Bridging the grey divide of senior livelihood in Hong Kong for an age-friendly society:
an inclusive approach

Annie, HUNG Wing Yee_21005608G

The Hong Kong Polytechnic University

A Proposition for Design - Vision and Opportunity_SD5305

Professor: Dr. Jörn Bühring

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1. Introduction

1.1 Objective

The objective of this study is to explore possible approaches for senior citizens living in Hong Kong with more freedom and flexibility during the digital transformation widely covered in HK people's daily life. "*The use of telecommunication is an alternative to maintain social life and receive health information, but the limited access of internet and digital devices among the elderly, and limited digital literacy skills are the major barriers (Lau et al., 2021)*". The current digital social transformation impacted older adults' accessibility to access equality information in most essential aspects of life, which created social challenges for them to live with life satisfaction, coping strategies, self-esteem, and self-actualization moving onward. This study aims to explore ways to ease and bridge the recent social challenges of the digital divide. The goal is to shape positive aging for seniors living in Hong Kong and form an age-friendly society in the near future.

1.2 Understand the Lifestyle of HK seniors (Past decades and Now)

The number of people in Hong Kong Aged 65 or above, considers senior citizens, was estimated at 759,200 people (11% of the population) in 2000. The elderly is increased to approximately 15.7% of its population,1,322,500 people, being aged 65 or above as of 2021 (Report on Healthy Ageing Executive Summary). This means that one out of every six people in Hong Kong is a senior citizen. Hong Kong is an aging society without a doubt. So, is Hong Kong an age-friendly society?

In recent decades, seniors are more conscious of their lifestyle in terms of health and well-being management (physically and mentally). Aim at preventing and earlier management of diseases, targeting living healthier and happier for a longer life expectancy. According to an empirical study conducted in Hong Kong (Chou, Chow, & Chi, 2004), there were seven categories of leisure activities of older adults, watching the television or listening to the radio, reading newspapers, books, or magazines, socializing with relatives and friends, playing mahjong or cards, doing exercises in the morning or strolling in the park, going out for breakfast and strolling on the street or shopping. From these, found older adults concern about their leisure activities to

socialize and connect with their families, friends, and communities. Moreover, leisure activities can also serve as a means for personal development by providing access to information and helping individuals understand the external environment of society through reading newspapers and traditional broadcasts. In order to prevent social isolation, and try to be engaged in society. In order to archive active and healthy aging in Hong Kong aging society.

In the past decade, the elderly mainly focus on improving health and well-being development, they prioritize physical and mental health, to keep themselves active and try to have an independent living. The elderly would love to take amateur courses and listen to healthcare lectures regularly. These all are regarding the informational supports, that the society and communities offered to allow senior citizens to access health information in the past decade. Besides, some of them believe, in order to keep their physical and mental health more flexible by continuously working in the labor force. There are different working models, part-time workers are popular among Hong Kong's elderly labor force. In 2010, the elderly population was 915,000 people. Of these, 16.7% were part of the labor force, which means that 152,805 elderly individuals were still working. By 2019, the labor force ratio of older adults increased to 30.9%, and the elderly population also increased to 1,200,000, which means 370,800 elderly is working labor.

They value independence and autonomy, they need the capability of self-care to make their own life decision. More than just being financially independent, it includes the ability to complete daily tasks such as purchasing daily essentials, traveling independently, and socializing with loved ones. They should also be able to manage their finances and handle government services independently, and so on… Seniors also perceive the importance of social connection and engagement to get connected and get emotional support from to their loved ones in order to boost their sense of belonging, the feeling of worthiness, and a sense of security.

Therefore, there is an importance of health and social for the elderly services aimed at healthy aging, active aging, successful aging, and positive aging to achieve the goal of a sense of security, a sense of belonging, and a feeling of worthiness for the elderly. These allow the elderly to live flexibly with a sense of self-esteem in Hong Kong as an aging-friendly society.

1.3 What's been done for an aging society (in the past 5-10 years)

With the longer life expectancy, the continuously low birth rate, and the growing proportion of the elderly in Hong Kong in the recent past decade. There are some policies and societal measures to engage with, in order to help senior citizens to cope.

From a retail and grocery perspective, collaboration with the social welfare department allows elders to apply for the Senior Citizen Card (for those aged 65 or above), which entitles them to discounts or priority services offered by government departments. To purchase at a discounted price at local Barkey shops and supermarkets, like Maxim's Cake Lab, and Wellcome. Most of these services are only available during specific periods, such as non-peak hours or once a week. During the Covid period in 2020, Wellcome dished out food coupons for those in need, including seniors. The collaboration networks are highly-covered in HK 18 districts. This program provides financial assistance to elderly individuals for daily essentials and encourages them to engage with society by going out, with a sense of support and love.

From the commuting perspective, collaboration with the transportation department having the $2 scheme with JoyYouCard (for those aged 60 or above). This program allows all elderly individuals (including those with disabilities) to travel at a discounted fare of $2 per trip. Public transportation including, bus, MTR, ferry, etc. This encourages elders to be more connected to society, with a sense of belonging and social inclusion.

From the food and dining services perspective, with the Senior Citizen Card, seniors are able to enjoy meals at discounted prices at a specific period of time (mainly at non-peak hours, like tea time), likes, KFC, McDonald, Yoshinoya are part of the collaborators of the program.

From the perspective of banking services, banks offer "Age-Friendly Banking and Services" to assist the elderly with banking services. This service appoints someone who the senior trusts to act on their behalf and help manage their finances. However, it might not encourage the elders, which might not a high independency approach, with a high level of instructional support and informational support, that the seniors are not able to self-service for banking, which lack of a sense of security and self-actualization.

From a government services perspective, it is mandatory for all Hong Kong citizens to replace their old Hong Kong identity cards with a new ones. For senior citizens, the government encourages them to be accompanied by an adult over 18 years old. However, it required a high level of informational support from families and friends. The registration flow required a high

level of technology Internet of Things, citizens are needed to register online first, then go to the office with the registered mobile message. When the citizens arrived at the service center, they are required to use the self-serve kiosk, to register before the photo taking of the new smart identity card. Before the photo taking, there are at least 3 digital actions, requiring 3 digital devices. These are all devices that seniors may not be familiar with, which could result in them being unwilling to try them out. They also cannot use these behaviorally, as these are not something they expected or experienced much in their daily life. The service flow does not encourage seniors to self-service, which requires an adult to accompany them. This means that government services are not designed to encourage seniors to have a positive and powerful experience. This high level of self-service flow implementation is not only for the smart identity card replacement service. But also to other government services, such as replacing a passport and Mainland Travel Permit for Hong Kong and Macao, etc. During the pandemic period from 2019-2022, many COVID testing centers collaborated with the government and required similar digital service progress. Seniors may not have been able to keep up with these changes, called the digital divide, and therefore required lots of instructional and informational support from their families.

Seniors face a digital divide not only in government services but also in society's transformation with highly advanced technology. The Internet of Things is now involved in society's operations, which are a part of our daily lives. Impacted the retail and groceries sector, commuting, food and dining services, and banking services. Some digital applications and transformations in the communities are successful while some are failed applications that the seniors might not be able to self-service with. Here are some samples as the followings,

For successful cases in Hong Kong, the retail and grocery, as well as commuting sectors, have shown to be relatively successful transformations that elders are able to adopt. Many supermarkets and retail stores installed the self-checkout kiosk, which required all customers to do self-checkout. The senior customers needed to scan the QR code and then select the payment methods to do self-service, the self-checkout flow is similar to what they observed and experienced in the past few decades. At the initial stage of the adoption of self-checkout, there are few staffs to assist those who indeed. While for commuting services, KMB and other bus service providers, offered a mobile application, that allows everyone to track the estimated bus arrival time and journey time, etc. So that citizens are able to plan better for their time. The

application design is straight forward, requires fewer user actions, and the GPS function already provides the nearby bus station for the user to quickly select and check.

Seniors are able to use both of the functions mentioned above, self-checkout kiosk provides a sense of high familiarity, considers a behavioural emotional design, and provides emotion-memories linkage from the past experience. So that seniors feel a sense of empowerment which encourages repeated usage. And the KMB mobile application provides a sense of usability considered as reflective emotional design, which empowers usability, that increases the satisfaction and willingness of seniors to learn and adapt. All these are the beauty of emotional design that is connected to people's memories and ownership which enhances the effectiveness of using digital products and services with high satisfaction, with the practice over time, it might enhance the efficiency of the overall experience.

On the other hand, some digital services and applications have failed, and seniors may not be able to keep up with them, which can exclude them from participating in the current society in some ways. With the less labor supply in the food and dining services industry, many restaurants and Yumcha places implemented the self-order kiosk or self-order application, some included digital self-checkout. However, the elders have difficulties on access information on mobile devices, like navigation, and placing orders, as it required many user actions and the information is small on mobile devices, while many seniors (about 60% of them) have issues with sight health - presbyopia. These are not something they used to experience in their daily life. Due to the low effectiveness and efficiency, this may reduce the satisfaction to encourage them willing to learn and adapt. They would prefer someone to help.

Besides, banking services digital transformation, encourage everyone to access online banking and do financial self-services with limited in-person assistance. However, the adaptation and usage are not universal enough to allow everyone to use it. Many seniors still prefer in-person services due to the unfamiliarity and a sense of security, which reduces the satisfaction of encouraging them to adapt to society's digital transformation. As they are not familiar with the financial operations when doing self-serve financially. This may result in lower financial flexibility due to changes in banking services. This approach excludes some people from being able to access and enjoy information independently. It requires a high level of instructional and informational support from others for senior citizens.

The above-failed cases of food and dining, and banking services providers in Hong Kong that have an exclusive approach. This is concerning, as Hong Kong is an aging society. If seniors are unable to self-serve in a society that is not aging-friendly, it could potentially harm their self-esteem in the long term. Seniors are facing a digital divide that causes inequality in society, which might impact their emotional connection to society as well. *"A digital divide occurs when inequality in access to information and communication services among population groups exists."* - Yuguchi, Kiyotaka, Kidlington: Elsevier Ltd, Telecommunications policy, 2008, Vol.32 (5), p.340-348.

Therefore, considering that society is going to be more self-service and requires a high level of independent actions, everyone in society cannot be excluded in terms of equality to access the same level of information, including seniors. Thus, an inclusive approach with emotional design and a universal approach, are the key factors in encouraging seniors to adapt to the digital transformation in Hong Kong's society. *"Everything has a personality: everything sends an emotional signal. Even where this was not the intention of the designer, the people who view the website infer personalities and experience emotions."— Don Norman, Grand Old Man of User Experience.*

1.4 What's the senior's attitude changed over the past 5 years in HK?

In the past few years, seniors have been conscious of their personal health and well-being, with a desire for longer life expectancy. With the communities and government supports, like the District Elderly Community Centre (DECC) and Support Teams for the Elderly (STE). These programs and communities make it easier for seniors to access health and societal information, with the goal of promoting equality through instructional, informational, and emotional support. HK was still considered an aging-friendly society. Prior to the rapid pace of digital transformation in society, these resources were not as readily available.

According to Maslow's hierarchy of needs, from the bottom of the hierarchy upwards, the needs are physiological, safety, love and belonging, esteem, and self-actualization. Seniors living in HK in the past few years, were above love and belonging (having a sense of connection to families, friends, and society), in between esteem and self-actualization. Seniors were able to connect to family, friends, and society, and with social support from different perspectives, some might achieve in between self-esteem and self-actualization. After society's transformation involving

more technology of things with the exclusive approach, seniors started to disconnect from these. The hierarchy of needs with safety needs, which include personal security, health, and property.
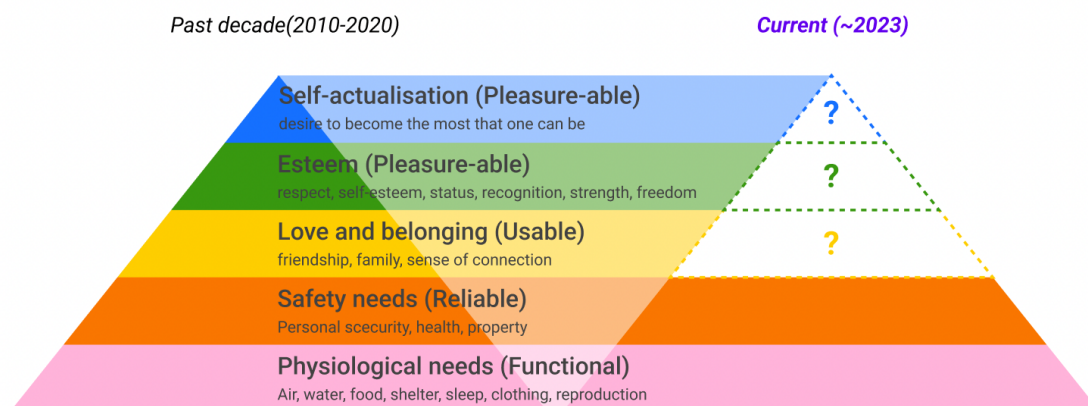
Figure 1.4.1 Current hierarchy of needs

However, most of them cannot feel a sense of belonging and are excluded from society. They were able to handle independent living, but more instructional and informational support from families and friends is needed, in order to deal with daily independent living impacted by groceries shopping, food and dining service, banking, government services, etc.

In the past ten years, older adults have been able to live independently with confidence by accessing community and social information equally. This allowed them to connect with their communities and society, which gave them self-esteem and freedom and even achieved self-actualization. However, with the rapid transformation of society, seniors are not able to self-serve in society, they live with dependency, with a higher amount of support from family and younger generations. These things decreased their self-confidence, personal liberty, and their relationships with society.

Hence, it is important to have an approach that includes everyone, uses emotional and universal design, and helps seniors adjust and live comfortably in our society that's changing quickly. This will also help them fulfill their higher needs while living in Hong Kong. The goal is to create an environment that is welcoming and safe for everyone, including older adults, where they feel valued and included in society.

1.5 Introduction to the Inclusive Approach (with emotional design)

An inclusive approach is aimed at creating a product or service that understands and enables everyone from different backgrounds, with various abilities. This means people of different ages, cultural backgrounds, genders, education, geographic, location, race, financial situations, etc, are able to access the same level of information equally.

The two key concepts from the inclusive approach are accessibility and high usability. Accessibility standards make it somewhat easier to evaluate accessibility compared to inclusive and universal design, the common example is font size, color contrast, and color mode (light mode and dark mode). While universal design aims to create a single experience that can be accessed and used by all people, while inclusive design accepts multiple design variations as long as they achieve the desired outcome. Universal design is more widely used in tangible and environmental contexts in the future ideally, while inclusive design is applied more frequently to digital product design in the nearest future.

Seniors often find websites and mobile applications to be difficult to read because they are designed with younger users in mind. In the words of one study participant: *"the internet is unfriendly to people with bad eyesight."* While with mobile device enhancement, to solve this font size issue, many of mobile software systems allow users to select different sizes of the font in order to fit in their use cases.

Emotional design can help achieve a more inclusive approach. As previously stated, the aim of emotional design is to improve effectiveness, efficiency, and satisfaction. The different elements of emotional design - visceral, behavioral, and reflective design - help to create a connection with the user through first impressions, familiarity, and emotional memories. This connection improves usability, resulting in a memorable and enjoyable experience for users, and increasing the chances of repeated usage. For example, the communication might provide diverse illustrations to delight the whole customer journey, use different skin tones, age groups, genders, and health statuses, and occupations to address diversity. So that, every user might not feel excluded from the context. Hence, increased satisfaction from an enhanced level of emotional design with familiarity elements. Seniors are more encouraged to learn and increase their effectiveness to complete the task. From time to time, with constant practices, these might increase the efficiency for seniors to do self-serve in society in different aspects of their daily,

they might live more flexibly and freely in an age-friend society. So, the hierarchy of needs for seniors might upward again backed by a higher level of achievement for self-esteem and self-actualization.

The inclusive approach should look different for different people with different needs, to look less exclusive or offensive to anyone. Learn from the diversified approach with various needs, Avoid assuming that one design can fit all. But allow the seniors and other exclusive groups of people more engaged and encouraged to learn with satisfaction, in order to enhance the effectiveness and efficiency of the goal. Once this is achieved, an universal design pattern can be introduced. However, there are steps and processes that are necessary to assist everyone in society during the transformation period with an inclusive approach, to ensure everyone can access the same information equally, independently and live flexibly in society.

2. Discover

2.1 Methodologies

Below findings are through observations and site-visit. To observe seniors' digital usage of self-serve service in different aspects of living, including groceries shopping, commuting, food and dining, banking, and government services in society.

2.2 Livelihood in seniors aged over 60 in their daily life

2.2.1 What are the impacts on the macro-level/ societal level

With the social transformation, the digital divide is occurring and impacting seniors' daily life. The findings are the situations and impacts of digital applications. "Prior gerontechnological research has suggested a clustering of attitudes and uses of ICTs among older adults, providing hints at the user types. Studies have indicated that older adults have diverse motivations and reasonings for using ICTs including fun, usability, and usefulness (McMellon & Schiffman, 2002; Melenhorst, Rogers, & Bouwhuis, 2006)." In the past decades, technology is for fun and entertainment, more on social connections. However time forward to now, technology have a great impact on social inclusion and influences their daily living.

By observing seniors' use in the following five aspects: retail and groceries shopping, commuting and mobility/transportation, food and dining services, bank services, and government services. The difference between the function of digital applications compared with the past experience, and their usage are listed below.
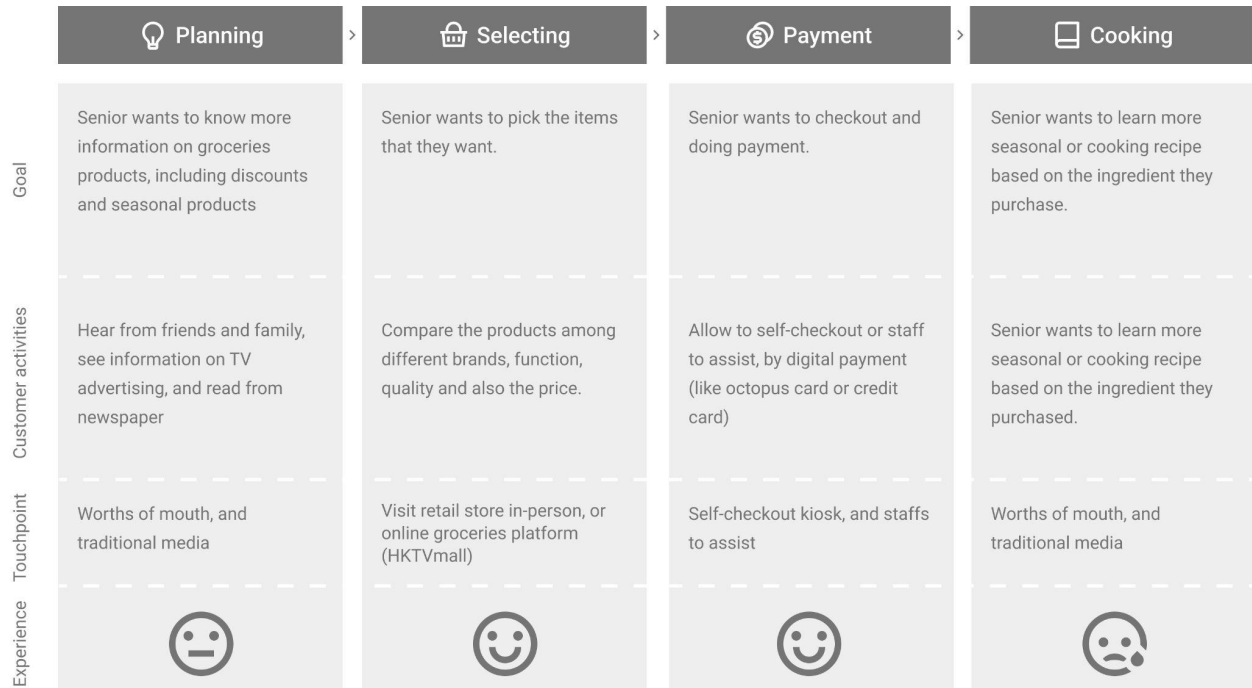
Planning	Selecting	Payment	Cooking
Goal			
Senior wants to know more information on groceries products, including discounts and seasonal products	Senior wants to pick the items that they want.	Senior wants to checkout and doing payment.	Senior wants to learn more seasonal or cooking recipe based on the ingredient they purchase.
Customer activities			
Hear from friends and family, see information on TV advertising, and read from newspaper	Compare the products among different brands, function, quality and also the price.	Allow to self-checkout or staff to assist, by digital payment (like octopus card or credit card)	Senior wants to learn more seasonal or cooking recipe based on the ingredient they purchased.
Touchpoint			
Worths of mouth, and traditional media	Visit retail store in-person, or online groceries platform (HKTVmall)	Self-checkout kiosk, and staffs to assist	Worths of mouth, and traditional media
Experience			
😐	🙂	🙂	🙁

Figure 2.2.1.1 Existing senior's retail and groceries shopping journey

From retail and groceries shopping aspects, take the significant supermarket, like Wellcome and Yata's services transformation as an example. All customers are encouraged to do self-checkout with alternatives of in-person staff to operate with the traditional checkout process. From the observation, the self-service customers are from diverse age groups, mainly seniors are able to do self-serve checkout confidently and smoothly. The functionality of digital service transformation of self-serve of groceries shopping is similar to the traditional checkout flow, which means, both traditional and new digital checkout devices are doing the same function to check out and have a similar user journey. For example, it requires the user to scan the barcode on the package of the groceries product, and it requires the user to choose a payment method for payment checkout. With the familiarity in appearance to the traditional checkout, the past experience that staff from supermarket operated for seniors. Allow them easier to adapt to the smart service of digital checkout independently with a low level of assistance. Some might need instructional support at the initial stage, but with the experience learned, they are more confident to use the checkout device and do it more effectively and efficiently. Moreover, the digital checkout device screen is big enough, so that seniors might find it more easily and accessible even if they have minor sight issues. So, seniors are able to adapt to the digital self-serve in terms of retail and groceries shopping aspect, due to the familiarity

and a larger screen might be a more effective device, to reduce seniors' anxiety and worries, and this is favorable to bring seniors into the digital era.

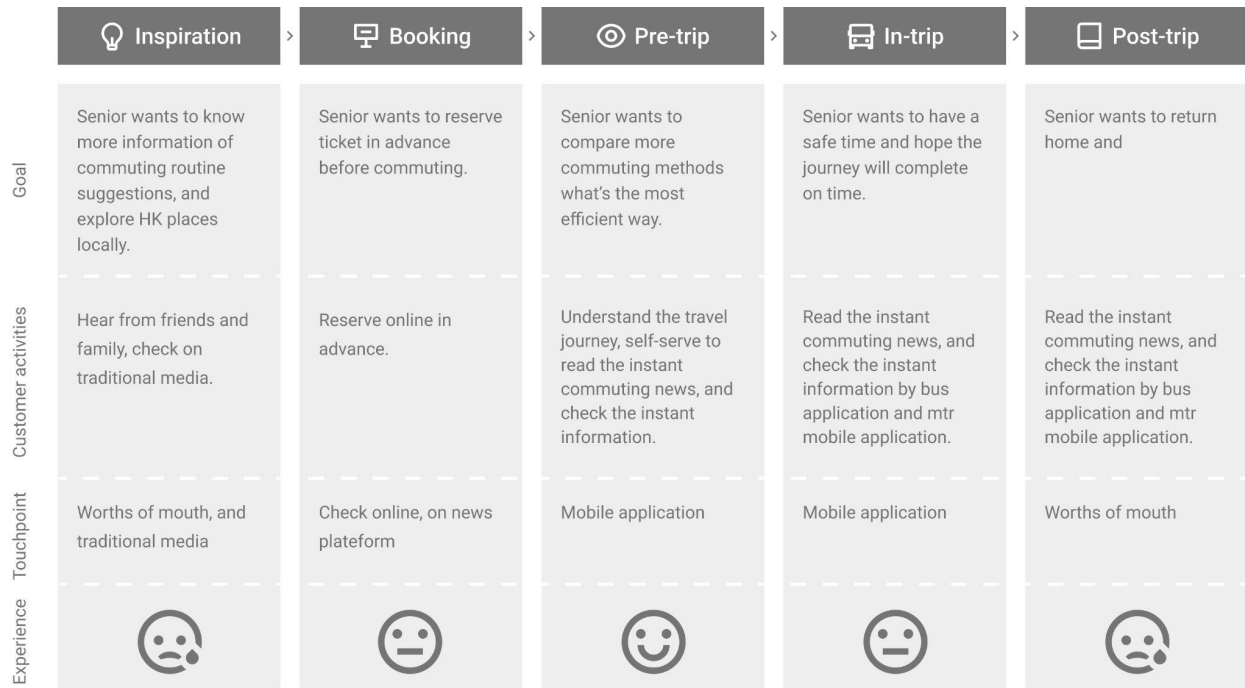|	Inspiration	Booking	Pre-trip	In-trip	Post-trip
Goal	Senior wants to know more information of commuting routine suggestions, and explore HK places locally.	Senior wants to reserve ticket in advance before commuting.	Senior wants to compare more commuting methods what's the most efficient way.	Senior wants to have a safe time and hope the journey will complete on time.	Senior wants to return home and
Customer activities	Hear from friends and family, check on traditional media.	Reserve online in advance.	Understand the travel journey, self-serve to read the instant commuting news, and check the instant information.	Read the instant commuting news, and check the instant information by bus application and mtr mobile application.	Read the instant commuting news, and check the instant information by bus application and mtr mobile application.
Touchpoint	Worths of mouth, and traditional media	Check online, on news plateform	Mobile application	Mobile application	Worths of mouth
Experience	😞	😐	🙂	😐	😞

Figure 2.2.1.2 Existing senior's commuting journey

To optimize commuting and transportation in society, there are more applications that allow users to see transparent information on the Internet anytime, anywhere. Consider using MTR and public bus services as an example. This can help you make the most of your time and better plan your outings. Nowadays, many Hong Kong residents check the estimated arrival time and travel time for buses using a mobile application before leaving their homes. And some might check the estimated travel journey time compare to the MTR mobile application, to show which commuting methods are more suitable for that particular time. By observing the senior's daily usage, they are more willing to use the KMB mobile application, compared to the MTR mobile application. Since the KMB mobile application is simple, single usage, and the font size is more accessible for seniors, which is easy to use to understand. To make it easier to check the bus arrival time with the nearby bus stations shown on top with the GPS function, users should be able to access it easily and independently while waiting in line. While the MTR mobile application, has a smaller and more subtle designer, youths also need to drag and enlarge to

point to the right station for the next actions on the screen. Compared to the KMB bus application, MTR mobile application required more actions and more time to process and access the information. Although the information and function may be new to seniors, they are willing to use and adapt to them in their daily lives with satisfaction and effectiveness. Therefore, seniors are encouraged and feel more confident when completing tasks on the mobile screen with fewer and simpler actions, which is more usable for seniors. With the new function and usable digital service by KMB, it enhances the living of seniors to allow them to be more accessible and connected to society, which is an emotional design with an inclusive approach to allow everyone in the society to enjoy the service equally.
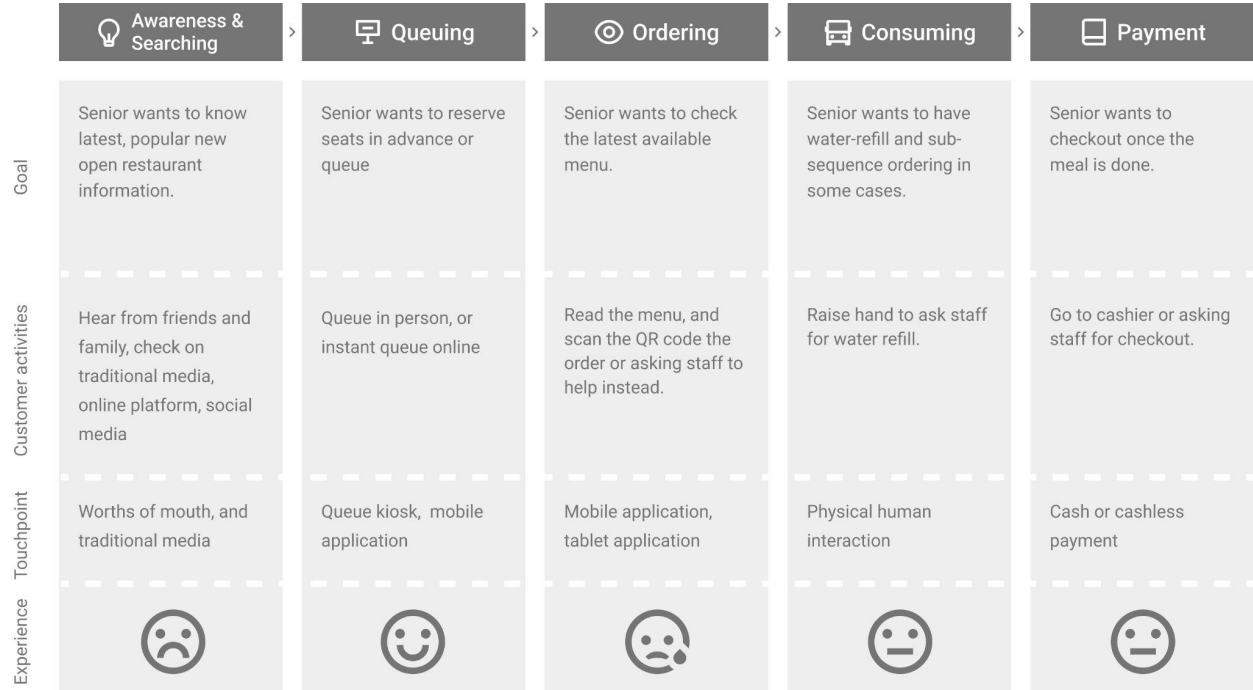
	Awareness & Searching	Queuing	Ordering	Consuming	Payment
Goal	Senior wants to know latest, popular new open restaurant information.	Senior wants to reserve seats in advance or queue	Senior wants to check the latest available menu.	Senior wants to have water-refill and sub-sequence ordering in some cases.	Senior wants to checkout once the meal is done.
Customer activities	Hear from friends and family, check on traditional media, online platform, social media	Queue in person, or instant queue online	Read the menu, and scan the QR code the order or asking staff to help instead.	Raise hand to ask staff for water refill.	Go to cashier or asking staff for checkout.
Touchpoint	Worths of mouth, and traditional media	Queue kiosk, mobile application	Mobile application, tablet application	Physical human interaction	Cash or cashless payment
Experience	☹	☺	😢	😐	😐

Figure 2.2.1.3 Existing senior's food and dining journey

To fix the shortage and best use of people, many local and chain cafes and restaurants started to implement digital queuing and food ordering systems to leverage the services. There is a popular food and restaurant guide digital application to review the restaurant and also allow customers to One of the popular digital instant queueing mobile application in Hong Kong is called "The Gulu", has a function of the instant queue for restaurant, and require fewer actions to queue, basically input the number of seats and click confirm to process. Compare to the

traditional way of queueing, users are required to inform the staff of how many diners to sit in. Seniors are familiar with this function of digital queue service before dine-in, they are effectively and efficiently done this task independently. Seniors are accustomed to using digital queue services prior to dining in and are able to complete this task independently and efficiently. When going to the ordering step, there are different levels of adoption of digital services. Take Yum Cha Place - ChoiFookent, as an example, it adopted the digital services in a large context to offer to the diners. In the past decades, customers were required to check the dim sum paper to order the food, then ask for assistance from staff to input into the system. ChoiFookent implemented digital ordering in the past 4-5 years, while the new digital ordering was not popularizing, so the yum cha place canceled the digital service back in 2018-2019. In April and May of 2023, ChoiFookent set up a mobile ordering system that required all users to use it instead of dim sum paper. Customers have the option to purchase paper for HKD2 if they are not willing to use digital ordering through the mobile application. This new ordering service causes social noise in a negative way. Yum Cha is a regular daily activity for Hong Kong Seniors. While they are not tech-savage in any of the digital devices and kiosks, given a mandatory shift to digital ordering. This resulted in many negative voices, then ChoiFookent back to dim sum paper ordering as the main ordering method for diners, with an alternative to mobile ordering service. While the majority are senior diners of yum cha place, they are not comfortable with no alternative and sharp cut on the paper order as they experience for decades before. Even though the function is the same, the experience is totally different, in the way that they explore the menu, access, and navigate the menu, and then order at the end. These are not seniors familiar with, the service they expected before. The seniors (the primary target audience), cannot enjoy equity as others and difficult accessing the information they had in the past. Seniors users are required to access the mobile application on smaller screens and require more effort to navigate the menu and make actions. Older adults are not very interested in using digital ordering systems. This is because the self-ordering mobile system is exclusive and not accessible to seniors who cannot access the same level of information independently and equally. However, the instant queuing kiosk offers a larger device and fewer actions, making it more effective for daily use. Seniors are also more willing to try it and confident in using it.

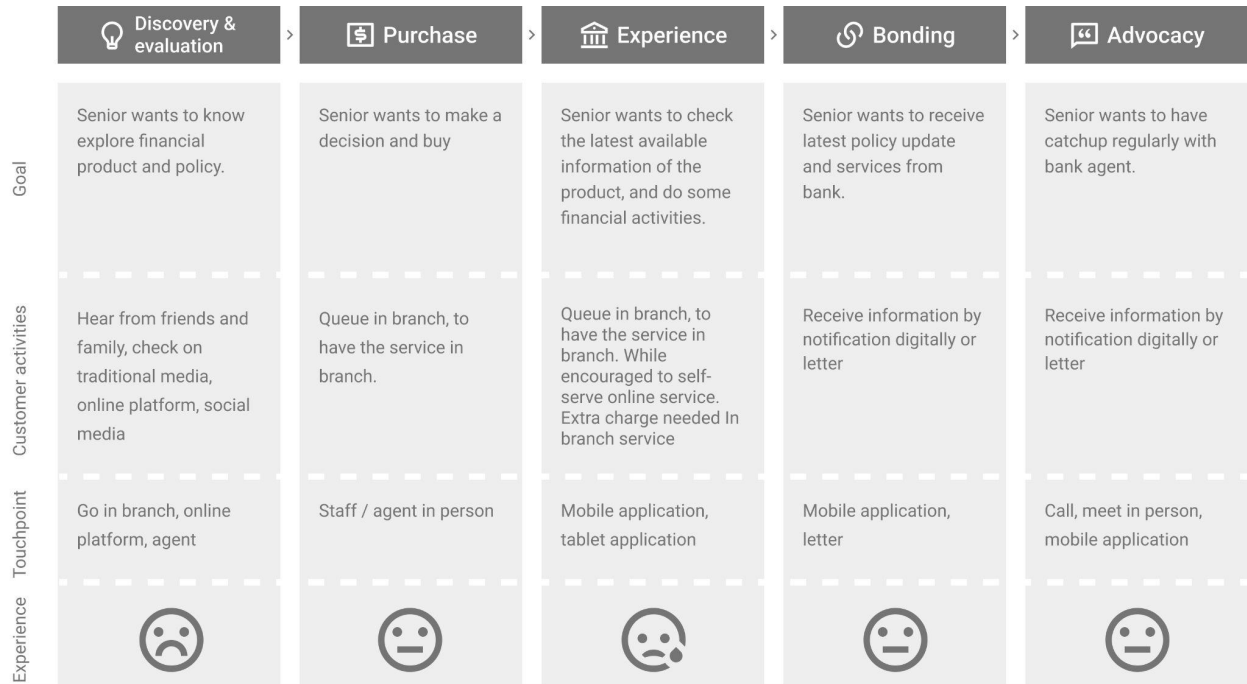| Discovery & evaluation	Purchase	Experience	Bonding	Advocacy
Goal				
Senior wants to know explore financial product and policy.	Senior wants to make a decision and buy	Senior wants to check the latest available information of the product, and do some financial activities.	Senior wants to receive latest policy update and services from bank.	Senior wants to have catchup regularly with bank agent.
Customer activities				
Hear from friends and family, check on traditional media, online platform, social media	Queue in branch, to have the service in branch.	Queue in branch, to have the service in branch. While encouraged to self-serve online service. Extra charge needed In branch service	Receive information by notification digitally or letter	Receive information by notification digitally or letter
Touchpoint				
Go in branch, online platform, agent	Staff / agent in person	Mobile application, tablet application	Mobile application, letter	Call, meet in person, mobile application
Experience				
☹	😐	😟	😐	😐

Figure 2.2.1.4 Existing senior's banking journey

From the banking aspect, with the high-performance self-serve finance services and platform usage, in terms of speed. Similar to the digital service of food and dining ordering mobile system. Most of the financial service systems are supported on a mobile device, while the accessibility and navigation are complex for seniors. Specifically, there are many instant pop-up messages and steps to remind the instant change of the financial statistics. Seniors might find anxiety and worries and are not confident to use the self-serve service by digital means. This unfamiliarity might be a blocker for seniors to be independently using self-serve banking services. While using the ATM machine seniors are able to use it independently most of the time, the simple interface and minimal numeric keyboard are straightforward to users and is used for decades. The ATM baking services are enhanced with the QR code linked to the account and provide traditional usage, which is still an inclusive approach that allows everyone to use it based on their needs with alternatives and options for different kinds of users.
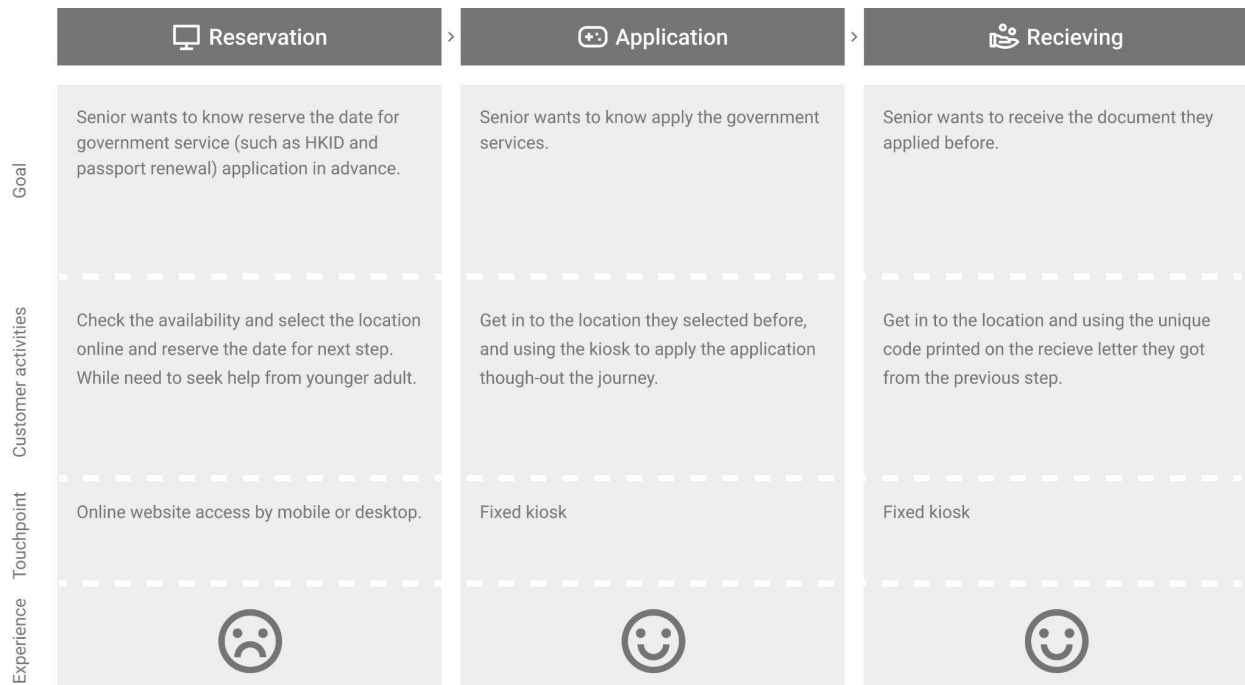
	Reservation	Application	Recieving
Goal	Senior wants to know reserve the date for government service (such as HKID and passport renewal) application in advance.	Senior wants to know apply the government services.	Senior wants to receive the document they applied before.
Customer activities	Check the availability and select the location online and reserve the date for next step. While need to seek help from younger adult.	Get in to the location they selected before, and using the kiosk to apply the application though-out the journey.	Get in to the location and using the unique code printed on the recieve letter they got from the previous step.
Touchpoint	Online website access by mobile or desktop.	Fixed kiosk	Fixed kiosk
Experience	☹	☺	☺

Figure 2.2.1.5 Existing senior's government services journey

The same thing occurred with government services nowadays in Hong Kong. With technology support, many procedures have been sped up and become more productive. For example, the whole service journey of appointment, application, and receiving of identity cards, Mainland Travel Permits, and passports, all are highly covered and mainly require self-service with minimal assistance from the staff. Citizens are not accepted to walk in, they have to make an appointment online ahead. Appointments usually occur on the website, the whole process includes at least 5 steps from inputting personal and details information, selection of date and venue, and also review and confirmation. At this appointment stage, the bulky information will overload the users. Especially, the font is small and they are not familiar with the computer usage when dealing with essential tasks online. Thus, most of the time, seniors need to seek help from younger family members and friends. At the applications and receiving stage, most of the time require citizens to use the kiosk machine to do self-service the procedure. While the function and usage is similar to the ATM machine with a simple and straightforward screen and interaction, with some simple button and a physical keyboard. This similarity brings up familiarity to users, even seniors users who use it for the first time, they are willing to handle it with minimal assistance from family and staff. However, as this is the first time seniors use the machine, they prefer someone they trust to accompany with and provide informational and

emotional support. However, government services still consider an exclusive approach to seniors in a large context, in which seniors are not able to complete the tasks and services independently.

In addition, besides of above daily aspects, seniors also can easily adapt to digital services in other ways in daily living. For instance, using smart TVs to watch online broadcasts from Netflix and DisneyPlus. The device's familiarity enables a direct connection to the popular streaming service Netflix. Its usage is similar and familiar to traditional TV, using the remote to control and switch programs. This allows seniors to browse the smart TV on Netflix and DisneyPlus confidently. Seniors can use the call function on their smartphones without any instruction or support because they are familiar with the visuals and functions. Thus, familiarity usage, larger screen size, and easy navigation (with fewer actions/ control) are the essential elements to encourage seniors to enter the digital era and to bridge the digital divide brought by the self-serve society transformation. From this successful case, found seniors are tend to be more confident in controlling bigger screen smart device, for example, self-checkout kiosk and SmartTV together with pyhysical remote control panel, having direct and clean shortcut buttons.

In short, seniors cannot escape from digital services which are covered in their daily life in all perspectives, from retail and grocery shopping to commuting to banks and government services. However, not all digital services allow seniors to have equal access to information, which creates a digital divide that limits flexibility in their daily life. These affect the hierarchy of needs, satisfaction, and connection of senior citizens to society. On the other hand, Hong Kong is turning into an age-unfriendly society, which means older adults may not be able to live independently.

From the above, seniors can easily use digital devices and services because they are already familiar with their functions compared to traditional methods. This emotion-memories linkage design can increase users' confidence and willingness when trying to use digital products and services in daily life. At the same time, the larger screen size also provides better accessibility to seniors which encourages them to explore the content. On the other hand, the small screen size with small text might be a challenge for seniors to access the information. This limited the actions and willingness that seniors' willingness to try to enter the digital era, which they cannot escape from society right now.

2.2.2 What are the impacts on the micro-level (family level)

Since seniors are not able to access information independently, different from before, they need to seek support (both instructional and informational support) from others, mainly from family and friends.

"Instrumental support could be defined as kinds of services, behaviors and other non-material forms of support to directly help the person in need. Instrumental support once has been served via the provision of material, financial assistance, suggestions and clarifying issues" - (Vaux, 1988). "Informational support means providing useful information which could be applied to solve problems. In contrast to instrumental support, information here is not of itself help, but helps people to cope with problems themselves" - (House, 1981). Informational support always acts as a medium to provide assistance and guidance to persons, such as necessary knowledge and skills to resolve various stressful situations" - (Cresci, 2001).

In the daily life of seniors, they started to seek help from family and friends from all the digital changeling they facing mentioned above. For example, if they need any advanced commuting routine out of the KMB bus mobile application, they might seek help from youth to search for an easier routine for them. Seniors are unable to go to restaurants or yum cha places that only offer digital ordering services, either alone or with friends, for their food and dining as a social activities connection. As they are not comfortable and emotionally connected to the services, they are not willing to go, they rather go to the traditional ordering restaurant instead. If they are interested to go to a restaurant that implemented digital ordering, like NOC cafe or Sushiro, they will need youth or young family members to accompany with. For the banking services aspect, most of the time they will go to the traditional banking services like using the ATM machine or in-line queueing for the in-person services. All this requires seniors to go to the branch physically. But they might feel a sense of security in doing this. If there is online payment or online shopping, they will seek helps from youth instead, even if they do have an individual credit card for payment. As they are not familiar with the online payment flow, with many steps and most of the products and services contain two-factor authentication(2FA). At last, for government services, seniors are not able to do most of the online reservations, at this stage they require lots of support from the youth. While going to the application and receiving stages, they still need some emotional support and accompany as they are not familiar with the digitalized procedures, which causes a sense of being unsecured, and a lack of ownership.

Seniors today require more support than in the past decade to cope with the fast-paced and digital transformation of society. This includes emotional, instructional, and informational support in various aspects of their lives, such as in the products and services they use on a daily basis. Therefore, the primary family members, like spouses, adult children, and friends in providing emotional and instrumental support for the digital era, they play an important role to provide guidance, and assistance to seniors, and they helped older adults to cope with the problems for living in the age-unfriendly society.

"As projected by the HKSAR government, the percentage of older people aged 65 or above will reach 36% of the population by 2064 (Census and Statistics Department, 2015)……These changes mean a rise in diversified family forms including single-families, split families, childless families and so forth, indicating a future rise in a pool of population living alone with lack of support from informal caregivers…" - Eliza L.Y. Wong, Janice Y.C. Lau & Eng-Kiong Yeoh (2018) Thinking intergenerationally: intergenerational solidarity, health and active aging in Hong Kong, Journal of Intergenerational Relationships). With reducing instructional and informational support for aging elders, an inclusive approach is crucial to develop and moving toward to age-friendly society.

3. Define

3.1 Why the digital services offer to seniors failed?

Findings show that the main reasons for the failure of digital transformation in society are the lack of an inclusive approach and the inability of individuals to serve themselves. Factors such as unfamiliarity with technology, small screen sizes due to physical limitations, and new functions contribute to these challenges. Senior citizens face additional challenges due to their lack of confidence and willingness to try new things, which discourages them from adapting to the digital society.

3.2 Problem statements

Deterioration in physical health, lack of financial support, sense of loneliness and social exclusion were often associated with depressive symptoms among Hong Kong elderly people (Hung et al., 2016; Kwong et al., 2020; Lee & Chou, 2019; Sau Po Centre on Ageing, 2019). On top of these, local seniors in Hong Kong may struggle to adapt to the self-serve society transformation due to difficulties with using digital products and services in all perspectives in their daily life, like food and dining services, banking, and government services. There are many exclusive approaches in society, which are without emotional linkage. The usage of digital applications limits individuals' ability to access equal information as others, leading to reduced self-esteem and self-actualization. As a result, reduced their independence in dealing with essential daily tasks compared to the past. Lower satisfaction can impact a person's willingness and attitude to try, which subsequently affects the effectiveness and efficiency of practices in their life, which caused to a negative coping strategy.
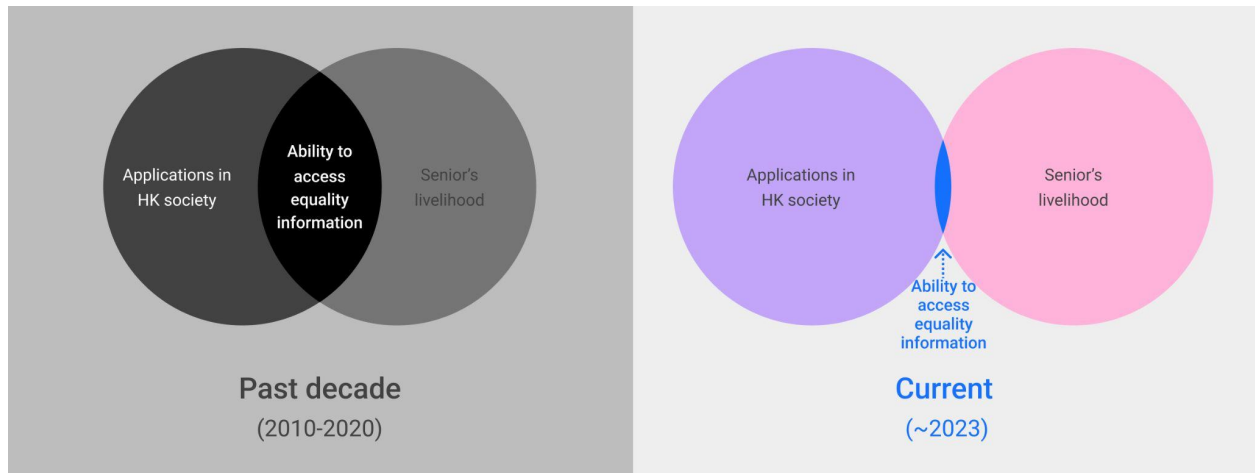
Figure 3.1 Grey divide happening in the HK society

At the same time, the above may not be easy for seniors to learn and adapt to if the exclusive approach without any familiarity, low accessibility, and memories-emotional linkage, hence requiring them to seek emotional, informational, and instructional support from family and friends. These make their life more dependent on others, which reduced their coping strategy and ability, and negatively impacts their quality of life when they age.

"The findings of the pilot study revealed that senior citizens usually adopted several kinds of coping styles if they felt stressed. Generally, coping strategies such as talking with others, asking for others' suggestions, participating in leisure activities, accepting the reality and comforting themselves were most frequently used. Specifically, in light of the empirical studies, it was reported that a series of negative coping strategies (e.g., escape-avoidance, distancing) were proportionally more frequently used among older adults (Folkman, Lazarus, Pimley, & Novacek, 1987)" - Social Support Networks, Coping, and Positive Aging Among the Community-Dwelling Elderly in Hong Kong*.* Hong Kong is starting to turn into an age-unfriendly society, without a transition period to help seniors step into the digital era self-serve society step by step, that everyone cannot escape from.
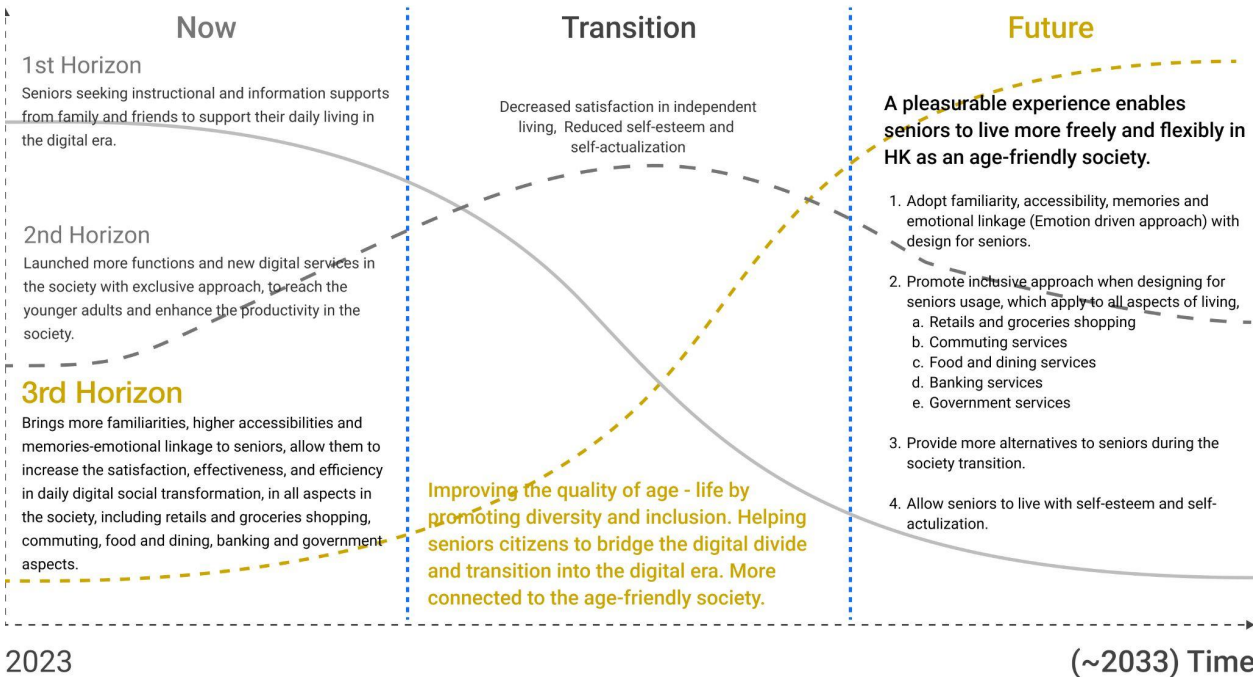
HK Society

1st Horizon

Seniors seeking instructional and information supports from family and friends to support their daily living in the digital era.

2nd Horizon

Launched more functions and new digital services in the society with exclusive approach, to reach the younger adults and enhance the productivity in the society.

3rd Horizon

Brings more familiarities, higher accessibilities and memories-emotional linkage to seniors, allow them to increase the satisfaction, effectiveness, and efficiency in daily digital social transformation, in all aspects in the society, including retails and groceries shopping, commuting, food and dining, banking and government aspects.

Decreased satisfaction in independent living, Reduced self-esteem and self-actualization

Improving the quality of age - life by promoting diversity and inclusion. Helping seniors citizens to bridge the digital divide and transition into the digital era. More connected to the age-friendly society.

A pleasurable experience enables seniors to live more freely and flexibly in HK as an age-friendly society.

1. Adopt familiarity, accessibility, memories and emotional linkage (Emotion driven approach) with design for seniors.

2. Promote inclusive approach when designing for seniors usage, which apply to all aspects of living,
   a. Retails and groceries shopping
   b. Commuting services
   c. Food and dining services
   d. Banking services
   e. Government services

3. Provide more alternatives to seniors during the society transition.

4. Allow seniors to live with self-esteem and self-actulization.

2023

(~2033) Time

Figure 3.2 The 3 Horizons - Nearest Future Goal

4. Design

4.1 Possible opportunity

How might we leverage the key successful elements in the Hong Kong context to other aspects during the social transformation with an inclusive approach? So that, everyone in society is included and able to use various alternatives based on their needs to access the same and equal information. And this allows seniors to live independently in a self-serve society continuously building up their self-esteem and self-actualization in terms of a hierarchy of needs. At the same time, the inclusive approach might increase satisfaction from an enhanced level of emotional design with familiarity elements. Seniors are more encouraged to learn and increase their effectiveness to complete self-serve tasks. From time to time, with constant practices, these might increase the efficiency for seniors to do self-serve flexibly and freely in the age-friendly society, in order to bridge the digital divide for the livelihood of seniors in Hong Kong. So that, allows everyone can live comfortably and adapt to self-services during the social transformation.

4.2 Foundation elements when designing for seniors with an inclusive approach

Inclusive design is not mean one universal design catering to all people in society. But provide variants and alternatives, having options for users and citizens to pick the means they feel comfortable using and access the equality information freely and flexibly based on their needs to complete their daily tasks effectively and efficiently.

As discussed above, familiarity, accessibility, and memories-emotional linkage are three key elements to increasing seniors' willingness and interests. To allow them to step into the digital era during the social transformation, below are some tips and guidance to help design inclusively for seniors.

Below are the Do and Don't when designing for seniors in a rapidly transforming and aging society,
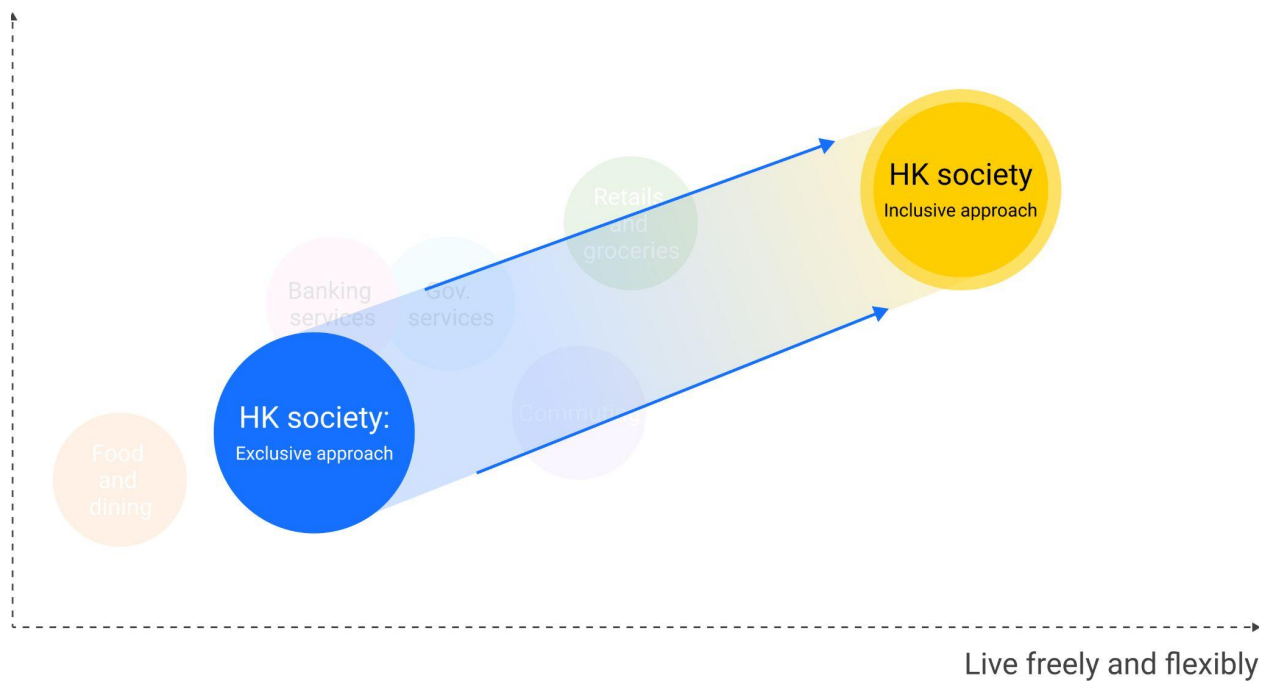
Accessing to the equality of information

Figure 4.2 Transition to senior livelihood in Hong Kong for an age-friendly society: an inclusive approach

DO

4.2.1 Familiarity

The digital design services better bring a sense of familiarity and maintain the pattern or practice they used to from the senior past memories. If there is a new function of new products and services that seniors never experience before, familiarity is the hook to allow seniors to step in. There are many digital designs for older adults, but most of them require seniors to have a long learning path before efficient usage. Learning from the streaming television service Netflix, which uses the same remote appearance as traditional television, brings the familiarity and capability of the smart TV makes, which is an effective device to bridge the digital divide that older adults were facing. Allow them to enjoy the new digital services with simple control of existing television remote control to navigate with minimal buttons. This usage is similar to traditional television when switching the channels. However, a learning path that requires might still be considered, with a real person or other ways of assistance. Below are some ideas that

the 4 aspects (commuting, food and dining, banking, and government) in seniors' daily life that they currently are not able to handle independently.

4.2.2 Accessibility

Learned from the above, when designing for seniors with higher accessibility, there are some key elements that might need to consider to allow seniors able to access the same information. For example, the font size options, like in the mobile setting, there is varients of font size that allow seniors and youths to choose based on their need, seniors might prefer larger font size for those having sight concerns, and youths might prefer smaller text to view more context at once. Besides, to allow seniors to use digital products and services, higher usability with less straightforward actions with minimal interactions is essential. For example, fewer pop-ups to block seniors during tasks (including all advertising and system updates), will make seniors less worried and anxious if they made a mistake, and the pop-up is usually like an alert to warn them that they did something wrong. This experience will reduce confidence in using any digital products and services. All the above having font size variants, and reducing pop-ups to block users including advertising and system errors made the digital products and services easier to use, and the interface does not change too much of the context without user's feedback. These might enhance the accessibility that assists seniors to deal with self-serve service, as this brings more confidence and willingness to seniors.

4.2.3 Memories and emotional linkage (Emotion driven approach)

"Everything has a personality: everything sends an emotional signal. Even where this was not the intention of the designer, the people who view the website infer personalities and experience emotions." — Don Norman, Grand Old Man of User Experience. The emotional design includes effectiveness, efficiency, and satisfaction. Effectiveness means doing the right things and getting things done, allowing the users to complete the task. Efficiency means if the user completes the task with minimal effort (including mental and physical efforts) and time. Satisfaction means the user feels happy and feel comfortable when they used the products or services. Memories-emotional linkage will drive seniors to be more pleasant to use the products and services, that are not only usable, reliable, and functional. But the pleasurable experience brought from the memories-emotional design will be encouraged and increased the desire and

willingness to try again. The delightful experience would bring pleasurable memories to users, which helps to increase their confidence for them to try next.

Emotional design with these three elements increased satisfaction from the enhanced level of emotional design with familiarity elements mentioned above. Seniors are more encouraged to lifelong learning and increase their effectiveness to complete the task. From time to time, with constant practices, these might increase the efficiency for seniors to do self-serve during the social transformation.

DON'T

4.2.4 Universal pattern (One design)

When designing an inclusive approach, a few elements might be avoided when designing for seniors living flexibly in society. A universal pattern (one design) might be avoided, as not everyone in society has the same needs and same physical health states. People in Hong Kong society, are formed with different age groups, different educational backgrounds, different cultures, etc. A diversity of society is promoted to provide more options to different groups of people to allow them to live freely and flexibly in the aging society. Therefore, one design with one pattern which only catering a few groups of people might create a living concern, that not everyone in society is able to access the same level of equality information. For example, the suggested routine only happens on a small screen mobile application which requires many actions input, mobile application is the only mean to do online food ordering, banking self-serve replace most of the traditional banking services, and government reservation services is only available through an online website. These might create sub-sequence social problems that not everyone is able to live flexibly in society, and they might not live independently as well. These will reduce self-actualization, self-esteem, and the sense of belonging, people might even feel not safe. At the same time, the experience of living in an exclusive society is not a pleasurable experience, some might even cannot enjoy the usable, reliable, or even not functional experience in society's digital transformation.

4.2.5 Low accessibility (Small screens with no navigation tips)

During the aged life, most of seniors have sight difficulties. If most of the digital services only support mobile screens with small font sizes, it limited the ability of seniors to read and access to the information equally. Also, language options are also a consideration that helps seniors to understand the context. Some restaurants and cafes would set the default language of online digital ordering to English, as the primary diners are younger adults, the assumption is that most youngers and foreigners are able to read English. However, most local seniors are still only able to read Chinese. The small font sizes and non-local default language might limit their ability to do self-serve in any aspect of daily living in Hong Kong.

Besides, small visual elements for presenting functional items also impact usability if seniors cannot see it clearly. For example, for the small visual back arrow icon button, and using small menu icons to represent menu selections. If the icon and touch area of the screen is small, the self-serve user flow might have some mistakes occur unexpected, as the small touchable elements are not easily reachable to seniors. And they might also spend more time understanding the contexts. As a result, low effectiveness and low efficiency might reduce the satisfaction of completing tasks in their daily life. These also reduce their self-actualization, and self-esteem as they cannot function with their daily essentials well, compared to the past.

4.3 Journey mapping for seniors living in an inclusive society in the 5 aspects in the nearest future (in 5 years)

As mentioned before, familiarity, higher accessibility, and emotional design will allow seniors to live more freely and flexibly, and Hong Kong is toward an aging-friendly society. Below are the customer journeys for seniors' daily livelihood in Hong Kong in the nearest future.

4.3.1 Retail and groceries shopping

With the inclusive approach adopted in retail and groceries shopping, it empowers seniors to have more alternatives and options in their daily life and to live freely and flexibly compare to now and the past 5 years. There are generally 4 stages of the retail and groceries shopping journey, planning, selecting, payment, and cooking.

Seniors might feel more comfortable using the smart online grocery digital application through smart TV while sitting on the sofa. With the wider screen, seniors might discuss the context with partners, family, and friends more easily. In the nearest 5 years, seniors might still be able to do self-serve checkout through the self-checkout kiosk. The looking forward part is how the supermarkets might collaborate with retail and groceries shopping providers at the planning stage so that all shopping patterns and behavior might be captured at the post-paying and cooking stages. Thus, the personalized shopping pattern might suggest to the seniors to help them live more easily at the planning stage. For example, the monthly purchase or auto-purchase might be activated if the users usually repurchase the products about twice a month. All these might help seniors live easier in a digital society transformation to do self-serve activities for daily essentials freely and flexibly of the 4 stages of retail and groceries shopping.
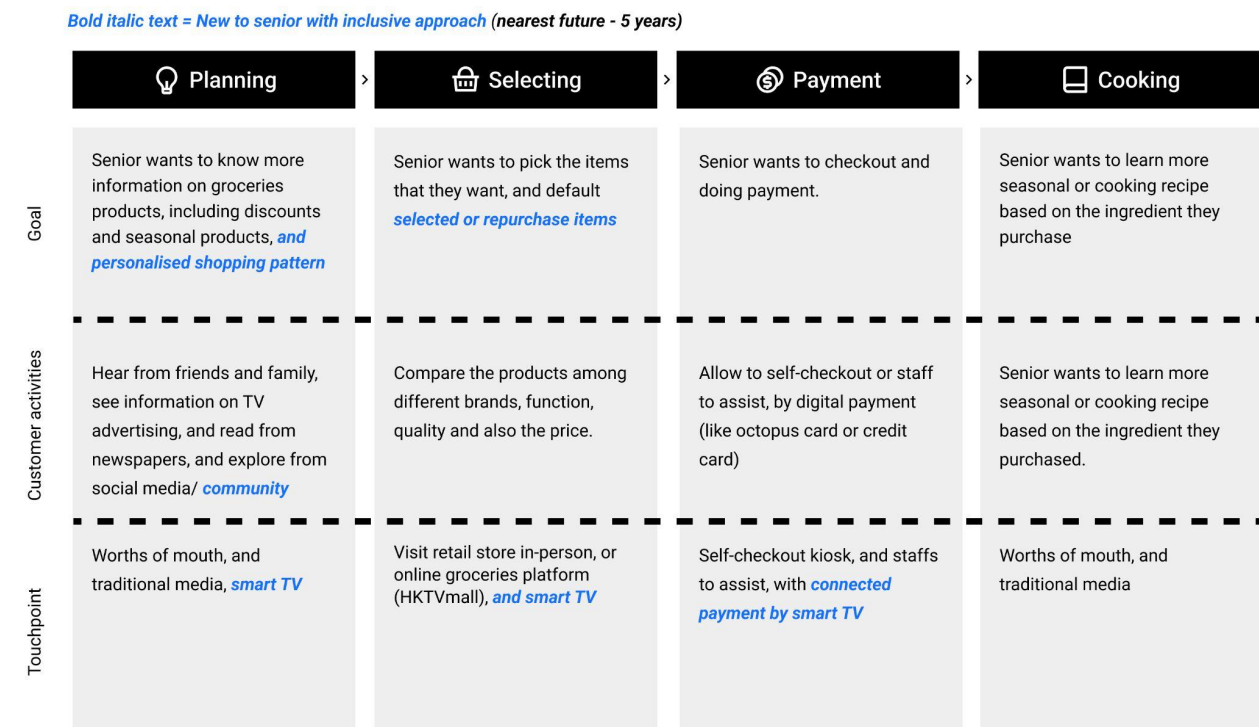
Bold italic text = New to senior with inclusive approach (*nearest future - 5 years*)

	💡 Planning	🛒 Selecting	Ⓢ Payment	🖥 Cooking
Goal	Senior wants to know more information on groceries products, including discounts and seasonal products, *and personalised shopping pattern*	Senior wants to pick the items that they want, and default *selected or repurchase items*	Senior wants to checkout and doing payment.	Senior wants to learn more seasonal or cooking recipe based on the ingredient they purchase
Customer activities	Hear from friends and family, see information on TV advertising, and read from newspapers, and explore from social media/ *community*	Compare the products among different brands, function, quality and also the price.	Allow to self-checkout or staff to assist, by digital payment (like octopus card or credit card)	Senior wants to learn more seasonal or cooking recipe based on the ingredient they purchased.
Touchpoint	Worths of mouth, and traditional media, *smart TV*	Visit retail store in-person, or online groceries platform (HKTVmall), *and smart TV*	Self-checkout kiosk, and staffs to assist, with *connected payment by smart TV*	Worths of mouth, and traditional media

Figure 4.3.1 Senior's retail and groceries shopping journey: Inclusive approach

4.3.2 Commuting services

Having an inclusive approach in commuting services, seniors with more options and alternatives to check and learn the commuting routine suggestions on the larger screen. There

are usually 5 stages of an existing leisure commuting journey, from inspiration to the booking(reservation), to pre-trip, in-trip, and post-trip. With the higher accessibility and familiarity, they are more flexible to access commuting information with the rapid transportation system development in Hong Kong in recent few years. With the inclusive design approach of commuting services, seniors might access the equality latest information at home, or in-station. For example, they allow accessing instant railway news or accident information, or other instant routine suggestions based on the traffic situation to plan their date better.

At the pre-trip stage, they have options to access the information at home before going out through the mobile application with seniors mode, or access through the smart TV application on a large screen that allow them to see more comfortably without any sight health limitation that most seniors facing during their aged life. The service provider for the wider screen app can work with local communities to suggest age-friendly seasonal spots for seniors to travel to. Seniors can also check these suggestions on their mobile devices with large font size options while on the move. During the trip, they can use the ticket machine at the station to check their travel status. After completing the trip, the personalized mobile app linked to their octopus card can store their travel records for future use.

The new transportation policy allows for seniors to have a sense of familiarity and connection to the community and society, while still being inclusive. With the $2 government commuting policy and inclusive commuting services, seniors are encouraged to explore and stay in touch with their community, family, and friends in Hong Kong.

	Inspiration	Booking	Pre-trip	In-trip	Post-trip
Goal	Senior wants to know more information of commuting routine, *explore age-friendly and seasonal spots locally.*	Senior wants to reserve ticket in advance before commuting.	Senior wants to compare more commuting methods what's the most efficient way.	Senior wants to have a safe time and hope the journey will complete on time, and *check the check traffic and travel status*	Senior wants to return home and *store the travel records for future use*
Customer activities	Hear from friends and family, check on traditional media, *social community*	Reserve online or *in-station* in advance	Understand the travel journey, self-serve to read the instant commuting news, and check the instant information.	Read the instant commuting news, and check the instant information by bus application and mtr mobile application.	Read the instant commuting news, and check the instant information by bus application and mtr mobile application.
Touchpoint	Worths of mouth, and traditional media, *mobile (senior mode) and smart TV*	Check online, on news plateform, *travel machine*	Mobile application, *(senior mode)*	Mobile application *(senior mode)*	Worths of mouth, *mobile (senior mode) and smart TV*

Figure4.3.2 Senior's commuting journey: Inclusive approach

4.3.3 Food and dining services

Food and dining services can be inclusive. The customer journey includes 6 stages: awareness, searching, queuing, ordering, consuming, and payment. At the queueing and ordering stage, the service provider might still consider using existing queuing kiosks with one click to queue. Another alternative available to seniors is to enhance the accessibility of mobile applications. For example, by referencing GPS usage and studying customers' behavior patterns, the mobile application could shorten the list of nearby restaurants that the customers frequently visit and display them at the top. This way, senior users can easily reach the restaurant and queue up instantly in advance. During the ordering stage, they might be able to use the familiarity order method compare to the past, like they used to order food on paper. The service provider might consider using the new technology to bring the familiarity which is linked to their memories. At the checkout stage, with learning from retail and groceries shopping. Seniors are able to do the self-checkout with the checkout kiosk, which might show what they consumed, and the sub-items sum up for them to confirm. At the end of the dining journey, they are able to pay with existing digital payments like an Octopus card or credit card.

The approach aims to make seniors feel included in society by providing emotional linkage and higher accessibility, encouraging them to embrace the digital era. Moreover, seniors are able to be self-serve independently in the food and dining services, so they might have more self-esteem and self-actualization to live freely and flexibly in the society to deal with the daily living.

Bold italic text = New to senior with inclusive approach (nearest future - 5 years)

	Awareness & Searching	Queuing	Ordering	Consuming	Payment
Goal	Senior wants to know latest, popular new open restaurant information .	Senior wants to reserve seats in advance or queue	Senior wants to check the latest available menu *based on dining pattern*.	Senior wants to have water-refill and sub-sequence ordering in some cases.	Senior wants to checkout once the meal is done.
Customer activities	Hear from friends and family, check on traditional media, online platform, social media	Queue in person, or instant queue online	Read the menu, and scan the QR code the *self-order by the foldable screen*, or use the or asking staff to help instead.	*Wait for the food delivery, and use the self-serve ordering systems to ask for water refill.*	Go to cashier or asking staff for checkout.
Touchpoint	Worths of mouth, and traditional media,	Queue kiosk, mobile application,	*Foldable and flexible paper size screen with physical navigation buttons, touch pen, and human operator,*	Physical human interaction, *robot machines, remote working human operator*	Cash or cashless payment

Figure 4.3.3 Senior's food and dining journey: Inclusive approach

4.3.4 Bank services

Seniors can access financial and banking services more easily during societal changes, using an inclusive approach. The existing banking services can be broken down into six stages: discovery, evaluation, purchase, experience, bonding, and advocacy.

With the inclusive approach, all 6 stages might develop into more alternatives allowing seniors with more options not only waiting in a branch for a real person to assist but with more guidelines to allow seniors to self-serve with more confidence and avoid mistakes occurring. Bank service providers might consider enhancing the in-branch service, the self-serve banking activities might start from in-branch, to allow seniors to feel more comfortable with a sense of

security. The enhanced self-serve device might leverage the existing ATM that citizens used to use it for decades. Therefore, bank service providers might consider providing consistent service available on the leveraged function of ATMs, to access equality information as much as the mobile self-serve application. So, seniors might enjoy the self-serve service in-branch assisted by staff at the initial stage.
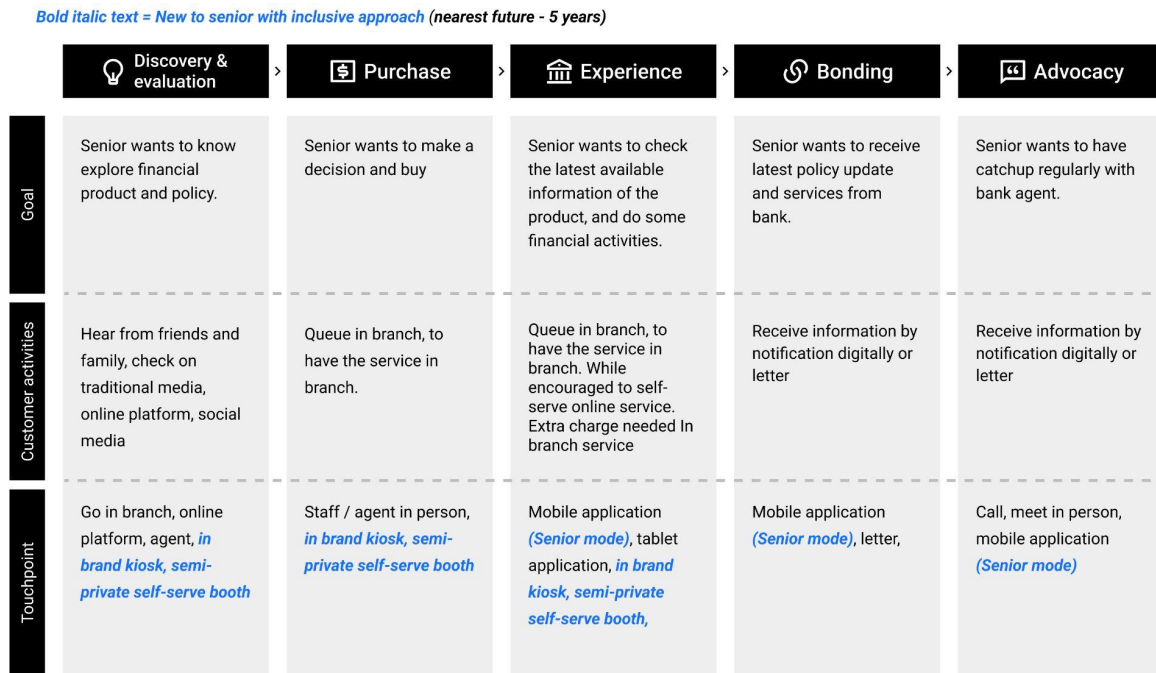
Bold italic text = New to senior with inclusive approach *(nearest future - 5 years)*

	Discovery & evaluation	Purchase	Experience	Bonding	Advocacy
Goal	Senior wants to know explore financial product and policy.	Senior wants to make a decision and buy	Senior wants to check the latest available information of the product, and do some financial activities.	Senior wants to receive latest policy update and services from bank.	Senior wants to have catchup regularly with bank agent.
Customer activities	Hear from friends and family, check on traditional media, online platform, social media	Queue in branch, to have the service in branch.	Queue in branch, to have the service in branch. While encouraged to self-serve online service. Extra charge needed In branch service	Receive information by notification digitally or letter	Receive information by notification digitally or letter
Touchpoint	Go in branch, online platform, agent, *in brand kiosk, semi-private self-serve booth*	Staff / agent in person, *in brand kiosk, semi-private self-serve booth*	Mobile application *(Senior mode)*, tablet application, *in brand kiosk, semi-private self-serve booth,*	Mobile application *(Senior mode)*, letter,	Call, meet in person, mobile application *(Senior mode)*

Figure 4.3.4 Senior's banking journey : Inclusive approach

4.3.5 Government services

Government services typically involve three stages: reservation, application, and receiving. Currently, the kiosks for application and receiving are simple to use. However, the reservation stage, being the first stage of the entire process, can have an impact on first impressions, emotional connection, and the willingness of seniors to try. Improvements may be necessary in this stage.

With the inclusive approach, during the reservation stage, government might use all existing public facilities locations as an alternative for seniors easier to access. For example, putting self-serve reservation kiosks in post offices or communities in all 18 districts. The kiosk might leverage from the application and receiving kiosk, having those simple and easy to use elements. Allow seniors to handle government services independently, and seek less support

from others. To enhance the sense of self-esteem and self-actualization. Not only provide a functional and usable service, but also a pleasurable experience that delights their livelihood.
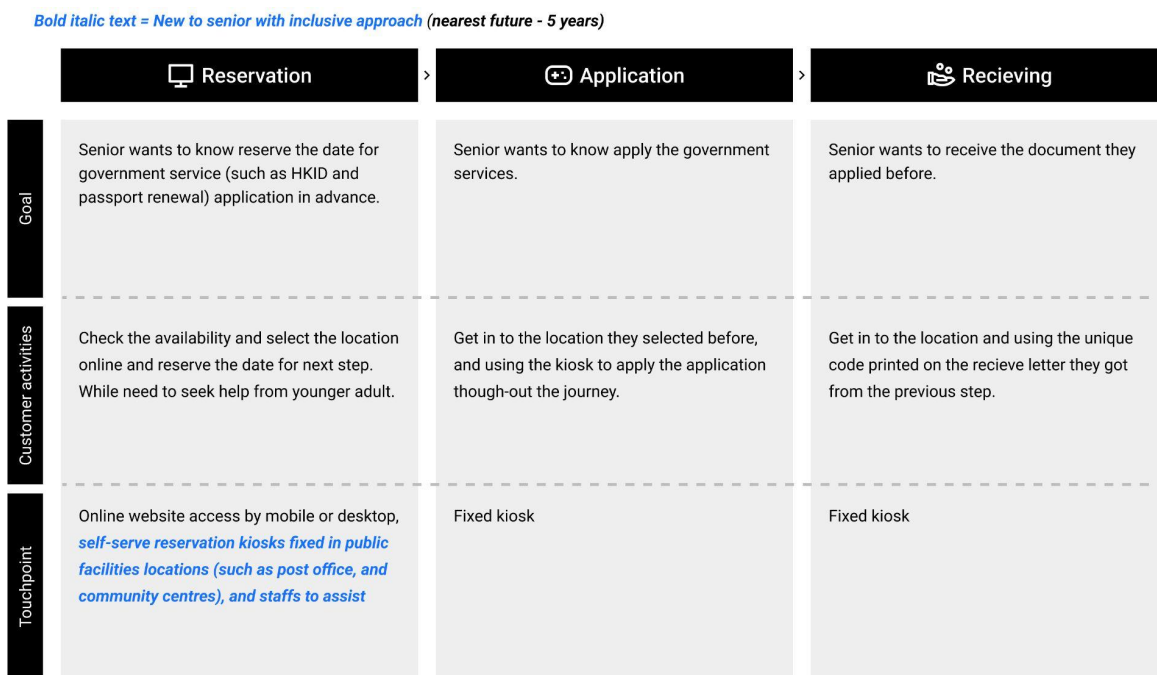

Figure 4.3.5 Senior's government service journey : Inclusive approach

4.4 Journey mapping for seniors living in an inclusive society in the 5 aspects in the future (in 10 years)

The above journey mapping is mainly catering to 5 years inclusive approach that helps seniors to fix instant living challenges, with familiarity, and higher accessibility to allow them to use and function well to access higher equality information, in order to live with freedom and flexibility to enhance the existing aged livelihood in Hong Kong with self-esteem. While below inclusive approach in 10 years, enables and empowers seniors' aged livelihood, not only functional and usable in society, but brings a sense of self-actualization bring from the pleasurable experience during the social transformation.

4.4.1 Retail and groceries shopping

The above inclusive 5 years approach for retail and groceries shopping are not covering the cooking stage of the whole retail and grocery shopping customer journey. To provide a comprehensive inclusive approach for retail and groceries aspect in seniors' aged livelihood in Hong Kong for future 10 years. The service provider might consider studying the user and seniors' cooking patterns and suggest a new cooking recipe based on studying the senior's user profile. So, senior citizens might learn new things through the higher accessibility device like smart TV based on their patterns and behaviors. To provide a personalized experience for seniors and lifelong learning for daily livelihood.

Bold italic text = New to senior with inclusive approach (nearest future - 5 years)
Bold italic text = New to senior with inclusive approach (in 10 years)

	💡 Planning	🛒 Selecting	⑥ Payment	🖥 Cooking
Goal	Senior wants to know more information on groceries products, including discounts and seasonal products, *personalised shopping pattern, and cooking inspiration*	Senior wants to pick the items that they want, and default *selected or repurchase items*	Senior wants to checkout and doing payment.	Senior wants to learn more seasonal or cooking recipe based on the ingredient they purchase, *suggested by personalised shopping or exploration pattern*
Customer activities	Hear from friends and family, see information on TV advertising, and read from newspapers, and explore from social media/ *community*	Compare the products among different brands, function, quality and also the price.	Allow to self-checkout or staff to assist, by digital payment (like octopus card or credit card)	Senior wants to learn more seasonal or cooking recipe based on the ingredient they purchased.
Touchpoint	Worths of mouth, and traditional media, *smart TV*	Visit retail store in-person, or online groceries platform (HKTVmall), *and smart TV*	Self-checkout kiosk, and staffs to assist, with *connected payment by smart TV*	Worths of mouth, and traditional media, *smart TV*

Figure 4.4.1 Senior's retail and groceries shopping journey: Inclusive approach

4.4.2 Commuting

The above inclusive 5 years commuting service approach mainly covered from pre-trip to post-trip journey. In order to empower seniors' aged lifestyle. The service provider might consider to included from inspiration to the booking(reservation). With the collaboration with local seniors communities and other aspects of living, the commuting service might suggest the most relevant and some hot spots during the non-peak weekdays. With an easy and one-click reservation, the seniors might also have alternatives to access this information at the community centers of using leverage from the self-serve reservation kiosk, which not only supports reserving government services. But also allow seniors to explore and get inspiration to have adventure locally, to enjoy the self-serve local trips. These encourage seniors to keep learning and exploring during the aged life in Hong Kong, getting to an age-friendly society during the social transformation.

Bold italic text = New to senior with inclusive approach (nearest future - 5 years)
Bold italic text = New to senior with inclusive approach (in 10 years)

	♀ Inspiration	⌨ Booking	◎ Pre-trip	🚌 In-trip	⬜ Post-trip
Goal	Senior wants to know more information of commuting routine, *explore age-friendly and seasonal spots locally*, *know more seniors communities suggestions*	Senior wants to reserve ticket in advance before commuting, *know more seniors communities suggestions*	Senior wants to compare more commuting methods what's the most efficient way.	Senior wants to have a safe time and hope the journey will complete on time, and *check the check traffic and travel status*	Senior wants to return home and *store the travel records for future use*
Customer activities	Hear from friends and family, check on traditional media, *social community*, *self-serve local trips*	Reserve online or *in-station* in advance, *self-serve local trips*	Understand the travel journey, self-serve to read the instant commuting news, and check the instant information.	Read the instant commuting news, and check the instant information by bus application and mtr mobile application.	Read the instant commuting news, and check the instant information by bus application and mtr mobile application.
Touchpoint	*Worths of mouth, and traditional media, mobile (senior mode) and smart TV*, *self-serve kiosk from fixed community centres and facilities locations*	Check online, on news plateform, *travel machine,*	Mobile application, *(senior mode)*	Mobile application *(senior mode)*	Worths of mouth, *mobile (senior mode) and smart TV*

Figure 4.4.2 Senior's commuting journey: Inclusive approach

4.4.3 Food and dining services

Compared to the 5 years inclusive approach for food and dining service, the awareness, and searching stage is missing some encouragement and touch points for seniors. Towards a 10 years plan for an inclusive approach for the age-friendly community in Hong Kong. Having higher local communities collaborations is needed, the service provider might consider stepping into the digital service at the awareness and restaurant searching stage. They might collaborate with the commuting services to have the search function available on the smart TV device. Allow seniors to explore and search the latest dining information on a larger screen with navigation by the television remote control as they used to. The application might analyze the interests and patterns of seniors, to suggest restaurants nearby or easy to access. With familiarity and higher accessibility, they are easier to reach out to the dining place that they might be interest in, to explore a new place with family and friends with self-actualization.

Bold italic text = New to senior with inclusive approach *(nearest future - 5 years)*
Bold italic text = New to senior with inclusive approach *(in 10 years)*

	Awareness & Searching	Queuing	Ordering	Consuming	Payment
Goal	Senior wants to know latest, popular new open restaurant information *based on dining pattern.*	Senior wants to reserve seats in advance or queue *based on dining pattern.*	Senior wants to check the latest available menu *based on dining pattern*.	Senior wants to have water-refill and sub-sequence ordering in some cases.	Senior wants to checkout once the meal is done.
Customer activities	Hear from friends and family, check on traditional media, online platform, social media	Queue in person, or instant queue online	Read the menu, and scan the QR code the *self-order by the foldable screen*, or use the or asking staff to help instead.	*Wait for the food delivery, and use the self-serve ordering systems to ask for water refill.*	Go to cashier or asking staff for checkout.
Touchpoint	Worths of mouth, and traditional media, *smart TV*	Queue kiosk, mobile application, *smart TV*	*Foldable and flexible paper size screen with physical navigation buttons, touch pen, and human operator,*	Physical human interaction, *robot machines, remote working human operator*	Cash or cashless payment

Figure 4.4.3 Senior's food and dining journey: Inclusive approach

4.4.4 Bank services

Compared to the past 5 years, customers may still prefer to experience the end-to-end journey of banking services in-branch for a sense of security and familiarity. Banking services may transition towards self-service at home for the 10-year period. This is because seniors prefer banking services from their smart TVs at home, rather than on-the-go mobile usage due to physical limitations. Provide safe and secure housing for seniors while offering banking services on a large screen to help them transition into the digital era gradually. Which enable seniors to complete financial tasks independently to achieve self-esteem and self-actualization.

Bold italic text = New to senior with inclusive approach (nearest future - 5 years)
Bold italic text = New to senior with inclusive approach (in 10 years)
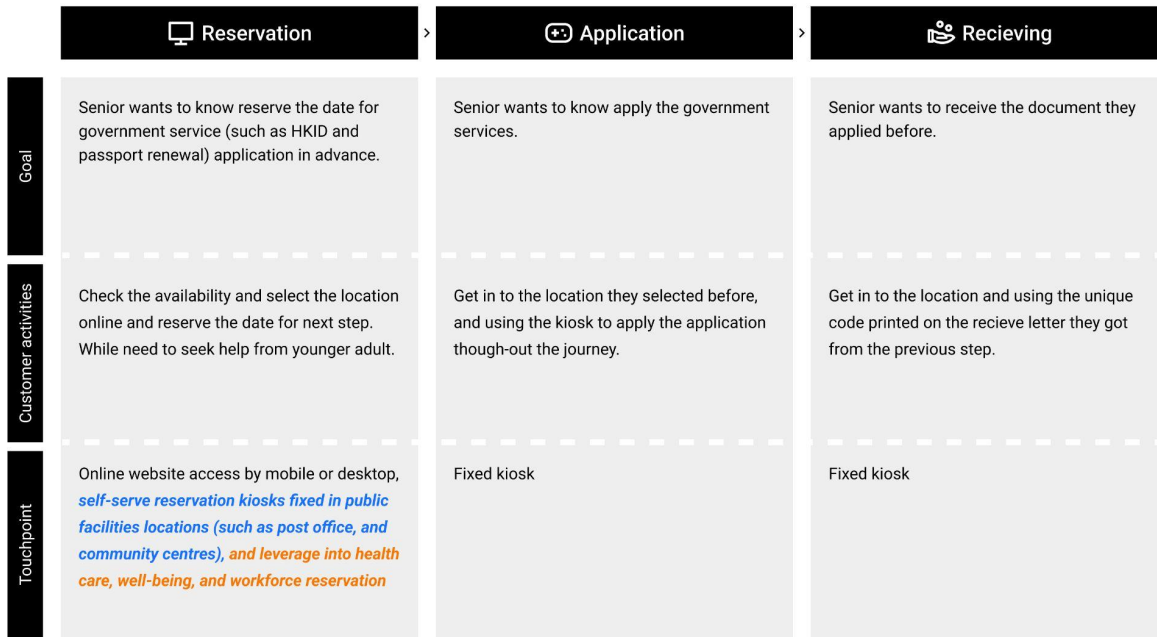
	Discovery & evaluation	Purchase	Experience	Bonding	Advocacy
Goal	Senior wants to know explore financial product and policy, *and review comments*	Senior wants to make a decision and buy	Senior wants to check the latest available information of the product, and do some financial activities.	Senior wants to receive latest policy update and services from bank.	Senior wants to have catchup regularly with bank agent.
Customer activities	Hear from friends and family, check on traditional media, online platform, social media, *community*	Queue in branch, to have the service in branch.	Queue in branch, to have the service in branch. While encouraged to self-serve online service. Extra charge needed In branch service	Receive information by notification digitally or letter	Receive information by notification digitally or letter
Touchpoint	Go in branch, online platform, agent, *in brand kiosk, semi-private self-serve booth, and smart TV*	Staff / agent in person, *in brand kiosk, semi-private self-serve booth, and smart TV*	Mobile application *(Senior mode)*, tablet application, *in brand kiosk, semi-private self-serve booth, and smart TV*	Mobile application *(Senior mode)*, letter, *smart TV, notification*	Call, meet in person, mobile application *(Senior mode)*, *smart TV*

Figure 4.4.3 Senior's banking journey: Inclusive approach

4.4.5 Government services

Government services experience may be key for seniors to feel included in society. If they are unable to complete public services independently, their experience of living in society may not be useful for them, making them feel excluded and disconnected from society. There might have more sub-sequences of social problems. So for government services, the service providers might consider leveraging the function and experience of the reservation kiosks located in public facilities locations. To leverage the functions, service providers might consider expanding the services into health care, well-being, and workforce aspects to make seniors' life

easier. Which can also delight their livelihood in Hong Kong for the aged lifestyle. To allow them to access equality information nearby if they are not possible to access it financially or physically.

Bold italic text = New to senior with inclusive approach (nearest future - 5 years)
Bold italic text = New to senior with inclusive approach (in 10 years)

	🖥 Reservation	🎮 Application	🤝 Recieving
Goal	Senior wants to know reserve the date for government service (such as HKID and passport renewal) application in advance.	Senior wants to know apply the government services.	Senior wants to receive the document they applied before.
Customer activities	Check the availability and select the location online and reserve the date for next step. While need to seek help from younger adult.	Get in to the location they selected before, and using the kiosk to apply the application though-out the journey.	Get in to the location and using the unique code printed on the recieve letter they got from the previous step.
Touchpoint	Online website access by mobile or desktop, *self-serve reservation kiosks fixed in public facilities locations (such as post office, and community centres), and leverage into health care, well-being, and workforce reservation*	Fixed kiosk	Fixed kiosk

Figure4.4.5

4.5 Design Summary

To improve the quality of life for seniors in Hong Kong and create an age-friendly society, we need to adopt an inclusive approach that promotes self-esteem and self-actualization. By doing so, we can ensure that seniors receive the support and care they need to lead fulfilling lives. This approach will not only help seniors but also benefit the wider society by promoting diversity and inclusion.

Over the next 5 and 10 years, to expand the services to help everyone in society, including seniors, bridge the digital divide and transition into the digital era. This will involve providing public and community collaborative support to seniors on how to use technology daily basic, as well as developing new digital tools and services that meet their specific needs. By embracing the digital era, seniors will be able to connect with friends and family more easily, access equal information and services, and participate in online communities.

This transformation not only provides a pleasurable experience but also enables seniors to live more freely and flexibly. They will be able to take advantage of the many benefits that technology has to offer, such as online groceries shopping, remote banking consultations, etc, to make their life easier. By empowering seniors to embrace the digital era, helping them to maintain their independence and enhance their quality of life with life satisfaction and positive coping strategies.

5. Deliver

5.1 Designing for seniors with an inclusive approach to different aspects of daily living

5.1.1 Retail and groceries shopping

Nowadays, most seniors are able to do self-checkout independently using digital payment methods such as an Octopus card or credit card. Some seniors are even able to use the senior version of the grocery mobile shopping application, which is linked to their original HKTVmall mobile accounts.

In the near future, retail and grocery service providers may consider developing a smart application that allows seniors to access smart TV devices. With a wider and larger screen, seniors might feel more comfortable viewing the content and reduce their anxiety when using online retail and grocery shopping. This is essential for their daily lives, as some groceries can be heavy and difficult for seniors to physically carry, such as packed rice and cooking oil.

On the other hand, the simple and familiar usage of the television remote control, allows seniors to be more confident and increased their willingness to try to navigate on the wider screen on smart TV to browse and shop for groceries online, instead of accessing by mobile application. Similarly, the account might connect to any master account (usually their younger family member's account) or one's individual digital payment method like an Octopus card or credit card. Which requires less input, seniors might choose from the account's record. So that, this makes checkout and online grocery shopping easier.

At the same time, this might increase the self-esteem and self-actualization that seniors are able to step into the digital era with self-serve and also require less instructional and informational support from younger adults. As a result, seniors are more encouraged to enter into the self-serve society transformation with higher satisfaction, from higher effectiveness and efficiency in retail and groceries shopping aspect. With higher accessibility that some seniors are not comfortable and avoid making mistakes, the alternatives to access on the larger screen

device through smart TV might be a possible approach to be more inclusive for all people to access the equality information for retail and grocery shopping online. Allow seniors to be more encouraged to enter into the digital era, in order to bridge the digital divide that seniors currently face in the social transformation in retail and groceries aspect.

5.1.2 Commuting

With the development of the railway system in Hong Kong, people have more options for getting to their destination. Younger adults check routine suggestions before going out and consider other commuting methods like taking the bus or minibus. Seniors used to check routes on a map, but now, with more options and lines, they need to check online for the most efficient route and to see if there are any railway issues. In the past, people used ticket machines to buy tickets and an octopus machine to check the remaining value of their card to see if they needed to top-up.

For the routine checking services, the railway provider might consider the inclusive approach with familiarity and memories, and emotional linkage to deliver a delightful commuting experience to seniors and all customers so that everyone is able to access the equality information of instant commuting suggestions. For example, railway providers might consider leveraging the functions of existing ticket machines. Usually, the starting point is already pre-selected as the customers are using the machine in the station. While the destination is selected by the customers, which requires fewer actions from customers. The leveraged ticket machine might be wider into a self-serve commuting machine, including functions of routine suggestions. The machine might consider keeping the existing larger screen with an interactive map and minimal physical buttons so that seniors might willing to use the machine in person. On the other hand, studying from KMB mobile application, MTR might reference the use of technology of using the current GPS location as the pre-selected station. While connected to the individual's octopus card to learn the pattern that they used, or track the records that they explore before. With the straightforward and suggested selection of the destinations, it requires fewer actions to reduce the sense of worry and anxiety that create errors. All these might encourage the use of mobile applications for seniors as an alternative to check routine suggestions. These provide an alternative that empowered seniors to do self-serve commuting

services in society. While younger adults might consider using either the in-station self-serve commuting machine or online mobile services based on their needs, anytime and anywhere.

With the familiarity brings by the leveraged functions of existing ticket machines, and the higher accessibility brings by the large screen and physical buttons. These bring the sense of memories-emotional linkage to delight the commuting experience customers. To allow everyone in the society including seniors are able to self-serve and live freely and flexibly in the Hong Kong aging society, in a more age-friendly direction.

5.1.3 Food and Dining

Take yum cha place as an example, in the past decades, diners were used to ordering by dim sum paper to see the menu in physical paper format. Diners may pass around the table to order food together. After that, they remain in their seat and raise their hand to pass the order paper to the staff. Staff will help to bring the paper to the fixed location of the system machine to input the orders manually, after double confirmation with diners. Typically, staff must make manual efforts to refill diners' teapots with water. This process requires a lot of human effort, while senior diners have already been familiar with it for decades. While a few chain restaurants in the Western dining industry, like Supersanwish HK, have already implemented robot machines to help staff release their workload and deliver food and drinks, many others have yet to follow suit.

During the digital transformation of society, Yum Cha service can prioritize familiarity to improve customer service. Instead of manual tasks like inputting orders and refilling water, Yum Cha can focus on improving ordering procedures with smart services. For example, they can implement self-serve ordering systems with a foldable screen in a similar format to what seniors are familiar with. With an A4-size screen and touch pen, Yum Cha can provide a continuous ordering experience, encouraging seniors to try self-serving in food and dining.

At the same time, learned from the robot usage for delivering food and drink to diners and in other industries. Most HK people and seniors may experience robots in their daily life, doing sanitizing and cleansing tasks in the shopping mall. Most of these are installed sensors to avoid accident happen. While adapting this in the food and dining industry, might consider implementing the robot system as an alternative to delivery ordering service. The robot could be

linked to a human operator, enabling remote work for disabled staff who could use the robot for physical navigation assistance. Also, allow seniors might be able to talk to a real person through the robot, with more human interactions if they prefer talking to people. This robot might also talk about the job of water refill, food delivery, ordering, and customer services. The robot implements only bring the familiarity seniors experience in other spaces and usage in their daily life, providing the real person chatting and ordering in the food and dining industry. But also enable more working opportunities for disabled people, with more diversity to form an inclusive society in Hong Kong.

Moreover, physical person staff still needed to be an assistant role to serve and help everyone in that restaurant as other alternatives for some seniors and others people having sight and visual problems. Therefore, with the inclusive approach in the food and dining aspect, everyone in society would have more opportunities for seniors and disabled people to live more freely and flexibly in Hong Kong with a more diverse and age-friendly atmosphere.

5.1.4 Banking services

Take bank services as an example, seniors still prefer to go to the branch to do the financial services. Most of financial services are encouraged to manage online digital activities. While this might cause a grey divide for seniors that they cannot enjoy the smartness of financial services. Nowadays, there are less human staff in the branch to assist customers in the branch. Therefore, there is a queuing machine, to allow customers to take queue numbers or wait in the sitting area, or some branches still use the traditional queue. So, seniors might need to spend longer time in the branch to complete the banking activity.

To make banking services more familiar and reduce the need for manual services in branches, banks may consider improving the functions of automated teller machines (ATMs). For example, to provide the alternative of an interactive banking booth in the branch, allow seniors able to talk to real personal staff remotely in the semi-private area. The staff can work from anywhere, not just in a branch or fixed location. The ATM experience can be enhanced by using larger screens in semi-private booths to improve visibility and security. Additionally, the ATM can be designed with a simple control panel, like an existing keyboard with minimal physical buttons, to help older adults feel more confident using it.

These features provide more flexibility for both customers and staff. Seniors can talk to real staff members and feel safer and more confident than when using online banking services at home. If they face any technical problems, they can easily reach out to staff or simply press a button to get assistance. This helps increase their willingness to use self-serve banking services and prepares them for the digital era of banking. Customers can be more flexible in controlling their finances and complete banking tasks more freely. Banks can also reduce the need to physically hire staff in branches and provide possible alternatives to help seniors transition into society's digital transformation in the near future. This helps seniors better use their time and strengthens their self-esteem and ability to deal with daily tasks they are used to doing.

To make banking services more accessible to seniors, we can leverage existing self-serve mobile applications and design a senior-mode interface. For example, HKTVmall, a popular online shopping platform, has a seniors mode interface connected to a master account, which is usually managed by a trusted younger family member. However, privacy and compliance issues need to be considered, as banking and financial information can be more confidential and legally sensitive. By experiencing a familiar seniors mode interface on HKTVmall, seniors may gain confidence and be more willing to try using banking services online. However, older adults may still need some guidance to learn how to use self-service mobile apps.

By making banking services more familiar and effective, seniors can become more independent and complete their daily tasks without relying on younger generations for help. This can lead to a greater sense of fulfillment and confidence, which can help them cope in society.

5.1.5 Government services

Seniors have no online alternatives for government services. They often rely on younger adults to help with tasks like HKID replacement and passport renewal. The inclusive approach, provide alternatives for everyone in society to access equal information to complete government task that citizens might have options based on their needs. Public facilities such as post offices and community centers are located throughout Hong Kong's 18 districts. To best serve seniors, government service providers can set up kiosks in familiar, accessible locations. These kiosks can offer specific, straightforward tasks such as reservation services and updates. After completing the service, a physical paper copy can be printed for the seniors to have as a reference. This allows them to reserve services easily in a fixed location. Community center

staff can also assist seniors in adapting to the digital self-serve society, improving their experience with technology.

5.2 Conclusion

Living with an inclusive approach toward an aging-friendly society
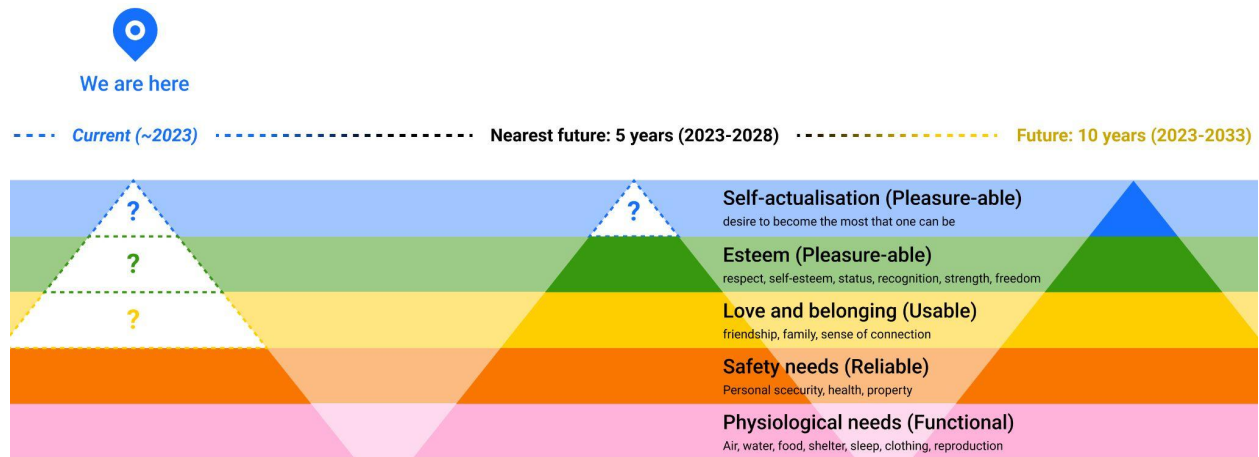

Figure 5.2.1 Transition of hierarchy of needs

Senior citizens can become more confident and willing to try self-service options for shopping, commuting, dining, banking, and government services, reducing their dependence on family and friends for instructional and informational support. This frees seniors to live more freely and flexibly, with an enjoyable experience that increases their hierarchy of needs and leverages their self-esteem and self-actualization. In an aging-friendly society, seniors can bridge the digital divide and are no longer excluded from social transformation services.
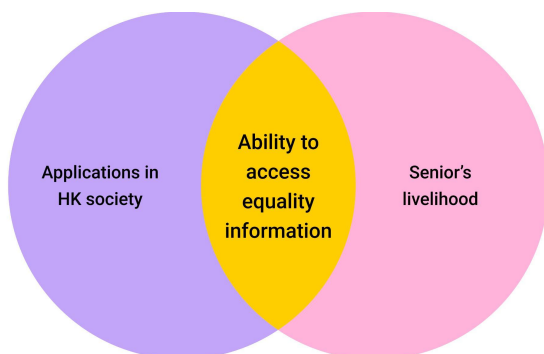
Figure 5.2.2 Bridging the grey divide of senior livelihood in Hong Kong for an age-friendly society

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