Technology Adoption for Active and Healthy Ageing among Current and Future Generations of Older Adults

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Technology Adoption for Active and Healthy Ageing among Current and Future Generations of Older Adults

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JENS OFFERMAN is a trained exercise physiologist with a Bachelor's and Master's degree in Sports Medicine from Umeå University (2019). During his doctoral studies, he has been affiliated with the Centre for Ageing and Supportive Environments (CASE) and the Proactive Ageing research profile at Lund University. His PhD project was conducted within the Active and Healthy Ageing and Ageing and Health research groups at the Department of Health Sciences, Faculty of Medicine, Lund University.

This thesis explores how people from three age groups representing different generations in Sweden engage with digital technology—and how such technologies can support active and healthy ageing. Jens draws on national surveys and focus group discussions to provide a broad and in-depth understanding of how adults aged 30 to 79 perceive and engage with technology in daily life. The findings show that while digital tools can support health, independence, and social connection, not everyone has the same chance to benefit. Engagement is shaped by attitudes, life circumstances, financial resources, available support, and how well technologies integrate into everyday life. Jens's work highlights that access alone is not enough: for technology to truly make a difference, it needs to be designed with individuals in mind and supported by systems offering assistance over time. These findings provide valuable insights into how society can better support people of all ages in a rapidly digitalising world. The findings are relevant for anyone involved in health, ageing, or digital services—and for all of us who wish to age in a way that feels connected, meaningful, and fair.

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UNIVERSITY

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Using a multi-methods approach, four interrelated studies were conducted. The first study, based on a national survey, examined generational attitudes toward a broad spectrum of technologies and their relevance in supporting AHA. Using the same dataset, the second study investigated how socio-demographic factors and attitudes towards digital technology were associated with reported ability to keep up with technological developments. Based on data from a national panel, the third study captured self-reported changes in digital technology use and attitudes during the early phase of the COVID-19 pandemic, providing insights into how period effects might influence digital engagement. The fourth study employed focus group interviews in an experimental housing environment to explore perceived barriers and facilitators to adopting smart home technologies among current and future older adults.

The generational perspective reveals that shared or overlapping views on technology among age groups can be more influential than age-based stereotypes when it comes to technology attitudes and adoption. Rather than labelling older adults as inherently “technophobic”, or younger adults as automatically “tech-savvy,” the findings show that attitudes toward technology are more strongly influenced by perceived usefulness, personal motivation, and prior experience than by age alone. Generational labels, while useful for capturing differences in digital familiarity and exposure, do not fully account for variation in adoption. Instead, technology engagement is shaped by individual resources, social influence, structural support, and sustainability concerns.

Overall, this thesis contributes to a more nuanced understanding of technology adoption that moves beyond chronological age. Challenging prevailing assumptions about ageing and technology, the findings underscore the need for inclusive and sustainable technology design, lifelong digital support systems, and policy attention paid to structural barriers such as affordability and access. These efforts are important to ensure that digital technologies can support autonomy, participation, and well-being for both current and future generations of older adults.

Key words: Technology adoption, Active and healthy ageing, Digital inclusion, Digital divide, Ageism

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“The person who achieves his goal is the one that has faced frustration and dealt with it, understood it, and used it to their advantage …” – Drew Weissman

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Preface

My academic journey began in the field of sports medicine, where I devoted myself to understanding how to optimise human performance and recovery. I completed my bachelor's and master's degrees at Umeå University, where I was trained to assess, strengthen, and support the body through evidence-based practice. Those early years taught me how the body adapts, how it recovers, and how it can be pushed to its limits. But over time, my curiosity began to shift. I found myself less interested in peak performance and more drawn to a broader and perhaps more complex question: What does it mean to age well?

Where I once focused on enhancing the physical body, I now became interested in the ageing experience as a whole, how individuals navigate later life, how to retain autonomy, and how societal and technological structures can support or hinder this process. This shift in perspective opened a new intellectual horizon: how can technology, increasingly embedded in everyday life, support active and healthy ageing?

My interest in research, however, predates this disciplinary shift. As a child, I was endlessly curious about how things worked. I would bombard my mother with questions, and rather than always providing an answer, she would point to our family encyclopaedia and say: "Look it up." That was my first gateway into the world of knowledge. I learned that if I looked closely enough, asked the right questions, and followed my curiosity, the answers were often within reach. Whether my questions were obscure trivia or about the mechanics behind everyday phenomena, I wanted to know—not just what, but why.

The first seed of my academic journey was planted in Umeå. There, I encountered the tools and frameworks that allowed me to transform questions into investigations. Over time, the process of inquiry, posing problems, analysing data, and contributing to a growing body of knowledge became more than a method; it became a way of thinking. Eventually, this led me to pursue the highest academic qualification: the doctoral degree.

The path through doctoral education has been both challenging and deeply formative. Over the course of this thesis work, I have had the opportunity to engage in interdisciplinary research, collaborate with dedicated colleagues, and explore questions situated at the intersection of ageing, technology, and health. Designing national surveys, conducting focus groups, and interpreting results from both quantitative and qualitative data pushed me to grow as a scholar. I learned to navigate complex ethical considerations, manage uncertainty in the research process, and communicate findings to both academic and layman audiences. There were moments of doubt and periods of exhaustion, but also clarity, encouragement, and a growing sense of purpose.

Through this journey, I found something deeply fulfilling: the chance to spend my days analysing problems, making sense of patterns, and contributing to a field that not only fascinates me intellectually, but also matters for how we live and age together as a society.

This thesis is the collated result of that journey. It represents not just an academic contribution but a personal narrative of learning, persistence, and curiosity. I hope that the work presented here contributes to a more nuanced understanding of how technology can support active and healthy ageing, if we ask and listen carefully to people who use it, and design it for lives as they are actually lived.

Abstract

To promote active and healthy ageing (AHA), it is essential to understand how different generations engage with digital technologies, as these tools are becoming increasingly integral to everyday life. This thesis project explored technology adoption among men and women from three age groups representing different generations (30–39, 50–59 and 70–79 years), focusing on attitudes, usage patterns, and factors that facilitate or hinder engagement with technologies intended to support AHA.

Using a multi-methods approach, four interrelated studies were conducted. The first study, based on a national survey, examined generational attitudes toward a broad spectrum of technologies and their relevance in supporting AHA. Using the same dataset, the second study investigated how socio-demographic factors and attitudes towards digital technology were associated with reported ability to keep up with technological developments. Based on data from a national panel, the third study captured self-reported changes in digital technology use and attitudes during the early phase of the COVID-19 pandemic, providing insights into how period effects might influence digital engagement. The fourth study employed focus group interviews in an experimental housing environment to explore perceived barriers and facilitators to adopting smart home technologies among current and future older adults.

The generational perspective reveals that shared or overlapping views on technology can be more influential than age-based stereotypes when it comes to technology attitudes and adoption. Rather than labelling older adults as inherently "technophobic", or younger adults as automatically "tech-savvy," the findings show that attitudes toward technology are more strongly influenced by perceived usefulness, personal motivation, and prior experience than by age alone. Generational labels, while useful for capturing differences in digital familiarity and exposure, do not fully account for variation in adoption. Instead, technology engagement is shaped by individual resources, social influence, structural support, and sustainability concerns.

Overall, this thesis contributes to a more nuanced understanding of technology adoption that moves beyond chronological age. Challenging prevailing assumptions about ageing and technology, the findings underscore the need for inclusive and sustainable technology design, lifelong digital support systems, and policy attention paid to structural barriers such as affordability and access. These efforts are important to ensure that digital technologies can support autonomy, participation, and well-being for both current and future generations of older adults.

Populärvetenskaplig sammanfattning

Vi står mitt i två stora samhällsförändringar: den digitala revolutionen och en växande andel äldre i befolkningen. Tillsammans skapar de inte bara utmaningar – utan också stora möjligheter. När tekniken blir en alltmer självklar del av vardagen, väcks en avgörande fråga: hur kan vi använda den för att stärka livskvaliteten, främja hälsa och skapa mening – genom hela livet och över generationsgränser? Att säkerställa att ny teknik stärker – snarare än försämrar – människors välbefinnande har därför blivit både en vetenskaplig och samhällelig angelägenhet. Med detta som utgångspunkt påbörjade jag min doktorsavhandling, för att undersöka hur människor från olika generationer i Sverige förhåller sig till digital teknik – och hur dessa verktyg kan bidra till det som Världshälsoorganisationen kallar för aktivt och hälsosamt åldrande, där hälsa, självständighet, delaktighet och välbefinnande främjas genom hela livet.

Istället för att enbart fokusera på äldre personer, eller utgå ifrån att åldrande automatiskt leder till digitalt utanförskap, valde jag att studera hur människor i åldrarna 30–39, 50–59 och 70–79 uppfattar, använder och anpassar sig till digitala lösningar. Syftet var inte bara att ta reda på vem som använder vad, utan också att förstå varför vissa teknologier tas i bruk, vad som motiverar eller försvårar användning – och hur upplevelser av teknik skiljer sig åt, både mellan och inom generationer.

Avhandlingens fyra delstudier

Avhandlingen bygger på fyra sammanlänkade delstudier, baserade på nationella enkätundersökningar och fokusgruppsintervjuer genomförda i en experimentell hemmiljö.

I den första studien, som omfattade 2 121 deltagare, undersökte vi allmänna attityder till teknik, med särskilt fokus på hur tekniska lösningar uppfattas kunna stödja ett aktivt och hälsosamt åldrande. Traditionella hjälpmedel, som hushållsapparater och tekniska stödprodukter uppskattades brett av deltagare i samtliga åldersgrupper. När det gällde digital teknik visade det sig att attityderna varierade mer inom generationerna än mellan dem. Dessa resultat utmanar den vanliga föreställningen att äldre generellt är teknikskeptiska. Tvärtom många äldre personer visade intresse, särskilt när tekniken upplevdes som meningsfull, lätt att använda och relevant i vardagen. Deltagare från samtliga åldersgrupper uttryckte oro för hållbarhetsaspekter, såsom miljöpåverkan och kostnader – en oro som var särskilt framträdande bland deltagarna i den äldsta gruppen, och som tydliggör behovet av genomtänkt och hållbar design.

I den andra delstudien undersökte vi vilka faktorer som påverkar människors upplevelse av att ”hänga med” i den tekniska utvecklingen. Med hjälp av samma enkätmaterial som i den första delstudien, visade analysen att utbildningsnivå och

positiva attityder till teknik hade större betydelse än kronologisk ålder. Deltagare som betraktade tekniken som ett stöd för självständighet, tidsbesparing eller social samhörighet upplevde i högre grad att de var digitalt inkluderade. Intressant nog rapporterade såväl låg- som höginkomsttagare svårigheter att hålla jämna steg med den digitala utvecklingen. Detta tyder på att den digitala klyftan inte enbart kan förklaras av tillgång till teknik, utan också rymmer aspekter som individuella prioriteringar, intressen och tillgång till stöd.

I den tredje delstudien fokuserade vi på hur människor anpassade sin teknikanvändning under den tidiga fasen av COVID-19-pandemin. Bland 3 000 respondenter ökade användningen av digital teknik i alla åldersgrupper, särskilt för kommunikation, inköp och tillgång till offentliga tjänster. Denna ökning drevs på av pandemirestriktionerna, som tvingade många att testa nya lösningar för att upprätthålla vardagsrutiner och sociala kontakter. Trots dessa beteendeförändringar förblev de grundläggande attityderna till teknik i stort sett oförändrade – vilket, utifrån resultaten från denna tvärsnittsstudie, tyder på att attityder är mer stabila över tid, medan beteenden kan förändras snabbt i respons på yttre omständigheter. Resultaten belyser vikten av att förstå så kallade periodeffekter – det vill säga hur samhällskriser och andra större händelser kan påverka människors beteenden över generationsgränser, oberoende av ålder.

I den fjärde och avslutande delstudien undersökte vi attityder till smarta hem-teknologier, såsom rörelsesensorer, röststyrning och automatiserade system avsedda att stödja självständigt boende. Fokusgrupper hölls med deltagare från samtliga tre generationer i MoRe-lab vid Lunds universitet, i en tvårumslägenhet särskilt utformad inom experimentell hälsovetenskaplig forskning för att simulera hemmiljöer. Lägenheten är utrustad med ett standardutbud av smarta hem-lösningar, vilket möjliggör observationer och diskussioner kring hur människor interagerar med digitala system i realistiska vardagssituationer. Studien visade både generationsövergripande likheter och åldersrelaterade skillnader. Yngre deltagare var generellt mer nyfikna, medan äldre uttryckte en kombination av intresse och skepsis, ofta grundat i tidigare erfarenheter. Många deltagare saknade grundläggande information om hur tekniken fungerade, och den informationsfilm som visades upplevdes av vissa som överdrivet optimistisk. Detta väckte etiska frågor – inte bara om vad tekniken gör, utan också om hur den introduceras, av vem och i vems intresse. Deltagarna efterfrågade tydlig, balanserad information samt tid för att reflektera över sina egna behov och förutsättningar

Centrala insikter och vägar framåt

En av de mest centrala insikterna i avhandlingen är att teknikanvändning i första hand inte handlar om ålder. Det som i störst utsträckning avgör om ny teknik tas i bruk är snarare om den upplevs som användbar, tillförlitlig, begriplig och relevant i vardagen. Självförtroende och motivation spelar en avgörande roll – faktorer som i sin tur formas av tidigare erfarenheter, tillgång till stöd och bredare samhälleliga

villkor. I studierna framkom till exempel att vissa personer i 70-årsåldern visade stor entusiasm för digitala verktyg, medan vissa i 30-årsåldern närmade sig tekniken med osäkerhet eller skepsis. Dessa resultat utmanar seglivade föreställningar om att yngre automatiskt är digitalt kompetenta, eller att åldrande per definition innebär teknologisk marginalisering. Tvärtom visar resultaten att digital delaktighet är något som formas i relation till sammanhang, stödstrukturer och meningsskapande – snarare än kronologisk ålder. I flera av studierna framträdde informella ”förändringsagenter”, såsom vänner, familjemedlemmar, vårdpersonal och offentliga aktörer som viktiga möjliggörare för digital inkludering. Genom att bygga förtroende och erbjuda praktiskt stöd hjälpte dessa personer andra att utforska och ta till sig digitala lösningar på sina egna villkor.

Ett återkommande tema i deltagarnas berättelser var hållbarhet – både i miljömässig och social bemärkelse. Många uttryckte oro över den växande mängden elektroniskt avfall och över att produkter har kort livslängd. Samtidigt lyftes de personliga kostnaderna i att ständigt behöva anpassa sig till nya tekniska system. Teknik som upplevdes som komplex, dåligt förklarad eller oförenlig med individens värderingar eller livssituation avfärdades ofta – inte på grund av ålder, utan för att den inte motsvarade användarens behov eller förväntningar.

COVID-19-pandemin visade dessutom hur stora samhällshändelser – så kallade ”periodeffekter” – kan fungera som katalysatorer för digitalt engagemang över generationsgränser. Men även om beteenden förändrades snabbt under pandemin, förblev attityderna i många fall stabila. Detta belyser hur komplex samspelet är mellan erfarenheter, föreställningar och anpassning i olika livsskeden.

Varför spelar det här roll – och hur går vi vidare?

Avhandlingens resultat är betydelsefulla eftersom de utmanar seglivade myter om både åldrande och digitalisering. I takt med att allt fler samhällstjänster – från hälso- och sjukvård till bankärenden – digitaliseras, har digitalt utanförskap utvecklats till en växande källa till ojämlikhet. Personer som saknar möjligheter, kunskap eller motivation att använda digitala verktyg riskerar att hamna utanför – inte bara i praktiska avseenden, utan också i socialt och existentiellt hänseende. De riskerar att förlora tillgång till samhällets grundläggande service, till social gemenskap och till möjligheten att leva ett självständigt liv. Trots att digitalt utanförskap ofta framställs som något som främst berör äldre, visar resultaten att det kan drabba människor i alla åldrar – särskilt de som saknar självförtroende, stödstrukturer eller ekonomiska och sociala resurser i ett allt mer digitalt samhälle.

Detta pekar på behovet av att omdefiniera digital inkludering – från att enbart handla om teknisk tillgång, till att ses som ett samhällsansvar för att säkerställa att tekniken stärker självständighet, delaktighet och jämlikhet för alla. För att detta ska bli verklighet krävs långsiktiga satsningar på digital utbildning, inkluderande design som tar hänsyn till sensoriska, kognitiva och funktionella variationer, samt politiska

initiativ som adresserar strukturella faktorer som inkomst, utbildning och digitala rättigheter.

Hållbarhet framstod också som en avgörande fråga. Deltagarna lyfte inte bara miljömässiga konsekvenser av digital innovation, utan även den sociala och ekonomiska hållbarheten i att ständigt förväntas anpassa sig till nya system. För att digital teknik ska vara verkligt åldrandevänlig måste den vara hållbar i bred bemärkelse: miljömässigt ansvarsfull, ekonomiskt rimlig, socialt rättvis och anpassningsbar över livets olika faser. Resultaten visar att det finns ett akut behov av inkluderande innovationsstrategier som tar hänsyn till människors olika erfarenheter, behov och livssituationer.

Ett centralt budskap i denna avhandling är vikten av att utveckla teknik *med* användarna, inte enbart *för* dem. Samskapande, flexibilitet och kontextuell relevans är avgörande principer. Det som främjar ett aktivt och hälsosamt åldrande för en individ kan vara irrelevant – eller till och med betungande – för en annan. Det är därför missvisande att betrakta äldre som en homogen grupp; precis som i andra åldersgrupper finns det stora variationer i behov, drivkrafter, livsvillkor och förutsättningar. Vägen framåt kräver att vi lämnar åldersbaserade antaganden bakom oss, och i stället utgår från människors faktiska livssituationer. Om digital innovation ska bidra till ett gott liv för nuvarande och framtida generationer av äldre, måste tekniken formas i samklang med hur människor faktiskt lever – inte hur vi föreställer oss att de borde leva. Det innebär att lyssna noggrant, designa med omsorg och sätta jämlikhet och hållbarhet i centrum för den digitala utvecklingen.

Popular science summary

We are in the midst of two major societal transformations: a digital revolution and an ageing population. Together, they bring not only challenges—but also tremendous opportunities. As technology becomes an increasingly natural part of everyday life, a pressing question emerges: how can we use it to strengthen quality of life, promote health, and create meaning—throughout the life-course and across generations? Ensuring that technological innovation enhances—rather than undermines—well-being has become both a scientific and societal imperative. This was the starting point for my doctoral research, in which I explored how people from different generations in Sweden relate to digital technologies—and how these tools can contribute to what the World Health Organisation calls active and healthy ageing, a concept that emphasises health, independence, participation, and well-being across the life span.

Rather than focusing solely on older adults, or assuming that ageing automatically leads to digital exclusion, I chose to study how people aged 30–39, 50–59, and 70–79 perceive, use, and adapt to digital solutions. The aim was not only to find out who uses what—but to understand why certain technologies are adopted, what motivates or hinders use, and how experiences with technology differ both between and within generations.

Papers included in the thesis

The thesis draws on four interconnected studies based on national surveys and focus group discussions conducted in an experimental living environment.

In the first study, involving 2,121 participants, we examined general attitudes toward technology, with a particular focus on whether various technological solutions were perceived as supporting active and healthy ageing. Traditional tools—such as household appliances and assistive devices—were widely appreciated by participants of all ages. When it came to digital technologies, however, attitudes varied more within generations than between them. These findings challenge the common perception that older adults are inherently sceptical of technology. On the contrary, many showed keen interest—especially when the technology was seen as meaningful, easy to use, and relevant in everyday life. Participants across all age groups also raised concerns about sustainability, such as environmental impact and cost—concerns that were particularly prominent among the oldest participants, highlighting the need for thoughtful and sustainable design.

The second study examined what factors influence people's sense of 'keeping up' with technological developments. Using the same survey data, we found that education and positive attitudes toward technology mattered more than chronological age. Participants who saw technology as a means to stay independent, save time, or maintain social ties were more likely to feel digitally included.

Interestingly, both low- and high-income earners reported difficulties keeping pace with the digital world. This suggests that the digital divide cannot be explained solely by access to devices or infrastructure—but also involves individual priorities, interests, and the availability of support.

In the third study, we focused on how people adapted their technology use during the early phase of the COVID-19 pandemic. Among 3,000 respondents, digital usage increased across all age groups, particularly for communication, shopping, and accessing public services. These changes were largely driven by restrictions that forced many to test new tools in order to maintain routines and social contact. Despite these behavioural changes, however, underlying attitudes toward technology remained stable, suggesting, based on this cross-sectional study, that while behaviours may shift rapidly in response to external circumstances, attitudes tend to change more slowly. These results underscore the importance of understanding period effects—how societal crises can influence behaviour across generations, independent of age.

In the fourth and final study, we explored attitudes toward smart home technologies—such as motion sensors, voice control, and automated systems designed to support independent living. Focus groups were conducted with participants from all three age groups in the MoRe-lab at Lund University, a two-room apartment specifically designed for experimental health sciences research. The apartment is equipped with a standard range of smart home technologies, enabling observation and discussion in realistic, everyday scenarios. The study revealed both generational similarities and age-related differences. Younger participants were generally more curious, while older participants expressed a mix of interest and scepticism—often shaped by past experiences. Many lacked basic information about how the technology functioned, and some found the informational video shown to be overly optimistic. This raised ethical questions—not only about what the technology can do, but also about how it is introduced, by whom, and in whose interest. Participants called for clear, balanced information, and time to reflect on their own needs and circumstances.

Key Insights and the Road Ahead

One of the thesis's central insights is that technology use is not primarily about age. What matters most is whether the technology is perceived as useful, trustworthy, understandable, and relevant to everyday life. Confidence and motivation play a decisive role—factors that are shaped by prior experiences, access to support, and broader societal conditions. Some participants in their seventies showed great enthusiasm for digital tools, while some in their thirties approached them with uncertainty or hesitation. These findings challenge persistent stereotypes—that younger people are inherently digitally savvy, or that ageing inevitably leads to marginalisation. Instead, they show that digital engagement is shaped by meaning, context, and support structures—not chronological age.

In several of the studies, informal ‘change agents’—such as friends, family members, healthcare staff, or public service providers—emerged as key enablers of digital inclusion. By offering trust and practical assistance, these individuals helped others explore digital tools on their own terms.

A recurring theme in participants’ reflections was sustainability—both environmental and social. Many expressed concerns about the growing amount of electronic waste and the short lifespan of new products. Others raised the personal cost of constantly having to adjust to new systems. Technologies that were complex, poorly explained, or misaligned with a person’s values or life situation were often dismissed—not because of age, but because they didn’t meet users’ needs or expectations.

The COVID-19 pandemic further demonstrated how major societal events—so-called ‘period effects’—can act as catalysts for digital engagement across generations. Yet while behaviours shifted during the pandemic, attitudes remained largely stable. This highlights the complexity of how experiences, beliefs, and adaptation interact at different stages of life.

Why This Matters—and The Way Forward

The findings are important because they challenge long-standing myths about both ageing and digitalisation. As more essential services—from healthcare to banking—move online, digital exclusion has become a growing source of inequality. Those who lack the opportunity, skills, or motivation to engage with digital tools risk being excluded—not only practically, but also socially and existentially. They risk losing access to basic services, social participation, and the ability to live independently. While digital exclusion is often associated with older adults, the results show it can affect people of all ages—particularly those who lack confidence, support, or socioeconomic resources in an increasingly digital world.

This points to the need to redefine digital inclusion—not just as access to technology, but as a shared societal responsibility to ensure that technology promotes autonomy, participation, and equity for all. Achieving this will require sustained investment in digital education; inclusive design that takes sensory, cognitive, and functional diversity into account; and policy initiatives that address structural barriers such as income, education, and digital rights.

Sustainability also emerged as a critical concern. Participants highlighted not only the environmental costs of digital innovation, but also the social and economic strain of being expected to continuously adapt. For digital technology to be truly age-friendly, it must be sustainable in the broadest sense: environmentally responsible, economically viable, socially just, and adaptable across the life-course. These findings reveal an urgent need for inclusive innovation strategies that take into account people’s diverse experiences, needs, and circumstances.

A key message of this thesis is the importance of developing technologies *with* users, not just *for* them. Co-creation, flexibility, and contextual relevance are vital. What supports active and healthy ageing for one person may be irrelevant—or even burdensome—for another. It is misleading to view older adults as a homogenous group; as with other age groups, there is wide variation in needs, motivations, and resources. Moving forward requires letting go of age-based assumptions and starting instead from people's real-life situations. If digital innovation is to contribute to a good life for current and future generations of older adults, technology must be shaped in harmony with how people actually live—not how we imagine they should live. That means listening carefully, designing thoughtfully, and placing equity and sustainability at the heart of digital development.

Abbreviations

AHA	Active and Healthy Ageing
CI	Confidence Interval
ICT	Information and Communication Technology
LUSEC	Lund University Secure Environment for Collaboration
OR	Odds ratio
UTAUT	Unified Theory of Acceptance and Use of Technology
WHO	World Health Organisation

Definitions

Active and Healthy Ageing	The process of optimising opportunities for health, participation, and security to enhance quality of life as people age (WHO, 2002).
Attitudes	An attitude is a psychological predisposition to evaluate a person, object, or idea with a certain degree of favour or disfavour, shaped by emotions, beliefs, and prior experiences. It comprises affective, behavioural, and cognitive components that collectively influence perception and action (Jain, 2014).
Ageing	A multidimensional and cumulative process of biological, psychological, and social change that occurs over the life-course. Ageing encompasses the progressive decline in physiological functions, adaptations in cognitive and emotional capacities, and evolving social roles and relationships, shaped by individual experiences and structural contexts (Bengtson & Settersten Jr, 2016).
Digital Divide	The gap between individuals or groups who have access to and effectively use digital technologies

	and those who do not. This divide is a multi-dimensional process encompassing motivational-, material-, skill-, and usage access, emphasising that digital inequality persists even when physical access is ensured (Van Dijk, 2020).
Digital Technology	Refers to electronic and computer-based systems that enable the processing, storage, and transmission of data. These technologies underpin a wide range of socio-technical activities, including communication, education, commerce, and governance, and are increasingly integral to promoting active and healthy aging, accessing healthcare and enhancing autonomy and quality of life among older adults, as exemplified by devices such as smartphones, computers, smart home systems, and digital services (Chen et al., 2023).
Health	The concept of health has been defined in multiple ways. The World Health Organisation's (WHO) 1946 definition describes health as "a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity." More recently, Leonardi (2018) has conceptualised health as "a state of balance, an equilibrium that individuals establish within themselves and between themselves and their social and physical environments."
Period effect	Changes in attitudes, behaviours, or outcomes that occur across all age groups simultaneously due to a significant historical event or societal shift occurring at a particular point in time. Unlike age or cohort effects, period effects are tied to the broader context and can influence an entire population regardless of their life stage (Glenn, 2005; Yang & Land, 2013).
Smart home	Dwellings equipped with a combination of smart home technologies that are integrated into intelligent systems to provide people with, for instance, comfort and safety through controlling the home environment (Aldrich, 2003; Pira, 2021).
Technology	The application of scientific knowledge to develop tools, systems, and processes that address practical

problems and improve human life. In the context of this thesis, technology encompasses both digital and non-digital solutions, including devices, platforms, and infrastructures, that support communication, health management, autonomy, and social participation in daily life (Wahab et al., 2012).

Thesis at a glance

Study I. Attitudes related to technology for active and healthy ageing in a national multigenerational survey, N =2,121.	
Aim	To give an overview of the sample and survey methodology of the GenerationTech project, followed by a description of attitudes and adoption related to technology in general and as a means to support active and healthy ageing from the perspective of three generations.
Methods	Quantitative method, a cross-sectional national survey with a random sample of men and women from three age groups representing different generations (30–39, 50–59, and 70–79 years).
Results	While traditional technologies (e.g., household and assistive devices) were preferred across the generations, the oldest generation perceived ICT as less useful and user-friendly than younger generations.
Conclusions	Attitudes toward technology are more individual than generational, underscoring the need for inclusive design and development to support active and healthy ageing across the life-course.
Study II. Factors associated with the ability to keep up with technology developments: Findings from a national multigenerational survey in Sweden, N =2,121.	
Aim	To investigate factors associated with the self-perception of keeping up with technology developments among people of three age groups (i.e., representing different generations), taking attitudes toward technology and socio-demographics into consideration.
Methods	Quantitative study design, a cross-sectional national survey. Logistic regression analyses.
Results	Younger participants, men, those with positive attitudes toward ICT, and individuals with higher education levels were more likely to perceive themselves as staying current with technology.
Conclusions	Perceived usefulness, ease of use, and independence are key motivators across generations, highlighting the need for tailored strategies to bridge digital divides and foster engagement across generations.
Study III. Self-reported changes in use of and attitudes toward ICT in three generations in Sweden during the early phase of the COVID-19 pandemic, N =3,000.	
Aim	To identify and describe self-reported changes in use of and attitudes toward ICT in three age groups (i.e., representing different generations) in Sweden during the early phase of the COVID-19 pandemic. In addition, the purpose was to identify and describe whether and how belonging to a specific generation was related to these changes.
Methods	Quantitative method, a cross-sectional national survey.
Results	ICT use increased across all three generations, particularly for communication and online services, although attitudes remained stable.
Conclusions	While usage adapted rapidly to meet situational demands, the generational differences in ICT attitudes persisted, suggesting deeper structural and experiential influences on technology engagement.
Study IV. Smart Home technology to support engagement in meaningful activities while ageing: A focus group study with current and future generations of older adults, N =15.	
Aim	To explore perspectives on attitudes, desires, and needs towards SHT among people of different ages (30–39-, 50–59-, & 70–79-year-old men and women), representing current and future generations of older adults. An additional aim was to identify and gain an understanding of the barriers and facilitators that can support older adults in engaging in meaningful activities at home as they age.
Methods	Qualitative study design, focus group interviews in an experimental housing environment.
Results	Focus group participants across three age cohorts expressed highly individualised attitudes toward technology, with preferences and needs diverging within generations rather than between them.
Conclusions	The findings challenge age-based assumptions, emphasising that technology attitudes are shaped more by personal experience and context than by generational identity.

List of papers

Paper I

Offerman, J[*]., Fristedt, S[*]., Schmidt, S. M., Lofqvist, C., & Iwarsson, S. (2023). Attitudes related to technology for active and healthy aging in a national multigenerational survey. *Nature Aging*, 3(5), 617–625. [*]Shared first authorship.

Paper II

Offerman, J., Fristedt, S., Schmidt, S, M., & Iwarsson, S. (2025). Factors associated with the ability to keep up with technology developments: Findings from a national multigenerational survey in Sweden. Manuscript submitted.

Paper III

Offerman, J., Schmidt, S, M., Iwarsson, S., & Fristedt, S. (2024). Self-reported changes in use of and attitudes toward ICT in three generations in Sweden during the early phase of the COVID-19 pandemic. *Gerontology and Geriatric Medicine*, 10.

Paper IV[1]

Galanza, W. S., Offerman, J., Fristedt, S., Iwarsson, S., Malesevic, N., & Schmidt, S. M. (2025). Smart home technology to support engagement in everyday activities while ageing: A focus group study with current and future generations of older adults. *PloS one*, 20(1), e0317352.

[1] This paper will be included in William Son Galanza's doctoral thesis as well (November 2025).

Introduction

Alongside rapid digitalisation, the world is also experiencing a dramatic demographic shift. By 2050, the global population of individuals aged 65 and older is projected to surpass 1.5 billion (United Nations, 2020). The growing ageing population is persistently presented as challenging because older adults often encounter physical, social, and mental health barriers that can impact their independence and overall well-being. However, this development is a result of human and societal progress and brings opportunities: with increased longevity and more educated older adults, there is potential for reimagining later life as a period of continued growth, engagement, and contribution to society (Harper, 2014; WHO, 2020).

To address this complexity, innovative solutions are essential. Technology has the potential to play an important role in promoting active and healthy ageing (AHA) by enhancing independence, improving health outcomes, and reducing social isolation (Chen et al., 2023; Czaja et al., 2024; Rudnicka et al., 2020). However, these benefits can only be realised equitably if structural barriers such as access, affordability, and digital literacy are systematically addressed (Lin et al., 2025). Digital tools such as wearable health monitors, smart home systems, and digital communication platforms have shown promise in helping older individuals age in place and maintain vital social connections (Mitzner et al., 2019; Peek et al., 2014). However, despite growing investment and interest in such technologies, their adoption remains uneven across populations and age groups; for instance, among older adults (Swedish Internet Foundation, 2024). Persistent barriers, such as limited digital literacy, doubts about usefulness, and contextual socio-environmental factors can hinder engagement with digital tools designed to support health and well-being (Chen et al., 2023). These disparities risk undermining the potential of digital technology to promote AHA. Consequently, a deeper understanding of generational differences in attitudes, experiences, and perceived needs is essential to ensure that technological solutions are not only accessible but also meaningful and effective in enhancing health, independence, and quality of life across the life-course.

Active and Healthy Ageing

AHA is a multifaceted and evolving concept aimed at enhancing quality of life as individuals grow older. Although no universally agreed-upon definition exists, the WHO defines AHA as “the process of optimising opportunities for health, participation and security in order to enhance quality of life as people age” (WHO, 2002). This definition reflects a broad, life-course–oriented approach, acknowledging that ageing is shaped by experiences and conditions across an individual’s lifespan (Bousquet et al., 2015; Kuh et al., 2014; Mao et al., 2020; Rudnicka et al., 2020).

Central to AHA is the concept of functional ability, the capacity to meet basic needs, learn, make decisions, remain mobile, maintain social relationships, and contribute to society (Rudnicka et al., 2020). Importantly, functional ability is not solely determined by personal attributes but is co-constructed through interactions with supportive environments (WHO, 2002; Zaidi et al., 2013; Zaidi et al., 2017). This underscores the need for structural conditions, such as accessible healthcare, inclusive urban design, and age-friendly communities, that support older adults in maintaining autonomy and independence.

The term ‘active’ in AHA extends beyond physical activity or labour market participation. Active ageing encompasses engagement in social, economic, cultural, spiritual, and civic aspects of life, as well as personally meaningful activities, such as reading, enjoying music, and lifelong learning (Rantanen et al., 2019). Health is also a crucial part of AHA. According to the World Health Organisation's foundational definition, health is “a state of complete physical, mental, and social well-being, not just the absence of disease or infirmity” (WHO, 1946). This definition takes a holistic view, and more recent ideas highlight the dynamic and contextual aspects of health. Leonardi (2018) defines it as “a state of balance, an equilibrium that individuals establish within themselves and between themselves and their social and physical environments." These perspectives show that health and ageing are relational, adaptive, and multidimensional. Ageing is not a uniform or linear process; it is shaped by the accumulation of experiences, resources, and challenges over time (Bengtson & Settersten Jr, 2016). As life-course research has shown, individuals age differently depending on their social position, health status, and environmental exposures (Berney et al., 2000). The diversity of ageing trajectories means that chronological age is a limited indicator of capacity, need, or experience, highlighting the importance of flexible, person-centred approaches to supporting AHA across the life span.

For example, individuals of the same age may differ widely in their health status, digital engagement, and life circumstances. Some people in their seventies report high levels of well-being and confidence in using digital tools, while others experience limitations shaped by health, access, or support systems. Similarly,

younger adults may vary in their digital skills, resources, or motivation to engage with technology. Such variation highlights the importance of viewing ageing not as a linear decline but as a dynamic multidimensional process shaped by structural conditions, personal trajectories, and intergenerational relationships (Bengtson & Settersten Jr, 2016; Berney et al., 2000). By focusing on generational attitudes and adoption patterns in the general population, this thesis contributes to a broader understanding of how people across the life-course engage with digital technologies in diverse ways—moving beyond age-based assumptions and shedding light on knowledge gaps in patterns of use, perceived value, and engagement across different life stages.

Critical Perspectives on Active and Healthy Ageing

AHA also emphasises security, ensuring that adequate protection, care, and assistance are available when needed (Zaidi et al., 2013). However, despite its broad appeal, the concept of AHA has been critiqued for the risk of becoming normative or prescriptive if it fails to account for diverse life trajectories and structural inequalities (Foster & Walker, 2015). For example, the strong emphasis on independence may inadvertently marginalise individuals with chronic illness, cognitive impairments, or declining functional capacity, positioning dependency as a personal failure. Furthermore, policy discourses often focus on individual responsibility, subtly shifting the burden onto older adults to remain 'active' and 'healthy' while underplaying systemic barriers such as socioeconomic disadvantage, digital exclusion, and unequal access to health services (Foster & Walker, 2015). Digital health initiatives that assume universal internet access and digital literacy may unintentionally exclude socio-economically marginalised groups, such as older adults in low-income households, or immigrant communities where access to technology and relevant training is limited (Friemel, 2016). Lin et al. (2025) propose a multi-level framework for digital equity in later life, highlighting that individual capabilities, community support structures, and policy environments shape equitable digital engagement. These challenges reflect a broader tension in ageing policy: when autonomy and participation are promoted without paying attention to the structural conditions that shape older adults' lives, there is a risk that such agendas reinforce rather than reduce inequality (Moulaert & Biggs, 2013). Nonetheless, the concept of AHA remains valuable as a guiding framework because it draws attention to the multidimensionality of ageing, encompassing health, participation, and security, and encourages policies that promote well-being across the life-course.

Technology as a Means of Supporting Active and Healthy Ageing

Digital technology has emerged as a central mechanism for promoting AHA across the life-course. Rather than focusing solely on the oldest age groups, it is essential to recognise that ageing is a dynamic, cumulative process that begins earlier in adulthood. The opportunities and challenges associated with technology use, therefore, vary across and within generations (Fristedt et al., 2021). Digital technologies, when meaningfully integrated into people's daily lives, can enhance autonomy, participation, and well-being; core dimensions of AHA (Rudnicka et al., 2020; WHO, 2002; Zaidi et al., 2017). However, technology should not be considered an end in and of itself, nor should AHA be narrowly defined as the successful adoption of new tools. Instead, both must be understood in relation to broader structural, social, and policy contexts that shape people's ability to age well. Digital technologies that support AHA must therefore be responsive to diverse generational experiences and changing functional abilities across the life-course, as effective use of digital technology can foster a positive feedback loop (see Fig. 1).

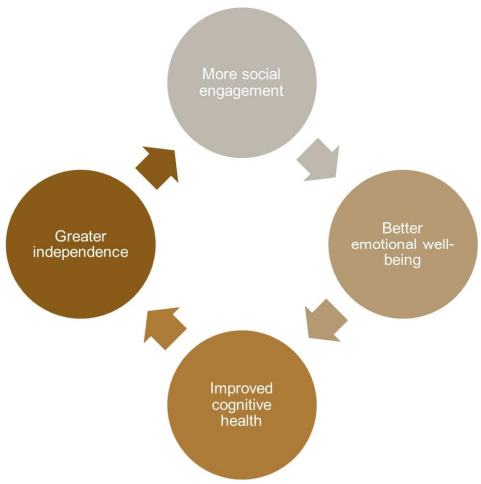

Figure 1. Positive feedback loop of using digital technology.

Technology in Everyday Life Across Generations

A wide range of technologies now intersect with everyday life across all age groups. These include communication platforms (e.g., smartphones, messaging apps, video calls), identification and banking services (e.g., BankID, Swish), health-related tools (e.g., e-prescriptions, 1177.se, fitness trackers), information and entertainment

platforms (e.g., Spotify, SVT Play, YouTube), and smart home devices (e.g., voice assistants, security systems) (See Fig. 2). Such tools support essential aspects of daily living: accessing services, staying connected, managing health, and navigating physical and digital environments. These technologies support autonomy, access to services, social participation, and convenience in everyday life, dimensions closely aligned with the goals of AHA.

Figure 2. Commonly used digital technologies in Sweden.

While digital technologies have become embedded in everyday routines, how they are used and for what purposes vary across generations. Adults aged 30–39 typically engage fluidly with a broad array of digital solutions, including app-based services for mobility, health, and entertainment. Those aged 50–59 often blend digital and analogue routines, relying increasingly on digital health portals, streaming services, and online banking. Among the 70–79 age group, digital adoption is more selective and function-driven, with common use of tools for communicating with family, securing the home, or accessing healthcare (Swedish Internet Foundation, 2024). Importantly, substantial variation exists within each generation, and simplistic age-based assumptions risk reinforcing stereotypes or obscuring socio-economic, cognitive, and contextual differences.

Generational Differences in Technology Adoption and Attitudes

The benefits of using technology to support AHA among older adults have been extensively advocated for (Czaja et al., 2024; Nimrod, 2020; Siegel & Dorner, 2017; Sixsmith & Gutman, 2013). Yet despite this potential, adoption among older adults remains inconsistent. Much of the previous literature has focused on difficulties faced by older users, often portraying them as technophobic or as inherently less digitally literate (McDonough, 2016). Findings from a meta-analysis challenged these stereotypes, suggesting that chronological age only negatively predicts technology acceptance in cases where perceived usefulness is unclear, such as with

social media (Hauk et al., 2018). As Berkowsky et al. (2018) argued, adults are more likely to adopt technology if they perceive it to be of value to them and if it will positively impact their lives. Existing evidence suggests that older adults tend to have more negative attitudes toward technology and report feeling less comfortable or capable using digital tools (Lee et al., 2019). Moreover, previous studies have shown that both older and younger people (Fristedt et al., 2021; Olsson et al., 2019; Zingmark et al., 2022) are challenged by ICT necessary for everyday life activities. Lee et al. suggest that the traditional generational gap in technology adoption will diminish with time. While some older adults embrace technology, many others struggle to integrate it into their daily lives. Reuter et al. (2023) argue that while digital inclusion—ensuring access, affordability, and basic skills—is necessary, it is not sufficient in and of itself. What also matters is digital participation: the ability to actively engage in, and contribute to, civic life, rather than merely consuming technology. Unlike younger generations, who have grown up with digital tools as an integral part of their environment, older adults have experienced technology as a series of rapid and often disruptive changes.

Despite these challenges, trends in digital engagement reveal signs of promising change. In Sweden, internet use has increased significantly over the past decade. In 2014, 89% of the general population used the internet, compared to 95% in 2024. The most notable growth has occurred among older individuals: in 2014, 51% of those aged 65 and above reported using the internet, compared to 83% in 2024 (Swedish Internet Foundation, 2014, 2024). These developments suggest that the generational divide is narrowing. However, barriers remain across all age groups. In 2024, one in five adults in Sweden reported needing assistance with some aspect of internet use (Swedish Internet Foundation, 2024). The same report highlighted that younger individuals are also showing signs of lagging behind in digital competence, particularly when it comes to information-seeking and critical use. This implies that the challenges of technology adoption in support of AHA are increasingly shaped not by age alone, but by a broader set of factors, including confidence, contextual relevance, and access to support.

Older adults are a highly diverse group, with varying levels of digital literacy and confidence (Fristedt et al., 2021). Some are enthusiastic adopters of technologies, while others face barriers such as perceived complexity, lack of training, and concerns over privacy (Boot et al., 2018; Charness & Boot, 2009; Vaportzis et al., 2017). However, despite extensive research on technology adoption, relatively few studies systematically examine generational differences and similarities in attitudes, competencies, and confidence; particularly those designed to identify cohort or period effects (Hauk et al., 2018; Yusif et al., 2016; Zhao et al., 2018).

The digital divide appears to be less related to age and more to differences in users' characteristics, interests, and expressions of digital competence. All people have knowledge and competence, just in different ways.

Digital Technologies Supporting Health and Daily Functioning

Digital and non-digital technologies both have the potential to contribute to health promotion by enabling individuals to maintain autonomy, manage chronic conditions, and remain socially and mentally engaged (Chen et al., 2023; Moxley et al., 2022). Digital tools can meaningfully support AHA when they align with individuals' values, needs, and capabilities. For instance, smart devices and apps can encourage physical activity, promote cognitive engagement, and improve access to services; functions that are crucial in preventing decline and maintaining independence (Bernardo et al., 2022; Chen et al., 2023; Greco et al., 2023). Wearables enable real-time monitoring of health indicators, support medication adherence, and facilitate preventive self-care, potentially reducing reliance on formal care systems (Chen et al., 2023; Czaja et al., 2024). Similarly, platforms offering brain-training programmes or telehealth consultations have shown promise in maintaining cognitive health and increasing healthcare accessibility (Marikyan et al., 2019). Yet, these benefits are often assumed rather than realised, particularly for groups facing barriers to access or engagement.

Barriers and Structural Conditions

Barriers to Meaningful Adoption

Persistent challenges, including low digital literacy, poor design usability, lack of trust, and affordability, continue to limit meaningful adoption among parts of the population (Tomczyk et al., 2023). Technologies that do not resonate with users' values or disrupt established routines may be rejected altogether (Berkowsky et al., 2018). For some, technology can become a source of frustration or alienation rather than empowerment, ultimately exacerbating rather than reducing inequalities (Lee, 2022). In such cases, technology fails to support AHA and may even reinforce social or health inequalities.

Smart home technologies illustrate these tensions well. Although they are promoted as solutions that enhance independence and safety—key goals of AHA (Aldrich, 2003; Pira, 2021)—their uptake remains limited (Valenica-Aras et al., 2023). Older adults in particular report uncertainty around issues related to installation, maintenance, and privacy (Dermody et al., 2024). While features like automated lighting or remote monitoring may indeed support ageing in place, they are often not perceived as useful or meaningful in practice (D'Amore et al., 2022; Ma et al., 2021). This disconnect highlights the need to better understand the decision-making processes behind adoption and the complex interplay between design, context, and individual meaning-making of technology use in later life.

Structural Conditions and Policy Efforts for Digital Inclusion

Importantly, the adoption of technology is not merely a private choice but is shaped by public infrastructure, policy, and social support. In Sweden, several national and local initiatives aim to foster digital inclusion. Government bodies such as the Digitalisation Council and the Agency for Digital Government (DIGG) offer strategic frameworks for access and skills development, while municipalities provide free IT support, training, and access points such as public libraries and senior centres. Civil society organisations (e.g., SPF Seniorerna, PRO) and institutions like the Swedish Internet Foundation contribute through workshops, tutorials, and awareness-raising programmes, including popular media formats like Seniorsurfarna. These efforts aim to ensure that individuals of all ages can participate in digital society, not just as consumers of care, but as engaged, autonomous citizens.

Despite these supports, critical gaps remain. Much of the policy discourse and research continues to focus on older adults with high levels of support needs, often framed in terms of welfare technology or care optimisation. This narrow lens neglects the broader, more heterogeneous older population, and everyday digital routines such as grocery shopping, banking, or social networking—activities central to AHA but often overlooked in research and design (Lee, 2022).

Towards Inclusive and Sustainable Technology Use

To ensure that both digital and non-digital tools meaningfully support AHA, inclusive design and targeted support must be prioritised (Lee, 2022; Ollevier et al., 2020). Understanding the specific needs and expectations of current and future generations of older adults is essential.

If technologies are to serve as effective means of supporting AHA, rather than barriers to AHA, then design processes must be participatory, support must be ongoing, and policies must address structural determinants such as income, education, and rights to digital participation (World Economic Forum, 2024). The promotion of AHA requires more than technological innovation; it requires investment in social infrastructure, critical reflection on who technologies serve, and a shift from solutionism toward sustained, inclusive engagement. When these conditions are met, technology can expand—not replace—the opportunities for individuals to live healthier, more connected, and more fulfilling lives as they age (Czaja, 2017; Greco et al., 2023). Yet even in supportive policy environments, differences in access, confidence, and perceived usefulness persist, particularly among those with lower education, income, or cognitive resources (World Economic Forum, 2024). Sustained efforts in both policy and practice are therefore essential to ensure that the benefits of digital technology are equitably distributed across society.

Factors Influencing Technology Adoption

Attitudes and Technology Adoption

Attitudes constitute enduring patterns of cognition, emotion, and behaviour that inform how individuals evaluate and respond to people, objects, ideas, and environments. They function as cognitive heuristics, often unconsciously guiding perception and decision-making. The widely cited tripartite model of attitudes posits that each attitude comprises cognitive (beliefs), affective (emotional responses), and behavioural (actions or intentions) components (Jain, 2014). For instance, an individual may believe that digital health applications are efficacious (cognitive), feel confident in using them (affective), and consequently integrate them into their daily routines (behavioural). These components collectively shape one's disposition towards technology and significantly influence patterns of adoption (see Fig. 3). In the context of promoting AHA, such attitudes are particularly important, as they can determine whether individuals engage with technologies that support autonomy, self-care, social participation, and well-being across the life-course (Rudnicka et al., 2020; Zaidi et al., 2017).

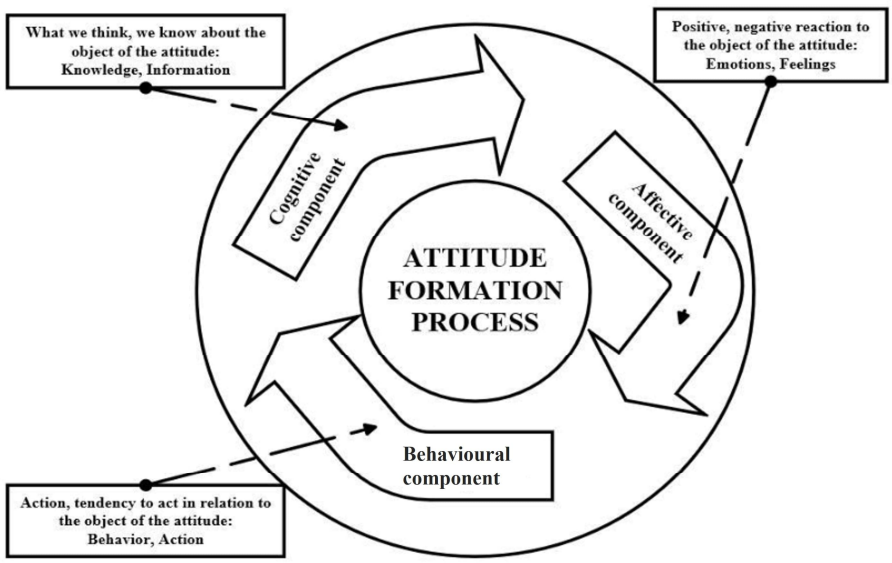

Figure 3. The attitude formation process. Based on Jain's tripartite model of attitudes (Jain, 2014).

Formation and Development of Attitudes

Attitudes are not innate but are acquired through a complex interplay of personal experience, social context, and learning processes. Direct encounters with technology, positive or negative, can leave lasting impressions that shape future engagement. Social influences also play a key role; individuals often internalise attitudes modelled by family, peers, and cultural norms (Chaiklin, 2011). In later life, the influence of change agents, or trusted intermediaries such as family members, healthcare professionals, or community leaders, can be especially important in shaping attitudes through both modelling and reinforcement (Rogers, 2010).

From a learning–theoretical perspective, attitudes may develop through associative mechanisms (classical conditioning), behavioural reinforcement (operant conditioning), and imitation (observational learning). These processes help explain why early exposure to digital technologies during childhood or adolescence is associated with more positive attitudes and higher likelihood of adoption in later years (Lee et al., 2019; Mitzner et al., 2019).

Although generally stable, attitudes can shift in response to new experiences, persuasive messages, or internal conflict. The theory of cognitive dissonance (Perlovsky, 2013) posits that inconsistency between beliefs and behaviours motivates individuals to resolve discomfort, often by altering attitudes. Persuasive messages from credible and familiar sources, such as change agents, can be especially effective in promoting attitude change and supporting technology adoption (Rogers, 2010).

Psychosocial Factors Influencing Technology Adoption

In the context of ageing populations, digital technologies' perceived usefulness and ease of use are consistently identified as key determinants of adoption (Berkowsky et al., 2018; Czaja et al., 2019; Czaja et al., 2006). Technologies that support autonomy, health maintenance, and social connection are particularly well-received when they present clear benefits and minimal barriers among older people (Schomakers et al., 2018; Sharit et al., 2021; Zhou et al., 2020).

Crucially, it is not only practical factors but also individuals' broader attitudes, shaped by personal experiences, perceived relevance, and social norms, that influence their likelihood of adopting technology (Berkowsky et al., 2018; Mitzner et al., 2019). Existing research has shown that older adults are more likely to adopt technologies they perceive as meaningful and beneficial to their everyday lives, especially when these support autonomy and well-being (Berkowsky et al., 2018; Hauk et al., 2018). Support from change agents, such as peers, professionals, or family members, can play a crucial role in facilitating positive attitudes and behaviours by offering guidance, encouragement, and successful use modelling (Rogers, 2010). Conversely, the absence of such support may reinforce scepticism

or avoidance, especially in contexts where individuals feel excluded or overwhelmed by ongoing digital developments. However, knowledge remains limited on how attitudes toward technology vary not only between individuals but also across generations, particularly in relation to AHA.

Barriers to Digital Inclusion: Attitudes, Design, and Access

In a society increasingly predicated upon digital infrastructure, non-participation in the digital landscape carries significant risks. Digital exclusion, defined not only by lack of access but also by insufficient skills, confidence, and opportunities to engage meaningfully, can limit individuals' access to essential services, healthcare, financial systems, and social networks (van Deursen & van Dijk, 2019).

Meanwhile, negative attitudes towards technology can contribute to disengagement (Czaja et al., 2019). Such attitudes often emerge from structural and design-related shortcomings, such as inaccessible interfaces, lack of relevance, or negative prior experiences with technology (Berkowsky et al., 2018). In this way, exclusion is not solely a matter of personal reluctance but also a reflection of how digital systems are developed, introduced, and supported.

Put forward by recent research (Seifert et al., 2021), poorly designed technologies that fail to account for diverse cognitive, sensory, or functional needs, particularly among older adults, may reinforce scepticism or dependence on others, ultimately undermining autonomy and participation. Addressing digital exclusion therefore requires more than infrastructural provision; it also demands inclusive design practices, equitable access to support, and efforts to foster confidence and trust in technology use across all segments of the population (Friemel, 2016). By addressing both individual and systemic barriers, inclusive digital participation can be achieved.

Sustainability as a Consideration in Technology Adoption

An additional, and increasingly salient, determinant of technological engagement pertains to sustainability. There is growing evidence that individuals are attentive not only to the functional utility of technologies but also to their environmental, economic, and social sustainability (Özçelik et al., 2022). Among older adults in particular, concerns regarding the longevity, reliability, and ecological footprint of digital devices influence decisions about their adoption and continued use (Schroeder et al., 2023).

Sustainability in this context encompasses more than ecological considerations; it also relates to design practices that ensure accessibility, long-term support, and enduring relevance (Ramírez-Saltos et al., 2023; Özçelik et al., 2022). Technologies perceived as temporary or contributing to environmental degradation may be rejected in favour of those offering more sustainable value propositions (Özçelik et al., 2022). By embedding sustainability into both product design and public

discourse, stakeholders and designers may foster greater trust and acceptance among users across the lifespan.

Theoretical and Conceptual Foundations of Technology Adoption Across Generations

Defining Technology Adoption in Ageing Contexts

Technology adoption is the process through which individuals or organisations accept and integrate new technology into their routines, influenced by factors such as perceived usefulness, ease of use, social influence, and facilitating conditions that shape their intention and actual use (Davis, 1989; Venkatesh et al., 2003). It encompasses the decision-making process of adopting a new tool, system, or product, and the ongoing use and integration of that technology into daily activities. Technology adoption can be defined as the acceptance, uptake, and sustained use of a technological innovation.

Notably, technology adoption plays a vital role in promoting AHA, as digital tools and innovations can support older adults in managing their health, maintaining social connections, and enhancing their independence and overall quality of life (Bousquet et al., 2015; Lee et al., 2025). When digital technologies align with older individuals' perceived needs and preferences, they can serve as powerful tools to support autonomy, engagement, and active participation in society throughout later life (Lee et al., 2025; Rogers, 2010).

Theories Linked to Technology Adoption

Unified Theory of Acceptance and Use of Technology (UTAUT)

Originally developed by Venkatesh et al. (2003), UTAUT offers a comprehensive framework for understanding the psychological determinants of technology adoption. The model synthesises elements from earlier theories (e.g., TAM, TRA, TPB), and identifies four key constructs—performance expectancy, effort expectancy, social influence, and facilitating conditions—that influence individuals' behavioural intention to use technology and their actual usage behaviour. These core constructs are moderated by factors such as age, gender, experience, and voluntariness of use (Venkatesh et al., 2003).

In this thesis, UTAUT provides a theoretical lens for interpreting how individual-level factors shape perceived ability and willingness to engage with technology, particularly among ageing populations. The UTAUT concepts, such as performance

expectancy (perceived usefulness) and effort expectancy (perceived ease of use), offer a useful framework for understanding the observed patterns. This theoretical perspective supports the interpretation of generational differences and helps identify specific barriers to and enablers of digital engagement across the life-course.

To account for technology adoption in non-mandatory, consumer-oriented contexts, such as the use of smartphones, apps, or smart home devices, the extended version, UTAUT2 (Venkatesh et al., 2012), is also relevant. By incorporating additional factors such as hedonic motivation, price value, and habit, UTAUT2 helps interpret patterns of emotional, financial, and habitual aspects of engagement with technologies. These additions are particularly relevant in the context of ageing, where voluntary use, perceived enjoyment, and daily routines strongly shape digital inclusion.

Overall, the UTAUT framework is used in this thesis for understanding how and why technology use varies across generations and life stages. However, its limitations in capturing broader socio-environmental influences, such as stigma, intergenerational support, or infrastructural barriers, are also recognised and addressed through complementary frameworks such as Diffusion of Innovations and Domestication Theory.

Diffusion of Innovations Theory

While UTAUT focuses on individual intention and use, Diffusion of Innovations Theory, developed by Rogers (2010), offers a broader view of how innovations spread across a social system over time. The innovation–decision process in Diffusion of Innovations Theory includes knowledge, persuasion, decision, implementation, and confirmation. It highlights how individuals consider whether an innovation aligns with their needs and values before adopting it.

Diffusion of Innovations Theory is especially useful for contextualising adoption at the societal level, shedding light on how peer influence, social norms, and systemic factors facilitate or hinder diffusion. It adds a valuable macro-level perspective to complement the micro-level focus of UTAUT. Importantly, Diffusion of Innovations Theory introduces the concept of adopter categories (innovators to laggards) and identifies five key attributes influencing adoption: relative advantage, compatibility, complexity, trialability, and observability. These constructs provide a structured lens for understanding the varied pace and pathways of adoption across population groups.

An important component of Diffusion of Innovations Theory is the role of change agents, who support the uptake of innovations within a community. Whether formal (e.g., healthcare providers) or informal (e.g., peers, family), these agents are particularly relevant in ageing contexts where support networks shape adoption. This socio-relational focus allows Diffusion of Innovations Theory to connect

individual decisions to collective trends, making it an essential complement to UTAUT's predictive behavioural model.

Domestication Theory

While UTAUT and Diffusion of Innovations Theory address the decision to adopt and the spread of innovations, they do not fully capture the ongoing, interpretive process by which technologies are made meaningful in everyday life. Domestication Theory, developed within media and communication studies (Haddon, 2011; Silverstone & Haddon, 1996), addresses this gap by focusing on how individuals and households negotiate, symbolise, and integrate technology into domestic routines and social identities.

Domestication Theory conceptualises technology adoption as a gradual, socio-cultural process that involves four overlapping dimensions: appropriation (acquisition and initial meaning), objectification (placement and symbolism), incorporation (routine use), and conversion (communicating use to others). This theory is particularly effective for exploring how older adults and multigenerational households incorporate technologies into contexts that may involve ambivalence, resistance, or negotiation.

Domestication Theory adds depth to the understanding of technology adoption by illuminating how use is shaped by everyday practices, values, and emotions, not just rational evaluations of usefulness. It is especially useful for qualitative and ethnographic research and captures dynamics that are often invisible in models focused purely on behavioural intention or system-level diffusion.

Comparative Overview and Integration

These three theories, UTAUT/UTAUT2, Diffusion of Innovations, and Domestication Theory, offer complementary perspectives on technology adoption. UTAUT/UTAUT2 provides a predictive model for examining individual acceptance and use, focusing on specific behavioural drivers. Diffusion of Innovations Theory extends this understanding to a systemic and social level, illuminating how innovations diffuse across populations and over time. Domestication Theory adds a cultural and experiential dimension, explaining how technologies become embedded in everyday life, identities, and relationships.

Together, they allow for a multi-dimensional analysis of technology adoption that accounts for motivational and behavioural factors (UTAUT/UTAUT2); social and temporal diffusion patterns (Diffusion of Innovations Theory); and symbolic, emotional, and contextual integration (Domestication Theory).

This complementary theoretical approach is particularly relevant for examining technology use among current and future generations of older adults. Rather than merging the theories into a single framework, they are used to highlight different but intersecting aspects of adoption. For instance, technology adoption theories such

as UTAUT or Diffusion of Innovation offer insights into individual-level motivations and barriers, while gerontological perspectives, such as the life-course perspective, emphasise how adoption is shaped by ageing trajectories and socio-cultural expectations. By drawing on these distinct but complementary perspectives, the research is better positioned to capture the layered, context-dependent, and generationally diverse nature of technology use in ageing populations.

Table 1. Overview of Domestication Theory, Diffusion of Innovations Theory, and UTAUT in terms of focus, scope, key constructs, perspective context, and main mechanism.

	Domestication Theory	Diffusion of Innovation	UTAUT/UTAUT2
Focus	Integration of technology into everyday life	Spread of innovations across social systems	Individual adoption and use of technology
Scope	Micro-level, socially and culturally situated	Macro-level, population-based	Micro-level, individual user behaviour in organisational and consumer settings
Key Constructs	Appropriation, Objectification, Incorporation, Conversion	Innovation attributes (e.g., relative advantage, compatibility); adopter categories	Performance expectancy, effort expectancy, social influence, facilitating conditions; UTAUT2 adds hedonic motivation, price value, and habit
Perscpective	Human-centred	Technology-centred	Human- and technology-centred
Context	Household, domestic life, ageing, health, media use	Societal, organisational, policy, and community-level innovations	Organisational (UTAUT) and consumer (UTAUT2) technology adoption
Main Mechanism	Ongoing negotiation of meaning, identity, and practice	Social influence, communication channels, and time-based diffusion	Rational decision-making based on utility and behavioural intention models

Conceptual and Theoretical Perspectives on Ageing and Generations

Ageing as a Life-Course Process

Ageing is a multidimensional and context-dependent process, shaped not only by chronological age, but also by a host of social, psychological, biological, and technological factors (Bengtson & Settersten Jr, 2016). While often treated as a linear or uniform progression, ageing unfolds in diverse ways across individuals and populations, depending on health status, life experiences, and environmental conditions. Within gerontology, an explicitly interdisciplinary field, numerous theories have been developed to account for the complexity of ageing and to situate it within broader life trajectories.

One such perspective is the life-course perspective, which emphasises how ageing is shaped by the cumulative interplay of individual choices, historical timing, and socio-structural influences (Elder Jr, 1994; Bengtson & Settersten Jr, 2016). Rather than viewing older age as a discrete phase, the life-course perspective highlights the dynamic and path-dependent nature of ageing (Bengtson & Settersten Jr, 2016)—how earlier experiences, including exposure to digital technologies, shape later capacities and preferences (Mitzner et al., 2010). Such perspectives are especially valuable in understanding how ageing intersects with digitalisation, and how attitudes toward technology are formed, maintained, or transformed over time. Life transitions (e.g., education, employment, retirement), as well as broader societal events (e.g., the rise of the internet or the COVID-19 pandemic), are seen as key inflection points that influence not only how people age, but also how they engage with technology to support autonomy, participation, and well-being (Bengtson & Settersten Jr, 2016; Glenn, 2005). This reflects a broader shift in ageing research away from static age categories and towards recognising ageing as socially embedded and heterogeneous.

Generational Framing and Conceptual Clarifications

The concept of 'generation' is often used informally to describe birth cohorts with shared formative experiences. Labels such as 'Baby Boomers', 'Generation X', and 'Millennials' are frequently employed in popular and policy discourse, although they lack strict scientific definitions and vary across cultural contexts (Rudolph et al., 2021). In this thesis, generational terms are used pragmatically to refer to three age groups—30–39 (Gen Y), 50–59 (Gen X), and 70–79 (Baby-boomers) years—selected to reflect meaningful differences in historical exposure to digital technologies and societal transitions. The youngest group (30–39 years) belongs to a generation shaped by the early expansion of the internet and mobile technologies, the middle group (50–59 years) to a generation shaped by the rise of personal computing, and the oldest group (70–79 years) to a generation shaped by post-war industrial and welfare state transformations. These categories were chosen not to represent essential generational identities, but to capture distinct positions in the life-course that reflect varying degrees of digital familiarity, health needs, and societal expectations regarding ageing. This approach enables a better understanding of how life stage and historical context intersect to shape attitudes, experiences, and perceived needs related to digital technology and ageing.

It is also important to note the conceptual ambiguity that arises from the dual use of the term 'generation' to describe both people and technology. For instance, first-generation mobile phones or fifth-generation wireless networks while also commonly used to denote birth cohorts shaped by shared formative experiences. As Lim (2009) argued, conflating these usages risks obscuring the complex social processes through which technologies are adopted, adapted, or resisted. Therefore, this thesis explicitly distinguishes between generations of people, shaped by shared

socio-historical contexts, and generations of technology, which evolve through innovation cycles and broader technological paradigms.

Taken together, life-course and generational perspectives offer important conceptual tools for analysing technology adoption in later life. They foreground the temporal, social, and experiential dimensions of both ageing and digital engagement, highlighting not only who uses which technologies, but when, how, and why these engagements emerge and evolve over time.

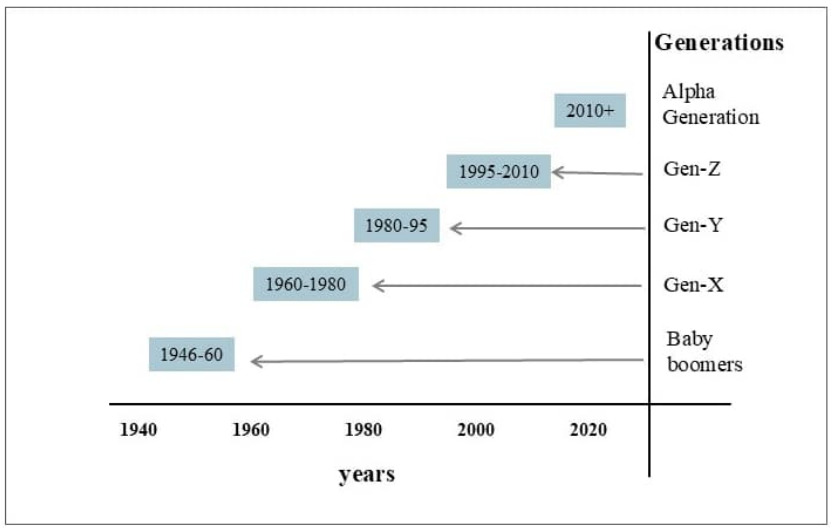

Figure 4. Generational birth year ranges.

Generational Belonging and Period Effects

In addition to generational patterns, it is essential to consider period effects—changes in attitudes or behaviours driven by significant societal events that affect all age groups simultaneously. Unlike age-related or cohort-specific influences, period effects reflect broader historical dynamics that may temporarily reshape, for instance, technology usage or the perceived value of the technology. Recognising these temporal influences helps disentangle age-related patterns from responses to external events (Glenn, 2005; Yang & Land, 2013). They often trigger behavioural shifts that are not tied to age or life stage, but to a shared response to broader contextual changes.

A striking example of a period effect is the COVID-19 pandemic, which catalysed a widespread and rapid transition to digital technologies beginning in early 2020. As societies moved toward remote work, telehealth, virtual learning, and digital socialisation, individuals of all ages were compelled to adopt new digital practices, not as a matter of generational preference, but in response to a collective global

disruption. This abrupt shift provides a unique opportunity to study technology use as shaped by context, rather than by age alone.

Other examples of period effects include the rollout of broadband internet in the early 2000s, which fundamentally changed how people accessed information and communicated, and the advent of smartphones following the introduction of the iPhone in 2007, which marked a significant turning point in digital connectivity. Most recently, the growing integration of AI tools into everyday life is shaping new patterns of technology interaction across generational lines.

Together, generational categories and period effects offer complementary perspectives for examining how individuals engage with technology over time. While generational analysis highlights the influence of early exposure and life-course positioning, period effects underscore the importance of broader societal forces. Both are critical to understanding the diversity of experiences and trajectories that shape technology adoption among current and future generations of older adults.

Rationale

All generations are increasingly engaged in selecting and using technologies in everyday life. As society becomes increasingly digital, being able to engage meaningfully with technology is essential for participation, autonomy, and well-being. However, not everyone experiences digital transformation equally. Long-standing disparities in access, skills, confidence, and relevance create a digital divide influenced by factors such as age, socioeconomic status, and context. This divide threatens not only social inclusion but also the technology's potential to support AHA. By examining how generational belonging relates to attitudes, readiness, and behaviours towards technology adoption, it is possible to identify patterns and needs crucial for fostering inclusion and effectiveness. Such insights can guide strategies that promote accessible and meaningful technology adoption across generations and life stages, thereby supporting AHA. Understanding how different generations relate to technology is therefore vital for developing inclusive approaches that enable equitable participation in a digital world.

Despite a growing body of research on technology use in later life, existing studies often focus solely on older adults, especially those with functional decline and substantial healthcare and social service needs. This overlooks how attitudes, experiences, and exposure to digital technologies vary both between and within age groups across the life-course. Moreover, there is limited research that systematically compares generational patterns of technology adoption, particularly in relation to the structural and psychosocial factors that facilitate or hinder engagement. The influence of broader societal changes, such as the COVID-19 pandemic, on technology use across generations is also underexplored, leaving gaps in understanding how period effects interact with life stage and cohort characteristics.

In addition, there is a need for research that not only captures broad trends and population-level patterns but also investigates how individuals make sense of technology in their everyday lives. This gap is particularly relevant for digital tools intended to support AHA, where personal meaning, perceived usefulness, and contextual support are critical to adoption.

To address these gaps, this thesis examines technology adoption across three age groups representing different generations in Sweden, combining national survey data and qualitative insights from focus groups. The research is grounded in theoretical frameworks from both gerontology and technology studies. The thesis explores attitudes, usage patterns, and the individual and structural factors influencing adoption, including access, motivation, and sustainability considerations.

Aims

The overarching aim of this thesis was to investigate how technology adoption can support AHA, focusing on three age groups representing different generations (30–39, 50–59, and 70–79 years old). By examining the attitudes, usage patterns, and factors that influence decisions to adopt new technologies among adults in Sweden, an overall purpose was to highlight similarities and differences in digital engagement across generations.

The research specifically sought to provide new insights into how personal experiences, social contexts, and structural conditions influence technology adoption in daily life. Delivering such results, it aspires to inform inclusive strategies that promote digital participation and equitable access to technologies that support autonomy, participation, and well-being across the life-course.

Specific aims

The GenerationTech Study (Study I)

To give an overview of the sample and survey methodology, followed by a description of attitudes and adoption related to technology in general and as a means to support AHA from the perspective of three age groups representing different generations.

The Keep Up Study (Study II)

To investigate factors associated with the reported ability to keep up with technology developments among people of three age groups representing different generations, taking attitudes toward technology and socio-demographics into consideration.

The COVID-19 Study (Study III)

To identify and describe self-reported changes in use of and attitudes toward ICT in three age groups representing different generations in Sweden during the early phase of the COVID-19 pandemic. In addition, the purpose was to identify and describe whether and how belonging to a specific generation was related to these changes.

Smart Home Study (Study IV)

To explore perspectives on attitudes, desires, and needs towards SHT among men and women of different ages, representing current and future generations of older adults. An additional aim was to identify and gain an understanding of the barriers and facilitators that can support older adults in engaging in meaningful activities at home as they age.

Methods

Study design and overview

In this thesis, a multi-methods design was employed, combining quantitative and qualitative approaches, as shown in Table 2. Two national surveys were conducted among individuals aged 30–39, 50–59, and 70–79 years to gain broad insights into attitudes toward technology and its potential to support AHA. The findings from the large-scale surveys offered a broad picture of where generational differences and similarities in technology adoption emerged. These insights were further deepened by focus group discussions with other participants from the same age groups, which illuminated the everyday contexts and underlying motivations shaping technology use.

Table 2. Overview of the four studies included in this thesis.

	Study I **GenerationTech Study**	**Study II** **Keep Up Study**	**Study III** **COVID-19 Study**	**Study IV** **Smart Home Study**
Aim	To give an overview of the sample and survey methodology, followed by a description of attitudes and adoption related to technology in general and as a means to support AHA from the perspective of three age groups representing different generations	To investigate factors associated with the reported ability to keep up with technology developments among people of three age groups representing different generations, taking attitudes toward technology and socio-demographics into consideration	To identify and describe self-reported changes in use of and attitudes toward ICT in three age groups representing different generations in Sweden during the early phase of the COVID-19 pandemic. In addition, the purpose was to identify and describe whether and how belonging to a specific generation was related to these changes	To explore perspectives on attitudes, desires, and needs towards SH technologies among men and women of different ages, representing current and future generations of older adults. An additional aim was to identify and gain an understanding of the barriers and facilitators that can support older adults in engaging in meaningful activities at home as they age
Methods/ Design/ Data collection	Quantitative, cross-sectional national survey study	Quantitative, cross-sectional national survey study	Quantitative, cross-sectional national survey study	Qualitative, focus group discussions in an experimental housing environment
Participants *men and women from three age groups representing different generations (30-39, 50-59 and 70-79 years).*	N = 2,121	N = 2,121	N = 3,000	N = 15
Analysis	Descriptive statistics and logistic regressions	Logistic regressions	Descriptive statistics and logistic regressions	Theory-driven deductive thematic approach based on Diffusion of Innovations Theory

National Surveys on Generational Attitudes and Technology Use: Survey Studies (I–III)

Study Design

Two cross-sectional national surveys were conducted in 2019 and 2020 using the same three age groups (30–39, 50–59, and 70–79 years), representing current and future generations of older adults. All three studies used structured questionnaires, analysed using descriptive statistics and logistic regressions adjusted for sociodemographic covariates. Study-specific details are described below.

Recruitments and Respondents

In the *GenerationTech* and *Keep Up* studies, a random sample was drawn from the Swedish State Personal Address Register (SPAR), representing men and women stratified into the three age cohorts. Kantar Sifo was commissioned for the sampling, recruitment, and data collection on behalf of and in collaboration with the research team.

In 2019, Kantar Sifo acquired 10,000 addresses. Stratified sampling accounted for the tendency of younger individuals to respond at lower rates. A comprehensive recruitment strategy was employed to maximise participation: postal letters were sent to potential respondents, including informed consent information, a link to the survey website, and unique login credentials for the online questionnaire. Non-responders received a postal reminder after one week. If there was still no response, trained interviewers followed up with phone calls, with up to eight attempts per person.

Throughout the main data collection process, Kantar Sifo performed regular quality control checks to ensure correct, complete, and logical entries in the database and maintained regular communication with the research team. Researchers reviewed data after 10% of responses and listened to 5% of phone interviews to catch any systematic issues. A continuous dialogue between Kantar Sifo and the research team helped ensure fidelity to the intended procedures.

These efforts resulted in a final sample of 2,121 respondents—1,081 men (51%) and 1,040 women (49%)—most of whom had been born in Sweden and had completed at least compulsory education. The overall response rate was 22% for men and 21% for women, with variation across age groups: 14% among those aged 30–39, 24% among those aged 50–59, and 35% among men and 30% among women in the 70–79 age group. For more details, see Table 3.

Table 3. Respondent characteristics in the GenerationTech and Keep Up studies (Survey I, N = 2,121) and the COVID-19 study (Survey II, N = 3,000).

Characteristic	Age 30-39		Age 50-59		Age 70-79	
	Survey I	Survey II	Survey I	Survey II	Survey I	Survey II
	n= 639	n=1,000	n= 703	n=1,000	n= 779	n=1,000
	%(n)	%(n)	%(n)	%(n)	%(n)	%(n)
Gender						
Male	49 (316)	50 (497)	49 (345)	51 (506)	54 (420)	54 (538)
Female	51 (323)	50 (503)	51 (358)	49 (494)	46 (359)	46 (462)
Country of Birth						
Sweden	88 (533)	97 (974)	89 (569)	94 (936)	93 (684)	95 (946)
Other	12 (72)	3 (26)	11 (72)	6 (64)	7 (49)	5 (54)
Education						
Compulsory school	2 (14)	1 (9)	4 (30)	3 (34)	28 (217)	16 (155)
High school	24 (153)	26 (263)	35 (244)	39 (389)	14 (111)	22 (219)
Polytechnic	14 (85)	N/A	12 (83)	N/A	17 (130)	N/A
University	60 (383)	73 (728)	49 (341)	58 (577)	41 (314)	62 (624)
Main occupation						
Studying	5 (29)	5 (51)	1 (6)	<1 (6)	<1 (3)	0 (0)
Working	83 (527)	82 (799)	90 (630)	93 (877)	2 (13)	1 (14)
Parental leave	7 (43)	9 (90)	0 (0)	0 (0)	0 (0)	0 (0)
Retired	<1 (1)	<1 (4)	2 (13)	3 (26)	95 (735)	99 (965)
Unemployed	2 (16)	3 (27)	3 (19)	4 (36)	0 (0)	0 (0)
Other or *missing*	3 (18)	*28*	4 (28)	*55*	3 (23)	*21*
Self-rated economy for technology needs						
Good	52 (333)	58 (566)	55 (382)	63 (622)	40 (305)	57 (571)
Fairly good	36 (228)	33 (325)	34 (239)	30 (295)	44 (338)	34 (338)
Fairly bad	9 (55)	7 (73)	7 (51)	5 (49)	10 (76)	6 (55)
Bad	3 (21)	2 (21)	4 (25)	2 (26)	6 (52)	3 (31)
Self-rated health						
Excellent	21 (130)	15 (146)	17 (120)	13 (134)	8 (64)	10 (95)
Very good	41 (264)	37 (365)	39 (275)	32 (315)	32 (242)	26 (257)
Good	29 (182)	37 (372)	31 (213)	38 (379)	39 (302)	41 (410)
Fair	8 (52)	9 (93)	10 (69)	14 (141)	19 (143)	21 (214)
Bad	1 (9)	2 (24)	3 (21)	3 (31)	2 (17)	2 (24)
Self-rated life satisfaction						
Excellent	15 (96)	8 (84)	17 (115)	12 (116)	16 (120)	14 (139)
Very good	46 (290)	35 (345)	44 (307)	35 (352)	39 (301)	32 (321)
Good	29 (183)	37 (367)	28 (193)	35 (348)	34 (258)	37 (368)
Fair	8 (53)	16 (162)	9 (66)	15 (150)	10 (80)	15 (155)
Bad	2 (12)	4 (42)	2 (13)	3 (34)	1 (6)	2 (17)

Note: Self-rated health and life satisfaction were assessed using a self-reported measure based on the SF-36 Health Survey (Ware, 1992).

In the *COVID-19* study, to ensure resource-efficient data collection within the limited project timeline and address potential representativeness issues when targeting a general population sample, an established online panel provided by Kantar Sifo was utilised. This panel was comprised of 100,000 randomly selected individuals aged 16 and older, representative of internet users in Sweden.

Participants in the panel had agreed to respond to surveys from Kantar Sifo within a specified time frame. To minimise familiarity bias, individuals are regularly replaced by new participants, ensuring that excessive involvement in studies does not influence the results. The online panel has demonstrated high response rates.

A sampling frame of 20,000 individuals was drawn from the panel, comprising 10,000 men and 10,000 women from the three age groups. In the next phase, a sub-selection of 9,146 individuals was randomly drawn by Kantar Sifo, taking into account known variations in response rates within the respective age groups. Subsequently, 5,108 individuals aged 30 to 39, 2,331 aged 50 to 59, and 1,707 aged 70 to 79 were invited to participate in the survey. Data collection took place from June 9th to 24th, 2020 (the early phase of the pandemic), with the goal of gathering responses from 1,000 individuals in each of the three age cohorts. Data collection was concluded once the target of 3,000 respondents had been reached, with 1,000 participants in each age cohort, as predetermined in the sampling design. In total, 1,459 women and 1,541 men took part in the survey. A description of the sample is presented in Table 3.

The Surveys

Both surveys used structured questionnaires developed based on existing literature and previous findings (Fristedt et al., 2021), focusing on technology use, attitudes, and adoption. The surveys were constructed to align with the research objectives and included questions grounded in theories of technology adoption and digital inclusion.

In the survey used for the *GenerationTech* and the *Keep Up* studies, data were collected through a survey questionnaire developed for the GenerationTech project. The questionnaire included 24 questions related to everyday products and services, such as household devices, kitchen appliances, and televisions, as well as ICT like smartphones, tablets, and computers. The survey included questions on welfare technologies, including safety alarms, video surveillance, and e-health solutions, alongside medical technologies such as assistive devices (e.g., wheeled walkers, wheelchairs, and communication aids). Seven questions were included pertaining to respondent characteristics, such as education, occupation, housing situation, marital status, and country of birth, in addition to self-reported general health, life satisfaction, and self-rated financial status on how well their economy covered their technology needs. To ensure data quality and usability, a pilot study followed by minor revisions was conducted prior to full-scale data collection. The estimated time to complete the survey was 10 to 15 minutes.

For the *COVID-19* study, a study-specific survey questionnaire was developed to focus on the changes experienced due to the recommendations introduced during the pandemic. The survey included questions related to how the pandemic affected respondents' use of digital technology. Participants were asked about their attitudes

toward digital technology and whether these attitudes had changed due to the pandemic and in response to public health recommendations. Additionally, they were asked whether they felt they had sufficient knowledge to use digital technology for everyday tasks, which digital products or services they used, and how they addressed any problems related to technology during the pandemic. Respondents answered questions on a 4-point scale (from "totally agree" to "do not agree") regarding their use of digital technology, including whether they had used it more frequently during the early phase of the pandemic and which types of technology had seen increased use. The online panel also provided demographic background information, including gender, age, education, region, household size, and self-rated health and life satisfaction. The survey took approximately 10 minutes to complete.

Both surveys included a mix of closed-ended questions, with Likert-like-scale items for attitudes and behaviour, as well as demographic questions. The exact copies of the surveys can be found in Appendices 1 and 2.

Understanding Attitudes Toward and Usage of Smart Home Technologies: A Qualitative Study (IV)

Study Design

This qualitative study employed focus group discussions (Hennink, 2013; Kreuger, 2015) to investigate participants' views and experiences related to smart home technologies. The format enabled rich, interactive dialogue through which a range of needs, expectations, and perceived challenges were expressed. The group-based setting fostered the exchange of both shared and divergent perspectives, contributing to a deeper understanding of the factors shaping attitudes toward these technologies.

Recruitment of Participants

To ensure a broad range of views on smart home technologies, participants were recruited using multiple outreach channels. Invitations were shared via existing mailing lists, targeting individuals with an interest in research, members of the User Board at CASE, and contacts within the researchers' professional networks. To reach younger individuals, physical flyers were placed in public venues such as university campuses, gyms, healthcare centres, supermarkets, libraries, and cafeterias. Recruitment took place from April 1 through May 30, 2023.

People who expressed interest by phone or email received comprehensive information about the study and were contacted individually to clarify its aims and procedures. Final selection was based on their availability to attend scheduled focus group meetings.

Aiming to recruit a generationally diverse sample while ensuring that all participants could fully engage in the group discussions, the inclusion criteria were: (1) the ability to speak and understand Swedish, and (2) belonging to one of the three specified age groups. In total, 15 individuals participated.

To explore attitudes toward smart home technologies in depth, three focus groups were convened. Each group met twice, resulting in six sessions overall. The approximately one-week interval between sessions gave participants an opportunity to reflect on their views, which enriched the discussions. Before the initial session, participants were offered the chance to ask questions or share concerns (none were raised).

Interview Guide for Focus Group Discussions

To support the focus group discussions, a series of open-ended questions was developed following established methodological guidance (Kreuger, 2015). The questioning route was designed to elicit participants' views on smart home technologies, including their attitudes, needs, desires, and perceived barriers to and enablers of adoption. Inspired by previous research examining how different generations relate to technology (Fristedt et al., 2021). The format encouraged participants to reflect on their own experiences while keeping the conversation anchored to the study's main aims. The exact copy of the interview guide can be found in Appendix 3.

Focus Group Procedure

The focus group discussions took place at the Movement and Reality Lab (MoRe-Lab) at Lund University, a state-of-the-art facility designed to simulate home environments for experimental health sciences research. This facility features a smart home environment, allowing us to explore how people interact with technology in everyday life. The apartment showcased a standard mix of smart home technologies (see Figure 5). The instrumented apartment setting allowed participants to discuss, and, in some cases, engage with real or familiar smart home technologies, grounding their reflections in concrete examples.

During the first session, participants shared their existing knowledge and prior experiences with smart home technologies. This was followed by a brief presentation and an illustrative video designed to stimulate discussion. Guided by open-ended questions, participants reflected on their attitudes, desires, and needs regarding technologies that could support everyday life and ageing in place.

The second session began with a summary of the previous discussion and then shifted focus toward identifying both enablers of and barriers to smart home technology use. Participants were invited to prioritise functions and devices they considered the most beneficial for facilitating daily activities in the home.

The first two sessions were moderated by a senior researcher, with me assisting, while another senior colleague observed and recorded the sessions from an adjacent control room. I led the remaining four sessions, and a fellow PhD student acted as assistant moderator. Notes were taken during the sessions, which helped the moderators reflect on the depth of the discussions and prepare for the next session. Each session lasted an average of 90 minutes.

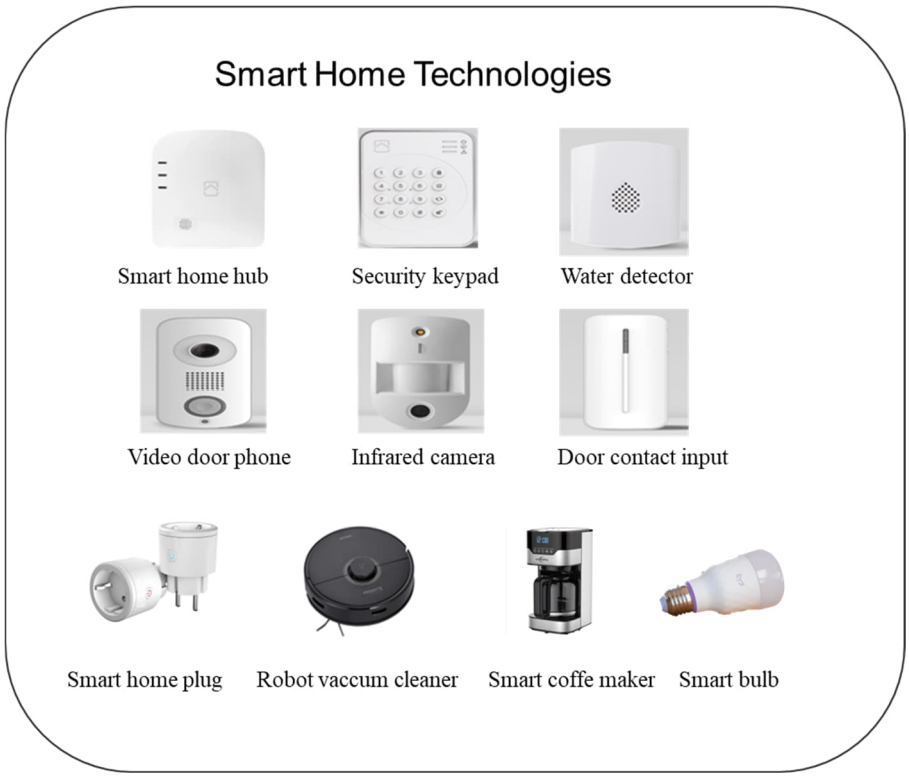

Figure 5: Showcase of smart home technologies demonstrated in the MoRe-Lab during focus group discussions.

Data analyses

Quantitative analyses

For all three quantitative studies—*GenerationTech*, *Keep Up*, and *COVID-19*—descriptive statistics were used to summarise the demographic characteristics of the respective samples. Logistic regression analyses were applied in all studies while controlling for relevant sociodemographic covariates.

Logistic Regression and Model Specification

Logistic regression is well-suited to binary outcomes, such as whether an individual uses or does not use a technology or agrees or disagrees with a statement. Instead of estimating a continuous value, logistic regression calculates the probability of an outcome occurring while adjusting for other relevant factors. Results are presented as odds ratios (OR), which indicate the likelihood of an outcome in one group relative to a reference group, holding other variables as constant.

To isolate the effect of generational belonging, all models were adjusted for key sociodemographic covariates, including education, self-rated health, economy, and life satisfaction. Where appropriate, ordinal and categorical response options were dichotomised, based on their distribution and median values, to improve model stability and enhance interpretability. This approach ensured that the results remained both statistically robust and accessible to a broader audience.

All analyses used the enter method (also known as forced-entry or simultaneous entry), in which all independent variables were included in the model simultaneously. This decision was grounded in theoretical and empirical considerations, allowing for a comprehensive assessment of the combined effects of multiple factors. Although this approach can retain non-significant predictors, it aligns with the exploratory nature of the research and is recommended in situations where theory, rather than statistical fit, drives variable inclusion (Field, 2024). The aim was not only to identify strong associations but also to understand the broader interplay of influences on technology adoption. No problematic multicollinearity was detected, as pre-analysis checks using a correlation matrix confirmed that no variable pairs exceeded the commonly accepted threshold of $r = 0.7$ (Dormann et al., 2013).

Study-Specific Analyses

In the *GenerationTech* study, descriptive statistics were used to summarise participant characteristics and responses. To explore generational differences in attitudes toward household and ICT products, chi-squared tests were applied to assess categorical preferences, and binary logistic regression models were used to examine associations between generational belonging and perceived usefulness or

user-friendliness of technologies. Adjusted models included covariates such as country of birth, education, municipality size, self-rated economy (for technology needs), life satisfaction, and general health. Bonferroni corrections were applied to account for multiple comparisons.

Table 4. Overview of study-specific data analyses, Studies I–III.

Study	Main Analyses	Dependent variables	Independent variables	Adjustments /Confounders	Software
GenerationTech study	Chi-Squared test and binary logistic regressions	Attitudes toward household and ICT devices	Generational belonging	Country of birth, education, municipality size, self-rated economy for tech needs, self-rated life satisfaction, self-rated health	SPSS Statistics 27
Keep Up study	Multivariable logistic regression model	Self-reported ability to keep up with technology developments	Generational belonging, gender, attitudes toward ICT & household devices, education, life satisfaction, self-rated economy for tech needs and self-rated health	Same as independent variables in the multivariable model	SPSS Statistics 29
COVID-19 study	Binary logistic regressions	Increased ICT usage during the pandemic. Use of specific technologies	Generational belonging, gender, education, self-rated economy for tech needs, self-rated health, housing, civil status, occupation, self-rated life satisfaction	All the above variables are included in the adjusted models	SPSS Statistics 27

Note: In all studies, the alpha level was set to $p < 0.05$.

In the *Keep Up* study, the primary outcome was dichotomised (agree vs. not agree), and binary logistic regression models were applied to assess associations with generational belonging, gender, attitudes toward ICT and household technologies, and sociodemographic variables including education, life satisfaction, self-rated health, and self-rated economy (for technology needs).

In the *COVID-19* study, binary logistic regression was used. Dependent variables were dichotomised into agreeing versus not agreeing to increased usage. The primary independent variable was generational belonging, with gender, education, self-rated economy (for technology needs), self-rated health, housing, civil status, occupation, and life satisfaction included in adjusted models.

Qualitative analysis

The audio recordings from all focus group sessions were transcribed verbatim, ensuring both accuracy and a deep familiarity with the material. The video recordings were used to support the transcription process, enabling accurate identification of participants, linking their contributions to the correct individuals, and observing group dynamics.

The subsequent analysis was conducted using a deductive thematic approach informed by established theoretical constructs (Braun & Clarke, 2021; Terry et al., 2017). Specifically, a deductive thematic analysis was applied, using a set of pre-defined themes and sub-themes derived from the five-step decision-making process, Diffusion of Innovations Theory (*knowledge, persuasion, decision, implementation, and confirmation*) (Rogers, 2010). This theory-driven approach provided a structured lens through which to examine participants' reflections on smart home technology, while still allowing for nuanced observations to be incorporated within the boundaries of each pre-defined theme, in line with a flexible deductive approach (Terry et al., 2017). We developed initial themes and sub-themes aligned with the stages, with input and support from senior researchers (see Table 5).

A close reading of the transcripts was then conducted to generate initial codes and detailed annotations, with particular attention paid to participants' attitudes, perceived needs, motivations, and barriers to adopting smart home technology. The resulting codes were mapped onto the pre-defined themes and subthemes in the relevant stage of the five-stage decision-making process outlined in the Diffusion of Innovations Theory.

To ensure coherence and validity, a second round of coding was independently conducted, and the full set of transcripts was revisited. Through this iterative process, the alignment between codes and themes was refined, and overlaps across the stages of the decision-making process were clarified. Ongoing discussions were held by the research team to review and refine the codes, themes, and sub-themes,

thereby ensuring a rigorous and transparent analytic process. NVivo software (QSR International, 2023) supported the analysis.

Table 5. Themes and sub-themes used for the deductive analysis.

Five-stage decision-making progress	Pre-defined themes	Sub-themes
Stage 1. Awareness/Knowledge	Awareness and knowledge of SHT	Own desire to understand SHT
		Increased awareness supported by change agents or politicians
Stage 2. Persuasion	Desired, non-desired, and needs of SHT	Perceived advantages of SHT
		The potential impact of SHT on users' functioning or health
		User data integrity with SHT implementation
		Perceived need of SHT
Stage 3. Decision	Determining ease of use through trial	
Stage 4. Implementation	Integration of Smart Home Technology into the home environment	Dealing with uncertainty and consequences of implementation
		Ideas for re-invention that would support practical implementation
		Ideas for re-invention for AI-supported SHT
Stage 5. Confirmation	Positive reinforcement or rejection of the adopted Smart Home Technology	Experiences supporting adoption.
		Reject SHT after adoption

Ethical considerations

All studies included in this thesis received ethical approval from the Swedish Ethical Review Authority. The approval numbers for the respective studies are as follows: [no. 2019-02072 and 2020-02236 and 2023-00119-01]. However, obtaining ethical approval for Study 4, the *Smart Home* study, presented challenges. The ethics review authority initially deemed formal approval unnecessary, which required the research team to submit an appeal. In this appeal, we emphasised the importance of ethical oversight due to the sensitive nature of the questions, particularly those related to participants' health. Although the study involved minimal risk, the collection of data concerning potentially sensitive information necessitated ethical approval to ensure appropriate protection of participants' integrity and rights. The appeal was successful, and ethical approval was subsequently granted.

Ethical considerations in this research were guided by the principles outlined in the Declaration of Helsinki (World Medical Association, 2014). This ensures that the studies adhere to fundamental ethical principles, including respect for individuals, beneficence, and justice, as well as the requirement for informed consent, risk minimisation, and the protection of vulnerable participants. All participants gave their informed consent prior to participation. In the *Smart Home* study, this included explicit consent for both audio and video recording, as well as for the use of anonymised quotes in publications and presentations. In the three national survey studies, informed consent was obtained either digitally, by phone, or in writing, depending on the mode of data collection. Additionally, this research adhered to best practices as outlined by the Swedish Research Council (2017). This includes principles of good research practice, such as integrity, transparency, and accountability in the handling of data, as well as respect for participants' autonomy and confidentiality. These guidelines serve to uphold high ethical standards and ensure that research is conducted responsibly and keeping societal benefit in mind.

To protect participants' confidentiality and ensure secure data handling, all collected data were stored in LUSEC. LUSEC is a secure digital infrastructure provided by the Faculty of Medicine, Lund University, which enables researchers to manage sensitive data in compliance with ethical and legal standards, including GDPR. The platform is specifically designed to safeguard research data through controlled access, encryption, and secure storage. Only authorised members of the research team had access to the data, and all transcripts were anonymised prior to analysis. By using LUSEC, I ensured that no unauthorised data sharing could occur, and that participants' information remained protected throughout the research process.

Overall, ethical considerations were carefully managed throughout the research process, ensuring that participants' rights and perspectives were respected. In the focus group setting, this was achieved through several deliberate measures. Prior to participation, all individuals were provided with comprehensive written and verbal

information about the study's aims, procedures, and their rights as participants, including the right to withdraw at any time without consequence.

As the moderator of the focus groups, I took particular care to create a safe and inclusive environment for discussion. At the beginning of each focus group, I introduced a set of ground rules aimed at fostering respectful dialogue and ensuring that all voices could be heard. I was attentive to group dynamics throughout, actively encouraging participation from quieter individuals and gently moderating more dominant voices to maintain balance. I remained sensitive to any signs of discomfort and was prepared to pause or shift the conversation if I sensed that a topic was becoming distressing or too personal. I also reminded participants at the end of each session not to share any sensitive or personal information of the discussion outside the group, reinforcing the importance of mutual respect and discretion. Through these measures, I aimed to uphold high ethical standards and create a space in which participants felt both safe and heard.

Results

Across all four studies, findings converge on a central insight: technologies that are perceived as enhancing autonomy, security, and everyday functioning are consistently valued, regardless of age. While generational differences in digital confidence, perceived usefulness, and ease of use did emerge, the overarching motivations for adopting technology, such as maintaining independence, participating in society, and managing daily life, were shared across generations and not associated with chronological age. Together, the results not only highlight statistical patterns but also bring forward the lived experiences and situational factors that influence engagement with technology across generations.

Generational Attitudes and Technology Use

Across the studies, several consistent patterns emerged regarding how different generations perceive, use, and adopt digital technologies. While all age groups expressed a general sense of digital competence, important generational differences were observed in perceived usefulness, adoption motives, and experienced challenges.

Older adults (aged 70–79) reported significantly lower odds than younger participants (aged 30–39) of perceiving both ICT and household devices as useful and user-friendly. However, the oldest group were significantly more likely to associate household technologies with increased independence, underscoring the importance of perceived function over novelty. A similar trend was seen among participants aged 50–59, who were more likely than the youngest group to link ICT to enhanced autonomy. Overall, respondents across all generations placed greater emphasis on price, reliability, and functional flexibility than on access to the latest technologies (*GenerationTech* study).

The primary motivations for using technology among respondents were to maintain independence, keep in contact with friends and family, and remain physically active. However, older adults (aged 70–79) were significantly less interested than younger generations in using technologies for saving time, controlling home entertainment, or shopping. Compared to the youngest group (aged 30–39), the middle-aged generation (aged 50–59) also expressed significantly less interest in time-saving features (*GenerationTech* study*)*.

Table 6. Generational Usage Patterns, Functions, and AHA Dimensions of Everyday Technologies.

Technology Type	Generational Usage Patterns	AHA Dimension Supported
Communication tools (e.g., video calls, SMS, messaging apps)	High across all; older adults increased use during COVID-19 for social contact	Participation, well-being, autonomy
Banking and identification services (e.g., Swish, BankID)	Frequent among midlife and younger groups; selectively used by older adults for practical needs	Autonomy, access to services
Digital health tools (e.g., 1177.se, e-prescriptions, activity trackers)	Used across all groups, midlife and older adults especially value it for managing health	Autonomy, well-being, access to care
Entertainment and information platforms (e.g., SVT Play, Netflix, Spotify)	Primarily, younger and midlife adults; older adults are less engaged unless the content is familiar	Well-being, social inclusion
Smart home technologies (e.g., voice assistants, security systems)	Limited knowledge and exposure across all groups; perceived as useful when linked to safety or independence	Autonomy, safety, well-being

Note: Summarises five commonly used types of digital technologies and their observed usage patterns across age groups, as identified in the thesis. It also outlines how each technology supports dimensions of AHA, including autonomy, participation, well-being, and access to services.

Attitudes such as viewing ICT as useful, time-saving, and supportive of independence were positively associated with individuals' ability to keep up with technological developments. This relationship was consistent even after adjusting for gender, age, and self-rated economy. However, challenges were more frequently reported both by older adults and by women, each group having significantly lower odds of reporting that they could keep up with technology developments (See Table 7). Respondents who assessed their economy as either 'good' or 'poor' also reported lower ability to keep up compared with those with a moderate economic self-assessment. Still, a majority across all age groups expressed confidence in their ability to keep up with technology developments (*Keep Up* study).

Table 7. Factors associated with reporting no problems keeping up with technological developments.

Variable/Comparison	OR [95% CI]
ICT is user-friendly	1.81 [1.21, 2.73]
ICT is time-saving	2.03 [1.44, 2.87]
ICT facilitates independence	1.99 [1.33, 2.96]
Household devices facilitate independence	0.68 [0.46, 0.99]
Youngest generation vs. oldest generation	2.88 [1.84, 4.53]
Female vs. male	0.52 [0.39, 0.70]

During the early phase of the COVID-19 pandemic, 60% of respondents reported using digital technology more frequently, particularly for maintaining social contact and managing daily life. While this trend was evident across age groups, generational variation also emerged. Compared to younger adults, older adults had 57% higher odds of increasing their ICT use. Video calls, SMS, and email were considered particularly important by the oldest group, whose use of these tools increased markedly (*COVID-19* study; see Table 8). Despite the rise in use, most participants (over 80%) reported no change in their overall attitude toward ICT. Nevertheless, a notable minority described a more positive attitude after the onset of the pandemic, with a small proportion (3%) expressing increased negativity.

Table 8. Key results from the COVID-19 study N =3,000.

Comparison	Outcome	OR [95% CI]
Oldest vs. youngest generation	Increased use of email	8.41 [6.61, 10.70]
Oldest vs. youngest generation	Increased use of SMS	2.43 [1.97, 2.98]
Middle-aged vs. youngest generation	Increased use of email	2.39 [1.88, 3.03]
Middle-aged vs. youngest generation	Increased use of SMS	1.29 [1.07, 1.56]
Middle-aged vs. youngest generation	Increased use of ICT to acquire goods	0.79 [0.66, 0.96]
Middle-aged vs. youngest generation	Increased use of video calls	0.70 [0.58, 0.85]

Note: This table presents selected significant findings from the COVID-19 study. Generational differences in increased usage of specific ICT tools during the early pandemic phase are reported.

Factors influencing the choice and adoption of technology across studies included cost, simplicity, and compatibility with everyday needs. Participants were generally disinterested in having the newest or most advanced products and instead prioritised robustness, clear functionality, and environmental sustainability, particularly older participants (*GenerationTech* study). This pragmatic orientation was reaffirmed in focus group discussions on smart home technologies (*Smart Home* study).

Understanding Attitudes Toward and Usage of Smart Home Technologies

Across all age groups, time-saving emerged as a widely appreciated feature, indicating a general value placed on convenience. While generational patterns were evident, notable intra-generational variation suggested that factors such as prior experience, openness to innovation, and contextual circumstances (e.g., caregiving needs, household composition) may influence attitudes more than age alone. Participants across all generations expressed a cautious but open stance toward AI-supported functions, showing interest while remaining sceptical about issues such as usability and personalisation.

Across generations, many participants had limited prior experience or knowledge of smart home technologies, showing a mix of curiosity and uncertainty. Their initial awareness mainly came from informal sources like family, media, or health professionals. While they recognised benefits such as improved security, convenience, and independence support, concerns about reliability, complexity, and unmet expectations were also voiced. The age groups 50–59 and 70–79 demonstrated an interest in learning more about SHT and its role in supporting ageing in place, reflecting a more active approach to gaining knowledge.

> "Friends pique my interest. As a result, I purchase technology that others have recommended to me." (Male, 50–59 years old).

> "There is so much we do not know. So, I want someone to tell me what I need. We need someone to show us how we can get help from smart home technology and make it easier for us." (Female, 70–79 years old).

Themes linked to persuasion included discussions on the influence of social networks and broader narratives about automation and AI. While some participants expressed curiosity or interest in smart home technologies, concerns about privacy, costs, usability, and scepticism as to whether these devices are genuinely 'smart' persisted. Interestingly, several participants challenged the terminology, suggesting that 'secure homes' might more accurately reflect their expectations. Older participants (70–79) highlighted immediate, practical benefits like fall detection and emergency support, while younger participants (30–39) were more focused on future possibilities and innovation rather than current personal needs. Middle-aged

participants (50–59) tended to view these perspectives as balanced, recognising both current usefulness and long-term relevance.

> "I am ambivalent about interpreting the word 'smart' home; it should be secured homes instead. Because of the simplicity and ease it offers. I perceive it as wiser, which gives a much deeper meaning than smart." (Male, 70–79 years old).

Themes linked to decision included descriptions of informal trials or observations of smart home technologies to assess their perceived usefulness and ease of use. For participants who had begun incorporating these technologies. The oldest group was more likely to express hesitation even after trying the technology, often citing issues such as interface complexity or a poor fit with their home environment. In contrast, younger adults were more willing to tolerate initial drawbacks if the perceived long-term potential was high, viewing adoption as an ongoing and adaptive process.

> "It partly works and partly does not. You need to go through many detours to reach the goal. I do not think technology is adopted. It will develop more and more, but I do not think it feels ready today." (Female, 30–39 years old).

> "But when everything is up and running, it works great and is okay. However, the beginning should be more uncomplicated, specifically the setup and installation, so people do not lose interest when you do not get it right." (Male, 50–59 years old).

Themes linked to implementation highlighted processes of personalisation and creative adaptation. Several described modifying or repurposing technologies to meet specific needs, aligning with the reinvention concept within the Diffusion of Innovations Theory. Participants aged 70–79 often required more external support during this stage and were less likely to adapt or modify the technology independently. In contrast, middle-aged and youngest participants demonstrated greater flexibility, frequently reinventing smart home technologies in creative ways, such as integrating voice assistants or automation.

> "I prefer a smart home technology device that is easy to understand, does not keep updating itself, and changes too much. So, if buttons change or change places, it can cause problems. There should be some universal solution to the symbols." (Female, 30–39 years old).

Finally, themes associated with the confirmation stage reflected mixed experiences. Some participants described reinforcement through successful use, while others reported discontinuation due to continued challenges or unmet expectations. Members of the oldest group (70–79) were more likely to discontinue use if the technology caused stress or failed to prove useful quickly, whereas younger participants were more tolerant of glitches and learning curves, often retaining the product despite early challenges. These insights illustrate how individual and

contextual factors shape the perceived value and long-term integration of smart home technologies into everyday life.

> "I proudly say this creates a freedom I would not have otherwise. How good that you have those functions at home so I can continue to live in my home, even if it is a tenancy; it can decrease the level of anxiety and increase my quality of life." (Male, 70–79 years old).

> "We did not trust the security of the data collected from the monitoring camera, so we took it down and never used it again." (Male, 50–59 years old).

The *Smart Home* study shows that although some generational patterns in smart home technology adoption are evident, particularly concerning urgency, privacy concerns, and interface preferences, behaviour across all five stages of adoption is influenced by individual attitudes, previous experience, and perceived relevance.

Discussion

This thesis extends prior research by introducing a generational perspective to examine how chronological age, life experience, and generational belonging shape attitudes toward technology adoption. While earlier studies have emphasised perceived usefulness, value, and ease of use, especially among older adults (Czaja et al., 2024; Mitzner et al., 2019), the findings from this thesis reveal that such factors influence technology adoption across all age groups.

A consistent theme emerging across the findings of the four studies included in this thesis is that individuals, irrespective of age, are more inclined to adopt a technology when it is perceived to be beneficial, user-friendly, and meaningful to use. Age, in itself, does not constitute the primary barrier to adoption; rather, the quality of design and the perceived value of the technology are central determinants of technology adoption. Thus, the findings challenge prevailing narratives that associate older age with limited digital literacy or reluctance to adopt new technologies; factors often cited as drivers of digital exclusion. Adoption is not solely age-dependent but is shaped by shared experiences, individual needs, and attitudes toward technology. Importantly, both shared and contrasting perspectives among age groups were observed across the studies. A desire for independence and social connection is evident across the generations represented by the three age groups addressed in the thesis, underscoring a broad recognition of the role technology can play in promoting AHA. Differences appear to stem primarily from personal preferences and previous experiences with digital technologies. Notably, the generational perspective underpinning this thesis challenges common assumptions, such as the belief that older adults are inherently technophobic or that younger adults are universally tech-savvy. Thus, the findings are important to counteract the risk of oversimplifying the nuanced and multifaceted nature of technology adoption across age groups. Attitudes towards technology are likely shaped more by factors such as perceived value and benefits, individual motivation, and contextual relevance than by chronological age.

Technology Adoption for Active and Healthy Ageing

Factors Influencing Technology Adoption

The findings show that technology adoption across generations depends largely on its perceived meaningfulness, necessity, and usability. When individuals, regardless of age, recognise technology as essential, intuitive, and capable of enhancing their daily lives, they are more inclined to integrate it into their routines. These findings reflect key constructs of UTAUT (Venkatesh et al., 2003), particularly performance expectancy—the perceived benefit or value of using a technology—and effort expectancy, which relates to the ease of use. For instance, in the *Keep Up* study, participants across all age groups were more likely to report keeping up with technology when they perceived it as useful for promoting autonomy and saving time (performance expectancy). Similarly, these patterns appeared in the *Smart Home* study, with older adults emphasising the value of simple, dependable solutions rather than complex systems, even when both served similar functions. In line with this, previous research has shown that older adults are more likely to adopt new technology when it is perceived as easy to use and supportive of autonomy in daily life (Berkowsky et al., 2018; Harris et al., 2022; Mitzner et al., 2019), perceptions that also serve as powerful motivators for learning and engagement (Czaja et al., 2024; Davis, 1989; Sharit & Czaja, 2020). Similarly, the findings of this thesis show that those who view technology as accessible and beneficial, particularly in promoting independence and saving time, are more likely to adopt it and report confidence in keeping up with technological developments. Such perceptions are directly relevant to promoting AHA, as they highlight how technologies can support functional ability, independence, and societal participation across the life-course. However, this relationship is not straightforward. While technology holds potential as an enabler of AHA, its benefits depend on how well it aligns with individuals' needs, capacities, and contexts. Technologies that are poorly designed, inaccessible, or perceived as irrelevant may instead reinforce exclusion or dependence. Therefore, the promise of AHA through technology should be viewed not as a quick fix but as a goal that requires thoughtful design, inclusive implementation, and sustained support over time.

Findings from this thesis challenge the assumption that chronological age is the primary barrier to technology adoption, revealing instead that perceived usefulness, usability, and personal relevance are more influential determinants. Such findings align with a life-course perspective, which emphasises how individuals' resources, experiences, and needs evolve over time and shape their engagement with technology (Bengtson & Settersten Jr, 2016). Rather than viewing older adults as a uniform or inherently vulnerable group, this perspective recognises the diversity of experiences, capacities, and needs within ageing populations. Importantly, respondents emphasised that their willingness to use technology is shaped by prior experience, perceived accessibility, and whether the technology supports autonomy.

These experiences are also shaped by broader structural factors such as gender, socio-economic status, and cultural expectations. This suggests that attitudinal factors are not merely predictors of adoption, but also outcomes of lived experiences with generations of technology (Lim, 2009). Moreover, the findings underscore that digital inclusion is not only about access or user-centred design but is deeply tied to broader questions of social and health equity (Chen et al., 2023). Unequal opportunities to engage with digital tools, whether due to affordability, digital literacy, or limited support, can reinforce disparities in participation, not only in healthcare but also in relation to work, education, social connection, and civic engagement across all ages. As such, promoting digital equity requires recognising the diverse circumstances of older adults and addressing systemic barriers to full participation in an increasingly digitalised society.

As shown in the *Keep Up* study, gendered patterns—for instance, women being less likely than men to report keeping up with technological developments—deserve attention, as these have direct implications for adoption. That is, lower digital confidence and self-assessed competence may reduce women's likelihood of exploring or integrating new technologies into daily life. Contributing factors highlighted in previous research include unequal access, lower confidence, limited digital literacy, and societal norms around technology use, and the fact that men often overestimate and women often underestimate the extent of their knowledge (Christensen, 2023; Shaouf & Altaqqi, 2018). Moreover, exclusive design and insufficient testing with women further diminish usability and relevance, reinforcing barriers to adoption (Stanney et al., 2020). Promoting inclusive design is therefore essential to supporting technology uptake among women. Economic conditions are another factor, which, according to findings from the *Keep Up* study, seems to influence technology adoption. Previous research has shown that individuals with higher socio-economic status typically have greater access to digital technologies and higher adoption rates (Pirhonen et al., 2020; Scheerder et al., 2017; Van Deursen & Helsper, 2015). However, the *Keep Up* study's findings reveal a more nuanced and partly contradictory picture: both high- and low self-rated economic status are associated with a lower perceived ability to keep up with technological developments compared to those who rated their economic status as fair. This suggests that financial extremes can reduce motivation or opportunity for engagement. While individuals with limited means may lack access and resources, those with greater financial security may deprioritise new technology, not due to barriers, but because of fewer perceived needs or lower motivation driven by necessity. Findings from the *GenerationTech* study suggest that perceived usefulness plays a key role in shaping engagement, and for some individuals with stable finances, digital technologies may not be viewed as essential or relevant to their daily lives. Instead, they may prioritise other interests, such as travel, sports, or outdoor activities; areas where their resources are invested and which offer value and fulfilment outside the digital sphere. This highlights how both economic constraint and economic choice can lead to lower technology adoption, although

through different pathways. It also challenges the assumption that higher socio-economic status uniformly enhances adoption (Pirhonen et al., 2020; Scheerder et al., 2017), instead it highlights how both financial constraint and security can suppress engagement and slow diffusion across society. Taken together, such findings underscore the importance of recognising and addressing these barriers in order to foster equitable technology adoption across generations, particularly in efforts to promote AHA in an increasingly digitalised society. Essentially, this requires not only tackling socioeconomic barriers but also ensuring that technologies are developed in relation to the diverse needs, abilities, and circumstances of users. Addressing these barriers involves inclusive design processes, accessible digital infrastructure, targeted support initiatives, and sustained investment in digital skills development, especially for those at risk of digital exclusion. In this way, digital inclusion becomes not merely a question of access, but a broader matter of enabling participation, autonomy, and health equity in later life.

A broader interpretation of sustainability also emerged from the findings, extending the discussion to long-term adoption. For people to invest time, money, and trust in technology, they need to believe it is sustainable in terms of performance and environmental responsibility. Findings from the *GenerationTech* and *Smart Home* studies show that people of different generations express reluctance to adopt tools they fear will become obsolete or contribute to environmental waste, especially when updates or replacements are frequent. These concerns reaffirm findings in earlier studies indicating that environmental values can influence technology acceptance, particularly among older adults and environmentally conscious users (Melenhorst et al., 2006; Özçelik et al., 2022). Designing for sustained adoption therefore requires attention to durability, maintainability, and ecological impact (Ramírez-Saltos et al., 2023). Technologies that are perceived as throwaway or short-lived may deter users from engaging in the first place. In this sense, sustainability—both environmental and functional—emerges as a critical factor influencing technology adoption across generations. As societies increasingly rely on digital infrastructures, these considerations must be central to the design and dissemination of technologies aimed at promoting inclusive, lifelong digital engagement.

Changing Attitudes and Usage During Adverse Events

Findings from the *COVID-19* study reveal that an adverse event, such as the pandemic, can lead to increased ICT usage across all age groups and, in some cases, contribute to more positive attitudes, particularly regarding technology's capacity to facilitate social connection. However, despite this surge in usage, overall attitudes remain largely stable. This suggests that deeper beliefs and emotional dispositions toward technology are not easily changed by situational necessity alone. Among older participants, many retained cautious or ambivalent views, shaped not only by

the stress of unfamiliar platforms but also by decades of experience navigating shifting technological landscapes (Mitzner et al., 2010). In contrast, younger individuals, who may already hold more positive attitudes, are more likely to adapt quickly and expand their use. However, not all changes in digital behaviour should be attributed to generational traits. Period effects, such as significant societal disruptions, can lead to temporary increases in technology adoption across all age groups. The COVID-19 pandemic, for instance, represents a clear period effect that prompted needs-driven engagement with digital tools well beyond generational boundaries. Recognising the influence of such temporal dynamics is essential to avoid misinterpreting situational behaviours as stable generational differences (Glenn, 2005; Yang & Land, 2013). This perspective offers valuable context for interpreting the *COVID-19* study results and highlights the importance of creating technologies that are inclusive and adaptable to different settings. Such design supports AHA not just across generations, but also in addressing future societal challenges.

The pandemic not only increased digital engagement for communication, shopping, and accessing services, it also highlighted the role of digital tools in supporting autonomy and social participation, which are key components of AHA (WHO, 2002). However, this behavioural shift did not necessarily result in long-term attitudinal change. This aligns with the tripartite model of attitudes (Jain, 2014), which defines attitudes as comprising cognitive (beliefs), affective (emotions), and behavioural (actions) components. In the *COVID-19* study, we observed a clear increase in ICT use across all generations, a behavioural shift likely driven by external necessity. However, most participants reported that their attitudes toward digital technologies remained unchanged. Given that our question focused on overall attitude change, and not explicitly on cognitive or affective shifts, this perceived stability may reflect the persistence of underlying beliefs and emotional responses. The tripartite model thus helps explain why increased use does not necessarily translate into an altered attitude: behavioural adaptation can occur without a corresponding shift in cognitive or affective components. This distinction is critical for designing effective digital support strategies that go beyond skill-building to address emotional and cognitive dimensions of technology use.

Furthermore, while the ‘pandemic push’ temporarily facilitated digital uptake, its effects are not uniformly lasting. For instance, the *Smart Home* study shows that some individuals discontinue technologies once their immediate value diminishes, highlighting the need for solutions that remain relevant, usable, and cost-effective over time. This is especially important when viewed through the lens of evolving generations, both of users and technologies, where needs, expectations, and digital infrastructures shift rapidly (Lim, 2009). As knowledge and tools quickly become outdated, this underscores the necessity of sustained research efforts to ensure that technology development and implementation remain aligned with the changing realities of users across the life-course. Nevertheless, necessity and social isolation

help some individuals overcome initial reluctance, suggesting that short-term drivers can initiate, but not guarantee, lasting engagement. Although recent reports (Swedish Internet Foundation, 2022, 2024) indicate that technology use has continued to rise since the pandemic, these trends likely reflect not only short-term responses to societal disruptions but also broader, ongoing changes in digital infrastructure, accessibility, and everyday routines. This suggests that for some individuals, the period effect of the pandemic may have interacted with other structural and personal factors to produce more lasting shifts in behaviour. This pattern may reflect not only adaptation to immediate circumstances but also a deeper re-evaluation of the role digital tools play in everyday life. Such developments carry important implications for digital inclusion policies, which must remain responsive not only to short-term catalysts like societal disruptions but also to the evolving long-term conditions that enable sustained and meaningful digital engagement.

From Hesitation to Integration: Understanding Smart Home Technology Adoption

The findings reveal complex generational dynamics in the adoption of smart home technologies. Despite widespread digital engagement, and although such technologies have been promoted since the 1980s (De Meyer, 1988), older adults still tend to favour traditional household and assistive devices over newer, more complex systems. Across the age groups represented in the focus group discussions, participants expressed hesitancy toward smart home solutions, often citing barriers such as complex installation processes, usability challenges, and privacy concerns. These concerns were particularly pronounced among older participants, who generally preferred familiar and reliable solutions.

However, attitudes were more nuanced than uniformly negative. While participants expressed scepticism toward so-called 'non-essentials' or entertainment-oriented smart home features, they were generally more receptive to technologies that served a clear functional purpose, particularly those enhancing safety and autonomy. For example, security-enhancing tools such as door cameras were often seen as meaningful and acceptable additions to the home, or when the systems were intuitive, minimally effortful, and aligned with concrete needs. The Domestication Theory frames technology adoption as an ongoing, iterative process, wherein users gradually integrate new tools into daily routines (Haddon, 2011). Participants in the *Smart Home* study, particularly older adults, appeared to remain in early domestication stages, negotiating whether the technologies they were asked about or had seen demonstrated aligned with their values, habits, and home environments. Similarly, the Diffusion of Innovations Theory (Rogers, 2010) highlights how perceived relative advantage, compatibility, and complexity shape adoption, factors that influence decisions across all generations and challenge the notion that age alone determines technology uptake. While younger users are often considered early adopters (Rogers, 2010), the results of this thesis demonstrate that they can also be deterred by poorly designed, intrusive, or difficult systems. Conversely,

technologies that are adaptable, intuitive, and user-centred are more likely to support meaningful integration and foster autonomy across generations. Together, these insights call for inclusive design strategies that move beyond generational determinism. By considering diverse life stages and preferences, designers and developers can better support equitable engagement with technology, enabling all users, regardless of age, to benefit from smart home and other types of technological innovations.

Support Systems for Technology Adoption

The presence of 'change agents' (such as family, friends, peers, or professionals) (Rogers, 2010) who can guide or demonstrate technology emerges as a major factor for technology adoption. The findings from the *COVID-19* study exemplified this, as many respondents relied on ICT to stay connected to family or social networks, which made them learn new digital solutions (for instance, ordering groceries online, or engaging in a video call), highlighting how external encouragement and social support can temporarily bridge the gap between hesitation and adoption (Balki et al., 2023; Llorente-Barroso et al., 2021). While these agents seem effective in driving uptake during a time of necessity, long-term adoption still depends on whether the technology integrates meaningfully into daily routines (Rogers, 2010). This dynamic was reflected in the *Smart Home* study, where participants frequently described relying on family and friends for advice, guidance, or hands-on help. In several cases, technologies had been purchased or set up by children or relatives, who either encouraged use or made decisions on behalf of the older adults. These findings further underscore that while period effects can amplify the visibility and short-term use of technology, sustained adoption is shaped by ongoing relevance, usability, and the presence of supportive social networks (Chung et al., 2021). As seen in the *COVID-19* study, social influence and support systems can temporarily mitigate apprehension, especially during periods of societal disruption.

Avoiding Digital Exclusion

While the findings show that people of different generations express confidence in using technology, some still feel uneasy when facing troubleshooting, updates, or interface changes. The 'fear' or frustration associated with breakdowns, updates, or changing user interfaces persists. These frustrations highlight a critical dimension of digital exclusion; one not rooted purely in age or generational identity, but in a misalignment between users' evolving needs and the pace of technological developments (Björnsdóttir et al., 2024; van Deursen & van Dijk, 2019). Period effects such as forced digitisation during the pandemic may surface as temporary engagement, but unless systems are designed with adaptability and inclusivity in mind, the risk of digital exclusion remains (Seifert et al., 2021).

Across the thesis, findings indicate that actual uptake is influenced by contextual factors such as health status, economic resources, and digital literacy, emphasising

that perceived usefulness alone is insufficient for sustained engagement. Similarly, recent findings suggest that digital engagement is affected by social encouragement and financial accessibility, while barriers such as stigma, privacy concerns, and unclear personal benefits hinder sustained use (Garcia Reyes et al., 2023). This suggests that technologies should be perceived as trustworthy, empowering, and aligned with personal health goals to promote meaningful and lasting engagement in later life. Overcoming digital exclusion requires more than just technical access; it demands inclusive design, personalised support, and a cultural shift recognising the legitimacy of diverse digital experiences (Chen et al., 2023; Czaja et al., 2019; Friemel, 2016). Importantly, non-users should not be seen as deficient, but rather as individuals with specific needs, values, or past experiences that influence their technology choices. Without continuous and adaptable support systems, there is a risk that digital innovation will reinforce, rather than reduce, existing inequalities. The findings highlight the importance of maintaining and expanding inclusive, context-sensitive, and life-course-oriented approaches to technology design and implementation, approaches that recognise how individuals' needs, capacities, and experiences with technology evolve over time, ensuring that digital participation can genuinely support AHA for everyone.

Digital Inclusion, Health Equity, and the Life-Course: Addressing Structural Barriers and Support Needs

The findings across this thesis underscore that digital inclusion is not only a matter of individual capability or interest but reflects broader life-course dynamics and structural inequalities. From a life-course perspective, engagement with digital technologies is shaped by factors such as education, occupational opportunities, health conditions, and social support networks, which interact over time to shape digital confidence, skill, and perceived relevance (Bengtson & Settersten Jr, 2016; Berney et al., 2000). Moreover, as Lim (2009) suggests, individuals' experiences with successive generations of technology also play a crucial role in shaping their familiarity, expectations, and openness toward new digital tools. These dynamics influence not only the likelihood of adoption but also broader opportunities for autonomy, participation, and well-being. Importantly, the inability to engage with digital tools can reinforce or exacerbate existing health disparities.

As more services, such as healthcare, banking, and civic engagement, move online, those lacking digital access, support, or confidence are at risk of exclusion (Chen et al., 2023; Van Dijk, 2020). In Sweden, current initiatives such as the Digitalisation Council, DIGG, and the Swedish Internet Foundation, as well as public libraries, contribute positively to promoting digital inclusion. However, the findings from this thesis suggest that they may not fully reach or resonate with all groups, particularly those with lower digital literacy, declining health, or limited economic means. Participants in the studies expressed that existing support is often fragmented, not always adapted to different life stages or learning preferences and may assume a

baseline level of digital confidence. Many highlighted the need for more sustained, low-threshold, and personally relevant support. This suggests that one-off interventions or general information campaigns may be insufficient to bridge the digital divide. Digital inequality, therefore, is a multidimensional issue. As van Dijk (2020) emphasises, meaningful participation requires more than physical access; it depends on motivational access, material conditions, digital skills, and actual usage opportunities.

The findings also reveal that technology adoption is not linear but negotiated. Insights from the *Smart Home* study show that personal needs, concerns about usability, and privacy shape engagement, sometimes leading to creative adaptation, other times to disengagement when expectations are not met. To better align societal efforts with the lived realities of diverse user groups, digital inclusion strategies must move beyond access and training alone. The result of this thesis indicate that there is a need to invest in inclusive design processes; intergenerational learning environments; and ongoing, locally embedded support structures that can adapt to users' changing needs over time. Crucially, digital technologies must not be viewed as substitutes for human support, but as tools that can complement existing care structures, provided they are implemented in ways that uphold dignity, agency, and equity.

In this context, digital inclusion must be treated as a social determinant of health. It is not merely a technical or generational issue but an equity concern. As digital and public health strategies increasingly converge, equity-oriented approaches must consider affordability, usability, and the alignment of technologies with people's lived realities. A health-promoting digital society must ensure that individuals can engage with digital tools in ways that are empowering, meaningful, and sustainable across the life-course (WHO, 2021).

Generational Differences and Similarities: A More Nuanced Picture

The findings of this thesis challenge deterministic assumptions that younger generations are inherently more enthusiastic about technology and that older adults are uniformly resistant. Instead, the findings point to a more layered understanding in which attitudes and behaviours are shaped by perceived usefulness, ease of use, personal relevance, privacy concerns, and social influence. These patterns align with life-course and domestication perspectives, which emphasise the role of accumulated experiences, social positioning, and meaning-making over static demographic characteristics (Bengtson & Settersten Jr, 2016; Haddon, 2011). Nonetheless, some generational tendencies were visible in the findings of this thesis, such as the younger group's greater fluency with app-based services or older participants' preference for tools with practical utility, and these did not represent rigid boundaries. Instead, a more nuanced picture of differences and similarities emerges. For example, while all generations value communication tools, their

preferences for platforms differ; older adults prefer video calls and messaging apps, whereas younger adults also embrace social media, although not uncritically. Concerns about data privacy, overload, or diminished well-being are shared across age groups, though expressed in different ways. Similarly, while smart home technologies were initially met with curiosity across all groups, adoption hinges less on age than on whether the technology is perceived to offer clear and respectful support for daily life. This suggests that digital engagement is shaped by a shared set of evaluative criteria across generations, even as technological preferences may differ, emphasising the need for flexible, user-centred approaches that cut across age groups.

In addition to individual factors, broader societal and historical influences—referred to as 'technology period effects' (Glenn, 2005)—help explain generational patterns in technology adoption. For example, the oldest participants in the *GenerationTech* study perceived digital technologies as less useful and less user-friendly compared to the youngest age group. These patterns reflect the socio-technical environments people were socialised into, shaped by prevailing norms, education systems, policy landscapes, and the availability and design of technologies during their formative years. Nonetheless, some determinants of acceptance were consistent across generations. These findings underscore the importance of considering both generational context and inclusive design principles when developing technologies that support AHA.

The proactive ageing research approach (Iwarsson et al., 2023) offers a valuable perspective for interpreting these findings, particularly by highlighting the conditions and capacities that need strengthening to foster long-term digital engagement. Instead of viewing ageing as an unavoidable decline, proactive ageing stresses individuals' ability to influence their own ageing trajectories through decisions, behaviours, and supportive environments across the life-course (Iwarsson et al., 2023). This perspective is especially useful for understanding the generational differences in attitudes towards technology and usage observed in this thesis. The findings highlight that promoting digital engagement cannot be achieved solely through short-term or age-specific interventions. Rather, proactive ageing focuses on how cognitive, psychological, physical, and social factors interact over time to shape individuals' willingness and capacity to engage with technology (Iwarsson et al., 2023). Knowledge gained from such initiatives could encourage broader acceptance and assist people of all ages in preparing for and adapting to technological innovations that improve quality of life (LoBuono et al., 2020; Miller et al., 2024). In this way, the proactive ageing approach complements the AHA framework by adding a developmental and forward-looking dimension. It supports the design of anticipatory, life-course-oriented strategies and interventions that help individuals of all ages navigate, adopt, and benefit from technological innovation in ways that promote independence, participation, and well-being.

While the generational perspective is valuable, it is essential to recognise its limitations. The concept of a ‘generation’ is socially constructed rather than a scientifically fixed category (Choudhary et al., 2024). Although grouping individuals into age cohorts, such as Baby Boomers or Generation X, enables comparative analysis, these boundaries are arbitrary and risk obscuring important variation within groups; for instance, in terms of digital literacy or health status (Cecconi et al., 2025; Choudhary et al., 2024). Future research would benefit from combining generational analysis with a stronger emphasis on life-course transitions and individual trajectories. For example, transitions such as retirement, caregiving, or managing chronic illness may significantly shape one’s relationship with technology, regardless of generational cohort (Charness & Boot, 2009). Additionally, while sociodemographic variables such as educational level, self-rated economy, and occupational status were accounted for in the analyses, the findings suggest that these factors alone do not fully explain the generational differences observed. For instance, two individuals of the same age may have vastly different digital experiences depending on their level of formal education or access to technological infrastructure. Further research is therefore needed to unpack how cultural and work-related experiences intersect with generational belonging to shape attitudes and capacities related to technology adoption (Choudhary et al., 2024; Stefan et al., 2025). Addressing these complexities is crucial for developing inclusive and responsive technologies that promote AHA for all.

Taken together, the findings from these studies demonstrate that technology adoption for AHA is shaped by a complex interplay of factors: individual perceptions of utility and usability (as described in UTAUT), broader patterns of diffusion and social alignment (as articulated in Diffusion of Innovations Theory), and the subtle, situated processes of meaning-making in everyday life (as explored in Domestication Theory). In addition, a life-course perspective helps contextualise these patterns by highlighting how earlier experiences, current roles, and anticipated futures shape individuals’ needs, capacities, and motivations for engaging with technology. This perspective draws attention to how ageing is not a fixed state but a dynamic process that interacts with technology adoption in diverse ways across time and generations. Engaging meaningfully with digital technologies can support autonomy, social connectedness, and access to health and welfare services—core components of AHA. This layered understanding underscores the need for multidimensional strategies that address not only what technologies can do but also how they are understood, supported, and integrated into people's lived realities. Ultimately, this thesis contributes to a more nuanced understanding of how digital technologies can promote AHA, provided that design and implementation efforts attend to generational preferences, capabilities, and social contexts.

Methodological considerations

Survey Design and Sampling Considerations

Several methodological considerations are important to acknowledge in interpreting the findings across the studies in this thesis. One central issue relates to survey design, specifically regarding questions that were not asked. While the surveys provided valuable insights into attitudes and perceived capabilities related to technology use, they lacked detailed questions about actual usage patterns, such as how, when, and in what contexts participants used technology (e.g., for work, socialisation, or healthcare). Furthermore, the surveys did not explore subjective experiences with technology, including emotional responses, or prior encounters with success or failure, which may have limited the depth of understanding regarding both adoption and non-adoption processes. These omissions partly reflect an effort to balance the scope and depth of the surveys with the need to minimise respondent burden. Including a broader set of detailed questions could have enhanced the nuance of the data but might also have increased the risk of participant fatigue and non-response. This is particularly important given the relatively high response rates achieved, especially among older participants in the included survey studies, which suggest that the design struck a reasonable compromise between comprehensiveness and feasibility.

The two national survey samples were drawn to reflect a broad cross-section of the Swedish population across three age groups representing different generations. In the *GenerationTech* and *Keep Up* studies, the sample characteristics closely resembled those of the general population. For instance, 78% of respondents had completed at least an upper secondary education (compared to 85% nationally), and 49% held a university degree (compared to 42% in the general population). The vast majority were born in Sweden (90%) and resided in larger or major cities (approximately 75%), which also aligns with national distributions. Participants represented a range of socioeconomic backgrounds and nationalities, contributing to a heterogeneous sample. Similarly, the *COVID-19* study included respondents from diverse socioeconomic classes and ethnic backgrounds, offering a degree of population representativeness. However, unlike the first survey, it relied exclusively on Kantar Sifo's online panel. While this enabled efficient access to a demographically varied sample, it may have introduced some selection bias, as panel members are typically active internet users. This could overrepresent individuals with greater digital literacy or more favourable attitudes toward technology. Nonetheless, given that 98% of Swedish households had internet access and approximately 90% of citizens used it daily at the time of data collection (Swedish Internet Foundation, 2020), this likely limited any substantial bias. These sampling choices reflect several trade-offs between representativeness and feasibility. Each recruitment strategy carries specific strengths and limitations. Random sampling, as used in the *GenerationTech* and *Keep Up* studies, enhances

external validity by reducing systematic bias and increasing generalisability. In contrast, panel-based recruitment, such as the recruitment strategy used in the *COVID-19* study, offers greater logistical efficiency and allows for targeted sampling across age groups, but may yield samples that are more digitally engaged or self-selected based on interest in research participation. That stated, using two different sampling strategies allowed for both a broad representation of the population and targeted inclusion of more digitally active individuals. This approach strengthened the findings by allowing patterns to be compared and confirmed across different types of samples.

Despite the large and diverse samples, individuals with cognitive impairments were likely underrepresented. Cognitive functioning was not assessed, and the demands of participating in surveys or focus groups may have limited involvement from those with significant impairments. While this is important to acknowledge, given that cognitive challenges can affect both technology use and perceived usefulness, the purpose of the studies was not to focus on vulnerable subgroups but to capture broad generational patterns across the general population. In this context, the applied sampling strategies were appropriate and necessary to meet the research aims. However, future studies aiming to promote digital inclusion among cognitively vulnerable populations should consider more tailored approaches, such as proxy respondents, simplified survey formats, or performance-based tools like the Everyday Technology Use Questionnaire (ETUQ) or the Management of Everyday Technology Assessment (META), to ensure that their specific needs and perspectives are also represented in strategies to support AHA.

Additional challenges emerged in relation to the study on smart home technologies. One limitation was that participants' general knowledge and awareness of such technologies appeared unexpectedly limited, which made it difficult to keep discussions focused and meaningful. Many participants were unfamiliar with the concept, resulting in misunderstandings or vague responses. To address this, a video was included in the study protocol to introduce the concept of smart home technology. However, in hindsight, we have understood that the video presented smart home living in a relatively promotional light rather than offering a neutral, informative overview. While the intention was to clarify the concept, this framing may have influenced participants' responses, potentially eliciting more favourable attitudes or expectations than would otherwise have emerged. At the same time, a notable strength of the study was the demonstration of selected products in an authentic but experimental home environment. This contextualised the technology and made it more tangible, which may have enhanced participants' understanding and engagement. Importantly, this hands-on exposure likely counteracted some of the limitations of the video by anchoring discussions in a more realistic and relatable setting. This highlights a broader methodological insight: when studying emerging technologies that are not yet widely understood or adopted, combining explanatory

materials with contextualised demonstrations can help bridge the gap between abstract concepts and participants' lived experience.

Another consideration lies in the inherent challenge of using current data to anticipate the future needs and preferences of younger generations, particularly within a 50-year perspective on supporting AHA. As individuals age, their needs, values, and socio-environmental contexts evolve. This makes it difficult to predict future technology adoption behaviours or design preferences with certainty. Moreover, such predictions are complicated by period effects—historical or societal events, such as the COVID-19 pandemic or rapid AI developments—which can disrupt established trajectories and reshape technology perceptions and use in ways that are difficult to predict (Yang & Land, 2013). While current data can offer valuable insights into generational tendencies, certain patterns, such as the emphasis on usability, affordability, and perceived usefulness, may plausibly persist into the future, even as broader contextual conditions evolve. Therefore, the results must be interpreted with caution, acknowledging that future developments, whether technological, cultural, or political, may significantly reshape the conditions under which adoption occurs.

Although the studies did not explicitly focus on perspectives from non-users of digital technology, the *Smart Home* study included participants with limited awareness or experience of smart home solutions—non-users in that specific context, but not of digital technologies overall. These perspectives are vital for better understanding the barriers to digital inclusion, as non-users can highlight issues such as usability challenges, economic constraints, privacy concerns, or distrust in technology. Excluding them limits the data's representativeness and may overlook structural and societal barriers that cause resistance or inaccessibility to technology. This is especially relevant in Sweden, where digitalisation is widespread: about 95% of the population uses the internet, and 90% do so daily (Swedish Internet Foundation, 2024). Still, a small yet significant segment remains disconnected, making it crucial to understand their reasons to develop inclusive strategies that promote equitable digital access.

Analytical Decisions and Trade-Offs

A methodological decision in the data analysis process was the dichotomisation of ordinal response variables. This approach was chosen to simplify results and enhance interpretability. However, this simplification entailed a loss of nuanced information present in the original five- or seven-point Likert scales, potentially obscuring subtle but meaningful differences in attitudes, confidence, or behavioural intentions. Alternatives such as ordinal regression were considered, as this method would have preserved the ordered structure of the data and offered more granular insights (Field, 2024). Nevertheless, its complexity, particularly in explaining thresholds and model outputs to non-technical stakeholders, limited its practical utility in this context. In addition, while multivariable regression analyses allowed

us to model multiple predictors simultaneously, they carry the risk of multicollinearity, which can distort coefficients and complicate interpretation (Field, 2024). We took steps to assess and mitigate this risk, but it remains an inherent limitation. Cluster analysis was also considered as a way to uncover latent response patterns and participant subgroups (Everitt et al., 2011), but the interpretative challenges and limited policy relevance of abstract clusters made it less suitable. Despite these trade-offs, we ultimately deemed the chosen regression models, based on dichotomised outcomes, to be the most appropriate analytical strategy for the aims and target audiences of this research. In addition to enhancing communicative clarity, this approach supported consistency across studies and facilitated the comparability of outcomes, thereby strengthening the coherence of the overall analysis.

Methodological Scope and Design Limitations

The use of a cross-sectional survey design presents well-known inherent limitations. This design captures a snapshot in time, offering valuable but static insights into a dynamic and fast-evolving field. In the context of digital technology, where user interfaces, functionalities, and societal norms change rapidly, cross-sectional data may quickly become outdated or fail to capture longitudinal shifts in behaviour and attitudes. This limitation is particularly relevant in research on ageing, where both individual ageing processes and broader societal changes (i.e., period effects) influence technology use. For example, external events such as the COVID-19 pandemic can temporarily alter digital engagement across age groups, highlighting the need to disentangle age, cohort, and period effects. Longitudinal or repeated cross-sectional designs would better capture these temporal dynamics, allowing for a more nuanced understanding of how technology adoption evolves over time and across generations.

All four studies in this thesis were conducted in Sweden, a country with high internet penetration, and relatively strong digital literacy across age groups (Swedish Internet Foundation, 2024). This highly digitalised context enabled nuanced analysis of generational patterns beyond basic access barriers but may limit the generalisability of findings to countries with different digital infrastructures. The GenerationTech project initially aimed for international comparisons, and data were planned to be collected in a few other countries. However, the COVID-19 pandemic disrupted these plans, affecting both digital behaviours (as shown in the *COVID-19* study) and the feasibility of broader data collection. This illustrates how period effects can shape not only technology use but also the design and scope of research. Future studies should revisit cross-national comparisons to better understand how generational attitudes and structural conditions vary internationally.

Finally, it is important to acknowledge the epistemological trade-offs between quantitative and qualitative approaches. The survey-based studies in this thesis provided valuable population-level insights into patterns of digital engagement

across generations, highlighting broad trends and sociodemographic associations. However, quantitative data alone cannot fully capture the situated meanings, everyday routines, and interpretations influenced by personal values and beliefs that shape how individuals engage with technology. By integrating qualitative material, such as participants' in-depth reflections from the *Smart Home* study, the research was able to explore not just whether certain technologies are adopted, but how and why these processes unfold differently across life stages and social contexts. This methodological complementarity enriches the overall understanding of technology adoption and highlights the value of combining methods to capture generational dynamics and transitions across the life-course.

Conclusions

The findings of this thesis indicate that the once-pronounced generational divide in technology adoption is diminishing. It provides new insights into how people from three age groups representing different generations in Sweden perceive and adopt digital technologies in ways that can support AHA. Through four studies, combining national surveys and qualitative focus groups, the findings reveal that technology adoption is a complex, dynamic process shaped not simply by chronological age, but by perceived usefulness, usability, motivation, and social and historical context.

Across generations, a consistent pattern emerged: technologies that are seen as meaningful, easy to use, and personally relevant are more likely to be adopted, regardless of chronological age. Positive attitudes toward technology strongly facilitate adoption, while concerns about complexity, privacy, and a lack of personal relevance remains as significant barriers. These findings align closely with UTAUT, Diffusion of Innovation, and Domestication Theory, each highlighting different but complementary dimensions in how individuals engage with digital technology. In addition, a life-course perspective brings attention to how digital engagement is shaped by cumulative experiences, transitions, and structural conditions across time, helping to contextualise generational patterns and disparities in technology adoption.

The studies demonstrate that while generational belonging shapes familiarity and confidence with digital tools, it is not deterministic. Individual experiences, early exposure to technology, and the perceived day-to-day relevance of technologies have a greater impact on adoption patterns than generational identity alone. Furthermore, exemplifying a period effect, the COVID-19 pandemic underscores how sudden societal changes can accelerate technology use across all age groups, independent of life stage.

Taken together, this thesis advances the understanding of the mechanisms underpinning technology adoption for AHA. It emphasises that supporting technology engagement requires addressing both the structural and attitudinal barriers that older adults, both current and future, may encounter. It also highlights the need to move beyond ageist stereotypes of older adults as inherently resistant to technology, recognising instead the diversity of experiences and the critical role of context and support in shaping digital inclusion.

Implications and Future Directions

The findings and conclusions have important implications for digitalisation policy and the design of technologies supporting AHA. First, attitudes towards technology are a key mediator of adoption. Individuals who view digital tools as user-friendly, time-saving, and empowering are more likely to feel they are keeping up with technological developments. Support initiatives should go beyond technical training to communicate how technology can enhance daily life and well-being. Second, situational need often drives adoption. During the COVID-19 pandemic, even the oldest generation reported increased digital engagement. This shows that motivation is context-dependent, and that adoption rises when use cases are immediate and meaningful. Digital support must therefore be ongoing and adaptable to changing life circumstances. Third, strategies to improve digital inclusion must address structural inequalities affecting access, motivation, and confidence. Individuals at both ends of the economic spectrum were less likely to report keeping up with technology, highlighting the need for policies that consider not only infrastructure but also affordability, economic stability, and motivational support. The gendered digital divide observed across the studies emphasises that inclusive design must cater to diverse needs and promote digital confidence while challenging gendered assumptions about technology use. Finally, there is a moral responsibility to ensure that technological innovation promotes accessibility, sustainability, and individual agency. Researchers and developers must involve diverse older adults in co-creating relevant solutions. Designing for AHA is not just a technical challenge but a social one, requiring empathy, attention to diversity, and a long-term commitment to equity.

Towards Inclusive Strategies for Digital Participation and Well-being

Drawing from the four studies in this thesis, several inclusive strategies can help promote digital participation and equitable access to technology across the life-course. Ensuring that digital tools are co-designed with users from diverse backgrounds and generations enhances their relevance, usability, and perceived value. Support efforts should be sustained over time and delivered through trusted intermediaries, such as family members, community organisations, and healthcare providers, to foster confidence and motivation, particularly among individuals with lower digital literacy. In parallel, public interventions should confront broader structural barriers, including affordability, limited device access, and design that fails to account for diverse abilities and contexts. Rather than relying on age-based assumptions, inclusive approaches must recognise the heterogeneity of ageing and respond to the shifting needs and life circumstances that shape technology use. By addressing these dimensions, digital technologies can more effectively support autonomy, social participation, and well-being throughout later life.

These implications open up important directions for future research. Longitudinal and mixed-methods studies are needed to understand how attitudes and engagement with technology evolve over time, particularly in response to key life events and transitions. There is also a need to examine how age, gender, socio-economic status, education, health, and cultural background interact to shape digital behaviours in later life, informing the development of more inclusive and equitable strategies. At the same time, research must keep pace with the rapid evolution of digital technologies, most notably the growing integration of AI in everyday life. Continuous, up-to-date investigations are essential to capture how emerging innovations are perceived, adopted, or resisted by different groups, and to ensure that interventions remain relevant and responsive in a fast-changing technological landscape.

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Appendices I—III

Appendix I

Enkät GenerationTech

I denna enkät finns frågor om tekniska produkter (dvs föremål men också tjänster som bygger på teknik) i allmänhet och tekniska produkter för aktivt och hälsosamt åldrande i synnerhet. Vad som är aktivt och hälsosamt åldrande är individuellt, och hör till exempel samman med att kunna göra det man själv vill och tycker är viktigt. Inga svar är rätt eller fel, utan vi är intresserade av din uppfattning kring dessa frågor oavsett din nuvarande ålder. Vi vill undersöka om det finns skillnader och likheter mellan olika generationers (30-39-, 50-59- och 70-79-åringars) teknikanvändning och attityder till ny teknik. Utifrån dina och andra deltagares svar vill vi utveckla ny kunskap om hur teknik kan användas och utformas för att stödja aktivitet och hälsa när människor åldras.

1. **Vilken eller vilka typer av tekniska produkter <u>skulle du själv vilja använda</u> för att främja aktivt och hälsosamt åldrande?** *Markera alla alternativ som du anser relevanta.*

   - ☐ Hushållsapparater (t ex disk-, tvättmaskin, mikro)
   - ☐ Apparater för underhållning i hemmet (t ex TV, radio, video, spelkonsoller)
   - ☐ Tekniska hjälpmedel (t ex rollator, rullstolar)
   - ☐ Aktivitetssensorer (t ex för fysisk aktivitet)
   - ☐ Redskap för fysisk aktivitet (t ex gymredskap, gåstavar eller cykel)
   - ☐ Personburna hälsosensorer (t ex för att mäta blodtryck, blodsocker)
   - ☐ Medicin-tekniska produkter (t ex pacemakers, insulinpumpar)
   - ☐ Personburna trygghetslarm
   - ☐ ”Smarta hem”
   - ☐ Sensorer för vård och omsorg i hemmet (t ex nattkameror, fallsensorer)
   - ☐ Robotar som hjälper till med olika aktiviteter i hemmet

- ☐ Robotar som kan agera socialt med människor
- ☐ Motorfordon
- ☐ Sociala medier
- ☐ Internetbaserad handel
- ☐ Internetbaserad samhällsservice (t ex digital kontakt med vård och omsorg, bibliotek, myndigheter)
- ☐ Annat, vad? ……...……...……

2. Av vilka skäl skulle du själv vilja använda tekniska produkter för att främja aktivt och hälsosamt åldrande? *Markera alla alternativ som du anser relevanta. För att:*

- ☐ Spara tid
- ☐ Klara mig själv
- ☐ Skapa trygghet
- ☐ Hålla kontakt med släkt och vänner
- ☐ För nöje och underhållning
- ☐ Kartlägga hälsa
- ☐ Larma vid fall eller sjukdom
- ☐ Styra föremål i min hemmiljö
- ☐ Skaffa service
- ☐ Göra inköp
- ☐ Motionera
- ☐ Teknik kan inte främja aktivt och hälsosamt åldrande
- ☐ Annat skäl, vad?
  ……...……...……...……

3. Hur ser du på möjligheterna, för folk i allmänhet, att främja aktivt och hälsosamt åldrande med hjälp av tekniska produkter?

- ☐ Nya tekniska produkter behöver utvecklas för att detta ska bli möjligt
- ☐ Tekniska produkter finns för detta, men tillgängligheten begränsas av samhället
- ☐ Tekniska produkter finns för detta, men alla har inte råd att skaffa sig den

☐ Tekniska produkter finns för detta och är tillgängliga för alla redan idag

4. Vilken typ av utformning föredrar du för tekniska produkter som är tänkta att främja ditt eget (framtida) aktiva och hälsosamma åldrande?

☐ Att de har samma utformning som tekniska produkter som jag använt tidigare i livet
☐ Att de har samma utformning som liknar det jag använt tidigare
☐ Att de är utformade speciellt för äldre personer
☐ Jag föredrar de allra senaste tekniska produkterna
☐ Annan utformning,
vilken?……...……...……...……

5. Vem/vilka anser du bör vara involverade <u>i utveckling</u> av tekniska produkter som ska användas för att främja aktivt och hälsosamt åldrande?
Markera alla alternativ som du anser relevanta.

☐ Designer
☐ Teknikproducerande företag
☐ Återförsäljare i branschen
☐ Representanter för vård- och omsorg
☐ Privatpersoner som ska använda produkterna
☐ Forskare
☐ Annan, ange vem:……...…….

6. Vem/vilka anser du bör vara involverade <u>i att välja</u> tekniska produkter som kan användas för att främja en persons aktiva och hälsosamt åldrande?
Markera alla alternativ som du anser relevanta.

☐ Personen själv
☐ Personens närstående
☐ Vård- och omsorgspersonal
☐ Teknikproducerande företag

- ☐ Återförsäljare i branschen
- ☐ Annan, ange vem:……..……...……..

7. Hur anser du att <u>personliga</u> tekniska hjälpmedel (t ex rollatorer, rullstolar) eller välfärdsteknik (t ex trygghetslarm, nattkameror) som ska stödja aktivt och hälsosamt åldrande bör bekostas?

- ☐ Samhället ska betala
- ☐ Personen själv ska betala
- ☐ Närstående ska betala
- ☐ Samhället och personen själv ska dela på kostnaden
- ☐ På annat sätt, ange hur : ……...…...……..

<u>Betydelse av tekniska produkter över tid</u>

Här följer några frågor som handlar om vilken betydelse du anser att tekniska produkter har haft och har i ditt vardagsliv. Precis som tidigare avser begreppet tekniska produkter och föremål men också tjänster som bygger på teknik

8. Nya tekniska produkter utvecklas ständigt, men vilket teknikskifte hade <u>störst</u> påverkan på ditt vardagsliv: när du var barn (fram tills du var ca 18 år)?
När jag/min familj fick tillgång till:

- ☐ Analog hemtelefon
- ☐ Tvättmaskin i bostaden
- ☐ Radio
- ☐ Bil
- ☐ Svartvit TV
- ☐ Färg-TV
- ☐ Hemdator
- ☐ Mobiltelefon
- ☐ Uppringt internet
- ☐ Spelkonsoler
- ☐ Bredband
- ☐ Smart mobiltelefon

☐ Annat, ange vad:……...……...……..

9. Nya tekniska produkter utvecklas ständigt, men vilket teknikskifte hade <u>störst</u> påverkan på ditt vardagsliv: som vuxen (från ca 19 års ålder fram tills idag)?

När jag fick tillgång till:

☐ Analog hemtelefon
☐ Tvättmaskin i bostaden
☐ Radio
☐ Bil
☐ Svartvit TV
☐ Färg-TV
☐ Hemdator
☐ Mobiltelefon
☐ Uppringt internet
☐ Spelkonsoler
☐ Bredband
☐ Smart mobiltelefon
☐ Annat, ange vad:……...……...……..

<u>Digitala tjänster</u>

Här följer några frågor kring digitala tjänster.

10. Hur nöjd eller missnöjd är du med dina möjligheter att själv påverka om du vill använda digitala tjänster för samhällsservice och banktjänster?

☐ Mycket nöjd
☐ Nöjd
☐ Varken nöjd eller missnöjd
☐ Missnöjd
☐ Mycket missnöjd

11. Om du angivet missnöjd/mycket missnöjd ovan, av vilken anledning är du missnöjd?

- ☐ Vill inte använda, men har inget annat val
- ☐ Vill använda vid fler tillfällen, men tjänst saknas
- ☐ Annat, nämligen:……...……...…

12. Hur vill du helst ta del av samhällsservice, banktjänster, etc om du själv får välja?

- ☐ Via digitala tjänster
- ☐ Via kombination av digitala tjänster och personlig service
- ☐ Via personlig service

13. Vilket är ditt huvudsakliga skäl till detta val?

- ☐ Tillgänglighet
- ☐ Bekvämlighet
- ☐ Tidsbesparing
- ☐ Värna min integritet
- ☐ Personlig säkerhet
- ☐ Vill tala med en människa
- ☐ Annat skäl, vilket: ……

14. I allmänhet, hur betalar du helst för varor och tjänster?

- ☐ Kontant
- ☐ Med betalkort eller kreditkort
- ☐ Via app (t ex Swish, parkeringsappar)
- ☐ Internetbank
- ☐ På annat sätt, vilket? ..……...……

15. Vilket är ditt huvudsakliga skäl till detta val?

- ☐ Tillgänglighet
- ☐ Bekvämlighet
- ☐ Tidsbesparing
- ☐ Värna min integritet

- ☐ Personlig säkerhet
- ☐ Annat skäl, vilket: ……

16. Vem anser du <u>bör</u> ansvara för att du som privatperson har den kunskap som krävs för att använda digitala tjänster från företag, myndigheter, banker, etc?
Markera alla alternativ som du anser relevanta.

- ☐ Det är mitt eget ansvar
- ☐ Den som äger eller tillhandahåller tjänsten (t ex myndigheter, företag)
- ☐ Kursorganisatörer (t ex studieförbund)
- ☐ Föreningar och organisationer (t ex fackförbund, seniororganisationer)
- ☐ Kommunen (t ex via biblioteket)
- ☐ Annan, ange vem: ……...……...……

17. Vem <u>ser i praktiken</u> till att du som privatperson har den kunskap som behövs för att använda digitala tjänster från företag, myndigheter, banker etc?
Markera alla alternativ som du anser relevanta.

- ☐ Det är mitt eget ansvar
- ☐ Den som äger eller tillhandahåller tjänsten (t ex myndigheter, företag)
- ☐ Kursorganisatörer (t ex studieförbund)
- ☐ Föreningar och organisationer (t ex fackförbund, seniororganisationer)
- ☐ Kommunen (t ex via biblioteket)
- ☐ Annan, ange vem: ……...……...……

<u>Råd om tekniska produkter</u>

18. Vem vänder du dig i första hand till för att få inköpsråd när du planerar att köpa en ny teknisk produkt? *Markera ett alternativ.*

- ☐ Närstående
- ☐ Vänner
- ☐ Webben
- ☐ Sociala medier

- ☐ Nyhetsmedia
- ☐ Fackpress
- ☐ Konsumentupplysning
- ☐ Produkttester
- ☐ Prisupplysning
- ☐ Återförsäljare
- ☐ Annan, ange vem: ……...……...……
- ☐ Ingen, jag löser det själv utan något av ovanstående

19. Om jag får problem med egen teknisk produkt löser jag dem oftast?
Markera alla alternativ som du anser relevanta.

- ☐ Själv (t ex prövar sig fram)
- ☐ Med hjälp av närstående
- ☐ Med hjälp av vänner
- ☐ Med hjälp av telefonsupport
- ☐ Med hjälp av information på internet
- ☐ Med hjälp av företaget där jag köpt den
- ☐ Via kommunal service (t ex biblioteket)
- ☐ Annan, ange vem: ……...……...……

Upplevelser och erfarenheter av tekniska produkter

Här följer några frågor som berör din uppfattning om olika typer av tekniska produkter (föremål och tjänster) som vi ber dig att ta ställning till.

20. Jag tycker att hushållsapparater (tvättmaskin, köksmaskiner, etc) i allmänhet:
Markera alla alternativ som du anser relevanta.

- ☐ Är användbara
- ☐ Är användarvänliga
- ☐ Fyller nödvändiga behov
- ☐ Är praktiska
- ☐ Är påträngande

- ☐ Är tidsbesparande
- ☐ Är pålitliga
- ☐ Är säkra att använda
- ☐ Gör mig oberoende
- ☐ Begränsar min integritet
- ☐ Inget av ovanstående

21. Jag tycker att <u>informations- och kommunikationsteknik</u> (datorer, smarta telefoner, etc) i allmänhet:
Markera alla alternativ som du anser relevanta.

- ☐ Är användbara
- ☐ Är användarvänliga
- ☐ Fyller nödvändiga behov
- ☐ Är praktiska
- ☐ Är påträngande
- ☐ Är tidsbesparande
- ☐ Är pålitliga
- ☐ Är säkra att använda
- ☐ Gör mig oberoende
- ☐ Begränsar min integritet
- ☐ Är påtvingat att använda
- ☐ Inget av ovanstående

22. Hur väl instämmer du i följande påståenden om tekniska produkter (föremål och tjänster)?

	Instämmer inte alls	Instämmer delvis	Instämmer i stor utsträckning	Instämmer helt

Tekniska produkter är oftast utformade så att de är lätta att använda oavsett användarens erfarenhet och förmåga.	☐	☐	☐	☐
Tekniska produkter är oftast utformade så att det är lätt att förstå hur de ska användas	☐	☐	☐	☐
Tekniska produkter är oftast utformade så att det är lätt att förstå hur de ska användas.	☐	☐	☐	☐
Dagens tekniska produkter har bättre kvalitet än de som utvecklades tidigare.	☐	☐	☐	☐
Tekniska produkter som utvecklas idag har kortare livslängd än äldre teknik.	☐	☐	☐	☐
Tekniska produkter utvecklas för att det är tekniskt möjligt snarare än utifrån människors behov.	☐	☐	☐	☐
Tekniska produkter utvecklas av vinstintresse, snarare än utifrån människors behov	☐	☐	☐	☐

23. Hur ser du på följande påståenden om val, användning mm av tekniska produkter?

	Instämmer inte alls	Instämmer delvis	Instämmer i stor utsträckning	Instämmer helt

När det gäller tekniska produkter, vill jag alltid ha de senaste/nyaste modellerna	☐	☐	☐	☐
Priset är betydelsefullt när jag väljer tekniska produkter.	☐	☐	☐	☐
Jag föredrar tekniska produkter som kan användas på flexibelt sätt för flera olika ändamål/funktioner	☐	☐	☐	☐
Jag föredrar tekniska produkter (t ex bilar, tvätt- och diskmaskiner) som har standardfunktioner snarare än extrafunktioner	☐	☐	☐	☐
Jag föredrar tekniska produkter som kan kopplas samman och styras från en enhet, t.ex. mobiltelefonen.	☐	☐	☐	☐
Jag föredrar tekniska produkter som kan kopplas samman och styras från en enhet, t.ex. mobiltelefonen.	☐	☐	☐	☐
Jag föredrar tekniska produkter som liknar de jag tidigare haft	☐	☐	☐	☐

Jag har inga problem att hänga med i teknikutvecklingen	☐	☐	☐	☐
Jag har lätt för att lära mig ny teknik och tekniska produkter	☐	☐	☐	☐
Det är viktigt för mig att de tekniska produkter som jag använder är miljömässigt hållbara	☐	☐	☐	☐
Det oroar mig att viktiga samhällsfunktioner är beroende av teknik.	☐	☐	☐	☐

24. Hur ser du på följande påstående om informations- och kommunikationsteknik samt digitala tjänster?

	Instämmer inte alls	Instämmer delvis	Instämmer i stor utsträckning	Instämmer helt
Mina personuppgifter hanteras på ett säkert sätt när jag använder informations- och kommunikationsteknik (t ex dator, smart mobiltelefon) för digitala samhällstjänster (t ex hos Skatteverket, Försäkringskassan)	☐	☐	☐	☐
Mina personuppgifter hanteras på ett säkert sätt när jag använder informations- och kommunikationsteknik (t ex dator, smart	☐	☐	☐	☐

mobiltelefon) för att hantera min ekonomi och göra inköp.				
Mina personuppgifter hanteras på ett säkert sätt när jag använder informations- och kommunikationsteknik (t ex dator, smart mobiltelefon) i sociala medier	☐	☐	☐	☐
Jag litar i allmänhet på den information som jag kan hitta på internet	☐	☐	☐	☐
Jag använder gärna sociala medier för att hålla kontakt med mina vänner	☐	☐	☐	☐
Jag använder gärna sociala medier för att ta del av nyheter och samhällsinformation	☐	☐	☐	☐

Frågor om dig själv

25. Vad passar bäst in på dig?

- ☐ Ensamstående
- ☐ Gift eller sambo
- ☐ Särbo
- ☐ Änka eller änkling
- ☐ Ingen av ovanstående

26. Antal personer i mitt hushåll som är…

a) under 18 år: ……...personer
b) 18 år och äldre (inklusive dig själv): ..……..personer

27. Var är du född?

- ☐ Sverige
- ☐ Annat land, nämligen: ……...……...……...

28. Om född i annat land än Sverige: Hur länge har du bott i Sverige?

……...……år

29. Vilken är din högsta avslutade utbildning?

- ☐ Grundskola, folkskola, realskola eller liknande
- ☐ Gymnasieutbildning
- ☐ Yrkesskola, yrkeshögskola eller liknande
- ☐ Universitets- eller högskoleutbildning

30. Min huvudsakliga sysselsättning är för närvarande:

- ☐ Studier
- ☐ Yrkesverksam
- ☐ Föräldraledig
- ☐ Pensionär
- ☐ Arbetslös
- ☐ Annat, vad: ……...……...……

31. Hur väl tycker du att din ekonomi täcker din/din familjs behov av teknik i dagsläget?

- ☐ Bra
- ☐ Ganska bra
- ☐ Ganska dåligt
- ☐ Dåligt

32. I allmänhet, skulle du vilja säga att…

	Utmärkt	Mycket god	God	Någorlunda	Dålig
…din hälsa är?	☐	☐	☐	☐	☐
…din livstillfredställelse är?	☐	☐	☐	☐	☐

Appendix II

Enkätstudie COVID-19

I samband med coronavirusets utbredning har ett antal rekommendationer och restriktioner införts och som följd av detta har användningen av digital teknik ökat. Vi vill veta om och i så fall hur detta har förändrat ditt användande av och din inställning till digital teknik. Liksom om och i så fall hur det påverkat din vardag och hälsa ur olika perspektiv. Vi vill också undersöka om det i detta sammanhang finns skillnader och likheter mellan olika generationer (30-39-, 50-59- och 70-79-åringar) och mellan könen i Sverige. Utifrån dina och andra deltagares svar vill vi utveckla ny kunskap om hur teknik kan användas och utformas för att stödja aktivitet och hälsa när människor åldras, och särskilt i samband med krissituationer såsom coronavirusets spridning.

1. Eftersom det kan ha betydelse för dina svar på vissa frågor undrar vi om du tillhör någon definierad riskgrupp i förhållande till coronaviruset?

   Nej /
   Ja, på grund av ålder /
   Ja, på grund av medicinsk diagnos /
   Ja, av annan orsak än ovan
   Vill ej uppge

Dagliga aktiviteter

Här följer några frågor kring om och i så fall hur situationen relaterad till coronaviruset förändrat dina dagliga aktiviteter. Vi börjar med frågor om inköp.

2. Handlar du/ni i ert hushåll mat och andra dagligvaror på samma sätt som före coronapandemin?

   Ja
   Nej
   Ej svar

3. Hur handlar ditt hushåll mat och andra dagligvaror just nu? Ange det (ett) alternativ som är oftast förekommande i samband med coronapandemin.
   Jag/vi…

   handlar själv/a i butik på samma sätt som tidigare /
   handlar själv/a när det är lite kunder i butiken /
   får hjälp av någon utanför hushållet (privat eller hemtjänst) att handla i butik /
   prenumererar på matkasse /

beställer digitalt (t ex via app eller hemsida) /
handlar på annat sätt, ange hur:
Tveksam, vet ej

4. [Frågan bara synlig för de som handlar själva i butik själva enligt fråga 3 – alt 1 och 2] Jag/vi handlar just nu mat/dagligvaror i butik för att jag/vi…(SLUMPMÄSSIG ORDNING alla utom g, som läggs sist)

Ja /
Nej
Ej svar

a. vill handla själv/a /
b. inte har någon som kan hjälpa mig/oss att handla i butik /
c. inte kan beställa digitalt /
d. inte vill beställa digitalt /
e. inte kan betala digitalt /
f. inte vill betala digitalt /
g. handlar i butik själva av annat skäl.

5. [Frågan bara synlig för de som valt alternativ g i fråga 4]
Du svarade att du/ni just nu handlar mat/ dagligvaror i butik av annat skäl. Vilket är skälet? Öppen fråga

6. [Frågan bara synlig för de som väljer att prenumerera på matkasse eller handlar på internet enligt fråga 3 – alt 4-5] Mitt hushåll handlar just nu mat/dagligvaror digitalt (beställer matkasse eller handlar via hemsida/app) för att jag/vi…(SLUMPMÄSSIG ORDNING alla utom h, som läggs sist)

Ja /
Nej
Ej svar

a. följer myndigheternas rekommendationer / vill undvika att bli smittad/e
b. anser att det är bekvämt /
c. anser att utbudet är bättre /
d. för att spara tid /
e. för att det blir billigare /
f. brukar få hjälp att handla, men den som brukar hjälpa mig/oss är sjuk eller rädd att bli smittad
g. brukar handla digitalt /
h. handlar digitalt av annat skäl

7. [Frågan bara synlig för de som valt alternativ h i fråga 6]
Du svarade att du/ni just nu handlar mat/ dagligvaror digitalt av annat skäl. Vilket är skälet? Öppen fråga

8. [Frågan bara synlig för de som väljer att prenumerera på matkasse eller handlar på internet enligt fråga 3 alt 4-5] Hur upplever du att handla på annat sätt än i butik?

Jag gillar det och kan tänka mig att fortsätta handla på annat sätt /
Jag har inget emot det, men kommer att återgå till att själv handla i butik när möjlighet ges /
Jag gillar det inte, och gör det nu bara för att jag måste
Jag har alltid/länge handlat på annat sätt än i butik
Tveksam, vet ej

9. Handlar du/ni varor för personliga behov (t ex kläder, skor, apoteksvaror) på samma sätt som före coronapandemin?

Ja /
Nej
Ej svar

10. Hur handlar du kläder, skor och andra personliga tillhörigheter just nu? Ange det (ett) alternativ som är oftast förekommande i samband med coronapandemin. Jag…

handlar själv i butik på samma sätt som tidigare/
handlar själv när det är lite kunder i butiken
får hjälp av någon utanför hushållet (privat eller hemtjänst) att handla i butik /
beställer digitalt (t ex hemsida, app) /
beställer via postorder /
undviker sådana inköp just nu /
handlar på annat sätt, ange hur
Ej svar

11. [Frågan bara synlig för de som handlar själva i butik enligt fråga 10- alt 1-2] Jag handlar just nu kläder, skor och andra personliga tillhörigheter i butik för att jag…(SLUMPMÄSSIG ORDNING alla utom g, som läggs sist)

Ja /
Nej
Ej svar

a. vill handla själv/
b. inte har någon som kan hjälpa mig att handla i butik /
c. inte kan beställa digitalt /
d. inte vill beställa digitalt /
e. inte kan betala digitalt /
f. inte vill betala digitalt /
g. handlar i butik själv av annat skäl

12. [Frågan bara synlig för de som valt alternativ g i fråga 11] Du svarade att du just nu handlar kläder, skor och andra personliga tillhörigheter i butik av annat skäl. Vilket är skälet?

13. [Frågan bara synlig för de som väljer att handla på internet eller postorder enligt fråga 10-alt 4-5] Jag handlar just nu kläder, skor och andra personliga tillhörigheter på annat sätt än i butik (postorder eller digitalt via hemsida, app) för att jag…(SLUMPMÄSSIG ORDNING alla utom h, som läggs sist)

Ja /
Nej
Ej svar

a. följer myndigheternas rekommendationer / vill undvika att bli smittad/
b. anser att det är bekvämt /
c. anser att utbudet är bättre /
d. vill spara tid /
e. anser det blir billigare /
f. brukar få hjälp att handla, men den som brukar hjälpa mig/oss är sjuk eller rädd att bli smittad /
g. brukar handla digitalt
h. handlar digitalt av annat skäl

14. [Frågan bara synlig för de som valt alternativ h i fråga 13] Du svarade att du just nu handlar kläder, skor och andra personliga tillhörigheter på annat sätt än i butik (postorder eller digitalt) av annat skäl. Vilket är skälet?

15. [Frågan bara synlig för de som väljer att handla på internet eller postorder enligt fråga 10-alt 4-5] Hur upplever du att handla på annat sätt än i butik?

Jag gillar det och kan tänka mig att fortsätta handla på annat sätt (postorder eller digitalt via hemsida, app) /
Jag har inget emot det, men kommer att återgå till att själv handla i butik när möjlighet ges /
Jag gillar det inte, och gör det nu bara för att jag måste
Jag har alltid/länge handlat på annat sätt än i butik
Tveksam, vet ej

16. Här följer några frågor kring aktiviteter och om de har förändrats med tanke på coronavirusets spridning. Med anledning av coronaviruset spridning …(SLUMPMÄSSIG ORDNING)

Instämmer inte alls
Instämmer delvis
Instämmer i stor utsträckning
Instämmer helt
Tveksam, vet ej

a. Spenderar jag mer tid i min egen bostad
b. Är jag mindre aktiv i samhället (t ex inom föreningsliv, kulturella eller andra sociala aktiviteter)
c. Håller jag ett socialt avstånd och undviker kroppskontakt om jag möter andra
d. Umgås jag mer med familj/släkt och vänner utomhus
e. Undviker jag att träffa vänner eller familj/släkt som är över 70 år som vanligt (utöver personer inom ditt eget hushåll)
f. Följer jag myndigheternas restriktioner

Till följd av coronavirusets spridning så får vi en rad restriktioner och rekommendationer från myndigheterna om att hålla social distans, vilket gör att de flesta vistas mer i sin bostad.

17. På grund av restriktioner och rekommendationer om att stanna hemma på grund av coronaviruset, så känner jag mig just nu…(jämfört med min situation innan corona) (SLUMPMÄSSIG ORDNING)

Mer än innan
Lika som innan
Mindre än innan
Tveksam, vet ej

Trygg
Isolerad
Ensam
Självständig
Delaktig

Digital teknik

Här följer frågor kring din användning av teknik och vad du tycker om detta nu i samband med coronavirusets utbredning.

18. Hur påverkas din faktiska användning av digital teknik av de rekommendationerna (som ges till följd av samhällets restriktioner med anledning av coronaviruset) om att använda digital teknik?

Jag känner mig uppmuntrad att öka min användning /
Jag känner mig tvingad att öka min användning /
De påverkar inte min användning /
Jag känner mig tvingad men avstår från att använda /
Jag använder mig inte alls av digital teknik
De påverkar mig på annat sätt, ange hur
Tveksam vet ej

19. Jag tycker att digitala produkter (datorer, smarta telefoner etc) och tjänster som baseras på digital teknik (t ex samhällsservice, internethandel, betalningsappar) i allmänhet…(SLUMPMÄSSIG ORDNING alla utom i, som läggs sist)

Ja
Nej
Ej svar

a. Är användarvänliga för mig/
b. Fyller nödvändiga behov för mig /
c. Är praktiska i sin utformning /
d. Är påträngande /
e. Är tidsbesparande för mig/
f. Är pålitliga att använda /
g. Är säkra att använda /
h. Gör mig oberoende /
i. Begränsar min integritet /
j. Är påtvingat att använda /
k. Annat

20. [Frågan bara synlig för de som valt alternativ i k fråga 19] Du svarade ”Annat” på föregående fråga. Vad tänkte du på?

21. Har din syn på digital teknik förändrats av situationen och rekommendationerna med anledning av coronaviruset?

Ja, jag är mer positiv till att använda digital teknik nu /
Ja, jag är mer negativ till att använda digital teknik nu /
Nej, min syn på digital teknik är oförändrad
Tveksam, vet ej

22. I samband med coronavirusets spridning …(SLUMPMÄSSIG ORDNING)

Instämmer inte alls /
Instämmer delvis /
Instämmer i stor utsträckning /
Instämmer helt /
Använder inte nu eller före Corona
Tveksam, vet ej

a. Använder jag digital teknik (t ex smartphone, surfplatta eller dator) oftare
b. Använder jag digital teknik för att skaffa varor oftare
c. Använder jag digital teknik för att skaffa tjänster oftare
d. Använder jag digital teknik för att betala varor och tjänster oftare
e. Använder jag e-post för att kontakta familj, släkt och vänner oftare
f. Ringer jag min familj, släkt och mina vänner oftare
g. Kontaktar jag min familj, släkt och mina vänner oftare via sms
h. Kontaktar jag min familj, släkt och mina vänner oftare via videosamtal (t ex Skype, Facetime)
i. Använder jag sociala medier (t ex Facebook, Instagram) oftare för att hålla kontakt med familj, släkt och vänner
j. Använder jag digital teknik (t ex sociala medier, hemsidor, nätbilagor av nyhetsmedia) oftare för att hålla mig uppdaterad med nyheter och samhällsinformation
k. Använder jag digital teknik för att få tillgång till filmer oftare
l. Använder jag digital teknik för att få tillgång till TV-program utöver ordinarie utbud (t ex via streamingtjänster) oftare
m. Använder jag digital teknik för att ta del av kulturutbud (t ex teater, konserter, bio) oftare

n. Använder jag digital teknik för underhållning (t ex spela spel, lösa korsord, sudoku) oftare
o. Använder jag digital teknik för att träna eller vara fysiskt aktiv oftare

23. I vilken utsträckning instämmer du i följande påstående? Jag har den kunskap som krävs för att använda digital teknik för mina aktiviteter i vardagslivet

Instämmer inte alls
Instämmer delvis
Instämmer i stor utsträckning
Instämmer helt
Tveksam, vet ej

24. Hur ser dina förutsättningar ut vad gäller att få stöd för att lösa problem med digital teknik?

Jag kan få stöd precis när jag vill /
Jag får vänta rimlig tid på stöd /
Jag får vänta för länge på stöd /
Jag har ingenstans att vända mig för stöd /
Tveksam, vet ej

25. Om jag fått problem eller behövt stöd med digital teknik i samband med coronavirusets spridning så…
Välj max tre alternativ (SLUMPMÄSSIG ORDNING alla utom de två sista alt)

Har jag löst dem själv /
Har jag löst dem med hjälp av familj/släktingar /
Har jag löst dem med hjälp av vänner /
Har jag löst dem med hjälp av grannar /
Har jag löst dem med hjälp av bovärd/vicevärd /
Har jag löst dem med hjälp av vård- eller omsorgspersonal /
Har jag löst dem med hjälp av telefonsupport/kundtjänst /
Har jag löst dem med hjälp av information på internet /
Har jag löst dem med hjälp av företaget där jag köpt produkten/servicen /
Har jag löst dem via kommunal service (t ex bibliotek, träffpunkt) /
Har jag inte kunnat lösa dem alls för att hjälp saknas

Har jag löst dem med hjälp av annan än ovanstående, ange vem:
Jag har inte fått/behövt hjälp
Tveksam, vet ej

26. [Om andra alternativ valts på fråga 25 än att man löst dem själv el. inte behövt hjälp] Hur nöjd är du med det stöd som du har fått?

Jag är inte alls nöjd
Jag är ganska nöjd /
Jag är nöjd /
Jag är mycket nöjd /
Tveksam, vet ej /

27. Om jag får problem med digital teknik som jag inte kan lösa själv, i samband med coronavirusets fortsatta spridning, skulle jag föredra att få hjälp av (flera alternativ möjliga)

Min familj/släktingar /
Mina vänner /
Mina grannar /
Min bovärd/vicevärd /
Vård- eller omsorgspersonal som jag har kontakt med/
Telefonsupport /
Information på internet /
Företaget där jag köpt produkten/servicen /
Via kommunal service (t ex bibliotek, träffpunkt) /
Annan, ange vem…
Tveksam, vet ej

Frågor om deltagaren

Avslutningsvis ställer vi några frågor om dig själv.

28. Vad passar bäst in på dig?

Jag är ensamstående /
Jag är gift eller sambo /
Jag är särbo /
Jag är änka eller änkling /
Annat, ange vad:
Vill ej uppge

29. Jag bor i:

Villa/radhus /

Hyreslägenhet /
Bostadsrätt
Vill ej uppge

30. Antal personer (inklusive dig själv) i mitt hushåll som är...

a. Under 18 år:……personer

b. 18 -69 år:……..personer

c. 70 - år:……personer

31. Var är du född?

I Sverige/
I annat land, nämligen:
Vill ej uppge

32. Hur länge har du bott i Sverige? Ange ditt svar i antal år

33. Vilken är din högsta avslutade utbildning?

Grundskola, folkskola, realskola eller liknande /
Gymnasieutbildning /
Yrkesskola, yrkeshögskola eller liknande /
Universitets- eller högskoleutbildning
Vill ej uppge

34. Min huvudsakliga sysselsättning är för närvarande:

Studier /
Yrkesverksam /
Föräldraledig /
Pensionär /
Arbetslös
Annat, vad?
Vill ej uppge

35. Hur väl tycker du att din ekonomi täcker din/din familjs behov av digital teknik i dagsläget?

Dåligt
Ganska dåligt
Ganska bra
Bra

Vill ej uppge

36. I allmänhet, skulle du vilja säga att din hälsa är?

Dålig
Någorlunda
God
Mycket god
Utmärkt
Vill ej uppge

37. I allmänhet, skulle du vilja säga att din livstillfredställelse är?

Dålig
Någorlunda
God
Mycket god
Utmärkt
Vill ej uppge

Appendix III

Intervjuguide för fokusgrupper

Titel:
Studie om smarta hemlösningar för aktivt och hälsosamt åldrande

Session 1

Introduktion: Första fokusgruppstillfället inleds med allmän genomgång kring intervjun (öppet diskussionsklimat och även praktiska frågor kommer att diskuteras), syftet med studien och metoden.

Allmän genomgång om intervjun
Alla deltagare presenterar sig för varandra
En kort förklaring av syftet med studien, samt moderator och assisterande moderators roll och position i samband med fokusgrupperna.

Fokusgruppen inleds med en öppen fråga om deltagarnas uppfattningar kring smarta hemlösningar, för att få en överblick av deltagarnas förförståelse inom området smarta hemlösningar:

- Vad är din erfarenhet av smarta hemlösningar?

Baserat på deltagarnas förförståelse kommer tillgängliga smarta hemlösningar att presenteras i MoRe-Lab

Intervju:

- Hur tycker ni de smarta hemlösingarna som finns här i MoRe-Lab upplevs?

  Vilket intryck får ni av tekniken som presenteras? Har någon tidigare erfarenhet av sådan teknik? Kände ni något extra (bra/dåligt) för någon av de smarta hemlösningarna? Vad är det i denna lösning som gör att ni känner så?

- Hur känner ni för smarta hemlösningar?
  Vad är er syn på smarta hemlösningar? Kan ni beskriva vilka lösningar/tekniker som är lätta att använda och vilka som inte är det?

  Vad är det som gör att de är lättare / svårare att använda just den tekniken?

  Hur upplever ni att er användning av smarta hemlösningar påverkas av exempelvis olika hem och familjesituationer, eller vid nedsatt fysisk eller kognitivförmåga?

- Vilken roll har smarta hemlösningar i att bidra till ett aktivt och hälsosamt åldrande?
  Vilka lösningar/tekniker använder ni idag? Hur ofta använder ni dem? Påverkar dem er livskvalité? Tror ni smarta hemlösningar kan bidra till ett aktivt och hälsosamt åldrande? På vilket sätt?

Rast/ Fika:

- Vilka smart hemlösningar använder ni idag?
  Hur mycket använder ni t.ex. mobil, dator, hemelektronik för att utföra dessa aktiviteter? Vilka typer av smarta hemlösningar hjälper er mest till vardags? Vilka typer av vardagsaktiviteter utförs med stöd av smarta hemlösningar?
  Hur tror ni att dessa tekniker kan vara användbara för vardagsaktivitet, hälsa och trygghet?

Avslutning:

- Finns det något annat som du skulle vilja tillägga eller diskutera ytterligare angående detta ämne/session?

Session 2

Introduktion:

En kort genomgång om session 1

Intervju:

- Finns det smarta hemlösningar som du skulle vilja använda? (Det kan vara teknik du känner från affären, tv, reklam, mm.)
  Vilken teknik? Varför? Vilka funktioner är det som gör att du önskar använda just den tekniken? Skiljer sig den

önskade nya tekniken från tidigare teknik/lösningar? På vilket sätt? Hur skulle de smarta hemlösningar ni skulle vilja använda påverka ert dagliga liv? Humör? Socialt liv? Trygghet? Hälsa och vård påverkan? Hur kan de smarta hemlösningarna ni vill använda bidra till ett aktivt och hälsosamt åldrande?

Vet ni om det finns någon ny teknik på marknaden som skulle passa de behov och önskningar som vi har diskuterat om idag?

Rast/ Fika:

- Finns det anledningar till att ni inte använder den tillgängliga tekniken (Smart-hem)?

Hur fick du det här intrycket? Från vilken speciell erfarenhet?
Är det fysiska funktioner eller det själva system som gör det?
Hur påverkar det ditt liv/ förmåga att hålla engagerad till aktivitet?

- Vad underlättar användningen av smarta hemlösningar?

  Vilken teknik använder du mest/ sällan? Varför?
  Vilka ändringar skulle underlätta för en smidigare användning?
  Hur kan detta leda till ökad aktivitet?
  Vilket stöd skulle du behöva för att använda dessa tekniker?
  Underlättar det om du får introduktion stöd som hjälper dig gå genom användning?
  Kommer det ge något skillnad med hjälp och utan hjälp att gå genom praktiska delen av teknik? Vilka skillnader?

Avslutning:

- Finns det något annat som du skulle vilja tillägga eller diskutera ytterligare angående detta ämne/session?

Andra fokusgruppstillfället avlutas med att tacka alla deltagare för deras värdefulla synpunkter. Information om när och hur man kan ta del av resultatet. Under avslutningen kommer en kort information delges angående del två av denna studie, forskningscirkel.