



Master's degree thesis

LOG950 Logistics

Investigating consumer preferences for senior apartments with extra services in Molde through the stated preference method

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Preface

This master thesis is our final work and assignment at the study Master of Science in Logistics at Molde University College 2018. It has been a rollercoaster writing this thesis and a lot of different emotions has followed us throughout the work with it. Our loved ones and maybe strangers have also felt these emotions too, and we want to thank them for putting up with us on this exciting and educational journey. It is with great pleasure to write this so close up to delivery, meaning the end of a five years' education at Molde University College is near. This is a milestone for us, and we want to thank all the very nice staff at Molde University College and fellow students that have been our friends throughout these years.

A special thanks goes to our supervisor Birgithe Eckermann Sandbæk who have been with us through some frustration on grey days and laughter on sunny days. We appreciate all the time she has spent, the discussions and advices she has participated with to help us improve the thesis. Additionally, other professors have helped with assisting and pushing us through the work, therefore we want to thank Øivind Opdal, Berit Irene Helgheim and our Italian stated preference specialist Edoardo Marcucci. We will also like to thank our family which have extraordinary helping us with food and living arrangements during this education. This study has had its ups and downs, and without the love, support and motivation from family and boyfriend, it would have been more bad than good days.

Finally, we would like to thank all our respondents, for taking the time to answer the questionnaire, and providing us with valuable and important information during this research.

THANK YOU!

Summary

The world's population is aging and statistics have shown that the amount of elderly is predicted to increase even further in the upcoming decades. Almost every country in the world will experience an increasing aging in their population which is mainly due to lower fertility and higher longevity. In order to be able to meet the challenges of an aging population, new changes, solutions and offers are required. This implies among others, being able to offer a greater diversity of housing options for the elderly, as they pose higher demands and expectations than previous generations. Therefore, this thesis aims at investigating consumer preferences for senior apartments with extra services in Molde. Previous research on this topic is somewhat scarce, and the research done in this thesis can be considered as a pilot for future research in this area.

Data was collected through the use of a questionnaire based on the stated preference method. Additional supportive qualitative data such as in-depth interviews and focus groups was also collected and used as a basis foundation to develop the questionnaire. The main part of the questionnaire was constructed as a discrete choice experiment (DCE) that was performed face-to-face, and further analyzed using the multinomial logit model.

Theories that were applied in this thesis involves around services, as this is the main concept behind a senior apartment. Service logistics involves around the individual customer and how to manage responsive service activities. Service design is about planning the service at a deeper level and integrate strategic, system, process and customer interaction through "touch-point" design. It is crucial to be innovative and technological advanced with services, as there can be many competitors out there. Therefore, service innovation and technology is also included, where a six-dimensional service innovation model is presented.

Results from the sample indicate that there is no current interest for senior apartments in Molde, but that it might be somewhere in the future. The respondents found it somewhat difficult to take a position to this now as the future is uncertain. Furthermore, the results seem to indicate that the health condition appears to be a decisive and common factor among the respondents in the choice of wanting to move to a senior apartment.

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1.0 Introduction

People around the world are living longer and healthier lives much thanks to better living conditions and healthcare services (Lillemoen 2010; European Commission 2014). Due to low fertility rates in a number of countries, population growth is slowing down while population aging is speeding up. Rapid increase in the elderly population around the world is expected in the coming decades as a result of the aging post-war baby boomers (European Commission 2014). This will result in higher expenses for the society in different countries, both in terms of social security and health care services. New changes and solutions are required in order to meet the challenges of an aging population. This implies among others the need to offer a greater diversity of housing options and services for elderly than those that already exist. Today's and future elderly will set higher demands when facing old age than previous generations as they are used to a higher standard of living. Additionally, they will be more resourceful, higher educated and more enlightened (Regjeringen 2015).

This forms the basis of this master thesis. The purpose of this thesis is to investigate preferences for senior apartments in a senior apartment facility among people aged 50 and above in Molde. Molde is a small city located on the west coast of Norway. In this context, a senior apartment can have the possibility to offer different types of services that may help the residents extend the time at home in view of future old age. What separates these apartments from ordinary apartments with additional services is that a senior apartment can offer more customized services. Additionally, it is age restricted and facilitated towards the elderly. These senior apartments can be considered as an intermediate station between current housing and nursing homes. The latter is a more suitable alternative if the need for help becomes too extensive. Nevertheless, these apartments should not be looked at as an institution, since it is meant for those who want to prepare for future aging. This includes both healthy older people and those who need basic assistance in terms of health services and daily chores. With regard to health services, basic assistance extends to the level that residents can no longer live independently. The aim of these senior apartments is to create a safer and easier living environment for elderly people while offer them various social and physical activities. Understanding the attitudes and preferences people in Molde have for senior apartments today, might give insight into how such apartments can be designed in the future. This has a direct connection to service logistics and service design

as it involves around how an organization can plan and develop services for their customers.

1.1 Research Area

Most previous research within this area has been conducted on nursing homes, assisted living facilities, housing preferences and health among elderly. These studies have mainly been outside of Norway, but it has been found some studies on elderly's future preferences for living arrangements in Norway. However, it is limited.

There has been done research on general housing decisions and preferences among healthy seniors (Roy et al. 2018), studies to identify elderly's demand and preferences about senior specific housing (Baker and Prince 1991), and research on future housing and living preferences (Brevik and Schmidt 2005; Kjersem and Aarseth 2009; Weeks, Branton and Nilsson 2005).

The stated preference (SP) method analyze how people make choices (Hensher and Rose 2011). It has been used in research areas like transportation (Bristow, Wardman and Chintakayala 2015); health (Mataria et al. 2004); environmental valuation (Menegaki 2011); ecosystem services (Takatsuka et al. 2009); marketing (Blandon, Henson, and Islam 2009), economics (Train and Atherton 1995); tourism (Kelly et al. 2007); infrastructure and the public sector (Jones et al. 2012).

With respect to the area of this thesis, studies using SP have found that when considering housing choices; people prefer natural features, newer houses and that housing expenditures has a negative significant influence on the choices (Earnhart 2002). Along with this, a larger dimension and closeness to different activities have a huge impact on choice (Hunt, McMillan, and Abraham 1994). Older people have strong preferences for apartments with everything on the same floor, closeness to food stores, care facilities and public transport. The elderly of the future will develop different lifestyles, hence preferring different residential locations (Jong et al. 2012). A SP study performed in China revealed that attributes like location and a secure neighborhood are of greater importance to the respondents than characteristics with the house (Wang and Li 2006). Demographical factors affect if people wants to live in the city, nevertheless the chosen housing does not

necessarily correspond with the preferred residential environment (Vasanen 2012; Wang and Li 2006). Most elderly want to continue living where they currently live and it was found that this became stronger with age (Jong et al. 2012). Despite the many different areas the SP method has been applied, it was not found research that used SP on healthy elderly's preferences for senior apartment in Norway. An overview of the preferences in this area can help gain knowledge on how to create services and characteristics for senior apartments that meets the market demand.

1.1.1 Research gap

Based on previous research and the challenges discussed, this thesis wants to investigate and gain knowledge about people's preferences for senior apartments in a Norwegian context, more specifically in Molde. This may contribute to new knowledge in an area that has been little researched in Norway previously. However, there are still some limitations to how deeply one can dive into the topic during the limited time period available for writing a master thesis. When this is said, this research could be used as a basis for future and more detailed research on the topic.

2.0 Research questions

There has been developed six research questions that will be answered based on data obtained from interviews.

RQ1: What factors impact the choice of wanting to move to a senior apartment?

RQ2: What services are most preferred and what factors impact the choice of service?

RQ3: Are common areas and social activities preferred, and which ones?

RQ4: Is it preferred to rent or to buy a senior apartment?

RQ5: Based on the DCE, what is the utility function and WTP?

RQ6: How should a service provider plan and design a senior apartment?

3.0 Background

This chapter presents the background for this thesis and informs about the issue at a deeper level. The senior living industry is assumed to have many future options as the proportion of elderly is increasing. Section 3.1 present facts about the aging population worldwide, while section 3.2 presents it in Norway. Section 3.3 further presents the senior living industry around the world. Last in section 3.4, Molde is presented as it is the area this research investigates.

3.1 Aging population worldwide

Almost every country around the world are now experiencing an increase in the number of elderly in their population (United Nation 2018). Population aging is predicted to become one of the most significant social changes of the 21st century, which will lead to different consequences in several sectors of society. The number of people aged 60 years and over is expected to increase from 962 million globally in 2017 to 2.1 billion in 2050 and 3.1 billion in 2100 (United Nations 2018). On a worldwide basis, population aged 60 and over is increasing faster than all younger age groups. Many countries are expected to face political pressures in relation to public systems of health care, pensions and social protections as a result of a growing older population. Based on this, governments should focus on policies that will address the needs and interest of the elderly in a number of areas (United Nations 2017).

A population's size and age composition are determined jointly by fertility, mortality and migration (United Nations 2018). Globally, declining fertility and higher longevity are the main drivers of population ageing. However, international migration has contributed to slowing down the aging process in some countries.

3.2 Aging population in Norway

Like other countries in the world, the older population is also increasing in Norway. However, the aging here has so far been weaker compared to many other countries (SSB 2017a). In the years to come, the number of elderly will continue to increase frequently. The strongest growth is expected to be in less central areas and municipalities, as more

people are moving to larger cities and more central municipalities. An increasing aging population will bring with it a number of challenges for Norway in the future. Among other things, it will lead to increased expenses for pensions as well as health and care services. In addition, it will lead to lower employment, which again weakens the tax bases (Regjeringen 2017). In order to contribute to good and sustainable health care services and housing options for elderly in the future, it will be necessary to come up with new and better solutions. By supporting local effort and having private and public actors cooperating, new and innovative solutions can be implemented to the best for society (Regjeringen 2015).

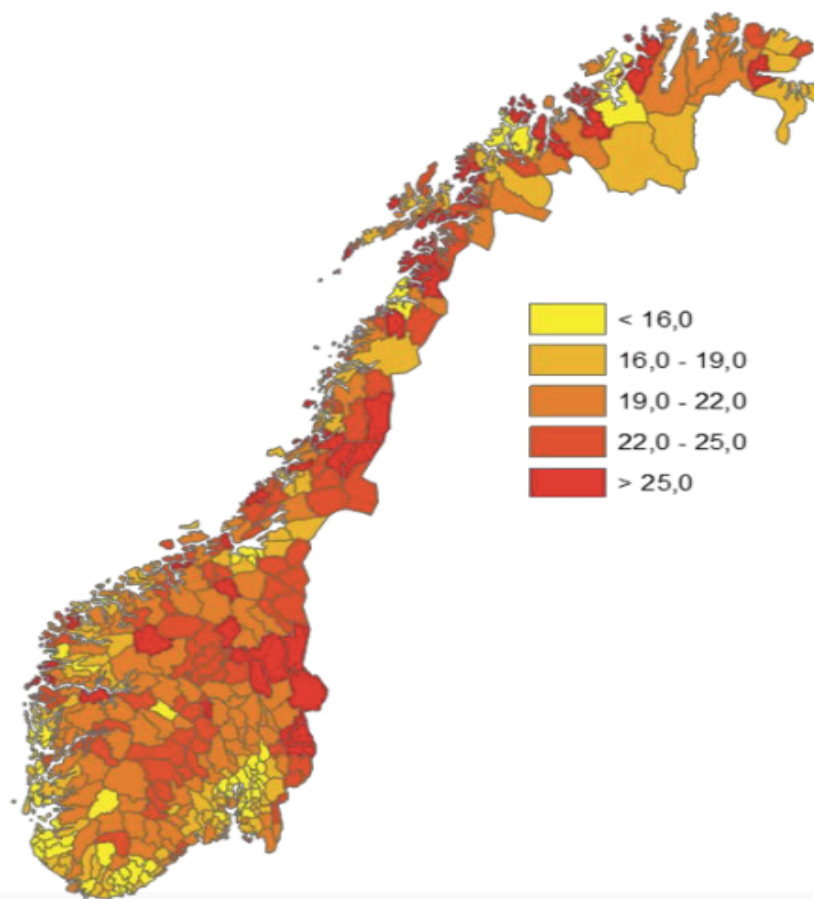


Figure 1: Registered proportion of people aged 65 years and older in Norwegian municipalities in 2017. The registered proportion is measured in percentage. Source: SSB (2017a).

3.3 The senior living industry around the world

The senior living industry has since 2004 increased and diversified to respond to the baby boomer's higher expectations about quality and delivery of services (Perkins et al. 2013). Living arrangements and services should be combined to meet the changes in expectations and demands.

Previously, the industry did not prioritize privacy, independence and personalization. However, there is now a change towards meeting factors that can improve life. The elderly no longer finds it enough to be told that their quality of life will improve. As elderly now challenge the industry, senior apartments no longer force on services and rules; moreover, they respond to new expectations. There has been an emerging amount of innovative and upgraded senior apartments during the last three decades (Perkins et al. 2013).

Not only highly developed countries such as North America, Western Europe and Japan feel the pressure in this industry. Countries like China and India observe even faster increase in the senior population. The worldwide changes in physiological and cognitive factors for the elderly are similar. Nevertheless, all countries are unique and should develop different responses to the aging population. This should be based on culture, social customs, traditions, politics, existing health systems, legal and regulatory situation (Perkins et al. 2013). With this said, new ideas are emerging worldwide and countries may learn from each other to improve and innovate the design of senior apartments.

3.3.1 Senior apartments and services around the world

There are many senior living options and definitions around the world (Emrath 1999; Jia and Heath 2016; Kim 2002; Wiley and Wyman 2012; Perkins et al. 2013). One of them is age restricted senior apartments (Emrath 1999; Wiley and Wyman 2012), which do not provide extra services above affordable rents (Emrath 1999). Age restricted senior apartments can be where the elderly start their senior life (Wiley and Wyman 2012). Another one may build on this and involve special services which involves maintenance and recreation (Emrath 1999). Some of them can offer meals in a common dining area and provide extra services such as shopping, housekeeping and transportation (Emrath 1999; Wiley and Wyman 2012). For those in need of assistance with daily living activities, the

“assisted living facility” is appropriate. When health deteriorates so that seniors require regular medical care, they should move on to a “skilled nursing facility” (Wiley and Wyman 2012).

In Norway, it seems to be a higher focus on assisted living and nursing homes for seniors that are in need of daily care (SSB 2015). Nevertheless, there is interest for senior apartments with extra services in Norway (Brevik and Schmidt 2005). Larger cities offer most of the age restricted senior apartments with extra services through the private market (Aftenposten 2005; Aleris 2018). Some may tempt the elderly’s with hobby rooms, guest rooms, activities and a social and nice community (Aftenposten 2005). Along with this, services such as cleaning and technical help is offered. Private senior apartments offer secure living conditions for the elderly’s that is suitable for those that can be independent (Aleris 2018). By having supportive welfare technology and closeness to health care services and other support, more safety than regular apartments can be provided.

3.4 Molde

The research is done in the context of senior apartments in Molde. Molde was chosen as a research area as it was the most practical solution considering the completion of the SP questionnaire. Molde is a small city located on the west coast of Norway in the county of Møre and Romsdal (Stokkan and Thorsnæs 2016). The location of Molde is presented in figure 2.

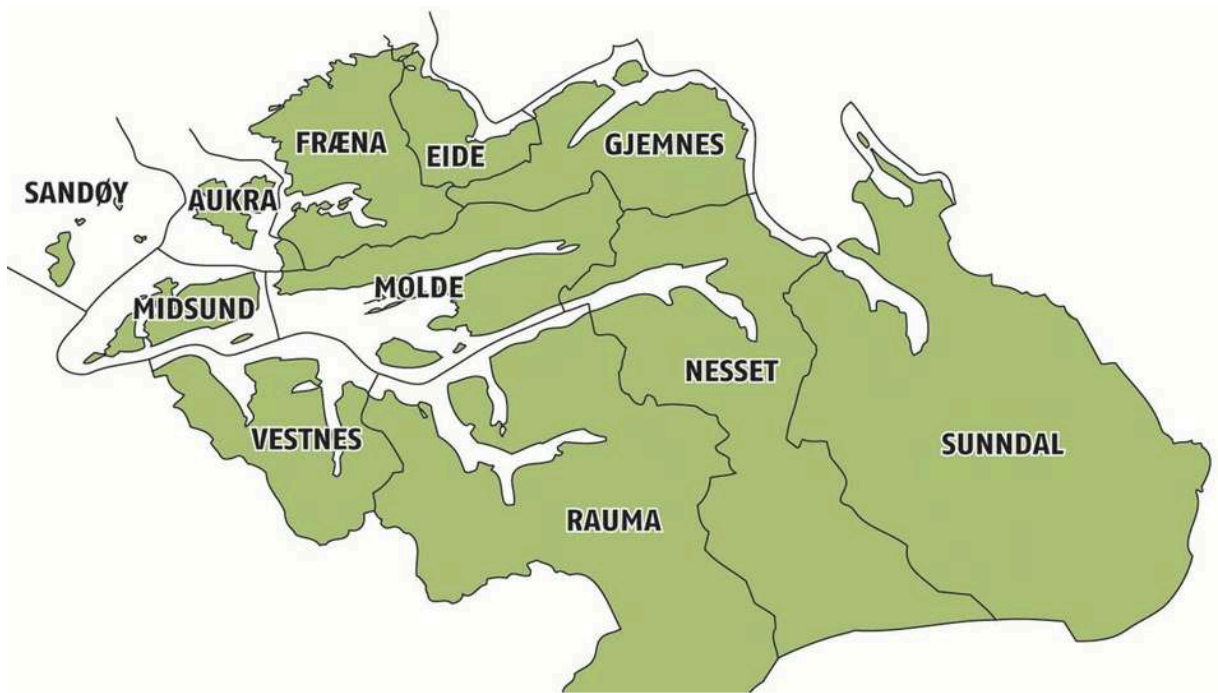


Figure 2: Location of Molde. Source: Rbnett (2015)

The population is mainly living along the coastline, and in particular on the north side of Moldefjorden and Fannefjorden. Molde's city center is located west of the Molde river with short distance to shops and nature. Molde has 26 901 inhabitants and a land area of 363 km² (Stokkan and Thorsnæs 2016). The age distribution among the inhabitants is presented in figure 3.

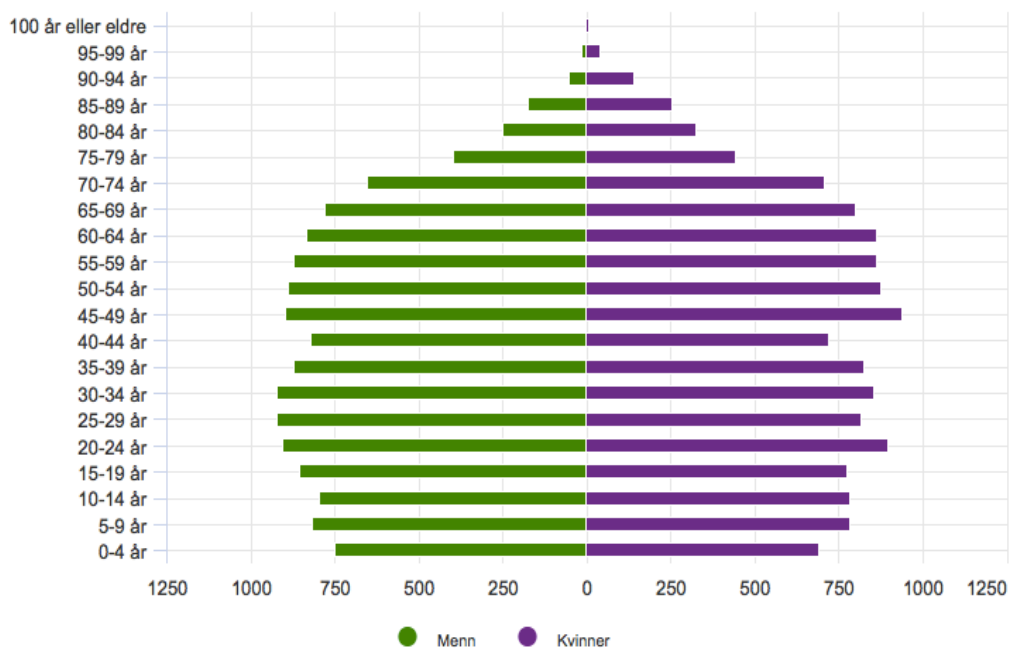


Figure 3: Age distribution among inhabitants of Molde. Source: SSB (2017b)

Out of the total number of inhabitants, there are 10 250 people that are aged 50 years and above, 4923 are men and 5327 are women (SSB 2017b).

Figure 4 shows the elderly care burden in Molde and in the areas around in respectively 2016 and 2040. The figures are based on population projections.

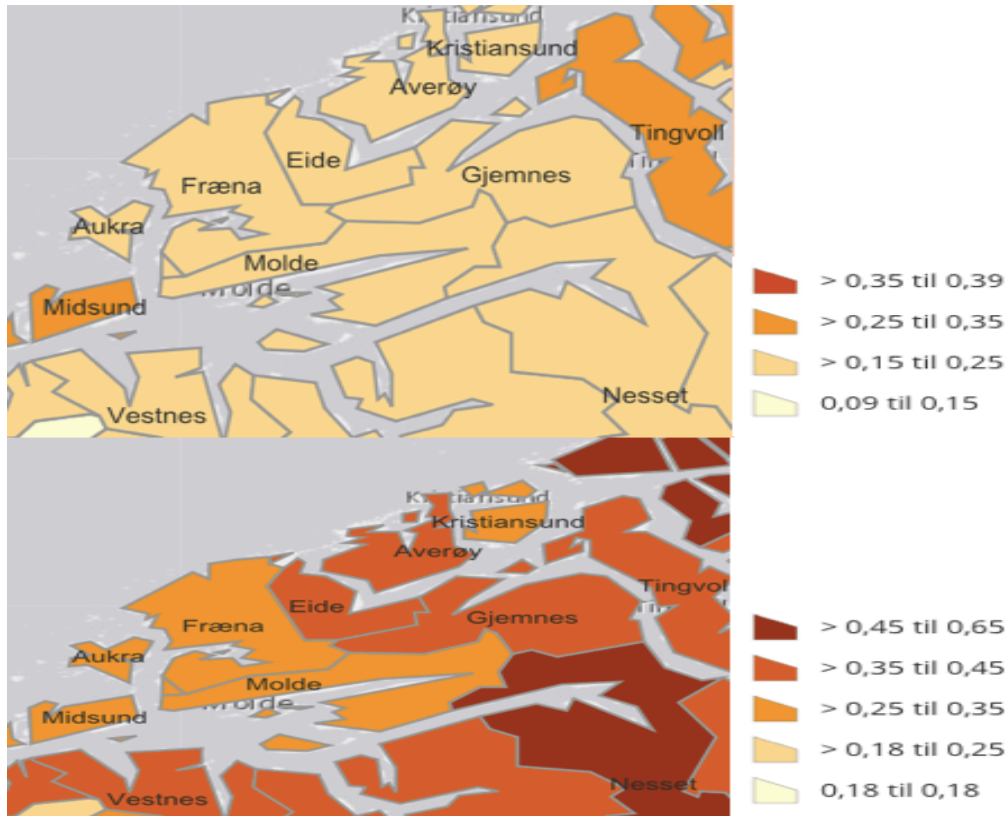


Figure 4: Care burden in Molde in 2016 and 2040. Source: SSB (2016)

The upper map shows the elderly care burden in 2016 in Molde and in areas around. It is calculated based on the number of people aged 70 years and older relative to the number of people aged 20-69 (SSB 2016). That is, people who are no longer part of the workforce relative to those who are considered to be in working age. A low number equals few older people relative to those working. The bottom map shows the elderly care burden in 2040 for the same areas and is calculated in the same way. Due to general aging in the population, it is more categories in 2040 than 2016. These maps indicate that there is a relatively moderate increase in care burden for Molde compared to nearby areas in the upcoming years to 2040 (SSB 2016).

4.0 Theoretical framework

The aim of this chapter is to understand the importance of services and how it can increase the residents satisfaction with weight on theory from senior housing. In section 4.1, service logistics is presented, which can be looked at as an extension of logistics, importantly it have different concepts and goes deeper into the individual customer. Section 4.2 investigates further the design of services and presents the service design planning model. Section 4.3 highlights the importance of innovation and technology with respect to services and presents the six-dimensional service innovation model.

4.1 Service logistics

Traditionally, logistics has been applied in business when describing the management of material flows. Service logistics however, is a different concept which involves around the management of responsive service activities and the individual customer (Davis and Manrodt 1994). Some activities produce products such as the development of a high quality senior apartment facility. Other activities add value to products, such as knowledgeable, nice, kind and hardworking service providers. Additionally, easy available services and the quality of them can add value. Other activities do not involve products, which can be services such as maintenance, transportation, physiotherapy and social activities. Logistics in senior apartments might be viewed as ordering food or equipment for maintenance. On the other side, service logistics co-ordinates the interaction between customer and the service provider as well as reducing lead time between the scheduling, performance and procedure evaluation (Davis and Manrodt 1994).

A senior apartment developer and service provider should be identified and recognized by the way they interact with their customers, and not just as having extra services. The service provider should either plan internally what to offer the customer, or plan the capacity which can respond to individual customer needs (Davis and Manrodt 1994). A service provider can first internally plan how the senior apartment facility and services should be designed. This should respond to the general elderly segment with respect to that health eventually will deteriorate. When the elderly has moved in, the service provider can plan capacity so that they can respond to the individual needs. The elderly in senior apartments are like all kinds of people; they want to feel independent, choose how their

needs are met and shape their environment (Perkins et al. 2013). The next generation of elderly will be more understandable to the provided service's value and living options they select. This requires a complex interface between the individuals and the environment to satisfy their needs (Perkins et al. 2013).

Service logistics is based on four concepts (Davis and Manrodt 1994). The first concept is to increase the value of benefit through activities with or without a product. In a senior apartment, the facility and the extra services designed towards the elderly will increase the benefit. The second is to focus on the delivery process as benefits are delivered through activities. For example, those providing the services should behave politely, deliver high quality services at the time the elderly need them. The third concept is to have a mechanism that co-ordinate the delivery to minimize wasted capacity and ensure service fit and cost control. The service provider can use technology and communication to coordinate and plan how to serve the elderly. The fourth concept is to put weight on frontline diagnosis rather than centralized planning. After diagnosing the elderly's need, frontline contact staff must determine what to be done and respond to needs in a cost-effective way. It is important to have a good fit for the elderly's needs. This requires that service providers organize in a way that maximize responsiveness. They must diagnose and find solutions to individual needs, and not standardize a service that will meet the needs of a specific market niche (Davis and Manrodt 1994).

Gourdin (2006) states that the component with the largest significance in a logistics system is customer service, and that all other activities should be arranged to support goals in this component. Customer service strategy should be built around dependability, time, convenience, communications and honesty. A very important aspect in customer strategy is the quality. Gourdin (2006) defines quality as value or fitness of use from the customers point of view. The service provider should make sure that the internal and external opinions about quality is equal to truly satisfy the elderly. Even though the service provider believe to provide high-quality services, the elderly might not think so. Parasuraman, Zeithaml, and Berry (1985) presents a service quality model with logistics processes to find the factors that can cause customers to be unhappy. The service quality model is presented in figure 5.

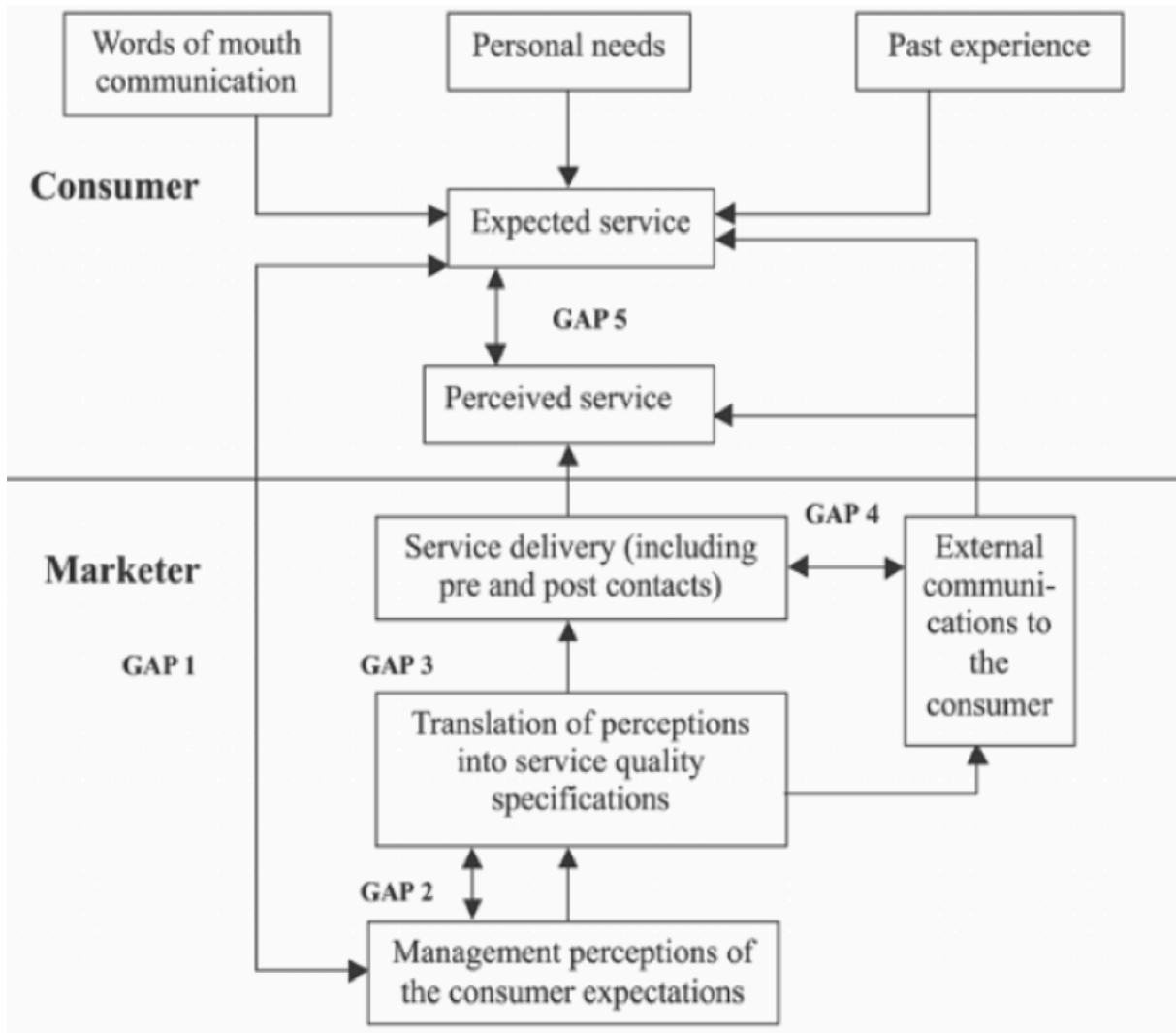


Figure 5: Service quality model. Source: Parasuraman, Zeithaml, and Berry (1985)

Service logistics is centered around the human and focuses on the customer experience where the key value for success is the quality of service. When the elderly's expectations are known, service providers can come up with a suitable service mix and customize it to them. The quality of service (Harrison, van Hoek, and Skipworth 2014) occur through interaction with the elderly during service delivery. When their expectations, the service quality and delivery does not lie on the same level, "gaps" emerges. By finding the gaps, satisfaction can be improved, which is a qualifier for long-term customer loyalty. Five service quality gaps is presented in the service quality model (Parasuraman, Zeithaml, and Berry 1985), these gaps can lead to customer dissatisfaction.

In a service apartment with extra services, the first gap might occur if the service provider misunderstand the elderly's needs. The second gap may appear if the service provider know the needs, yet do not fulfill them. The third gap may arise when there is a high-value service that meet expected needs, but is delivered in a bad way. For example, if a delicious meal is delivered, but the delivery person is rude. The fourth gap takes place if quality service is promised, but not provided. The fifth gap would be a result of the elderly perceiving the service different from expectations.

4.2 Service design

The service design concept is a relatively young field that has evolved in the last decades. It is according to Saco and Goncalves (2008) a term for an emerging discipline. Service design's objective is to make useful, useable, desirable, efficient and effective services. Service design is a holistic approach that integrates strategic, system, process and customer interaction which is known as "touch-point" design. It is also a systematic and iterative cycle that integrates user-oriented, team-based multidisciplinary approaches and methods (Saco and Goncalves 2008). For service design practitioners, there exists four important lessons:

1. Multidisciplinary teamwork should be achieved by looking at the entire system instead of isolated. Practitioners from different disciplines should work together.
2. The prototype should encourage dialogue by being transparent to all actors.
3. It should be an open design architecture, meaning that the solution is highly adaptable over time for gradual improvement and changes.
4. Integration between functional and emotional benefits should be achieved across touch-points. It is important to understand brand strategy and knowledge of key touch-points when designing service.

A service can only be delivered after investing numerous assets, processes, people and materials (Goldstein et al. 2002). Just like products, services do also consist of hundreds of thousands of components. On the other side, service components are rarely physical. They are a mix of processes, people skills and materials that must be integrated in the right way to result in a planned or designed service. Service providers must make decisions about each component of the service (Goldstein et al. 2002). These can range from major cases

such as the senior apartment facility location, to minor decisions like what flowers to have in the hallway. Numerous decisions are made when taking a new designed service concept from the idea stage through the design phase to a deliverable service. Goldstein et al. (2002) proposes a service design planning model that is presented in figure 6.

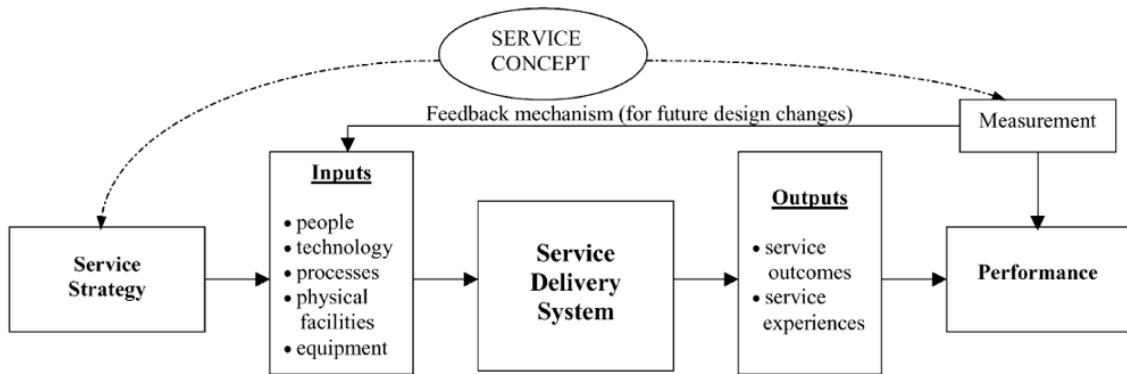


Figure 6: Service design planning model. Source: Goldstein et al. (2002)

The service concept includes the service strategy of what to deliver and how that strategy should be implemented. The implementation of the service strategy happens in the design of the service delivery system (Goldstein et al. 2002). The service strategy for service providers regards addressing their market position against competitors and the decision on what relationship they wish to pursue with their customers (Goldstein et al. 2002). For service providers in senior apartments, the market position should be “service leader”. It should also be a long-term relationship with the elderly. Something else that should be included in the service strategy is to figure out how to choose the desired service level.

When deciding what level of service to deliver in a senior apartment facility, many aspects must be taken into consideration. The elderly today search for a multiple of wellness related qualities such as the choice of dining venues, closeness to nature, design and colors that stimulate their senses (Perkins et al. 2013). They want the freedom to be social with who they want to socialize with and exercise their minds and body which increase healthy aging. There are several ways to respond to the physical challenges through the design of senior apartments and services (Perkins et al. 2013). All five senses are affected as people age, and the environment should compensate for this. Technology and design initiatives that have health in mind can help avoiding social discomfort which may lead to fear, embarrassment, depression and isolation. There is a trend for senior apartment facilities to

expand wellness, dining and recreation options as a reply to the elderly demanding a healthier lifestyle and individual choices (Perkins et al. 2013). Some of the new expectations the new generation of elderly and the market of senior apartment facilities demand, is a sustainable and green design.

Customers prefer to purchase from companies that gives the highest perception of customer delivered value (Gourdin 2006). The service provider should communicate to the elderly that the benefits they provide have a competitive advantage in terms of value in services compared to other competitors. A strategy based on added value will require a market research and segmentation. The service provider must investigate if there are market needs that meet the determined service level. The process of segmentation (Harrison, van Hoek, and Skipworth 2014) is when dividing a market into groups of customers who nearly demand the same product or services. Service providers can use it for profiling information and improve pricing activities, services and marketing. A senior apartment facility should reflect the target market's preferences and income level (Perkins et al. 2013). The local culture may have different trends than elsewhere, and a successful market research identifies what characteristics, services, unit size and common spaces that are preferred in a senior apartment facility.

The design of the service delivery system starts with the input which consists of the role of people, technology, physical facilities and equipment (Goldstein et al. 2002). The human error can affect the performance of service processes (Harrison, van Hoek, and Skipworth 2014). This counts for both the elderly and service providers in senior apartments. If the elderly have a bad day, they might perceive a well-executed service as bad, while a service provider may have a bad day and perform at a lower level than what is expected (Gourdin 2006). As the elderly have different tastes, it is crucial to know what services they value the most and are willing to pay for.

The process where a service is created and delivered results in the outputs which are the service outcomes and experienced service. The service outcomes and experienced service results in the performance. If there are gaps between what is planned and performed, these gaps can be measured and give feedback to the inputs. Measurement can improve the service concept. The performance measures for the service delivery process can vary widely. They can be financial, by looking at revenues, cost and profit. They can be

operational, by looking at number of transactions, people served and time spent on services. They can be marketing driven, by looking at customer satisfaction and perception of quality (Goldstein et al. 2002). The goals of the service concept, the elderly and service provider can help determine what performance measures that are appropriate for the service (Goldstein et al. 2002). The service provider will be affected by the performance measures, especially if there are rewards linked to the performance. It can be very complicated, as organizations with similar services manage the service delivery system very different. There is also a lack of standards to model performance measures in a service system design (Goldstein et al. 2002). Nevertheless, the service concept takes both the elderly and the service provider in consideration of performance measures. There is a need for flexibility to address important feedback for service design planning. The facility is the place where the service is provided, and will impact the experienced service.

The customer experience is a result from the service delivery process. When designing customer experience, one must first develop the experience statement (Johnston, Clark, and Shulver 2012). The critical part is to identify the emotions the service provider want their customers to feel because of service provided. There are over 300 recognizable emotions categorized into seven primary emotions which are joy, surprise, love, fear, anger, shame and sadness. A service provider should provide the emotions of feeling safe, joy, surprise and love. Customer experience takes place in the physical and informational surroundings of the service (Johnston, Clark, and Shulver 2012). This environment will affect the elderly's perception of provided service. It surrounds them 24 hours a day, 7 days a week and the level of service provided varies individually and by needs. The elderly's journey consists of interrelated services happening in a series of steps and touch points they take when experiencing the service process (Johnston, Clark, and Shulver 2012). These touch points happen when they both interact and do not interact with service providers. For example, in common areas, the maintenance provided, the social activities, dining area, transportation and physiotherapy.

4.3 Service innovation and technology

Information technology has a key role in service innovation which often results in significant changes in customer experience (Johnston, Clark, and Shulver 2012). Through managing innovation and new service development the service provider may find new

ways to access and interact with the elderly. Service innovations that are successful should have a business model that justify the expense, meet performance targets, stay ahead of competition and keep the brand relevant. This is important to stay attractive on the market in the future years.

Technology will continue to be part of key decision-making in the future and there are some factors that can help the development of service processes (Johnston, Clark, and Shulver 2012). (1) *Knowledge*. First, have knowledge about the elderly in information systems. This can ensure that service providers have relevant information about the elderly which can lead to a more professional image. Secondly, the staff must be knowledgeable about the service. Thirdly having knowledge about the elderly's use of services. Instead of just providing it, try to understand how they use it and give advice on how to more efficiently take it in use. (2) *Streamlining service*. This means that service providers can use technology to eliminate steps in the service process and reduce costs. (3) *Customizing and personalizing service*. This can be achieved by having information of buying patterns and communication with the elderly. (4) *Increasing reliability*. Technology can be used to automate routine processes. This gives immediately information about the elderly throughout the organization without errors that might occur by manually transmission. (5) *Facilitating communications and increasing customer control*. Voice and data communication systems can give many opportunities to communicate. Information systems can help the service provider respond in a way that makes the elderly feel important. This feel-good factor is essential for loyalty when there is little differentiation between services in a sector. (6) *Augmenting the service*. Technology can be used to develop the services.

Figure 7 presents a six-dimensional service innovation model (Hertog, van der Aa, and Jong 2010) and the dynamic capabilities needed to realize new service experience and solutions.

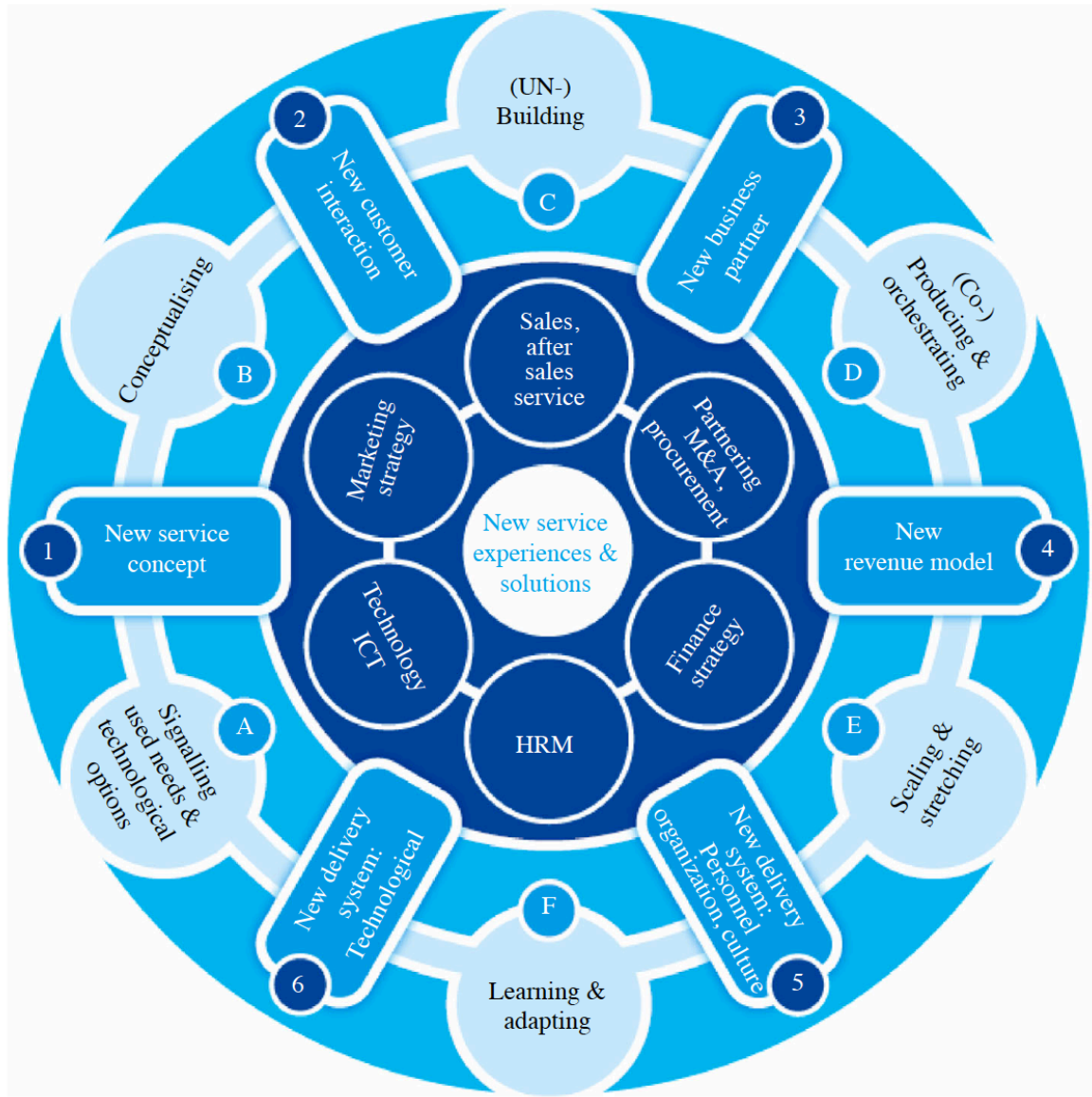


Figure 7: Six-dimensional service innovation model. Source: Hertog, van der Aa, and Jong (2010)

The creation of new service experiences and solutions is the center of the figure; this represent the main goal of service innovation (Hertog, van der Aa, and Jong 2010). The dimensions where service innovation takes place are numbered from 1-6 in the figure. They lead to new or renewed service functions for the service provider. New service functions change the service offered on the market. To realize service innovations, new various operational resources and dynamic capabilities linked to the functional management domains are required. This is the first ring of circles around the core. It includes technology and ICT (information and communication technology), marketing strategy, sales and after sales service, partnering M&A (mergers and acquisitions) and procurement, finance strategy and HRM (human resource management).

The first dimension is the service concept and involves around that innovation is a new idea of how to organize a solution to a problem or need. The second dimension is the new customer interaction which involves around the role elderly's play in the creation of value. The third dimension is new business partners, where service providers and new business partners jointly work with the new value system and produce service innovation. The fourth dimension is related to new revenue models. Not all service concepts are successful innovations, those with multiple actors should find appropriate ways to distribute costs and revenues (Hertog, van der Aa, and Jong 2010). The fifth dimension is the new delivery system that involves personnel, organization and culture. Service providers must make sure that workers perform new jobs properly, along with developing and offering innovative services. The sixth dimension is the new service delivery that involves technology. ICT have enabled numerous service innovations (Hertog, van der Aa, and Jong 2010).

The dynamic capabilities are the six circles noted from A-F in figure 7. They are service information capabilities referring to specific capabilities. These can be organizational competencies, routines and processes that are present or new to manage the process of service innovation. To realize competitive advantage and up to date service offers, service providers should combine existing and create new resources and operational capabilities (Hertog, van der Aa, and Jong 2010).

Signaling user needs and technological options (A) are important as service innovation answer to a perceived or unmet need from a customer (Hertog, van der Aa, and Jong 2010). It can also translate technological options to a service concept. The service provider should interact with potential elderly clients well in advance to have the capability to empathically understand users and their potential needs. Service providers should signal the latest technological options in their industry. This gives opportunities to adapt and innovate new ways to interact with the elderly, enrich service dialogues and offer opportunities for customized services. When conceptualizing (B), one must have in mind that service innovations are not like physical goods that can be researched, developed, prototyped and tested (Hertog, van der Aa, and Jong 2010). These intangible new ideas make it difficult for the elderly to know what to expect before they have been delivered the service and experienced it (Parasuraman, Zeithaml, and Berry 1985). Services are

characterized as interactive and as a shared process (Magnusson, Matthing, and Kristensson 2003). The customized services are an ongoing process between the service provider and the elderly (Hertog, van der Aa, and Jong 2010). Conceptualizing, designing, prototyping and testing the service innovations are expected to be less tangible and codified compared to products.

(UN-)bundling (C) involves innovation strategists and management since decisions on cooperation partners are involved (Hertog, van der Aa, and Jong 2010). There are two basic varieties. The first one is to make smart combinations where many services are available and there is a possibility to customize the service. The second one is unbundling the services and stripping these down that results in highly specialized services that are similar and can therefore be standardized to some extent. (Co-) producing and orchestrating (D) is important to put a new service concept on the market. The organization should manage service innovation across their boundaries and engage in networks.

Scaling and stretching (E) is important for an organization that wants to extend and grow. Scaling involves that it is hard to introduce on a large scale due to the intangible character of service innovations (Hertog, van der Aa, and Jong 2010). The human component and cultural dependency is very hard to standardize (Lyons, Chartman, and Joyce 2007). Stretching involves that service innovation is highly immaterial and that communication and branding is key to create a recognizable service concept (Krishnan and Hartline 2001). When the brand name is established, it can be valuable to enter new markets and stretch the core service concept. Learning and adapting (F) through reflection and lessons learned from the way service innovation is managed is key for service providers (Hertog, van der Aa, and Jong 2010). After learning, management must adapt the innovation process to continue evolving (Krishnan and Hartline 2001).

5.0 Research methodology

This chapter will explain the methodological approach used for this research and how the data was collected and analyzed. The chapter is divided into subsections, starting with the research design in section 5.1. Further section 5.2, will elaborate on the SP method and why it was chosen, section 5.3 will explain how the data was collected and how the questionnaire was developed. Section 5.4 mentions the questionnaire limitations, further data reliability and validity is presented in section 5.5 and last data analysis shows how data was analyzed in section 5.6.

5.1 Research design

The aim of this research is to investigate through a SP questionnaire, what preferences people aged 50 and above in Molde have for senior apartments with extra services. The research in this thesis is designed to answer the research questions in section 2.0. Research is described as a series of steps used to collect and analyze information that can help increase the understanding of a subject or issue (Creswell 2012). In order to be able to achieve high quality research, a thorough research design should be in place (Vogt, Gardner, and Haeffele 2012). This research has mainly used a quantitative approach in the form of a SP questionnaire, but has also collected supportive qualitative data used for the questionnaire development. According to (Creswell 2003), this can be characterized as a mixed-method approach.

5.2 Stated preference method

The SP method was chosen as it is a suitable method for studying people's preferences. SP questionnaires can be an appropriate tool when there is a need to assess consumer behavior in an area where a new product or service is introduced (Louviere and Hensher 1983). Compared to single observations from revealed preference data or standard questionnaires, each SP interview produces more observations per respondents. Additionally, it gives control over the choices offered to the respondents, which can lead to sufficient quality in the data and hence in the statistical models (Pearmain et al. 1991). SP methods consist of different approaches that presents hypothetical situations to respondents. In any given hypothetical situation, the respondents are asked to specify how they would have chosen if

the situation met them in reality (Pearmain et al. 1991). From the SP method, it was decided that the questionnaire was going to be performed as a discrete choice experiment (DCE). DCE makes it possible to provide the respondents with more realistic and simple hypothetical scenarios. However, the information obtained is more limited than other approaches within the SP method (Pearmain et al. 1991). Within a DCE there are several choice sets, whereas each contains a set of mutually exclusive hypothetical alternatives (Hoyos 2010).

5.3 Data collection

The data analyzed in this research was collected from several sources. The following section will clarify the process of how the questionnaire was developed and performed, and how the data was collected. Data collection can be divided into primary and secondary data (Creswell 2003). For the purpose of this research, primary data was collected through focus groups, in-depth interviews and a SP questionnaire. Secondary data was collected through previous research on the topic such as articles and books. This is illustrated in table 1.

Table 1: Primary and secondary data. Source: own work

	Primary	Secondary
Quantitative	Questionnaire	
Qualitative	In-depth interviews and focus group interviews	Literature review

5.3.1 Questionnaire development

Adamowicz, Louviere, and Swait (1998) describes how to develop and conduct a SP questionnaire in terms of seven steps. In this case, step seven was merged with step six as they are somewhat overlapping. The steps used to develop, perform and analyze the SP

questionnaire is presented in figure 8. These steps were mainly followed but adapted to this research. This section will describe the steps in greater detail.

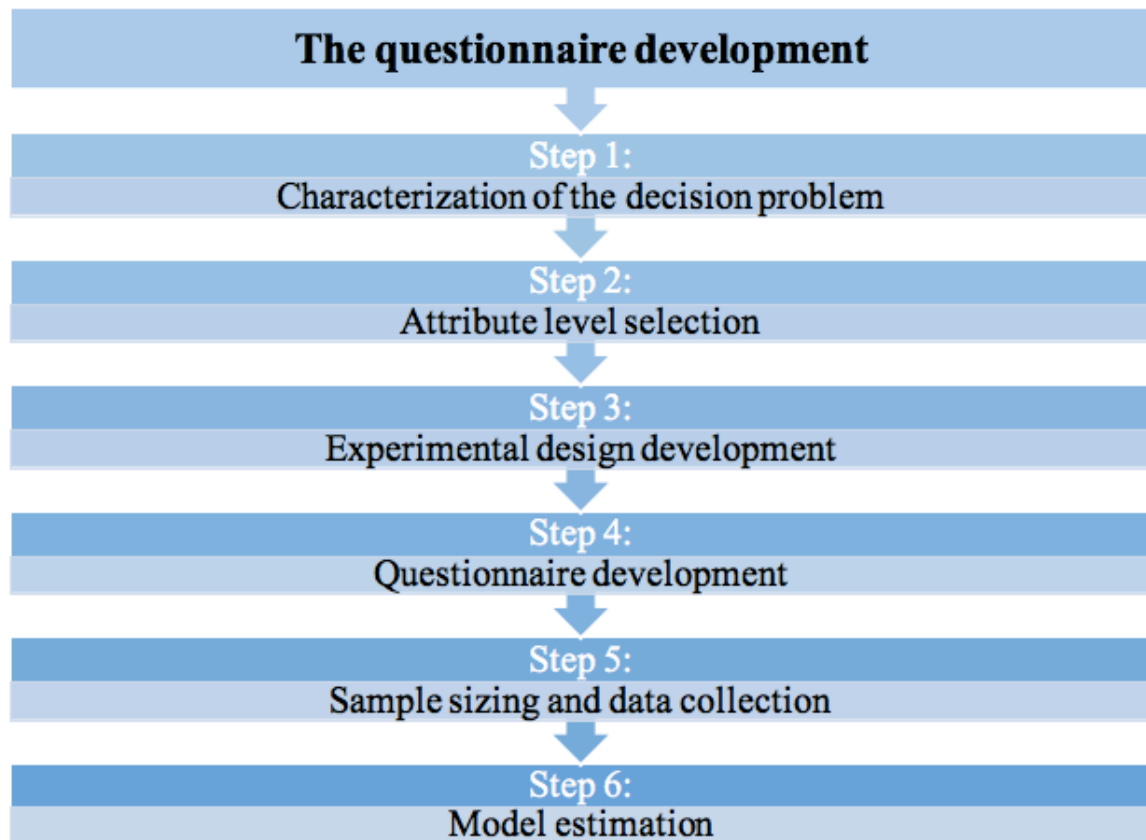


Figure 8 : The questionnaire development. Adapted from Adamowicz, Louviere, and Swait (1998)

5.3.2 Step 1: Characterization of the decision problem

In order to develop a deeper understanding of the research problem, it became necessary to collect supportive qualitative data (Adamowicz, Louviere, and Swait 1998). Supportive qualitative data was used as a preliminary study which helped obtain necessary knowledge in advance of the questionnaire development (Askheim and Grenness 2008). The supportive qualitative data was collected through in-depth interviews and focus groups.

Eight persons aged from 52 up to 79 years old participated in the in-depth interviews which had an average duration of 30 minutes each. An interview guide with six pre-determined questions formed the basis of the interview, where follow-up questions were asked if necessary. Since the respondents who participated in the interviews were

acquaintances of the interviewer, this may have had an influence on the questions and hence the answers respondents gave (Askheim and Grenness 2008). Before performing the interviews, the respondents were made aware of their rights in connection with the research project such as voluntarism to participate, anonymity and informed about the use of audio recordings (Askheim and Grenness 2008). Information obtained from the in-depth interviews helped to get a deeper understanding of what kind of alternatives, attributes and levels respondents thought was important in a senior apartment (Adamowicz, Louviere, and Swait 1998).

After having performed the in-depth interviews and explored more in depth the respondent's attitudes towards the research topic, three different focus group interviews were performed. The first group was a small group who consisted of four men aged 60-70 years old. The two last groups consisted of both men and women aged from 52-86 years old. As with the in-depth interviews, the respondents were also here informed about their rights in connection with the interview. An interview guide with eight pre-determined questions was used to perform all of the focus group interviews. Apart from the predetermined questions, there was also room for the respondents to come up with their own spontaneous views and opinions during the interview. The focus groups made it possible to explore the group dynamics, which involves how respondents interact and respond in a group (Askheim and Grenness 2008). This was valuable as new ideas and inputs from some respondents had positive effect on other respondents which generated more data.

Even though focus groups are a suitable method for acquiring information to the questionnaire, there was some limitations. Disregarded that it was very time consuming, it was easy for the conversation in the focus groups to fall outside of the research topic. At the risk of lower quality in the data material, the respondents were put back on track. After completing all the interviews, the data material was transcribed (Creswell 2012). In total, seven hours of audiotape recordings were collected. The audio recordings were played several times to ensure that the information had been interpreted as accurately as possible and that important information had not been forgotten. After transcribing the data into text, only the most important and relevant findings for the questionnaire development was taken into consideration.

5.3.3 Step 2: Attribute level selection

Based on the objectives with the study, and the qualitative information conducted in step 1, the decision fell on using four attributes for the questionnaire. The four attributes selected were the most frequently mentioned as important by the respondents. Additionally, they were relevant for the research and its purpose. Attributes are described as characteristics of a good or service, and will in this case be the characteristics of the senior apartment. The number of attributes in a DCE should be limited in order to avoid confusing respondents (Adamowicz, Louviere, and Swait 1998). The selected attributes for this research were purchase cost of the senior apartment, location of the senior apartment, square meter size of the senior apartment and service offered at the senior apartment. After the four attributes were selected, they were assigned values and levels. Table 2 shows the value and levels of the attributes.

Table 2: Attributes and levels. Source: own work

Attributes to the apartment	Attribute level
Purchase cost	2 000 000 NOK
Purchase cost	4 000 000 NOK
Purchase cost	6 000 000 NOK
Location	City center
Location	Outskirts
Location	Countryside
Square meter size	50 m2
Square meter size	80 m2
Square meter size	110 m2
Service offered	Janitor
Service offered	Cleaning
Service offered	Transportation
Service offered	Medical help
Service offered	Service room

The attribute purchase cost was originally assigned the levels 2 000 000 NOK, 3 000 000 NOK and 4 000 000 NOK but was later changed after having performed some of the interviews. This was mainly because the majority of the respondents did not seem affected by the price when choosing among the senior apartments in the DCE. As price is something that everyone has to pay attention to in the real world, it was assumed that the price range was set too low (Ngene 2012). In order to make the price range more realistic,

a thorough check of current market price in terms of new apartments in Molde was made. Based on this, the range of purchase cost was changed to the final outcome presented in table 2. Table 2 further shows that purchase cost, location and square meter size has been assigned three levels, while services offered has five levels.

5.3.4 Step 3: Experimental design development

After all the attributes and attribute levels was determined, the experimental design development took place. An experimental design describes which and how many hypothetical choice situations the respondents are faced with (Ngene 2012). When performing a DCE, several types of designs can be considered. In the DCE made for this research, a fractional factorial design was used. This design uses only a fraction of the number of choice situations that respondents are required to fulfill compared to a full factorial design (Ngene 2012).

There exist many different types of designs within a fractional factorial design and it was decided to use an efficient design. Efficient designs have the purpose of maximizing the information obtained from each choice situation, and be as efficient as possible in terms of predicted standard errors of the coefficient estimates (Ngene 2012). Table 3 shows the experimental design for the DCE used in this research.

Table 3: Experimental design. Source: own work

Design choice	h1.pc	h1.sq2	h1.loc	h1.serv	h2.pc	h2.sq	h2.loc	h2.serv	block
1	3	2	3	2	1	1	1	2	1
2	3	3	2	5	3	3	1	2	1
3	2	3	2	4	1	2	2	5	1
4	1	2	3	1	2	3	3	3	1
5	1	1	1	2	3	2	3	5	1
6	2	1	3	5	3	1	1	1	2
7	2	2	2	4	2	1	2	2	2
8	1	1	1	4	1	3	2	1	2
9	2	1	2	3	2	1	2	4	2
10	3	3	1	1	2	2	3	3	2
11	3	2	1	2	1	1	3	5	3
12	1	3	3	3	1	2	1	1	3
13	1	2	1	1	3	3	2	3	3
14	2	1	2	3	3	3	1	4	3
15	3	3	3	5	2	2	3	4	3

Each row in the table represents a choice situation. The experimental design has in total fifteen choice situations presented in blocks of three. Blocking is used so that respondents

do not need to answer fifteen different choice situations in a row. By dividing five choice situations into three blocks, the choices needed to be answered can be divided over three respondents instead of one (Ngene 2012).

In each choice situation, the respondents have to choose between two senior apartments hence h1 and h2 in the table. The apartments h1 and h2 has as mentioned four attributes. In the table, “pc” is referred to as purchase cost, “sq2” as square meters, “loc” as location and “serv” as services. The different numbers located under the apartments and their attributes, are the numbers that represents the levels of each attribute. It is the experimental design that decide what combination of the attribute levels that are presented in each choice situation.

5.3.5 Step 4: Questionnaire development

The questionnaire that was designed and developed in this research consists of four sections. The four sections include pre-interview, choice tasks, post-interview and sociodemographic. The pre-interview section includes questions that aims at retrieving information about the respondent’s current living and health situation and any current use of services (Adamowicz, Louviere, and Swait 1998).

The choice task section and hence the DCE, is the main part of the questionnaire and the section where the hypothetical choice scenarios are included. In each questionnaire, there are five choice scenarios where the respondents choose their most preferred apartment out of two options with different combinations. In this way, a deeper understanding of the trade-offs respondent’s make in the choice of apartment can be obtained.

The post-interview section includes questions that aims at finding out about the respondent’s preferences in connection with a senior apartment. In addition, two scenario questions are included. Finally, the sociodemographic section includes questions such as age, gender, marital status, income and education. The questionnaire was changed several times before the final version was finished. It was decided to design and perform the questionnaire in excel as this would make the data entering and data cleaning easier.

5.3.6 Step 5: Data collection and sample sizing

Before the actual data collection took place, the questionnaire was pilot tested. The questionnaire was pilot tested on several people from the target population. People who took the pilot test gave valuable feedback in terms of unclear or difficult questions as well as suggestions to new questions (Fink 2003). In this research, the target population are people aged 50 and above living in Molde which are referred to as elderly.

In connection with the data collection, there are no specific number of how big or small a sample size should be when performing a SP questionnaire. The required sample size depends on several factors such as the number of attributes, their levels and the design itself (Rose and Bliemer 2013). When performing the data collection, it was decided to combine the SP questionnaire with face-to-face interviews (Fink 2003). This was based on multiple reasons, but mainly on the assumption that a SP questionnaire would be unknown to many respondents. By being physically present during the interviews, the interviewer can be able to introduce and explain the purpose of the questionnaire more understandable. As it is important for the quality of the data, the SP questionnaire should be described and presented correctly. This will make it easier for the respondents to understand the technique and the context of the choices to be made. By being present during the interviews, the interviewer can acquire additional information from the respondents in the form of reflections and thoughts while answer any potential questions (Fink 2003). Due to the technical difficulties with typing the answers correctly into excel for the respondents, it was decided that this was going to be performed by the interviewer. The respondents however, were handed the questionnaire in paper format. Even though face-to-face interviews tend to have a great chance of receiving high response rates, the time and expense may come as a disadvantage (Leedy and Ormrod 2010).

A nonprobability sampling method was used when selecting the respondents for the questionnaire. This sampling method was chosen as it was convenient and appropriate for this type of questionnaire (Fink 2003). However, by using this sampling method the findings may not be applicable to the target population. Such samples may be vulnerable to selection biases as some respondents of the target population will be selected and others not. Within the nonprobability sampling it was used both convenience and snowball sampling to acquire more respondents.

The process of obtaining respondents to the questionnaire began by contacting several large companies in Molde through e-mail. Companies who were contacted was asked if they had time and available respondents in the right age group to participate in the questionnaire. As no one of the companies answered at that time, it was decided to go and knock on the employee's doors at Molde University college. After several days of knocking on the doors, it was decided to go and physically ask companies all around Molde. Seventeen companies in total was visited as well as shopping malls. In addition, three afternoons was spent on knocking on doors to residential houses.

5.3.7 Step 6: Model estimation

NLOGIT 6 was the software used for model estimation and data analysis in this research. The multinomial logit model (MNL) which was the model estimated will be further described in section 5.6.3.

5.4 Questionnaire limitations

During the data collection, some challenges occurred in connection with the layout of some questions in the questionnaire. Based on the feedback from many of the respondents, the hypothetical scenarios should have included a non-choice option in the choice task section. This would have made the choice scenarios more realistic, as some of the respondents felt obligated to make a choice between two apartments they did not want. Forcing the respondents to choose may lead to unrealistic estimates as nearly all decision contexts in the real world involve the option not to choose (Hensher, Rose, and Greene 2005). However, forcing respondents to make a choice can also provide valuable information. In this case, by not including a non-choice option, one can obtain information about the relationship different attribute levels have upon the respondent's choice.

Question 7 in the post-interview section was also somewhat challenging for the respondents to answer. This had to do with the fact that the respondents had different opinions concerning the market price of these services. In addition, some respondents just picked the cheapest option even though they could have paid more in reality. Due to the difficulties of finding the correct market price for these services, this question should have

been excluded from the questionnaire. The questionnaire is presented in appendix 1, appendix 2 and appendix 3.

5.5 Data reliability and validity

In order to evaluate the quality of the methods used, it is important to consider the validity and the reliability of the research. Validity and reliability are two terms that influence the extent to which something can be learned about the phenomenon studied, the chance of obtaining statistical significance in the data analysis, and if it is possible to draw meaningful conclusions from the data (Leedy and Ormrod 2010). One thing that may have affected the reliability in this research, could be in terms of some unclear or poorly written questions in the questionnaire. When it comes to the validity, there might be some concerns about some of the respondent's answers as they appeared to choose randomly.

5.6 Data analysis

This subsection presents how the data collected was analyzed. Data analysis can not only help in assessing patterns and inequalities in the collected data, but also describe dependence between variables (Lazar, Feng, and Hochheiser 2017). It was created dummy variables in excel to be able to count how people with different demography chose their alternatives in the questionnaire. Descriptive and graphical techniques as well as a probabilistic model has been used to analyze the data in this research.

5.6.1 Correlation test

A correlation test is used to measure the degree of linear covariance between two variables (Ubøe 2012). This test can give an understanding of how a variable influence or is related to another. When the correlation coefficient R_{XY} is close to -1 or 1, it is close to maximum covariance. R_{XY} is a number from -1 to 1 so that for all samples: $-1 \leq R_{XY} \leq 1$ (Ubøe 2012). R_{XY} is calculated as follows:

$$R_{XY} = \frac{S_{XY}}{S_X * S_Y}$$

Where S_{XY} is the sample covariance and measure the covariance between two variables. S_X and S_Y is the sample standard deviation (Ubøe 2012). The sample standard deviation is defined as:

$$S_X = \sqrt{S_X^2}$$

where S_X^2 is the sample variance to a series of observations defined as:

$$S_X^2 = \frac{1}{n-1} [(X_1 - \bar{X})^2 + \dots + (X_n - \bar{X})^2] = \frac{1}{n-1} \sum_{i=1}^n (X_i - \bar{X})^2$$

and the sample covariance S_{XY} is defined as:

$$S_{XY} = \frac{1}{n-1} [(X_1 - \bar{X})(Y_1 - \bar{Y}) + \dots + (X_n - \bar{X})(Y_n - \bar{Y})]$$

$$S_{XY} = \frac{1}{n-1} \sum_{i=1}^n (X_i - \bar{X})(Y_i - \bar{Y})$$

5.6.2 Willingness to pay

The willingness to pay (WTP) describes how much the purchase cost attribute would be required to change given a 1 unit change in an attribute such that the change in total utility would be equal to zero. The following formula was used:

$$WTP_X = -\frac{\beta_X}{\beta_{Cost}}$$

5.6.3 MNL regression

A binary or simple logit model is used when the attribute has two levels. As there were three levels to purchasing cost, square meter and location and five to the services, the MNL model was used. The MNL model is according to Adamowicz and Boxall (2001) the most commonly used choice model. It has the assumption that across alternatives and

individuals, the error term is independent and identically distributed. All random variables are mutually independent and will have the same probability distribution. It is assumed a normal distribution with degree of freedom (DF) = 1.96, the t-value is significant if $|t| \geq 1.96$ and not significant if $|t| < 1.96$. A low p-value is favorable as $p < 0.05$ indicates a significant coefficient. A Gumbel distribution for the error term belongs to the MNL model (Adamowicz, Louviere, and Swait 1998). The error term has the density function (Li et al. 2013):

$$f(\varepsilon) = e^{-\varepsilon} e^{-e^{-\varepsilon}}$$

and the cumulative distribution function:

$$f(\varepsilon) = e^{-e^{-\varepsilon}}$$

With the assumption that the deterministic component $V_{dsj} = V_{dsj}(x_{dsjk})$ of the utility function is linear-in-the-parameters and normal distributed. The probability that alternative i within choice set C is chosen was given by the MNL model:

$$P_C(i) = \frac{\exp(\lambda\beta X_i)}{\sum_{j \in C} \exp(\lambda\beta X_j)}$$

The MNL model can be derived from random utility theory (RUT) (Bierlaire 1997). MNL identity's and estimate the parameter vector β of utility. The RUT involves that consumers should try to maximize utility even though there might be a potential lack of realism in the variables for the utility function in the hypothetical market.

5.6.4 Log likelihood function

To estimate the vector of the β parameters, the maximum likelihood function can be used (Li et al. 2013). It looks as follows:

$$L(\beta) = \prod_n \prod_t \prod_j (P_{njt})^{y_{njt}},$$

where $y_{njt} = 1$ if individual n chose alternative j in choice set t , otherwise $y_{njt} = 0$. The parameter vectors from the maximum likelihood estimation should maximize the likelihood for the utility function to explain observed data. By taking the logarithms, the log-likelihood function is:

$$LL(\beta) = \sum_n \sum_t \sum_j y_{njt} \ln(P_{njt}).$$

6.0 Results

This chapter presents the results from this research. The data collection took place in the time period from February 6th to March 9th. In total 127 people were physically asked to participate in the questionnaire, whereas 102 people said yes and completed. However, two of the respondents refused to answer the question about services (Appendix 8-11). The duration of the interviews and how long it took for people to finish varied from ten minutes up to one hour. The following two sub-sections present the relevant findings from the interviews and the analysis that will help answer the research questions presented in chapter 2.0.

6.1 Descriptive statistics

Table 4 presents the sociodemographic factors.

Table 4: Sociodemographics. Source: own work

Category	Variable	n
Gender	Male	55
	Female	47
Marital status	Single	12
	Married	78
	Widow/widower	2
	Cohabitant	10
Income	< 500 000 NOK	24
	500 000 NOK - 700 000 NOK	43
	> 700 000 NOK	35
Age	50-59	54
	60-69	39
	70 +	9
Education	Primary school	3
	High school	3
	University / college	76

Table 4 shows that mainly all the respondents were married and in the younger age group with high education and relatively high income. The distribution of males (n=55) and females (n=47) are almost equal. A correlation test on the genders with respect to age

(Appendix 6) show that they are well represented in the different age groups with a very strong coefficient $R_{XY} = 0.991$. The majority of the respondents characterized their health as very good (n=42) or good (n=42), while only two respondents defined their health as bad. None of the respondents characterized their health as very bad (Appendix 6).

In table 5, the question of whether to rent or buy a senior apartment in a five years' time is presented against marital status, income, education and health.

Table 5: In five years' time. Source: own work.

Marital status	Buy	Rent	Buy later	Rent later	Neither
Single	1	0	5	1	5
Married	2	3	27	5	43
Widow/er	0	0	1	0	1
Cohabitant	0	0	8	0	2
Income					
< 500 K	0	1	12	1	10
500-700 K	2	0	17	4	20
> 700 K	1	2	12	1	21
Education					
Primary school	0	0	0	2	1
High school	1	1	11	0	10
University/college	2	2	30	4	40
Health category					
Very good	0	1	16	3	22
Good	2	0	19	2	19
OK	1	2	6	1	6
Bad	0	0	0	0	2
SUM	3	3	41	6	49

Table 5 illustrates that almost half of the sample (n=49) would not buy or rent when considering both a five years' time and in a longer time-perspective. Additionally, it was very few that would buy (n=3) and rent (n=3). The results reveal that a good representation would buy (n=41) as opposite to rent (n=6) in a five years' time.

The first scenario: "Considering your living situation; if you are or were to be alone – what would you have done?" is presented in table 6 with the alternatives "Move from Molde",

“Stay in the same residence”, “Move to a senior apartment in Molde” and “Move to a new residence”.

Table 6: Scenario 1. Source: own work

Marital status	Move from Molde	Same residence	Move to senior apartment	New residence
Single	0	12	0	0
Married	4	44	7	23
Widow/er	0	2	0	0
Cohabitant	1	3	0	6
Income				
< 500 K	0	14	2	8
500-700 K	3	25	3	12
> 700 K	2	22	2	9
Education				
Primary school	0	2	0	1
High school	0	14	1	8
University/college	5	45	6	20
Health category				
Very good	3	22	3	14
Good	0	27	3	12
OK	2	10	1	3
Bad	0	2	0	0
SUM	5	61	7	29

The table presents the scenario against the sociodemographic. Out of 102 respondents, only three would move from Molde. More than half (n=61) would stay in the same residence and the second largest group (n=29) would continue living in the same residence. Very few respondents (n=7) was interested in moving to a senior apartment. A correlation test between the gender and age towards the alternatives (Appendix 7) provided the rather high R_{XY} value of 0.91.

Table 7 presents the outcome from the second scenario: “Considering your living situation; if you or your partner got a weakened health – what would you have done?” against sociodemographic with the same alternatives as scenario 1.

Table 7: Scenario 2. Source: own work.

Marital status	Move from Molde	Same residence	Move to senior apartment	New residence
Single	0	4	6	2
Married	2	32	35	9
Widow/er	0	0	1	1
Cohabitant	1	2	4	3
Income				
< 500 K	1	7	10	6
500-700 K	2	17	19	5
> 700 K	0	14	17	4
Education				
Primary school	0	3	0	0
High school	2	8	9	4
University/college	1	27	37	11
Health category				
Very good	2	13	18	9
Good	0	15	21	6
OK	1	8	7	0
Bad	0	2	0	0
SUM	3	38	46	15

The table reveal that in this scenario, mainly the respondents would move to a senior apartment (n=46) and secondly remain in the same residence (n=38). A few would move to a new residence (n=15) and move from Molde (n=3). During the interviews, the respondents were asked to rank three services as 1 (best), 2 (second best) and 3 (third best). Table 8 presents services ranked as 1, 2 and 3.

Table 8: Services ranked as 1, 2 and 3. Source: own work.

Service	Ranked as 1	Ranked as 2	Ranked as 3	SUM
Janitor	25	23	11	59
Cleaning	48	24	11	83
Transport	1	7	15	23
Technical help	6	11	11	28
Physiotherapy	2	15	11	28
Chiropractor	2	0	4	6
Medical help	12	5	19	36
Food delivery	3	15	16	34
Other	1	0	2	3

When ranked as one, results show that cleaning was most popular (n=48), then janitor (n=25) and medical help (n=12). Transportation was the service with the least interest (n=1). Additionally, it was not much interest in chiropractor (n=2) and physiotherapy (n=2). Ranked as two, it was found that most respondents chose cleaning (n=24) and janitor (n=23). This was followed up by physiotherapy (n=15) and food delivery (n=15). Table 8 reveal a change in the most popular services when ranked as three, as medical help (n=19), food delivery (n=16) and transport (n=15) was most chosen. Nevertheless, janitor, cleaning, technical help and physiotherapy had all equal count (n=11). The count for all services ranked as 1, 2 and 3 was summed up, and together the percentages was calculated. Figure 9 presents the percentage overview of the most chosen services in total.

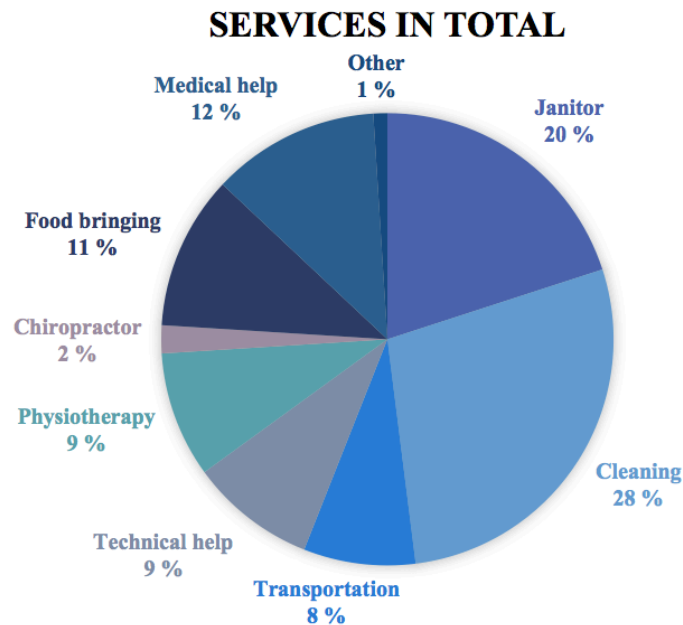


Figure 9: Percentage of chosen services in total. Source: own work.

This reveal that cleaning (28 %) was most popular, next janitor (20 %), medical help (12 %) and food bringing (11 %). It was very low interest in chiropractor (2 %).

Table 9 illustrates the count of qualities respondents liked the most with a senior apartment. They were ranked as 1, 2 and 3 here as well. Along with this, percentage of them summed up in total is presented.

Table 9: Count and percentage of qualities with a senior apartment ranked as 1, 2 and 3. Source: own work.

Quality	Ranked as 1	Ranked as 2	Ranked as 3	Total in %
View	26	13	19	19
Terrace	23	42	12	25
One floor	40	7	17	21
Garden	5	3	2	3
Close to nature	1	10	16	9
Close to grocery shop	4	23	21	16
Close to culture	3	4	14	7
Other	0	0	1	0

The most popular ranked as 1 was to have the senior apartment on one floor (n=40). This was followed up by view (n=26) and terrace (n=23). Closeness to nature (n=1) was the least popular quality ranked as 1. Terrace (n=42) almost doubled ranked as 2. It was followed up by grocery shop (n=23), while garden (n=3) was least chosen. The results show that no quality was highly more chosen than others when ranked as 3. Closeness to grocery shop (n=21) was most popular while garden (n=2) was the least popular. When summing them up, it reveals that terrace (25 %), to have the apartment on one floor (21 %) and a nice view (19 %) was most important. Garden (3 %) was the least popular.

The division of reasons for wanting to move into a senior apartment is presented in figure 10.

REASONS TO MOVE TO A SENIOR APARTMENT

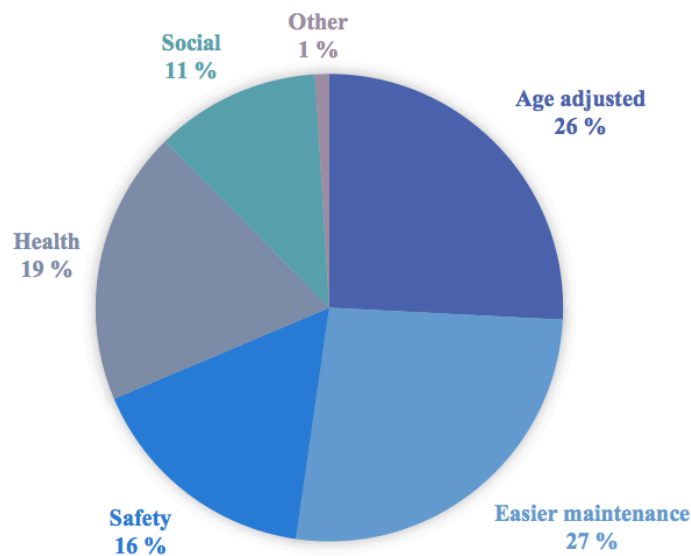


Figure 10: Reasons to move to a senior apartment. Source: own work.

Easier maintenance (27 %) was most popular closely followed by having the senior apartment age adjusted (26 %). The middlemost reasons were health (19 %) and safety (16 %), while social (11 %) was least chosen. Figure 11 illustrates a histogram with common areas and their corresponding ranking as 1, 2 and 3.

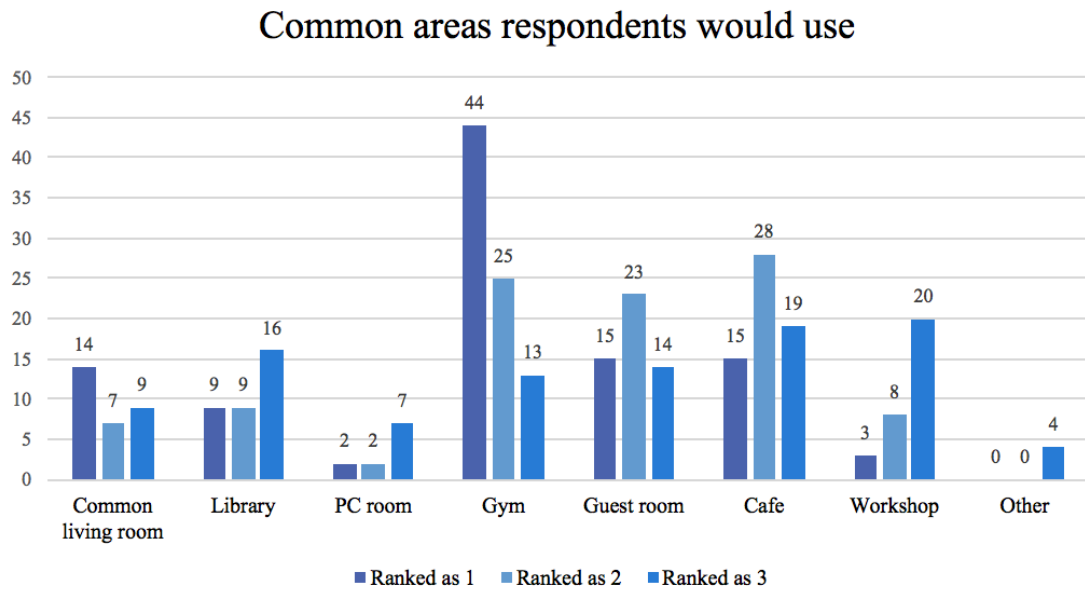


Figure 11: Common areas respondents would use ranked as 1, 2 and 3. Source: own work.

With respect to common areas, as much as 84 % of the sample would have liked to take them in use, while 10 % was not sure and 6 % was not interested. Evidently, it can be seen from the figure that gym, café and guest room was the most preferred common areas. It was little interest in a PC room. In figure 12, the social activities the respondents would like to use is presented in percentages.

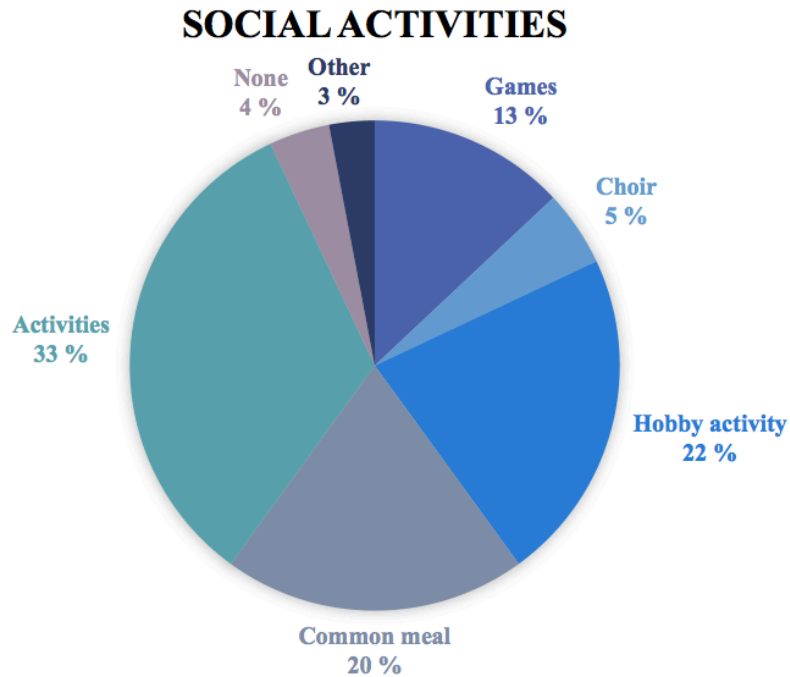


Figure 12: Social activities. Source: own work.

Most of the sample would like activities (33 %), hobby activities (20 %) and common meals (20 %). Very few chose no social activities (4 %), thus it appears that a social life is important for the sample.

6.2 Results from DCE

This sub chapter presents the results from the DCE scenarios. A log likelihood value was estimated based on the 5 choices made by the 102 respondents so that $N = 510$ and the outcome was $LL(\beta) = -287.342$. The log likelihood does not say much on its own as an index of fit in this case, nevertheless it may be used to compare the fit of different coefficients. For further research on the topic, the best model would have the properties so that $LL(\beta) > -287.342$.

Table 10: MNL regression. Source: own work.

Attribute	Coefficient	Std.Error	t	p-value	Significant	95 % C.I.	
						Lower	Upper
Purchase cost	-0,165	0,076	-2,18	0,029	Yes	-0,313	-0,017
Dimension	0,029	0,004	7,18	0	Yes	0,021	0,037
City	0,544	0,111	4,89	0	Yes	0,326	0,763
Outskirts	-0,145	0,118	-1,23	0,217	No	-0,376	0,085
Janitor	0,218	0,157	1,39	0,165	No	-0,09	0,526
Cleaning	0,029	0,161	0,18	0,858	No	-0,286	0,344
Transport	-0,155	0,16	-0,97	0,331	No	-0,468	0,158
Medical help	0,062	0,145	0,43	0,668	No	-0,222	0,347

Table 10 contains the outcomes from the MNL regression where one can find the coefficients, standard errors, t-values, p-values and the confidence intervals (C.I.). Based on this, all attributes below city were not significant, and thus the significant attributes were purchase cost, square meter and city.

As expected, purchase cost has a negative sign and the value was $\beta_{PC} = -0.165$.

Furthermore, it was expected a positive sign for the square meter coefficient. Although the estimated value did not have a very high value, the square meter coefficient was positive as follows: $\beta_{SQ} = 0.029$.

When it came to the qualitative attributes; city, outskirts and country side were in the location group. City had the value $\beta_{CI} = 0,544$ and outskirts had $\beta_O = -0,145$. Country side β_{CS} was calculated based on β_{CI} and β_O so that all the $\beta_{Location} = \beta_{CI} + \beta_O + \beta_{CS} = 0$. From this, country side was given the value $\beta_{CS} = -0.399$.

When it came to services, janitor had the value $\beta_J = 0.218$, cleaning had the value of $\beta_{CL} = 0.029$, transport had a value of $\beta_T = -0.155$, medical help had a value of $\beta_M = 0.062$. The last service which was service room β_{SR} was calculated based on $\beta_{Service} = \beta_J + \beta_{CL} + \beta_T + \beta_M + \beta_{SR} = 0$, this gave a value of $\beta_{SR} = -0.412$. Since β_{CS} and β_{SR} were the most negative coefficients, they were further excluded in the analysis.

Based on the results, only purchasing cost, square meter and city were included in the utility function presented as follows:

$$U = -0.165x_{PC} + 0.029x_{SQ} + 0.544x_{CI} + \varepsilon$$

Services was excluded from the utility function as they were not significant. Based on the MNL regression, WTP was calculated for square meter and city with respect to purchase cost as seen in the equations below. The WTP_{SQ} had the value of 0.175 and WTP_C had the value of 3.300. With respect to square meter, purchase cost was accepted to change 0.175 units for one unit change in square meter. Additionally, the respondents had a strong preference for living in the city, and was willing to change purchase cost 3.300 to live in the city.

$$WTP_{SQ} = -\frac{\beta_{SQ}}{\beta_{PC}} = -\frac{0,02885}{-0,16494} = 0.175$$

$$WTP_C = -\frac{\beta_C}{\beta_{PC}} = -\frac{0,54439}{-0,16494} = 3.300$$

7.0 Discussion

This chapter presents the discussion which is based on the background information in chapter 3, the theory presented in chapter 4 and the results in chapter 6. Based on this, the research questions will be answered. This research had the purpose to investigate what preferences people aged 50 years and above in Molde had for senior apartments with extra services. The outcome of the results indicates that the largest proportion of the sample are not interested in such apartments when considering a future five-year's time perspective or more surprisingly even at a later time perspective. This may have a close connection to that the majority of the sample were located in the younger age group and with good health (Appendix 6). Table 5 shows that only some of the respondents (n=6) would consider buying or renting in five years' time. The majority (n=49), selected the option neither, which may indicate that they have difficulty in anticipating a wish or a need for senior apartments at current time, or simply are just not interested. However, it can be nearby to assume that the choice of future housing in view of old age, can be difficult to take a position to now so suddenly, as the future is characterized by uncertainty (Kjersem and Aarseth 2009).

Based on additional information from the interviews, it was many of the respondents who expressed that they would not consider a senior apartment before their health got weakened (Baker and Prince 1991; Kjersem and Aarseth 2009). Even though it was mentioned during the interviews that senior apartments also were meant for healthy elderly, it was many who seemed to be hung up in the word "senior". It may look as many associated the word with being old and dependent on help which some respondents confirmed when they thought senior apartments were the same as nursing homes (Perkins et al. 2013). Based on the latter, it may be important for a service provider to come up with an understandable advertising campaign in their strategy. This can help express the concept as unique as well as being able to provide high benefit for future residents.

Although the interest in senior apartments with extra services is somewhat low for this particular sample, it is still reasonable to assume that there will be a greater need for more housing options for the elderly in Molde somewhere in the future. Even though the need for care burden is predicted lower for Molde than other nearby areas in the years to come, it might not turn out to be the case (SSB 2016). Based on that the care burden is calculated

on the basis of number of people over age 70 compared to those in working age, it may be natural to think that Molde has a larger proportion of younger people moving to town than other less central areas close by. This may for example be because Molde has a University college that brings more young students to the city which contributes to reducing the total percentage of care burden.

Despite of the above mentioned, there was still a high share (n=41) of the respondents who would like to buy such an apartment when considering a longer time perspective. Looking at those respondents, buying a senior apartment was much more preferred than renting which corresponds to previous research (Brevik and Schmidt 2005). This may be related to that the majority of the respondents owned their current residence (Appendix 6), and thus had a desire to continue to do so in the choice of a future senior apartment. In addition, many mentioned that they would continue to place their money into something safe as housing.

Looking at the results from table 6, most respondents would continue to live in their current homes even when picturing themselves becoming alone. This was a surprising and unexpected finding, as it was anticipated that maybe more would have chosen to move to a senior apartment with safe surroundings and supportive services if this had happened. Despite of this, many respondents mentioned that they had obtained a strong connection to their current homes, and therefore had difficulty in imagining any other option (Brevik and Schmidt 2005; Kramer and Pfaffenbach 2016). The latter can be an important factor that can affect the choice of housing. It is not unusual to assume that many connect their own homes with their own identity (Roy et al. 2018). Furthermore, there were several who justified their choice by saying that if they would become alone, they would rather use the support and help from family and children than move to a senior apartment. Even though the above mentioned was an unexpected finding, it was more surprisingly that a relatively high share (n=29) would rather move to an ordinary apartment than to a senior apartment if becoming alone. It may again seem that the word “senior” and then “apartment” might be a little intimidating on many respondents. As many gave the impression of not fully understand the concept of senior apartments and what it meant, it can be assumed that many of the answers in this research are characterized by this. However, the latter result could also be an indication that senior apartments are just not for everyone.

Comparing table 6 to table 7, respondents wanting to move to a senior apartment increased from 7 to 46 when they were asked to imagine a weakened health condition in the form of impaired functional ability. These results seem to strengthen the assumption that the health condition is an important factor for the respondents in the choice of wanting to move to a senior apartment. This assumption coincides also with previous research which has stated that the choice of housing is closely linked to the individual's health and life situation (Kjersem and Aarseth 2009). Further, the results show that 38 respondents would continue to live in their current home even when faced with a weakened health. Based on additional information obtained from the interviews, several respondents mentioned that they would rather adapt their current homes in view of future old age than move to a senior apartment. Furthermore, it was many who mentioned that they had a desire to be independent as long as possible because this was important for them. Previous research has also found that freedom and independence are two major factors for not wanting to move to an intermediate station (Kjersem and Aarseth 2009). Even though the senior apartments are meant for independent elderly, it still seems that the strong connection to current residence plays an important role. The results also seem to indicate that the respondents age and gender does not affect their choice (Appendix 7).

Looking at the results concerning services respondents would have used in a senior apartment, most would have used services like cleaning and janitor (Brevik and Schmidt 2005). Many of the respondents argued that they chose the services they preferred most based on what they would have used today. Since the respondents were presented with predetermined and standardized services, it is important to be aware that they can have different requirements and expectations for these services as well as preferring other types of services. According to the theory, it is important not to standardize services offered in a senior apartment, but rather adapt these services to individual needs which may lead to increased benefit for the individual (Davis and Manrodt 1994). A bundling strategy seems suitable, as it makes smart combinations of many available services that can be customized (Hertog, van der Aa, and Jong 2010). When it comes to the health-related services such as medical help, physiotherapy and chiropractor, these are of less importance to the respondents. This may again be explained by the sample being relatively young where most of them defined their own health as quite good. As the health condition plays a decisive role in the use of health-related services, it is natural to think that more respondents would have chosen these services if they had a need for it. This was also

confirmed by the respondents themselves, who mentioned that they would have used health-related services if the need arises in the future. The least preferred service ranked as one was transportation. This may not come as a surprise as Molde is a city with relatively short distances to everything a person may need and most of the sample are probably able to drive their own car.

For the respondents, it is important that a senior apartment is located at one floor, has view and possibilities for a terrace. In addition, it is preferred that the apartments are located close to grocery shops. Based on that many of the respondents currently were living in large detached houses, there were many who expressed concerns about possible difficulties that could arise when living in a house that had many floors as they became older. According to the theory, a senior apartment should be designed in such a way that they meet the needs of the elderly while taken into consideration that their health may deteriorate (Davis and Manrodt 1994). In view of this, it is important to develop new and innovative solutions and services that can make the elderly manage to live longer independently in their own apartment (Hertog, van der Aa, and Jong 2010). It was many of the respondents who thought that a nice view was important. Many looked at this as necessary, as they mentioned that many people living in Molde are used to and spoiled with good views. Furthermore, they mentioned that it was not unlikely that the interest in senior apartments could increase if the apartments were located in an area with a good view. This can be important characteristics to have in mind when designing a facility for senior apartments.

The main reasons for wanting to move to a senior apartment were according to the respondent's answers, easier maintenance, age adjusted and health. Easier maintenance and that the apartment was age adjusted may be related to that many respondents also chose cleaning and janitor as the most wanted services. According to the respondents themselves, it was important that the apartments was easy to keep in order, as the energy level decreases with age. The sample once again find the health condition as an important factor for wanting to move to a senior apartment, which strengthens the assumption that this sample does not want or consider a senior apartment before health is impaired. Socially was not that highly chosen in this context, however it can be assumed that this is because the above mentioned were more important in this particular question. During the interviews, the respondents gave the impression that it was important to be social and this

may also be why the majority of the respondents would have used common areas in a senior apartment. Previous research has also found that common areas are highly preferred and especially common areas where the elderly can do things with others (Brevik and Schmidt 2005). The most preferred common areas the sample would have used was gym, café and guest room. Many respondents mentioned that it was important to stay healthy and fit and were positive to a gym being part of the senior apartment complex. In addition, the respondents thought that it was a good idea that one could use common quest rooms if they were visited by children or family.

This research aimed to design a utility function in order to explain what preferences the sample had with respect to a senior apartment. Based on the utility function one could be able to capture the attractiveness of the attributes among the respondents (Adamowicz, Louviere, and Swait 1998). Looking at the results from the DCE and hence the choice scenarios, an unexpected finding was that services was not significant in the respondent's choice of a senior apartment. A possible explanation for this may be that the remaining attributes from the choice set was more important when evaluating the two apartments. As services offered at a senior apartment is a main characteristic that distinguish such an apartment from other related housing options, they were included in the choice set. However, they were excluded from the utility function as they were not significant. The remaining attributes in the utility function was therefore purchase cost, location and square meter. Purchase cost was the most significant quantitative attribute and as assumed, the results show that purchase cost affects the utility negatively. However, the cost did not seem to impact the respondent's choice as much as anticipated except from when the choice scenarios presented the square meter at the lowest level and the purchase cost at the highest level. This may be related to that the majority of the sample was highly educated and hence had a relatively high income. Nevertheless, observations made during the interviews can indicate that some respondents were influenced by the choice of an apartment being hypothetical and hence the hypothetical costs.

Among the location attributes, city which means city center was the only significant that had a positive effect. The coefficient for city indicates that there is a strong desire to live in or near the city center compared to the other location attributes. Nevertheless, it is important to point out that the different location attributes were somewhat strictly defined concerning the areas they included. Since Molde is a small city, there is only minor

differences from living in the city center compared to living in the outskirts. As anticipated, the square meter attribute was significant and the results show that it affects the utility positively. This could be explained by that most of the respondents had a strong preference to choose the apartment with the highest square meter. Based on additional information from the interviews, some argued that if they were going to move from a large detached house to an apartment, they had to have an apartment with a decent size. Previous research have also found that less spacious houses was rejected when faced with hypothetical choices (Earnhart 2002).

The results concerning WTP with respect to square meter size, shows that the respondents are willing to pay more for a larger apartment. This corresponds to what the respondents have said earlier considering the size of the apartments. The WTP also corresponds to the previous finding in the questionnaire concerning that there is a higher interest for living in the city center.

Based on the above mentioned, there has been found some preferences on the demand side which may be a starting point that can form the basis for the supply side. This along with the theoretical framework can be of great help when implementing such a service concept in Molde. As there are currently no similar living options like this, a new supplier can become a service leader with a differentiated concept like senior apartments. By imagining the pressure there might be on assisted living facilities or nursing homes in the future years, such a concept may lessen the demand for living options. Even though it may not provide advanced health care, it may lessen the elderly's chores and offer services that can help elderly become more independently and live longer at home.

8.0 Conclusion

This thesis has explored consumer preferences for senior apartments with extra services in Molde. Additionally to find out if there was an interest for it. Despite what was assumed in advance, it was found that there was no current interest in a senior apartment among the sample. Based on the small sample obtained from this research, a general conclusion can not be drawn concerning that there is no interest for senior apartments in Molde.

The results seem to indicate that the health condition is a factor that impact the choice of wanting to move to such an apartment. Another factor that may be assumed to have an affect on the choice, is the respondents strong connection to their current homes. Even though the largest proportion of the sample had no current interest, some respondents would like to move to such an apartment in the future. Based on the predicted demographical changes in the coming decades, it is believed that there will be a need for more housing options for the elderly in the future.

Even though there was a low interest, the preferences concerning services, qualities and characteristics was revealed. Based on additional information obtained during the interviews, it seemed as the respondents made their choices based on current needs. Cleaning and janitor was the most preferred services for this sample. Health related services was not important for the respondents at current time, even though health was a main factor for wanting to move to a senior apartment. Nevertheless, the sample would use it at a later point in life if the health deteriorated.

With respect to the facility, the majority of the sample was interested in common areas. Respondents would like to have common areas like gym, café and guest room. It seemed important for the sample to stay healthy and have the opportunity to have visitors. Additional information revealed that it was important for the sample to be social and participate in social activities. The most preferred activities included hiking, swimming, cinema, bowling and hobby activities.

If the respondents were going to move to a senior apartment, they would rather buy than rent. This can have a connection to that the majority of the sample owns their current homes and still want to continue to do so in the future.

An unexpected finding from the DCE in the questionnaire revealed that services were not significant. This was assumed to be because other attributes with an apartment was of higher importance for the respondents. Based on the results, it was revealed that it was more important for the sample to have a lower purchase cost, higher square meter size and to live close to the city center. With respect to willingness to pay between these attributes, it was found that the sample was willing to pay more for a higher square meter size and to live in the city.

A service provider of a senior apartment with extra services should follow the steps from the service design planning model. It is important to have the most preferred characteristics and qualities such as a one floor and age adjusted apartment. Additionally, they should have a multidisciplinary teamwork and visibility throughout the organization including the residents. From service logistics, it is known that the customer is the main focus, hence services should be customized to the residents. To stay attractive and differentiated on the market, it is important to include service innovation and continue to adapt and improve.

8.1 Limitation

Even though this thesis contributes to the literature of senior apartments with extra services in Molde, it has some limitations that can be avoided in future research. The main limitation of this work was that the collected sample size was small compared to the target population. Despite of this, interviews were thoroughly performed, additional information was obtained and typing errors was avoided. This research had mainly young and healthy respondents with high education and a relatively high income. Due to this skewed sample, those aged above 70, those who might have a weakened health, the lower income group and those with primary school education was not well represented. Nevertheless, it can be important to have the younger groups preferences as they speak for the new generation of seniors. They are more value and quality conscious along with demanding a lifestyle suitable for their individual needs when aging. Another aspect with this, is that those aged above 70 used a longer time to finish the interviews. With the limited time in mind, the sample could have turned out to be even smaller if more elderly people participated.

Further, the method used in this thesis had some limitations. First, it was an unknown method for both interviewers and mainly all the respondents. Due to this and the design of the SP questionnaire, the study was limited due to the feeling of needing to be present during interviews. On the other side, it was a suitable method for this type of research where preferences and choices were investigated. Furthermore, some respondents had at the current time problems with answering hypothetical questions about buying an apartment as this was not realistic for them. However, only a few refused to finish the questionnaire because of this issue.

8.2 Future research

There exists no current research on this topic in Molde, therefore, this pilot fills a gap that can be improved by future research. With the limited time and resources in consideration, it provides lessons learned and future directions on the topic as much more can be done in a larger scale. For example, this thesis only studied preferences on the possible consumer side, it could also be interesting to investigate how current senior living options are organized. Additionally, how residents that are currently living in senior apartments experience it and what ideas they might have for future senior apartments. Nevertheless, few elderly living options exist in Molde, in contrast to larger cities. Therefore, it can be very important to gain knowledge on elderly's housing preferences in smaller cities such as Molde, as it might result in different preferences than larger ones.

The specific target group that was aimed at provided a relative limited population, and thereby a small sample size. Despite of this, it has through work with this research been provided knowledge about what this sample prefer today. Furthermore, it has been gained knowledge about how a new questionnaire on this problem can be improved. To make the results more robust while reducing standard errors in the data, future research can increase the sample size in several means. One way is to increase resources in terms of time and people. This counts especially when applying the SP method as it can be time consuming to perform this type of interviews. By searching in the national registry for the target population, one can be sure the questionnaire is sent to the right people. Consequently, this could make the sample more random. Further research can also administer a SP questionnaire on paper to a larger group simultaneously. However, not following the respondents through the questionnaire may result in typing errors or misunderstanding of questions and importantly the concept. This accounts especially for the oldest group as

some needed assistance in understanding. Another idea is to perform the investigation through a standard questionnaire and for example, administer it per e-mail, phone or mail.

To achieve a more representative group for the research problem, the age group could have had a higher limit. For example, further research can have an age limit of 60 years and above, which could give different results and maybe a more representative group for the research problem. Interviews were mainly performed at companies in Molde, which can be a factor that affects the results. It must be mentioned that it was put an effort into reaching those aged above 70, nevertheless, the limited time caught up at the end. Further research should investigate ways to reach the even older population. For example, make appointments beforehand and find out if there are activities around in Molde where seniors get together and might have the time to answer.

This research has mainly investigated general services, and not looked at individual preferences as it could be too time consuming. In spite of this, there can be room for future research to gather more individual preferences about services. Additionally, as the SP method provided insignificant service attributes, it is recommended to look at services in isolation from other attributes. By looking at services in isolation, the most preferred services could be revealed. It could also be interesting to investigate more about the use of technology with respect to communication with service providers and improving services.

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Appendices

Appendix 1: Pre-interview

I.D.:

Pre-interview

1: How is your current living situation?
1: Detached house
2: Apartment
3: Terraced house
4: Dorm

2: Do you own or rent?
1: Own
2: Rent

3: Where do you live?
1: City center Def: Between Aker stadium, the ferry port and up to the old Molde stadium
2: Outskirts of city center Def: Between the city center and the countryside
3: In the countryside Def: East of the airport and west of Kringstad

4: How would you describe your own health at this time?
1: Very good
2: Good
3: OK
4: Bad
5: Very bad

5: How would you describe your partner's health at this time?
1: Very good
2: Good
3: OK
4: Bad
5: Very bad
6: Do not have a partner

6: Which of the following services are you currently using?

<input type="checkbox"/>	Janitor
<input type="checkbox"/>	Cleaning
<input type="checkbox"/>	Technological assistance
<input type="checkbox"/>	Physical therapist
<input type="checkbox"/>	Chiropractor
<input type="checkbox"/>	Food delivery
<input type="checkbox"/>	Medical help
<input type="checkbox"/>	None of the above
<input type="checkbox"/>	Other: <input type="text"/>

Appendix 2: Choice task (DCE)

Block 1
DC: 1

SCENARIO 1	Apartment 1	Apartment 2
Purchase cost	6 000 000	2 000 000
Square meter	80 m2	50 m2
Location	Countryside	City center
Services	Cleaning	Cleaning

Pick one:

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

Block 1
DC: 2

SCENARIO 2	Apartment 1	Apartment 2
Purchase cost	6 000 000	6 000 000
Square meter	110 m2	110 m2
Location	Outskirts	City center
Services	Service-room	Cleaning

Pick one:

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

Block 1
DC: 3

SCENARIO 3	Apartment 1	Apartment 2
Purchase cost	4 000 000	2 000 000
Square meter	110 m2	80 m2
Location	Outskirts	Outskirts
Services	Medical help	Service-room

Pick one:

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

Block 1
DC: 4

SCENARIO 4	Apartment 1	Apartment 2
Purchase cost	2 000 000	4 000 000
Square meter	80 m2	110 m2
Location	Countryside	Countryside
Services	Janitor	Transportation

Pick one:

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

Block 1
DC: 5

SCENARIO 5	Apartment 1	Apartment 2
Purchase cost	2 000 000	6 000 000
Square meter	50 m2	80 m2
Location	City center	Countryside
Services	Cleaning	Service-room

Pick one:

Block 2
DC: 6

SCENARIO 6	Apartment 1	Apartment 2
Purchase cost	4 000 000	6 000 000
Square meter	50 m2	50 m2
Location	Countryside	City center
Services	Service-room	Janitor

Pick one:

Block 2
DC: 7

SCENARIO 7	Apartment 1	Apartment 2
Purchase cost	4 000 000	4 000 000
Square meter	80 m2	50 m2
Location	Outskirts	Outskirts
Services	Medical help	Cleaning

Pick one:

Block 2
DC: 8

SCENARIO 8	Apartment 1	Apartment 2
Purchase cost	2 000 000	2 000 000
Square meter	50 m2	110 m2
Location	City center	Outskirts
Services	Medical help	Janitor

Pick one:

Block 2
DC: 9

SCENARIO 9	Apartment 1	Apartment 2
Purchase cost	4 000 000	4 000 000
Square meter	50 m2	50 m2
Location	Outskirts	Outskirts
Services	Transportation	Medical help

Pick one:

Block 2
DC: 10

SCENARIO 10	Apartment 1	Apartment 2
Purchase cost	6 000 000	4 000 000
Square meter	110 m2	80 m2
Location	City center	Countryside
Services	Janitor	Transportation

Pick one:

Block 3
DC: 11

SCENARIO 11	Apartment 1	Apartment 2
Purchase cost	6 000 000	2 000 000
Square meter	80 m2	50 m2
Location	City center	Countryside
Services	Cleaning	Service-room

Pick one:

Block 3
DC: 12

SCENARIO 12	Apartment 1	Apartment 2
Purchase cost	2 000 000	2 000 000
Square meter	110 m2	80 m2
Location	Countryside	City center
Services	Transportation	Janitor

Pick one:

Block 3

DC: 13

SCENARIO 13	Apartment 1	Apartment 2
Purchase cost	2 000 000	6 000 000
Square meter	80 m2	110 m2
Location	City center	Outskirts
Services	Janitor	Transportation

Pick one:

Block 3

DC: 14

SCENARIO 14	Apartment 1	Apartment 2
Purchase cost	4 000 000	6 000 000
Square meter	50 m2	110 m2
Location	Outskirts	City center
Services	Transportation	Medical help

Pick one:

Block 3

DC: 15

SCENARIO 15	Apartment 1	Apartment 2
Purchase cost	6 000 000	4 000 000
Square meter	110 m2	80 m2
Location	Countryside	Countryside
Services	Service- room	Medical help

Pick one:

Appendix 3: Scenario

Scenario 1

Considering your living situation; if you are or were to be alone – what would you have done?

	Pick one:
Move from Molde	
Stay in the same residence	
Move to a senior apartment with extra services in Molde	
Move to a new residence	

Scenario 2

Considering your living situation; if you or your partner got a weakened health – what would you have done?

(Weakened health means in this case impaired functional ability)

	Pick one:
Move from Molde	
Stay in the same residence	
Move to a senior apartment with extra services in Molde	
Move to a new residence	

Appendix 4: Post-interview

Post-interview

1: What are the main reasons for wanting to move in a senior apartment with extra services? (Rank 3 options from 1-3, where 1 is best)

<input type="text"/>	More adapted to old age	
<input type="text"/>	Easier maintenance	
<input type="text"/>	Safety	
<input type="text"/>	Health	
<input type="text"/>	Social	
<input type="text"/>	Other:	<input type="text"/>

2: What services would you use in a senior apartment? (Rank 3 options from 1-3, where 1 is best)

<input type="text"/>	Janitor	
<input type="text"/>	Cleaning	
<input type="text"/>	Transportation	
<input type="text"/>	Technological assistance	
<input type="text"/>	Physical therapist	
<input type="text"/>	Chiropractor	
<input type="text"/>	Food delivery	
<input type="text"/>	Medical help	
<input type="text"/>	Other:	<input type="text"/>

3: Would you have used common areas in a senior apartment?

<input type="text"/>	Yes
<input type="text"/>	No
<input type="text"/>	Do not know

4: What common areas would you have used? (Rank 3 options from 1-3, where 1 is best)

<input type="checkbox"/>	Shared living room with tea kitchen
<input type="checkbox"/>	Library
<input type="checkbox"/>	Data room
<input type="checkbox"/>	Fitness room
<input type="checkbox"/>	Guest apartment
<input type="checkbox"/>	Café
<input type="checkbox"/>	Workshop
<input type="checkbox"/>	Other: <input type="text"/>

5: What social activities would you have attended? (Choose max 3)

<input type="checkbox"/>	Game night
<input type="checkbox"/>	Choir
<input type="checkbox"/>	Hobby activities
<input type="checkbox"/>	Common meals
<input type="checkbox"/>	Activities Def: Tour group/swimming/cinema/bowling
<input type="checkbox"/>	Neither
<input type="checkbox"/>	Other: <input type="text"/>

6: What qualities do you value the most with a senior apartment? (Rank 3 options from 1-3, where 1 is the best)

<input type="checkbox"/>	View
<input type="checkbox"/>	Terrace
<input type="checkbox"/>	Apartment on one level
<input type="checkbox"/>	Garden
<input type="checkbox"/>	Proximity to nature
<input type="checkbox"/>	Proximity to grocery stores
<input type="checkbox"/>	Proximity to cultural and service facilities
<input type="checkbox"/>	Other: <input type="text"/>

7: How much are you willing to pay for a basic package containing the three services you selected in question 2?

<input type="checkbox"/>	50% of market price
<input type="checkbox"/>	70% of market price
<input type="checkbox"/>	90% of market price

8: What would you do in 5 years?

<input type="checkbox"/>	I want to buy a senior apartment
<input type="checkbox"/>	I want to rent a senior apartment
<input type="checkbox"/>	I want to buy at a later time
<input type="checkbox"/>	I want to rent at a later time
<input type="checkbox"/>	Neither

Appendix 5: Sociodemographic

Sociodemographic



1: Gender

- 1: Female
- 2: Male



2: Age

- 1: 50-59
- 2: 60-69
- 3: 70 and above



3: Marital status

- 1: Single
- 2: Married
- 3: Widow/Widower
- 4: Cohabitant



4: Gross income

- 1: Below 500 000 NOK
- 2: Between 500 000 and 700 000 NOK
- 3: Above 700 000 NOK



5: Education

- 1: Primary school
- 2: High School
- 3: College or University

Appendix 6: Pre-interview results

Current living situation

Living situation	Detached house	Apartment	Terraced house	Dorm
Count	72	17	13	0

Currently own or rent

Own/rent	Own	Rent
Count	101	1

Current living location

Location	City center	Outskirts	Countryside
Count	23	66	13

Respondents current health situation

Respondents health	Very good	Good	OK	Bad	Very bad
Count	42	42	16	2	0

Respondents partners' current health situation

Partners health	Very good	Good	OK	Bad	Very bad	No partner
Count	38	29	15	6	0	14

Currently used services

Current used services	Janitor	Cleaning	Technological assistance		
Count	5	11	0		
	Physical therapist	Chiropractor	Food delivery	Medical help	
Count	5	2	0	3	
	None of the above	Other			
Count	80	0			

Appendix 7: Analysis of gender and age in scenarios

Gender and age

Gender	50-59	60-69	70 +	SUM
Male	29	22	4	55
Female	25	17	5	47
SUM	54	39	9	102

Gender and age scenario 1

Males Age	Move from Molde	Same residence	Move to senior apartment	New residence
50-59	1	14	3	11
60-69	2	16	1	3
70+	0	4	0	0
Female Age				
50-59	2	12	1	10
60-69	0	12	1	4
70+	0	3	1	1

Gender and age scenario 2

Males Age	Move from Molde	Same residence	Move to senior apartment	New residence
50-59	2	10	13	4
60-69	0	9	12	1
70+	0	3	1	0
Female Age				
50-59	1	8	10	6
60-69	0	4	9	4
70+	0	4	1	0

Appendix 8: Services and health

Services ranked as 1 and health

Health category	Janitor	Cleaning	Transport	Technical help	Physiotherapy
Very good	6	22	1	3	1
Good	15	20	0	2	0
OK	4	5	0	1	1
Bad	0	1	0	0	0
SUM	25	48	1	6	2

Health category	Chiropractor	Medical help	Food delivery	Other
Very good	0	5	2	1
Good	1	3	1	0
OK	1	4	0	0
Bad	0	0	0	0
SUM	2	12	3	1

Services ranked as 2 and health

Health category	Janitor	Cleaning	Transport	Technical help	Physiotherapy
Very good	10	6	5	5	4
Good	11	13	2	4	6
OK	2	5	0	2	4
Bad	0	0	0	0	1
SUM	23	24	7	11	15

Health category	Chiropractor	Medical help	Food delivery	Other
Very good	0	3	8	0
Good	0	1	5	0
OK	0	4	2	0
Bad	0	1	0	0
SUM	0	5	15	0

Services ranked as 3 and health

Health category	Janitor	Cleaning	Transport	Technical help	Physiotherapy
Very good	7	3	6	4	7
Good	1	6	6	5	3
OK	3	2	3	2	1
Bad	0	0	0	0	0
SUM	11	11	15	11	11

Health category	Chiropractor	Medical help	Food delivery	Other
Very good	1	9	4	0
Good	0	9	10	2
OK	2	1	2	0
Bad	1	0	0	0
SUM	4	19	16	2

Appendix 9: Services and marital status

Services ranked as 1 and marital status

Marital	Janitor	Cleaning	Transport	Technical help	Physiotherapy
Single	1	6	0	2	0
Married	22	34	1	3	2
Widow/er	1	1	0	0	0
Cohabitant	1	7	0	1	0
SUM	25	48	1	6	2

Marital	Chiropractor	Medical help	Food delivery	Other
Single	1	1	0	0
Married	1	11	3	1
Widow/er	0	0	0	0
Cohabitant	0	0	0	0
SUM	2	12	3	1

Services ranked as 2 and marital status

Marital	Janitor	Cleaning	Transport	Technical help	Physiotherapy
Single	4	4	1	0	1
Married	14	19	5	9	13
Widow/er	0	1	0	0	0
Cohabitant	5	0	1	2	1
SUM	23	24	7	11	15

Marital	Chiropractor	Medical help	Food delivery	Other
Single	0	0	1	0
Married	0	5	12	0
Widow/er	0	0	1	0
Cohabitant	0	0	1	0
SUM	0	5	15	0

Services ranked as 3 and marital status

Marital	Janitor	Cleaning	Transport	Technical help	Physiotherapy
Single	0	1	0	1	3
Married	10	10	14	10	5
Widow/er	0	0	0	0	0
Cohabitant	1	0	1	0	3
SUM	11	11	15	11	11

Marital	Chiropractor	Medical help	Food delivery	Other
Single	0	3	3	0
Married	4	9	13	2
Widow/er	0	2	0	0
Cohabitant	0	5	0	0
SUM	4	19	16	2

Appendix 10: Services and income

Services ranked as 1 and income

Income	Janitor	Cleaning	Transport	Technical help	Physiotherapy
< 500 K	5	13	0	2	1
500 - 700 K	9	19	1	3	0
> 700 K	11	16	0	1	1
SUM	25	48	1	6	2

Income	Chiropractor	Medical help	Food delivery	Other
< 500 K	2	1	0	0
500 - 700 K	0	7	2	1
> 700 K	0	4	1	0
SUM	2	12	3	1

Services ranked as 2 and income

Income	Janitor	Cleaning	Transport	Technical help	Physiotherapy
< 500 K	8	7	1	1	6
500 - 700 K	12	8	3	6	7
> 700 K	3	9	3	4	2
SUM	23	24	7	11	15

Income	Chiropractor	Medical help	Food delivery	Other
< 500 K	0	1	0	0
500 - 700 K	0	1	5	0
> 700 K	0	3	10	0
SUM	0	5	15	0

Services ranked as 3 and income

Income	Janitor	Cleaning	Transport	Technical help	Physiotherapy
< 500 K	1	0	4	2	4
500 - 700 K	6	5	7	5	4
> 700 K	4	6	4	4	3
SUM	11	11	15	11	11

Income	Chiropractor	Medical help	Food delivery	Other
< 500 K	2	6	5	0
500 - 700 K	1	6	8	0
> 700 K	1	7	3	2
SUM	4	19	16	2

Appendix 11: Services and education

Services ranked as 1 and education

Education	Janitor	Cleaning	Transport	Technical help	Physiotherapy
Primary school	2	1	0	0	0
High school	4	14	0	0	1
University/college	19	33	1	6	1
SUM	25	48	1	6	2

Education	Chiropractor	Medical help	Food delivery	Other
Primary school	0	0	0	0
High school	2	1	0	0
University/college	0	11	3	1
SUM	2	12	3	1

Services ranked as 2 and education

Education	Janitor	Cleaning	Transport	Technical help	Physiotherapy
Primary school	0	0	1	2	0
High school	8	4	1	2	5
University/college	15	20	5	7	10
SUM	23	24	7	11	15

Education	Chiropractor	Medical help	Food delivery	Other
Primary school	0	0	0	0
High school	0	2	1	0
University/college	0	3	14	0
SUM	0	5	15	0

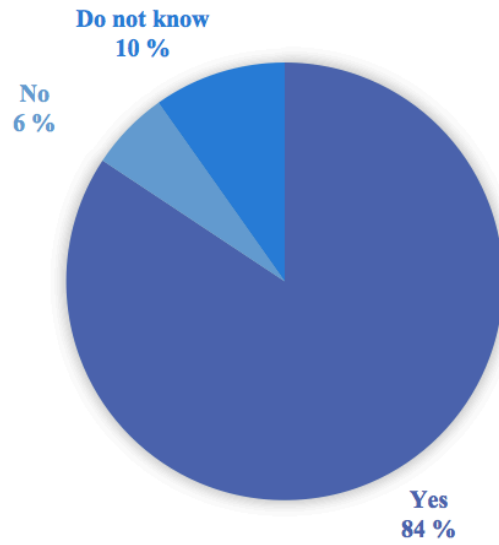
Services ranked as 3 and education

Education	Janitor	Cleaning	Transport	Technical help	Physiotherapy
Primary school	1	2	0	0	0
High school	1	2	5	2	3
University/college	9	7	10	9	8
SUM	11	11	15	11	11

Education	Chiropractor	Medical help	Food delivery	Other
Primary school	0	0	0	0
High school	0	5	5	0
University/college	4	14	11	2
SUM	4	19	16	2

Appendix 12: Extra results from the post-interview

WOULD YOU USE COMMON AREAS?



WILLING TO PAY OUT OF THE MARKET PRICE

