an advantage of doing questionnaire. By doing questionnaire, the researcher can collect data like personal income, sexual relationship and any others that related to people privacy as the names of all the respondents are anonymous. The continuing advantage of questionnaire is it is repetitive information (Choudhury, n.d.) that spread to the people and all of them answering the same question and it will be more useful and cheap comparing to other primary collecting data method.

Choudhury (n.d.) stated that questionnaire is an easier method to do in research data collecting and it will become the advantage of it. It will be easier to plan, construct and administer without require much technical skills or knowledge compare to others methods. The other advantage of doing questionnaire is it will have lesser pressure to the respondents (Choudhury, n.d.). This is because respondents can answer the question in questionnaire at his own leisure, unlike interview or observation need to answer through face to face and it will be embarrassed if the person does not want to answer your question. Questionnaire are usually form uniformity (Choudhury, n.d.) and it will be an advantage of questionnaire, as it help people to focus respondents attention on the question and it's also have its own standard instructions to record the response from the respondents to ensure its uniformity.

Choudhury (n.d.) also mentioned that questionnaire has some unique merits to form the validity of information. During the questionnaire design stage, all questions have been design to let all the respondents understand the subjects that are available in their own language and version. Therefore the researcher will not wrongly interpret the data collection. Whereas in other method like interview and observation, the people who doing it must record it down and the researcher will interpret at their own prejudice or biased thinking. The last advantage is the questionnaire ensures that all the response will be present as anonymity (Choudhury, n.d.). This

allow respondents to have greater confidence that no one can who are he and this make them feel safe, comfortable and free to express their own true view into the question.

The disadvantage of doing questionnaire is there will be limited response (Choudhury, n.d.), some of the questionnaire has to be answer by targeted group of people and they might ignore the questionnaire as they are busy. Some of the respondents might have no responded to the questionnaire as some of are lazy and indifferent type of person. Milne (1999) also agreed with that by having opinions of people may not answer the questionnaire if it will takes long time and hard to understand. The next disadvantage of using questionnaire is lack of personal contact (Choudhury, n.d.). As mention earlier the researchers need no go and meet the respondents, so that if the respondents fail to understand the question there will be nobody to explain to him. Choudhury (n.d.) mentioned even the questionnaire was design into a simple, precise and convenient one, but the people who receive questionnaire are still refuse to fill up as there are no people around him who motivate him to do so.

The following disadvantage is poor response (Choudhury, n.d.) which means that the ratio of return will be low if you are using mailed questionnaire. There are some factors that may affecting the response of the respondents like layout of questionnaire, nature of appeal, size of questionnaire and others. These factors may lead the respondents choose to answer it or not.

Another disadvantage is the information may be unreliable (Choudhury, n.d.), data collected through questionnaire may found out that some respondents would return back response that are incomplete or very less information that can be used in the research. If the researcher is collecting data through interview, the researcher may rephrase the questions to help him to get the information that he want. Choudhury (n.d.) further elaborate that by using questionnaire, there will be no chances for the researcher to repeat or explain the question to the

respondents for him to give out a particular answer and this may affect the validity if the respondents answer. The investigators also have no chances to observe the respondents expression and gesture, besides the he also do not know that whether the respondents have any inconsistencies or misrepresentation on their answer. Because of the reason state above the reliability of the responses will become very low.

The illegibility handwriting of the respondents will also become the disadvantage of using questionnaire to collect data (Choudhury, n.d.) and it might create difficulties or the researchers to understand what the respondent try to tell. The following disadvantage will be the incomplete entries (Choudhury, n.d.) that sometimes the respondent might leave out a lot of question in the questionnaire and it will create difficulties for the researchers to use it in their research. Besides language will be another barrier for the respondents to answer the question.

3.2 Questionnaire design

In the questionnaire the researcher will separate the respondents into 2 groups which was middle aged that were 35 years old until 59 as mentioned by Zahrani *et al.* (2003). According to Zahrani *et al.* (2003) people that above 60 are aging. The researcher will divided the questionnaire into two groups according to Zahrani *et al.* (2003) explained in middle age and aging. This is because the researcher want to compare the middle aged and aging perceptions to designs and services factors to aging housing development. The researcher has design the question into scale section as shown in Likert scale that state by Saunders *et al.* (2012) and divided them into two parts, one is designs to helps aging and the other will be the services provide to aging, so that the researcher can analysis the data through one way ANOVA and analysis the relations between ages to the perception of aging housing designs and services. Scale 1 - 5 will be given to the respondents to show their perception to the importance of the designs and services to aging that live alone as 1 is extremely not important, 2 is not important, 3 as neutral, 4 as important and 5 is extremely important. These scales will help the reasearcher to find out which designs and services they think which is important to the aging to live independently.

By dividing the questions into design and services providing to aging housing development, the researcher can find out that whether people will have differences in concerning about design or services factors to the residential building in between middle age and aging. By collecting the results, perceptions of Malaysia Chinese middle age and aging about the designs and services provide to aging that live independently. The outcome of the result will show the researcher that whether there is a relationship between the Malaysia Chinese middle age and aging perceptions,

if there is a relationship between them the results may also show the reasearcher that it is in a positive or negative relationship.

In these two sections, the researcher will put in design factors and services provided at overseas into the questionnaire and let the respondent to answer on it. By then the researcher can find out that which services and design that think that are more important to the aging people that live independently.

3.3 Sampling

In this research, questionnaire will be used as the data collecting method to collect data. Non-probability quota method will be used as it was that most practically method stated by Saunders *et al*. (2012) as the researcher do not know the population of each elements will be chosen. Which means that the researcher did not design a questionnaire for a fix number of demographic factors. Tansey (2007) also said that non-probability quota method can have a better control over the selection process and save cost in the research as the researcher do not have to receive same amount of respondent for different demographic factors. Tansey (2007) has showed us there are several types' non-probability quota method. In this research, convenience method will be used as has the advantages of low cost and ease of access (Saunders *et al.*, 2012). Convenience method are chosen because of it is a sampling procedure that on the basis of the respondent are easy to obtain which mean that the researcher can distribute to any one that he

met. Serakan (2003) also stated that most research will have a sample size of more than 30 and less than 500.

In this research, the researcher will collect 100 sets of questionnaire as according to Yamane (1967), a population size that more than 100,000 only require 100 set to achieve 90% confidence level, however the researcher will distributed 150 sets as the response rate can never be 100%. The population in Rawang is 120,447 in the year of 2012 found in citipedia.info. The main target respondent in this research will be allocated in Rawang as the research has communicate with the developer in Rawang area to help him distribute the questionnaire to the client. These client was the potential property buyers in the market as the research is about the perceptions of people to the design and services provide in aging housing development. The questionnaire will be distribute at any sale gallery of the developer as there are the one who can meet the potential property buyers in the market and it is suitable for them to collect data from the visitors. These customers and visitors at the property sales gallery are the potential buyers that want to buy property from the developer, so these are the right people that the research need their answer.

3.4 Pilot Test

As Schade (2015) mentioned, pilot test is an important process to help the researcher found out problems in questionnaire design and having a fine tune before distributing the questionnaire to public. Schade (2015) also stated that if the pilot test are going well, the researcher can use it as a real result in the progress of collecting data. Even it have some minor error on it, the researcher may use some of the information inside.

In this researcher, the researcher has distribute 15 sets of questionnaire as pilot test to the family and friends that living Rawang. In this pilot test questionnaire, the researcher have separate it into 3 sections which is section 1 demographic, section 2 designs factors for aging housing development and section 3 services factor for aging housing development. This pilot test was to test that is any amendments can made before distribute to the target respondents.

3.5 Analysis Method

Qualitative content analysis mentioned by Graneheim and Lundman (2003) can be used for objective 1 and 2 which to investigate the types of designs and services that can be provide to aging that live independently. As Corti & Bishop (2005) stated that secondary analysis of qualitative data was to reuse the data exist earlier. Heaton (2008) also stated that secondary analysis of secondary data can used to verify the findings of previous research. Corti & Bishop (2005) state that secondary data can be reuse and compare to each other by having differences in times, groups or culture. Saunders *et al.*(2012) also showed us that secondary data can be obtain in three ways which is documentary, survey and multiple sources which will be showed below. In this research, documentary will be used to collect secondary data. Text documentary method will be used as designs and services for aging housing development has been used by others country for a long time and it can save our time to do research.

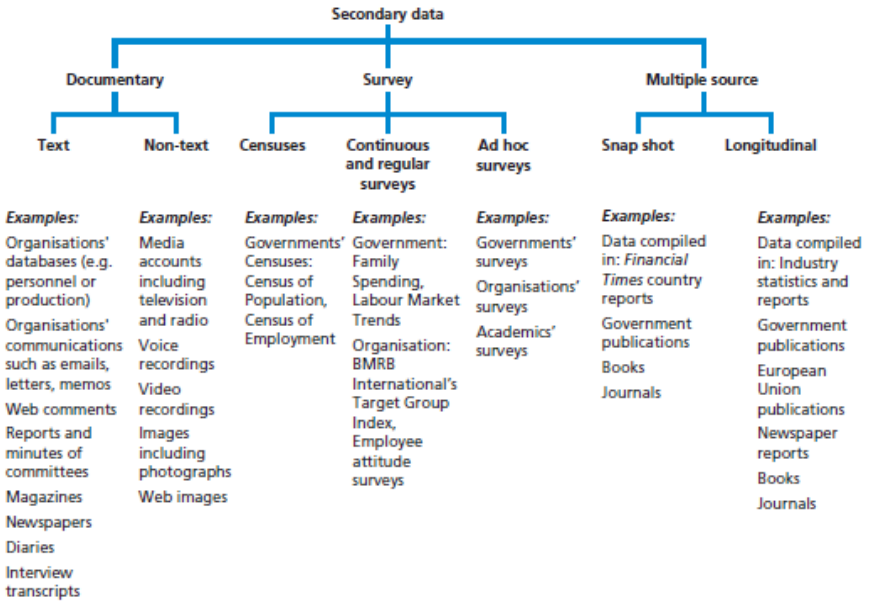

Table 3.1: Secondary data collecting method (Saunder *et al.*, 2012)

Whereas one way anova will be used for objective 3 to analysis the data collecting. One way anova will be the suitable method to analysis the data because it can analysis the differences of 2 or more groups of data (Tae, 2017). As mentioned by McCornick *et al.* (2015), descriptive analysis of mean will be analysis and can be used in analysis process. Tae (2017) also stated that data was collecting from different groups of people with different age, using one way anova can be used to find out that whether the two groups of data having differences in between them. To start the one way anova, P value or significance value is an important results that will be shown in two forms $H_{0:}\ \mu_1 = \mu_2$ and $H_a: \mu_1 \neq \mu_2$ which shows us that is there any relationships in between group. H_0 is the null hypothesis which state that there are not significance and no relationships in two groups. H_a is the alternative hypothesis which shows that there is different in mean value, therefore there will have a relationship in between two groups. So $H_{0:}\ \mu_1 = \mu_2$ will explained that there are no relationship in between the middle age and aging perceptions about design and services to aging housing development. Whereas $H_a: \mu_1 \neq \mu_2$ shows there are relationship in between the middle age and aging perceptions about design and services to aging housing development.

These hypotheses can be examined through the results of P-value as mentioned by McCornick *et al.* (2015). When P-value is greater than 0.05, it can be explained that there are not differences in between the variables are not significance. In the result, null hypothesis will be accepted when P value is greater than 0.05. In hypothesis it can be explained that there are not relationship between middle age and aging respondent's perceptions to the design and services provide for aging housing development. If the p-value is lower than 0.05, the null hypothesis will be rejected and change to alternative hypothesis. The result can be explained as the differences between the variations are significance, besides it also can show that there are relationship in

between middle age and aging respondent's perceptions to the design and services provide for aging housing development.

Chapter 4

4.1 Designs and Services of Aging Housing Development

In Aging housing development, Verwer (2012) has stated that doors and corridor should have enough space for wheel chair to go through as some aging might need wheel chair for mobility. Verwer (2012) and "Home for a Lifetime" (n.d.) also stated that the bathroom must be have enough space for the wheel chair and grab bars should be install at a comfortable height beside the toilet and shower room as aging might need it to support them when going bathroom. Both of the articles also mention that the switches should be install at a lower position, so that the aging can on and off it easily. Verwer (2012) and "Aging in Place and Universal Design" (2015) also state that kitchen is a high risk area for aging as they might use the kitchen often, so that the benches should be wide enough for the wheel chair to go through and the working space should be lower, so that the aging can work on it.

Verwer (2012) has state that laundry area should be design like in the kitchen that the space in between benches should be wide enough for the wheel chair to go through. He also state that all area should use non-slippery floor tiles and enough lighting system at the working area. Bedroom is a place that people will always use for 1/3 of a day, so Verwer (2012) suggest that a cabinet provide beside the bed will be good as phone and medicine can keep in it for urgent conditions. "Aging in Place and Universal Design" (2015) also suggest that staircase should not use open riser and keep straight with landing slab for rest purpose. Grab bars or handrails should be install in both sides of the staircase to support aging while going upstairs.

In the services in aging housing development, Lim and Khan (2012) has state that aging will need long term care. Griffith *et al*. (1996) state that long term care have in congregate housing service can meet the requirement to take care of the aging like prepare daily meals, housework and laundry. Griffith *et al.* (1996) also state that aging that have difficulties in perform physical actions might need personal care like take bath, dressing, walking and picking up medicine for the aging. Griffith *et al.* (1996) also state that aging might need transport services to health service, grocery shopping and activities center for their requirement. Some aging also need services like bills paying and minor repairing works as some of them are having difficulties in performing physical actions.

4.2 Response Rate

The response rate of the questionnaire are 75.33% as the researcher has send out 150 set of questionnaire and receive 113 set of the questionnaire has been received and 100 set among them were choose to analyses the data as mentioned in chapter 3. Among the 100 sets of respondents, the researcher will divide them into 2 groups and each group will have 50 sets. Figure 4.1 shows the gender of the respondents and Figure 4.2 will show the income of the respondents.

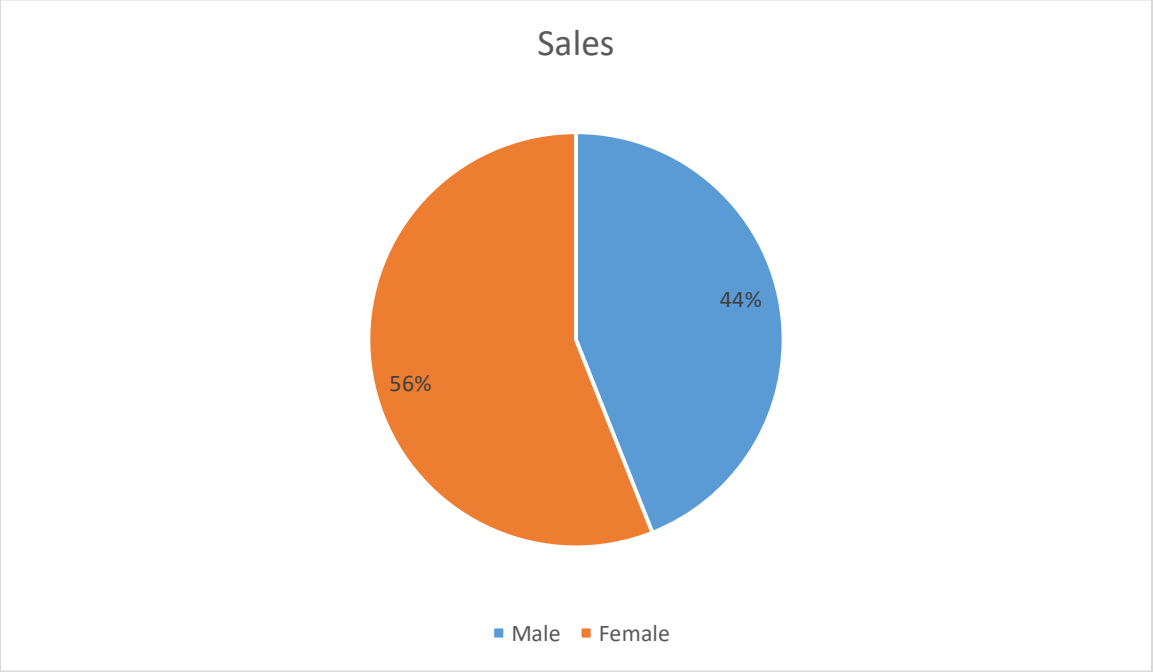

Figure 4.1: Gender of Respondents

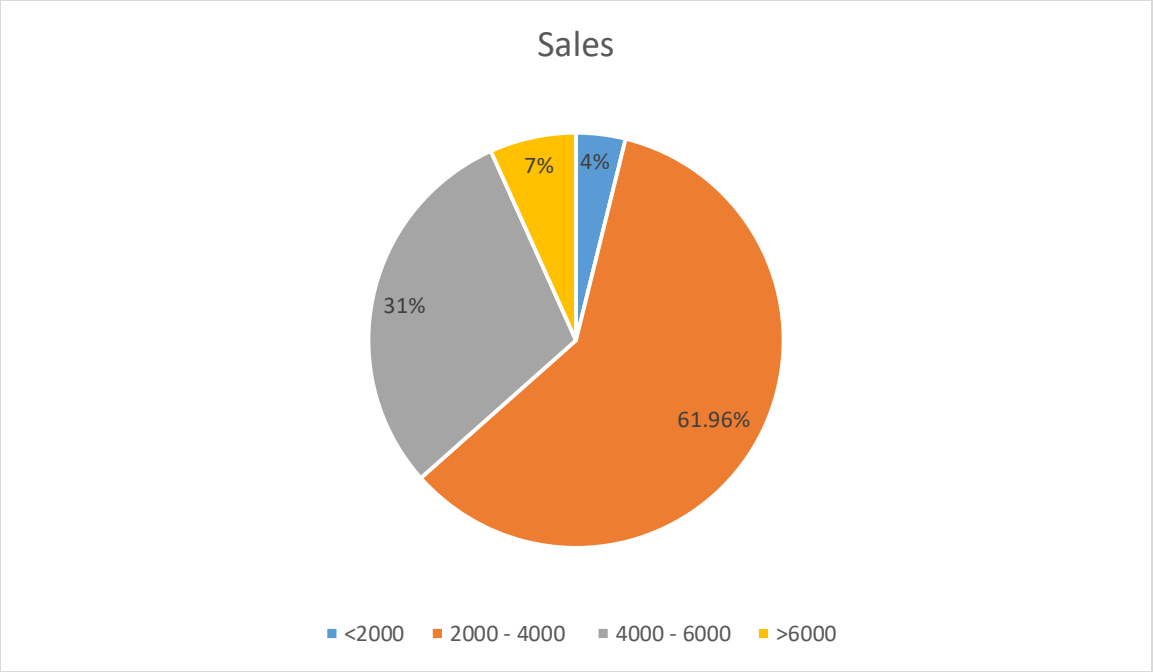

Figure 4.2: Income of Respondents

In figure 4.1, it has shown that there are 44 males and 56 females' response to the questionnaire and there are 4 respondents who earns less than RM 2,000, 58 respondents earn in between 2,000 to 4,000, 31 respondents earns in between 4,000 to 6,000 and 7 of them earns more than 6,000

4.3 Descriptive analysis

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Walkway.PA	35 - 59	50	3.9600	.75485	.10675	3.7455	4.1745	2.00	5.00
	More than 60	50	4.6000	.57143	.08081	4.4376	4.7624	3.00	5.00
	Total	100	4.2800	.73964	.07396	4.1332	4.4268	2.00	5.00
Walkway.H	35 - 59	50	3.4000	.88063	.12454	3.1497	3.6503	1.00	5.00
	More than 60	50	3.5200	.83885	.11863	3.2816	3.7584	2.00	5.00
	Total	100	3.4600	.85776	.08578	3.2898	3.6302	1.00	5.00
Steps.PA	35 - 59	50	3.8000	.85714	.12122	3.5564	4.0436	1.00	5.00
	More than 60	50	4.2600	.52722	.07456	4.1102	4.4098	3.00	5.00
	Total	100	4.0300	.74475	.07447	3.8822	4.1778	1.00	5.00
Steps.H	35 - 59	50	3.5600	.92934	.13143	3.2959	3.8241	2.00	5.00
	More than 60	50	3.5400	.83812	.11853	3.3018	3.7782	2.00	5.00
	Total	100	3.5500	.88048	.08805	3.3753	3.7247	2.00	5.00
Ramp.PA	35 - 59	50	3.8600	.72871	.10306	3.6529	4.0671	2.00	5.00
	More than 60	50	4.3200	.62073	.08778	4.1436	4.4964	3.00	5.00
	Total	100	4.0900	.71202	.07120	3.9487	4.2313	2.00	5.00
Ramp.H	35 - 59	50	3.3000	.78895	.11157	3.0758	3.5242	1.00	5.00
	More than 60	50	3.5400	.76158	.10770	3.3236	3.7564	2.00	5.00
	Total	100	3.4200	.78083	.07808	3.2651	3.5749	1.00	5.00
Tiles.B	35 - 59	50	4.4000	.60609	.08571	4.2278	4.5722	3.00	5.00
	More than 60	50	3.8800	.59385	.08398	3.7112	4.0488	2.00	5.00
	Total	100	4.1400	.65165	.06516	4.0107	4.2693	2.00	5.00
Tiles.K	35 - 59	50	4.0600	.58589	.08286	3.8935	4.2265	3.00	5.00
	More than 60	50	3.8200	.48192	.06815	3.6830	3.9570	3.00	5.00
	Total	100	3.9400	.54717	.05472	3.8314	4.0486	3.00	5.00
Tiles.LA	35 - 59	50	3.1400	1.01035	.14289	2.8529	3.4271	1.00	5.00
	More than 60	50	3.7600	.59109	.08359	3.5920	3.9280	2.00	5.00
	Total	100	3.4500	.88048	.08805	3.2753	3.6247	1.00	5.00
Tiles.BR	35 - 59	50	3.1000	.93131	.13171	2.8353	3.3647	1.00	5.00
	More than 60	50	3.7000	.64681	.09147	3.5162	3.8838	2.00	5.00
	Total	100	3.4000	.85280	.08528	3.2308	3.5692	1.00	5.00
Tiles.LR	35 - 59	50	2.8000	1.06904	.15119	2.4962	3.1038	1.00	5.00
	More than 60	50	3.6800	.62073	.08778	3.5036	3.8564	2.00	5.00
	Total	100	3.2400	.97566	.09757	3.0464	3.4336	1.00	5.00
GrabBars.B	35 - 59	50	4.2000	.75593	.10690	3.9852	4.4148	2.00	5.00
	More than 60	50	4.1000	.73540	.10400	3.8910	4.3090	3.00	5.00
	Total	100	4.1500	.74366	.07437	4.0024	4.2976	2.00	5.00
GrabBars.S	35 - 59	50	3.8200	.84973	.12017	3.5785	4.0615	1.00	5.00
	More than 60	50	3.9600	.83201	.11766	3.7235	4.1965	3.00	5.00
	Total	100	3.8900	.83961	.08396	3.7234	4.0566	1.00	5.00

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Lighting.B	35 - 59	50	4.2600	.59966	.08480	4.0896	4.4304	3.00	5.00
	More than 60	50	4.3400	.55733	.07882	4.1816	4.4984	3.00	5.00
	Total	100	4.3000	.57735	.05774	4.1854	4.4146	3.00	5.00
Lighting.K	35 - 59	50	4.1400	.57179	.08086	3.9775	4.3025	3.00	5.00
	More than 60	50	4.2200	.54548	.07714	4.0650	4.3750	3.00	5.00
	Total	100	4.1800	.55741	.05574	4.0694	4.2906	3.00	5.00
Lighting.LA	35 - 59	50	3.1200	.87225	.12335	2.8721	3.3679	2.00	5.00
	More than 60	50	4.0400	.72731	.10286	3.8333	4.2467	3.00	5.00
	Total	100	3.5800	.92310	.09231	3.3968	3.7632	2.00	5.00
Lighting.BR	35 - 59	50	3.5400	.81341	.11503	3.3088	3.7712	2.00	5.00
	More than 60	50	4.0000	.75593	.10690	3.7852	4.2148	3.00	5.00
	Total	100	3.7700	.81470	.08147	3.6083	3.9317	2.00	5.00
Lighting.LR	35 - 59	50	3.2000	1.06904	.15119	2.8962	3.5038	1.00	5.00
	More than 60	50	3.9800	.74203	.10494	3.7691	4.1909	3.00	5.00
	Total	100	3.5900	.99590	.09959	3.3924	3.7876	1.00	5.00
Cabinet.K	35 - 59	50	3.6400	.66271	.09372	3.4517	3.8283	2.00	5.00
	More than 60	50	4.0800	.72393	.10238	3.8743	4.2857	2.00	5.00
	Total	100	3.8600	.72502	.07250	3.7161	4.0039	2.00	5.00
Cabinet.BR	35 - 59	50	3.2400	.68690	.09714	3.0448	3.4352	1.00	4.00
	More than 60	50	3.4600	.64555	.09129	3.2765	3.6435	2.00	5.00
	Total	100	3.3500	.67232	.06723	3.2166	3.4834	1.00	5.00
Sink.B	35 - 59	50	3.3800	.72534	.10258	3.1739	3.5861	2.00	5.00
	More than 60	50	3.9200	.63374	.08963	3.7399	4.1001	2.00	5.00
	Total	100	3.6500	.72995	.07300	3.5052	3.7948	2.00	5.00
Sink.K	35 - 59	50	3.6000	.60609	.08571	3.4278	3.7722	3.00	5.00
	More than 60	50	3.7200	.70102	.09914	3.5208	3.9192	2.00	5.00
	Total	100	3.6600	.65474	.06547	3.5301	3.7899	2.00	5.00
Benches.K	35 - 59	50	3.7400	.63278	.08949	3.5602	3.9198	2.00	5.00
	More than 60	50	3.5800	.78480	.11099	3.3570	3.8030	2.00	5.00
	Total	100	3.6600	.71379	.07138	3.5184	3.8016	2.00	5.00
Benches.LA	35 - 59	50	3.2800	1.01096	.14297	2.9927	3.5673	1.00	5.00
	More than 60	50	3.4600	.54248	.07672	3.3058	3.6142	2.00	4.00
	Total	100	3.3700	.81222	.08122	3.2088	3.5312	1.00	5.00
WorkingArea.K	35 - 59	50	3.6800	.55107	.07793	3.5234	3.8366	2.00	5.00
	More than 60	50	3.5000	.88641	.12536	3.2481	3.7519	2.00	5.00
	Total	100	3.5900	.73985	.07398	3.4432	3.7368	2.00	5.00
WorkingArea.LA	35 - 59	50	3.0600	.84298	.11922	2.8204	3.2996	1.00	5.00
	More than 60	50	3.2400	.79693	.11270	3.0135	3.4665	2.00	5.00
	Total	100	3.1500	.82112	.08211	2.9871	3.3129	1.00	5.00
Switch.B	35 - 59	50	3.9600	1.06828	.15108	3.6564	4.2636	1.00	5.00
	More than 60	50	4.3600	.63116	.08926	4.1806	4.5394	3.00	5.00
	Total	100	4.1600	.89578	.08958	3.9823	4.3377	1.00	5.00
Switch.K	35 - 59	50	3.9400	.91272	.12908	3.6806	4.1994	1.00	5.00
	More than 60	50	4.3200	.71257	.10077	4.1175	4.5225	2.00	5.00
	Total	100	4.1300	.83672	.08367	3.9640	4.2960	1.00	5.00
Switch.LA	35 - 59	50	3.1200	1.20611	.17057	2.7772	3.4628	1.00	5.00
	More than 60	50	4.2200	.76372	.10801	4.0030	4.4370	2.00	5.00
	Total	100	3.6700	1.14640	.11464	3.4425	3.8975	1.00	5.00
Switch.BR	35 - 59	50	3.6000	.88063	.12454	3.3497	3.8503	1.00	5.00
	More than 60	50	4.3800	.63535	.08985	4.1994	4.5606	3.00	5.00
	Total	100	3.9900	.85865	.08586	3.8196	4.1604	1.00	5.00
Switch.LR	35 - 59	50	3.0600	1.18511	.16760	2.7232	3.3968	1.00	5.00
	More than 60	50	4.3600	.69282	.09798	4.1631	4.5569	3.00	5.00
	Total	100	3.7100	1.16597	.11660	3.4786	3.9414	1.00	5.00

Table 4.1: Mean of Middle and aging perceptions for designs factors

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
HS.C	35 - 59	50	4.0200	.74203	.10494	3.8091	4.2309	2.00	5.00
	More than 60	50	4.3400	.55733	.07882	4.1816	4.4984	3.00	5.00
	Total	100	4.1800	.67240	.06724	4.0466	4.3134	2.00	5.00
HS.H	35 - 59	50	3.9800	.68482	.09685	3.7854	4.1746	2.00	5.00
	More than 60	50	3.4400	.73290	.10365	3.2317	3.6483	2.00	5.00
	Total	100	3.7100	.75605	.07561	3.5600	3.8600	2.00	5.00
HS.L	35 - 59	50	3.3800	.94524	.13368	3.1114	3.6486	2.00	5.00
	More than 60	50	3.5000	.70711	.10000	3.2990	3.7010	2.00	5.00
	Total	100	3.4400	.83267	.08327	3.2748	3.6052	2.00	5.00
TS.MC	35 - 59	50	4.5600	.57711	.08162	4.3960	4.7240	3.00	5.00
	More than 60	50	4.5800	.57463	.08127	4.4167	4.7433	3.00	5.00
	Total	100	4.5700	.57305	.05730	4.4563	4.6837	3.00	5.00
TS.GS	35 - 59	50	3.6600	1.13587	.16064	3.3372	3.9828	1.00	5.00
	More than 60	50	4.1200	.89534	.12662	3.8655	4.3745	2.00	5.00
	Total	100	3.8900	1.04345	.10434	3.6830	4.0970	1.00	5.00
TS.SA	35 - 59	50	3.4000	.96890	.13702	3.1246	3.6754	1.00	5.00
	More than 60	50	3.6800	.95704	.13535	3.4080	3.9520	2.00	5.00
	Total	100	3.5400	.96839	.09684	3.3479	3.7321	1.00	5.00
PC.B	35 - 59	50	3.9400	.68243	.09651	3.7461	4.1339	2.00	5.00
	More than 60	50	4.0200	.76904	.10876	3.8014	4.2386	2.00	5.00
	Total	100	3.9800	.72446	.07245	3.8363	4.1237	2.00	5.00
PC.D	35 - 59	50	3.3200	.81916	.11585	3.0872	3.5528	2.00	5.00
	More than 60	50	3.7800	.64807	.09165	3.5958	3.9642	2.00	5.00
	Total	100	3.5500	.77035	.07703	3.3971	3.7029	2.00	5.00
PC.W	35 - 59	50	3.5000	.93131	.13171	3.2353	3.7647	1.00	5.00
	More than 60	50	3.8600	.53490	.07565	3.7080	4.0120	2.00	5.00
	Total	100	3.6800	.77694	.07769	3.5258	3.8342	1.00	5.00
PC.M	35 - 59	50	4.4800	.54361	.07688	4.3255	4.6345	3.00	5.00
	More than 60	50	4.1600	.61809	.08741	3.9843	4.3357	3.00	5.00
	Total	100	4.3200	.60101	.06010	4.2007	4.4393	3.00	5.00
HM.PB	35 - 59	50	3.9600	.83201	.11766	3.7235	4.1965	2.00	5.00
	More than 60	50	3.5800	1.01197	.14311	3.2924	3.8676	2.00	5.00
	Total	100	3.7700	.94125	.09413	3.5832	3.9568	2.00	5.00
HM.RW	35 - 59	50	3.7400	.82833	.11714	3.5046	3.9754	2.00	5.00
	More than 60	50	3.5600	.99304	.14044	3.2778	3.8422	2.00	5.00
	Total	100	3.6500	.91425	.09143	3.4686	3.8314	2.00	5.00

Table 4.2: Mean of Middle and aging perceptions for services factors

In table 4.1, it shows to the researcher that walkway in the public area are more important to Chinese Elderly than inside the house as the mean of 2 groups for public area is 4.28 and inside the house is 3.46. The mean of Aging for public area and inside the house also shows that aging is more concern about the walkway are wide enough for the wheel chair which is 4.6 for

the public area and 3.52 for the house compare to the middle age which is 3.96 for public area and 3.46 for the house. The following question about easy identify stair edges shows the same result that it is more important to have an easy identify stair edges in public area than inside the house. The mean of aging which is 4.26 shows that they are more concern about the easy identify stair edges of the public compare to the middle age which is 3.8. Whereas both aging and middle age respondents show almost the same concern for easy identify stair edges inside the house which is 3.54 for aging and 3.56 for middle age.

Question 3 is about using ramp rather than steps. The mean of 2 groups show that the aging is more concern about the replace ramp rather than using steps in public area than inside the house. It shows the same result in question 2 as the mean of aging shows more concern in public area than middle age which is 4.32 compare to middle age which is 3.86. Whereas inside the house is almost the same which is 3.54 for aging and 3.3 for middle age respondents. The following question is about the non-slippery floor tiles use in house. In this question, it shows us that bathroom and kitchen are more important to use non-slippery floor tiles as the mean for kitchen is 4.14 and 3.94 for kitchen. Whereas bedroom, laundry area and living room has mean that less than 3.5. In this question middle age shows more concern about tiles in bathroom and kitchen, whereas aging shows more concern in bedroom, laundry area and living room.

In question 5, the researcher ask about installing grab bars in bathroom and staircase. The result was showed that the garb bar was more important in bathroom compare to the staircase. The mean value for bathroom is 4.15 compare to staircase is 3.89. The result show in these two area, aging and middle age respondent shows almost the same concern which is 4.1 and 4.2 for bathroom. Staircase has a mean of 3.96 and 3.82 for staircase. Enough lighting system in house area of question 6 shows that lighting system are more important in kitchen and bathroom which

is 4.3 for bathroom and 4.18 for kitchen. Whereas bedroom, laundry area and living room are less than 3.8. In this question, aging and middle age show almost the same concern on lighting system in bathroom and kitchen, whereas aging having a higher mean value compare to middle age respondents in bedroom, living room and laundry area.

Cabinet in kitchen are more important than cabinet provide in bedroom. It has showed us in the mean table that the mean value for cabinet provide in kitchen is 3.86 compare to bedroom is 3.35. In this question, aging have a higher mean value which is 4.08 and 3.46 compare to middle age 3.64 and 3.24. Question 8 is about the space under the sink in kitchen and bathroom is necessary for aging that live independently. The mean result show us that space under sink have almost the same result for space provide under the sink in bathroom and kitchen which is 3.65 for kitchen and 3.66 for bathroom. The result also show that the aging have a higher mean value compare to middle age respondents. Next is the space between benches in kitchen and laundry area. Benches in kitchen have a higher mean value which is 3.66 compare to laundry area 3.37. Middle age are more concerning about benches in kitchen, whereas aging more concern on benches in laundry area.

Question 10 is about the working area are not higher than 800mm. Kitchen are having a mean value of 3.59, whereas laundry area have a mean value of 3.15 which shows that kitchen are more important to have a working area that are not higher than 800mm. In this question, aging having a higher mean value in laundry area, whereas middle age respondents have a higher mean value in kitchen area. Question 11 is to install switch at a lower position in the house and the mean result shows that bathroom and kitchen are more important to have a lower position switch than bedroom, living room and laundry area. Bathroom are having a mean value of 4.16, kitchen is 4.13, whereas bedroom, living room and laundry area have mean value that less than 4.

In this question, all the areas in this question aging are having a higher mean value than middle age respondents which shows that aging really need lower position switch as all the mean values in aging groups are more than 4.2.

Table 4.2 is continue from question 12 which is about home services like cooking, housework and laundry work provide by management team for aging that live independently. The mean result shows us that cooking is the most important home service for aging which is 4.18, whereas housework has a mean value of 3.71 and 3.44 for laundry work. In this question, aging are having a higher value in cooking and laundry work which is 4.34 and 3.5 compare to middle age respondents which is 4.02 and 3.38. Middle ages respondents thinks that housework are more important which shows in the mean value of 3.98 compare to aging mean value, 3.44. Question 13 is the transport service to aging that live independently. The mean value has showed us that transport to medical center is the most important location for transport service which is 4.57, following by grocery 3.89 and social activities center which is 3.54. Aging and middle age respondents' shows that they have almost the same concern in transport service to medical center. Aging have a mean value of 4.58 for transport to medical center and 4.56 in mean value of middle age respondents. Aging are showing us that they are having more concern to the transport to grocery and social activities center through the mean value of 4.12 and 3.68 compare to middle age respondents which is 3.66 and 3.4.

The mean value in question 14 about aging personal care has showed us that helping aging to pick up medicine is the most important personal care which is 4.32, following by bath which is 3.98, walking 3.68 and dressing which is 3.55. Aging are having more concern than middle ages respondents in personal care of bathing, dressing and walking which is 4.02, 3.78 and 3.86 compare to middle age respondents 3.94, 3.32 and 3.5. Middle age are having more

concern than aging in picking up medicine which is 4.48 compare to aging 4.16. The last question was home management about bills paying and minor repair works. The mean value of the bills paying is 3.77, it showed that bills paying are more important than minor repair work which is 3.65. In this question, middle age have more concern compare to the aging. In bills paying, middle age respondents have a mean value of 3.96, meanwhile aging only have 3.58. Same with minor repair work, middle age respondent have a mean value of 3.74 compare to aging 3.56.

4.4 One way Anova

4.4.1 ANOVA Result for Aging Designs

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Walkway.PA	Between Groups	10.240	1	10.240	22.849	.000
	Within Groups	43.920	98	.448		
	Total	54.160	99			
Walkway.H	Between Groups	.360	1	.360	.487	.487
	Within Groups	72.480	98	.740		
	Total	72.840	99			
Steps.PA	Between Groups	5.290	1	5.290	10.448	.002
	Within Groups	49.620	98	.506		
	Total	54.910	99			
Steps.H	Between Groups	.010	1	.010	.013	.910
	Within Groups	76.740	98	.783		
	Total	76.750	99			
Ramp.PA	Between Groups	5.290	1	5.290	11.546	.001
	Within Groups	44.900	98	.458		
	Total	50.190	99			
Ramp.H	Between Groups	1.440	1	1.440	2.395	.125
	Within Groups	58.920	98	.601		
	Total	60.360	99			
Tiles.B	Between Groups	6.760	1	6.760	18.778	.000
	Within Groups	35.280	98	.360		
	Total	42.040	99			
Tiles.K	Between Groups	1.440	1	1.440	5.004	.028
	Within Groups	28.200	98	.288		
	Total	29.640	99			
Tiles.LA	Between Groups	9.610	1	9.610	14.027	.000
	Within Groups	67.140	98	.685		
	Total	76.750	99			
Tiles.BR	Between Groups	9.000	1	9.000	14.000	.000
	Within Groups	63.000	98	.643		
	Total	72.000	99			
Tiles.LR	Between Groups	19.360	1	19.360	25.338	.000
	Within Groups	74.880	98	.764		
	Total	94.240	99			
GrabBars.B	Between Groups	.250	1	.250	.450	.504
	Within Groups	54.500	98	.556		
	Total	54.750	99			
GrabBars.S	Between Groups	.490	1	.490	.693	.407
	Within Groups	69.300	98	.707		
	Total	69.790	99			

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Lighting.B	Between Groups	.160	1	.160	.477	.491
	Within Groups	32.840	98	.335		
	Total	33.000	99			
Lighting.K	Between Groups	.160	1	.160	.512	.476
	Within Groups	30.600	98	.312		
	Total	30.760	99			
Lighting.LA	Between Groups	21.160	1	21.160	32.811	.000
	Within Groups	63.200	98	.645		
	Total	84.360	99			
Lighting.BR	Between Groups	5.290	1	5.290	8.580	.004
	Within Groups	60.420	98	.617		
	Total	65.710	99			
Lighting.LR	Between Groups	15.210	1	15.210	17.963	.000
	Within Groups	82.980	98	.847		
	Total	98.190	99			
Cabinet.K	Between Groups	4.840	1	4.840	10.049	.002
	Within Groups	47.200	98	.482		
	Total	52.040	99			
Cabinet.BR	Between Groups	1.210	1	1.210	2.723	.102
	Within Groups	43.540	98	.444		
	Total	44.750	99			
Sink.B	Between Groups	7.290	1	7.290	15.715	.000
	Within Groups	45.460	98	.464		
	Total	52.750	99			
Sink.K	Between Groups	.360	1	.360	.838	.362
	Within Groups	42.080	98	.429		
	Total	42.440	99			
Benches.K	Between Groups	.640	1	.640	1.259	.264
	Within Groups	49.800	98	.508		
	Total	50.440	99			
Benches.LA	Between Groups	.810	1	.810	1.231	.270
	Within Groups	64.500	98	.658		
	Total	65.310	99			
WorkingArea.K	Between Groups	.810	1	.810	1.487	.226
	Within Groups	53.380	98	.545		
	Total	54.190	99			
WorkingArea.LA	Between Groups	.810	1	.810	1.204	.275
	Within Groups	65.940	98	.673		
	Total	66.750	99			
Switch.B	Between Groups	4.000	1	4.000	5.196	.025
	Within Groups	75.440	98	.770		
	Total	79.440	99			
Switch.K	Between Groups	3.610	1	3.610	5.385	.022
	Within Groups	65.700	98	.670		
	Total	69.310	99			
Switch.LA	Between Groups	30.250	1	30.250	29.687	.000
	Within Groups	99.860	98	1.019		
	Total	130.110	99			
Switch.BR	Between Groups	15.210	1	15.210	25.798	.000
	Within Groups	57.780	98	.590		
	Total	72.990	99			
Switch.LR	Between Groups	42.250	1	42.250	44.840	.000
	Within Groups	92.340	98	.942		
	Total	134.590	99			

Table 4.3: One way anova of Middle and aging perceptions for designs factors

In table 4.3 was showing the significance value of each design factors. The first question is the walkway that allow for wheel chair to pass by in public area is 0.000 which is less than 0.05 and it means that there are a difference in middle age and aging. The result was aging is having more concern on the walkway that allow wheel chair to pass by in public area than middle age respondents. Whereas for walkway in the house is allow wheel chair to pass by the significance value is 0.487 which is more than 0.05. This result shows that there are no affect in between middle age and aging perception to this design factor. In the design factor of easy identified steps in public area and inside house, the significance value are 0.002 for public area and 0.91 for inside the house. This shows the same result walkway designs, the aging are having more concern in easy identify steps in public area comparing with middle age respondents and no affect in between middle age and aging inside the house area.

Question 3 is about using ramp rather than using steps in public area and inside house area. The significance value is 0.001 for public area. The value are lesser than 0.05 which shows that there are difference in between middle age and aging perception of the design factor. From the mean result, it has state that the aging are having more concern on the ramp in public area. Whereas the significance value for inside house area is 0.125 which is more than 0.05. This has shown that there are no affect in between middle age and aging perception to the design of using ramp rather than steps in house area. In question 4, the researcher has ask about using the non-slippery tiles in bathroom, kitchen, laundry area, bedroom and living room. The significance value of this design in these area are 0.000, 0.028, 0.000, 0.000 and 0.000 which shows that the design in these area has a difference with middle age and aging perceptions. In this design, middle age are having more concern than aging in bathroom and kitchen area, whereas aging having more concern than middle age in bedroom, laundry area and living room area.

In design factor of grab bars in bathroom and staircase, the significance value is 0.504 and 0.407 which are more than 0.05. This shows that there are no affect or difference in middle age and aging perceptions in this design. The following question is enough lightning system in bathroom, kitchen, laundry area, bedroom and living room. The significance value are 0.491, 0.476, 0.000, 0.004 and 0.000. These significance value shows that there are no affect or difference in the mean value of lighting system in bathroom and kitchen. Whereas significance value in laundry area, bedroom and living room, aging are having more concern than middle age. Next question is about the cabinet that provide for aging in kitchen and bedroom. The significance of these two area are 0.002 and 0.102. The result has shown that there are difference in the perception of middle age and aging to the cabinet provide in kitchen. Aging thinks that it is more important than middle age. Whereas the significance value of cabinet provide in bedroom shows that there are no relation and affect in middle age and aging perception.

The following question are about space provided below the sink that provide in bathroom and kitchen. The significance value of this design are 0.000 and 0.362. The results shows that there are difference in middle age and aging perception in the design of providing space below the sink in bathroom. Aging are having more concern than middle age in this design factor at bathroom. Whereas the significance value of 0.362 that more than 0.05 shows that there are no affect in this design factor at kitchen. The significance value of providing enough space in between benches in kitchen and laundry area are 0.264 and 0.270 which are more than 0.05. The two results shows that there are no affect in middle age and aging perception in this design. The last question in design factor are install switch at a lower position in bathroom, kitchen, laundry area, bedroom and living room. The significance value are 0.025, 0.022, 0.000, 0.000 and 0.000 in these area and all of the value are less than 0.05. These results shows that there are differences

in between middle age and aging perception. Aging are having more concern than aging in these 5 area compare to middle age respondents.

4.4.2 ANOVA Result for Aging Services

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
HS.C	Between Groups	2.560	1	2.560	5.945	.017
	Within Groups	42.200	98	.431		
	Total	44.760	99			
HS.H	Between Groups	7.290	1	7.290	14.491	.000
	Within Groups	49.300	98	.503		
	Total	56.590	99			
HS.L	Between Groups	.360	1	.360	.517	.474
	Within Groups	68.280	98	.697		
	Total	68.640	99			
TS.MC	Between Groups	.010	1	.010	.030	.862
	Within Groups	32.500	98	.332		
	Total	32.510	99			
TS.GS	Between Groups	5.290	1	5.290	5.058	.027
	Within Groups	102.500	98	1.046		
	Total	107.790	99			
TS.SA	Between Groups	1.960	1	1.960	2.114	.149
	Within Groups	90.880	98	.927		
	Total	92.840	99			
PC.B	Between Groups	.160	1	.160	.303	.583
	Within Groups	51.800	98	.529		
	Total	51.960	99			
PC.D	Between Groups	5.290	1	5.290	9.697	.002
	Within Groups	53.460	98	.546		
	Total	58.750	99			
PC.W	Between Groups	3.240	1	3.240	5.618	.020
	Within Groups	56.520	98	.577		
	Total	59.760	99			
PC.M	Between Groups	2.560	1	2.560	7.557	.007
	Within Groups	33.200	98	.339		
	Total	35.760	99			
HM.PB	Between Groups	3.610	1	3.610	4.207	.043
	Within Groups	84.100	98	.858		
	Total	87.710	99			
HM.RW	Between Groups	.810	1	.810	.969	.327
	Within Groups	81.940	98	.836		
	Total	82.750	99			

Table 4.4: One way anova of Middle and aging perceptions for services factors

Table 4.4 was showing the result of significance value of each services factors. The first question in services for aging housing development is the home services about cooking, housework and laundry work. The significance value of these three home services are 0.017, 0.000 and 0.474. There are two significance value that shows there are differences in between middle age and aging perception in two home services. Aging feel that cooking is more important compare to middle age respondents, whereas in middle age perception, they feel that housework are more important for aging housing development compare to aging. The significance value of laundry work is 0.474 which is more than 0.474 shows that there are no affect in between middle age and aging perception to this house service.

The next question is transport service to medical center, grocery shopping and social activities center. The significance value of these three transport services are 0.862, 0.027 and 0.149. These results shows there are no affect to the middle age and aging perception to the transport services to medical center and social activities center. The significance value of transport service to grocery shopping is 0.027 which is less than 0.05 shows that there is a difference in between middle age and aging perception. Aging feel that grocery shopping is important compare to middle age respondents.

The following question is about personal care to aging like bathing, dressing, walking and picking up medicine. The significance value of these four personal care are 0.583, 0.002, 0.020 and 0.007. The significance value of bathing is 0.583 which is more than 0.05 which means that there are no affect in middle age and aging perception on this personal care. The personal care of dressing, walking and picking up medicine are less than 0.05 which means that there are difference in middle age and aging perception. From the mean value of middle age and aging, it shows that aging are having more concern on dressing and walking compare to middle

age respondents perception. Whereas middle age respondents feel that picking up medicine for aging is important compare to aging perception.

The last services factor is about home management. The significance value of paying bills for aging is 0.043 and minor repairing works significance value is 0.327. The significance value of paying bill is 0.043 which is less than 0.05 and this shows that there is a difference in between middle age and aging perception about paying bill home management. From the mean value result, it shows that middle age are having more concern in paying bill services for aging housing development than aging. The significance value of minor repairing work is 0.327 which is more than 0.05 shows there are no affect in between middle age and aging perception of this home management service.

Chapter 5

5.1 Discussion on Findings

In this research, the finding was there are a lot of factors that are having a significance value that less than 0.05 and shows a differences in between middle age and aging perceptions to some of the designs and services factors. Although there are also a lot of designs and services factors for aging housing development are having significance value that are more than 0.05 which mean there are not difference or affect in middle age and aging perceptions. These result does not shows that the Malaysia Chinese does not having more concern about these aging designs for aging housing development that support aging to live independently. The results of the mean value has shown us that the middle age respondent and aging are having high mean value in some of the designs in the questionnaire and some of it may have lower mean value, but not lower than 3. Malaysia Chinese may feel that some of the design may not be so important to support the aging to live independently. For example, the working area in laundry area may have the lowest mean value in all of the designs which is 3.15, this is because that Malaysia Chinese may think of that the working are in laundry area may not necessary lower than 800mm height.

Some other designs and services that Malaysia Chinese may be walkway in public area may allow wheel chair to proceed, easy identify steps in public area, using ramp instead of steps in public area, these designs shows that Malaysia Chinese concern about the access of people who may have difficulties in walking. Other designs such as non-slippery tiles in bathroom and kitchen, grab bars in bathroom and lighting system in bathroom and kitchen also show that Malaysia Chinese are worry about while aging using bathroom and kitchen alone and these design might support them while they are using it.

Whereas in services provide in aging housing development, Malaysia Chinese are have more concern about cooking for the aging as aging might have to cook 2 to 3 times daily for meal compare to housework and laundry work. Malaysia Chinese also having concern on the aging health as they think that it is important for the management team to provide transport service to the medical center and picking up medicine service to ensure that aging can live in a health condition.

5.2 Limitation of Scope of Study

In this research, the sampling size of the research is only 100 set and it shows us a lower confidence level which is +- 10% according to Taro Yamane (1967) because of the time constraint, the researcher have no time to collect more data from the respondents. In this research, the researcher can only collecting data from Rawang area is because of the time constraint and the researcher did not have the connection or relations to help in other area in Selangor.

Furthermore maybe there are more designs and services can be found in the world that can support aging to live independently in a comfortable and safe environment. Moreover more and more designs and services will be created when times goes on and change in regional area.

5.3 Recommendations on Future Research

In future, the researcher can increase the sampling size of the questionnaire to have a higher confident level, so that the data will be more reliable. Further study also can be done in other area in Selangor or others state. By having study in different area or state might have a different result as people from different area and state may have different perceptions on the designs and services for aging housing development. In this research, the researcher have study a lot of western country designs and services, so that further studies also can be done on Asia or South East Asia designs and services provide to aging that live indecently.

Other than designs and services for aging housing development, there must be others factors that can support the aging to live independently, so that further study also can be made in to this area. Studies of how Malaysia Chinese thinking about the designs and services also can be made to study the differences in the thinking of Malaysia Chinese.

5.4 Conclusion

In this research, the questionnaire analysis result has showed that the Malaysia Chinese middle age and aging perception for many designs and services that provided for aging housing development is high. Many of the design and service factor are important to aging that live independently that shown in the mean value of descriptive analysis. In the one way anova result, there are significance value that are less than 0.05 shows that there are difference in middle age and aging perception in many design and service factor and more than 0.05 shows that there are no affect or differences in middle age and aging perception to many of the design and service factors. However the mean value of the factors also show that the design and service factor are important to aging housing development, it just the perception of middle age and aging are not much difference.

In this research, the limitation is the sampling size of the questionnaire and there are only one area in Selangor to distribute the questionnaire. There may be other factors that can support aging to live independently other than designs and services for aging housing development. So that the further study can be improve by increase the sampling size or extend the research area. Besides further research also can study the other factors that can support aging to live independently except designs and services for aging housing development.

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Appendix

7.1 Appendix

Section I: Demographic

1) What is your age?

35 - 59	
60 and above	

2) What is your gender?

Male	
Female	

3) How much do you earn per month?

Below 2,000	
2,000 to 4,000	
4,000 to 6,000	
Above 6,000	

Section II: Housing Designs

Please rate the designs and services that you think is importance to aging that live independently in high rise resident building.

Question	Extremely not Importance (1)	Not Importance (2)	Natural (3)	Importance (4)	Extremely Importance (5)
Aging Housing Designs					
1) Walkway should be wide enough for wheel chair?					
a) Public area					
b) House					
2) Easy identify steps/stairs edges?					
a) Public area					
b) House staircase					
3) Having ramp into entrance instead of steps?					
a) Public area					
b) House entrance					
4) Use non-slippery floor tiles?					
a) Bathroom					
b) Kitchen					
c) Laundry area					
d) Bedroom					
e) Living room					
5) Install grab bar or rails?					
a) Bathroom					
b) Staircase					

Question	Extremely not Importance (1)	Not Importance (2)	Natural (3)	Importance (4)	Extremely Importance (5)
6) Enough lighting system?					
a) Bathroom					
b) Kitchen					
c) Laundry area					
d) Bedroom					
e) Living room					
7) Providing cabinets for aging?					
a) Kitchen					
b) Bedroom					
8) Providing knee space under sink?					
a) Bathroom					
b) Kitchen					
9) A 1500mm clearance between benches?					
a) Kitchen					
b) Laundry area					
10) Working area should not higher than 800mm?					
a) Kitchen					
b) Laundry area					
11) Switch should place at lower place?					
a) Bathroom					
b) Kitchen					
c) Laundry area					
d) Bedroom					
e) Living room					

Section III: Aging Services

Question	Extremely not Importance (1)	Not Importance (2)	Natural (3)	Importance (4)	Extremely Importance (5)
Aging Housing Services					
12) What home services that aging needs?					
a) Cooking/ Providing meals					
b) Housework					
c) Laundry					
13) Transport service to where are important to aging?					
a) Medical Centre					
b) Grocery shopping					
c) Social Activities					
14) Which type of personal care are important to aging?					
a)Bathing					
b)Dressing/ Undressing					
c)Walking					
d) Picking up medicine					
15) Which home management are important to aging that live alone?					
a)Paying bills					
b)Repairing works					