

JYU DISSERTATIONS 36

Sanna Kuoppamäki

The Role of Age and Life Course Stage in Digital Consumption



UNIVERSITY OF JYVÄSKYLÄ
FACULTY OF HUMANITIES AND
SOCIAL SCIENCES

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Esitetään Jyväskylän yliopiston humanistis-yhteiskuntatieteellisen tiedekunnan suostumuksella
julkisesti tarkastettavaksi yliopiston vanhassa juhlasalissa S212
marraskuun 30. päivänä 2018 kello 12.

Academic dissertation to be publicly discussed, by permission of
the Faculty of Humanities and Social Sciences of the University of Jyväskylä,
in Seminarium, auditorium S212, on November 30, 2018 at 12 o'clock noon.



JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

JYVÄSKYLÄ 2018

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Permanent link to this publication: <http://urn.fi/URN:ISBN:978-951-39-7608-8>

ISBN 978-951-39-7608-8 (PDF)

URN:ISBN:978-951-39-7608-8

ISSN 2489-9003

ABSTRACT

Kuoppamäki, Sanna

The role of age and life course stage in digital consumption

Jyväskylä: University of Jyväskylä, 2018, 99 p.

(JYU Dissertations

ISSN 2489-9003; 36)

ISBN 978-951-39-7608-8 (PDF)

Digital technologies are an inherent part of consumer environments today. This dissertation investigates older adults' usage of digital technologies by focusing on the role of age and life course stage in digital consumption in Finland. The dissertation applies theories of technology adoption and use, generations, and life course to examine older adults as digital consumers, the interrelationship between consumption and digital technologies and the effects of age and life course stage on digital consumption. The study utilises both quantitative and qualitative data from five (5) data sets. The results reveal that between the years 1999 and 2014, older adults reported more ecological and less self-indulgent attitudes towards consumption than young adults. Between 2009 and 2014, these differences were best explained by life course factors, i.e. household type and other socio-demographic variables. The results suggest that older adults are active online shoppers but less active users of mobile-based entertainment media. Online shopping is best explained by life course factors whereas entertainment media may be connected to generational preferences for certain types of media. The results indicate that older adults discuss digital technologies in relation to personal skills, social relationships and security. Older adults utilise electricity company online services more frequently than young adults and report a lack of knowledge regarding online environments less frequently than young adults. Considering digital participation in service environments the study acknowledges that, while the significance of chronological age in digital participation might be decreasing, the role of life course factors persist. As a main outcome of the study, the dissertation presents a comprehension of digital consumption across the life course that considers the role of chronological, generational and biographical age in digital consumption. The study concludes that older adults are selective users of digital technologies, and digital skills, needs and digital interaction transform digital service environments. The dissertation proposes that a generational framework for digital consumption provides an insufficient explanation for digital consumption, and suggests that life stage factors, such as bodily, mental and biographical ageing, transform the individual's tendency to consume digitally.

Keywords: digital consumption, digital technologies, ageing, life course, generations

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TIIVISTELMÄ

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Iän ja elämänvaiheen yhteys digitaaliseen kulutukseen

Jyväskylä: University of Jyväskylä, 2018, 99 p.

(JYU Dissertations

ISSN 2489-9003; 36)

ISBN 978-951-39-7608-8 (PDF)

Digitaaliset teknologiat ovat osa arkipäivän kulutusympäristöjä. Väitöskirjatutkimuksen aiheena on vanhempien aikuisten, noin 50–74-vuotiaiden digitaalisten teknologioiden käyttö osana erilaisia kulutusympäristöjä. Tutkimuksessa aihepiiriä lähestytään tarkastelemalla iän ja elämänvaiheen yhteyttä digitaaliseen kulutukseen. Teoreettisena viitekehystenä käytetään teknologian omaksumisen ja käytön sekä sukupolven ja elämänvaiheen käsitteitä, joiden pohjalta muodostetaan kehys vanhempien aikuisten digitaalisen kulutuksen tarkasteluun. Tutkimuksessa hyödynnetään sekä kvantitatiivisia että kvalitatiivisia aineistoja ja menetelmiä yhteensä viidestä (5) eri aineistosta. Tulokset osoittavat, että vuosina 1999 ja 2014 vanhempien aikuisten asenteet kulutusta kohtaan olivat nuoriin aikuisiin verrattuna ekologisemmat ja vähemmän nautintohaluisemmat. Vuosina 2009 ja 2004 erot kulutusasenteiden välillä olivat vahvimmin yhteydessä elämänvaiheeseen, jota tässä tutkimuksessa tarkasteltiin kotitaloustyypin ja muiden sosio-demografisten taustatekijöiden näkökulmasta. Vanhemmat aikuiset käyttävät mobiiliteknologiaa, eli älypuhelin tai tablettitietokonetta verkko-ostamiseen lähes yhtä usein kuin nuoret aikuiset. Viihteeseen vanhemmat aikuiset käyttävät mobiiliteknologiaa nuoria aikuisia harvemmin. Mobiilivälitteinen verkko-ostaminen on yhteydessä elämänvaiheeseen ja mobiilivälitteinen viihdekulutus ikään ja sukupuoleen. Vanhemmat aikuiset keskustelevat digitaalisista teknologioista digitaalisten taitojen, ihmissuhteiden ja turvallisuuden tunteen näkökulmasta. Vanhemmat aikuiset hyödyntävät sähköyhtiön sähköisiä asiointipalveluja useammin kuin nuoret aikuiset. He eivät myöskään ilmoita taitojen puutteen olevan syynä digitaalisten palveluiden käytön esteelle yhtään useammin kuin nuoret aikuiset. Tutkimuksen mukaan osallistuminen digitaalisiin palveluympäristöihin on vahvemmin yhteydessä elämänvaiheeseen kuin kronologiseen ikään. Vanhemmat aikuiset ovat valikoivia digitaalisia kuluttajia, ja digitaaliset taidot, tarpeet ja digitaalinen vuorovaikutus muokkaavat digitaalisia kulutusympäristöjä. Johtopäätöksenä tutkimus esittää, että digitaalisen kulutuksen tarkasteleminen vain digitaalisten sukupolvien näkökulmasta on riittämätön, ja elämänvaiheeseen liittyvät tekijät muuttavat yksilön taipumusta kuluttaa digitaalisesti.

Asiasanat: digitaalinen kulutus, digitaaliset teknologiat, ikääntyminen, elämänvaihe, sukupolvet

ACKNOWLEDGEMENTS

During this dissertation journey I have had the opportunity to challenge myself in countless ways. As in many other aspects of life, it was the encouragement and support of other people that ultimately led to achieving this difficult goal.

I want to express my sincerest gratitude and appreciation to my supervisors, Professor Terhi-Anna Wilska, Dr. Sakari Taipale and Dr. Katja Kokko. Terhi-Anna recruited me to the project *DIGI50+ Mature consumers, customer experience and value creation in digital and physical environments* (2015-2016). This project and the collaboration with Terhi-Anna formed the basis for my dissertation work. Sakari provided me with insightful comments that helped me develop my work further. Katja introduced me to essential research, and in the final phases of writing, inspired me to pay attention to details. Working with Terhi-Anna, Sakari and Katja has been enriching and rewarding.

During the final phases of the dissertation I received valuable comments from my reviewers. I want to genuinely thank Dr. Mireia Fernández-Ardèvol and Associate Professor Minna Ruckenstein for reviewing my thesis. Both Mireia and Minna provided me with excellent suggestions for improvements. Thank you Mireia for agreeing to be my opponent.

I had the chance to learn from many other wonderful researchers. Within the collaboration with Professor Outi Uusitalo and Ms. Tiina Kemppainen I learned new ways of approaching my research. It has also been a pleasure to share moments of everyday life with Veera and Minna. Thanks for being such great colleagues!

The dissertation was conducted at the Department of Social Sciences and Philosophy at the University of Jyväskylä. I am grateful for all of the opportunities to participate in teaching that ultimately made me a better researcher. Writing a thesis is sometimes a lonely endeavour, but the warm atmosphere of this department made it feel less solitary. The quality of my writing improved significantly after English proofreading. Thank you Ursa Dykstra for that!

Completing a long project requires both financial and emotional support. Reaching the final version of this dissertation would not have been possible without the scholarship I received from the Finnish Cultural Foundation.

Above all, my family provided endless support in the final phases. I want to thank my husband Olli for his patience, understanding and sense of humour, which helped me to find the right balance between writing and the other things in life. My parents Tarja and Tarmo have always encouraged me to pursue my interests. I want to thank Paula and Erkki for creating a loving atmosphere. My daughters Sara and Anni are my true sunshine, and the best source of inspiration every day.

Stockholm, October 10th, 2018

Sanna Kuoppamäki

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LIST OF ORIGINAL PUBLICATIONS

- I Kuoppamäki, S., Wilska, T-A., Taipale, S. (2017). Ageing and consumption in Finland: The effect of age and life course stage on ecological, economical and self-indulgent consumption among late middle-agers and young adults between 1999 and 2014. *International Journal of Consumer Studies*, 41(4), 457-464.
- II Kuoppamäki, S., Taipale, S., Wilska, T-A. (2017). The use of mobile technology for online shopping and entertainment among older adults in Finland. *Telematics and Informatics*, 34 (4), 110-117.
- III Kuoppamäki, S., Uusitalo, O. Kemppainen, T. (2018). A risk to privacy or a need for security? Digital domestic technologies in the lives of young adults and late middle-agers. In: S. Taipale, T-A. Wilska and C. Gilleard (eds). *Digital Technologies and Generational Identity. ICT Usage Across the Life Course*. London: Routledge.
- IV Kuoppamäki, S. (2018). Digital participation in service environments among senior electricity consumers in Finland. *Technology in Society*, 55, 111-118.

In articles I-III, the first author planned the research design, conducted the analysis and wrote all sections of the manuscript. The co-authors commented on the manuscript in all phases of the research process. In article IV, the author is the sole author.

1 INTRODUCTION

1.1 Digital consumption across the life course

Digital technologies have conclusively intertwined with multiple practices of daily living. In today's world, digitalisation has developed from the application of mobile technology for various purposes to a more comprehensive digital life. The world 'digital' can therefore be extended to describe every aspect of human life. In the field of consumption, consuming physical products has already shifted to consumption and co-creation of digital services.

The utilisation of digital technologies is nevertheless fragmented between individuals and social groups. Not all individuals participate in digital environments in an equally active way. Older adults, a heterogeneous group of consumers of approximately 50 to 74 years of age, are generally regarded as less active users of digital technologies in comparison to young adults. In recent years, the digital activity of adults aged 65 and over has increased, but they still own mobile technology and other digital devices less frequently than young adults (Czaja et al., 2006; Giljeard and Higgs, 2008; Helsper and Reisdorf, 2013; Näsi et al., 2012; Rasi and Kilpeläinen, 2016; Räsänen and Koironen, 2016; Zickuhr and Madden, 2012). Older adults are thus proposed to lag behind young adults in digital engagement (Hale et al., 2010; Haight et al., 2014; Hargittai and Hinnant, 2008; Niehaves and Plattfaut, 2014; Peacock and Künemund, 2007; Schreuers et al., 2017; Zickuhr and Smith, 2012).

This dissertation investigates older adults' usage of digital technologies by evaluating the role of age and life course stage in digital consumption. There are several reasons to examine specifically older adults, aged approximately 50 to 74, as digital consumers. The population structure in most western societies is changing, and the proportion of adults older than 65 is increasing. During the past decades, the life expectancy of western populations has increased about 10 years, and today an increasing proportion of people live to the age 80 in Finland and worldwide (National Center for Health Statistics, 2015). The spike in fertility following by World War II, known as the baby boom, has steadily declined in

Finland (Statistics Finland, 2016). Declining birth rates together with falling death rates results in the ageing of the population: the proportion of the population older than 65 is increasing. It is estimated that in 2050, almost one third (28 %) of the population in European countries will be aged 65 and over (United Nations, 2004, 2017). A large proportion of digital consumers will be people who are living the later stages of life.

The characteristics of ageing are also changing. People are living longer lives, but they are also staying healthier. Once an adult has reached the age of 60, he or she can expect from 15 to 20 years of healthy life in most developed nations (World Health Organization, 2010). The relative status of older adults has also improved in relation to consumption. In 2012, the median consumption was at its highest among people aged 55 to 59, which is 15 years later than 30 years ago (Ahonen and Vaittinen, 2015; Atkinson and Hayes, 2010). Older adults, having spent their adulthood during decades of steady job markets, and who by the age of 50 have decreased financial responsibility for their children, can arguably be considered the most well-off consumer group in the marketplace today (Biggs et al., 2007; Drolet et al., 2010; Jones et al., 2008). Older adults are thus expected to participate in digital consumption at the same frequency as young adults.

The role of age and life course stage in digital consumption can be evaluated from a multidimensional perspective. This dissertation conceptualises the multidimensionality of age in relation to chronological age, generational experiences and life course stage. A small proportion of research on older adults as consumers emphasises the psychological aspects of ageing in relation to consumption (Drolet et al., 2010; Fisher et al., 2007; French et al., 2006; Hurd and Rohwedder, 2010). The interrelationship between ageing and consumption is perceived as deriving from developmental changes that are accompanied by ageing. Ageing is necessarily associated with cognitive and socio-emotional changes these changes are to some extent related to chronological age.

Generational experiences describe the socially shared identity that members of each birth cohort share based on their memories from young adulthood years. The profound distinction between older and younger consumers is expected to emerge from generational experiences (Biggs et al., 2007; Karisto, 2007; Gilleard and Higgs, 2005, 2009; Jones et al., 2008). Generational experiences are constituted on the basis of historical circumstances during young adulthood (Edmunds and Turner, 2002a, 2002b; Mannheim, 1952; Purhonen, 2007; Riley, 1973). Older adults of the 21st century have spent their adolescent years during a period of economic growth and entered the later stages of life fully engaged with consumerism (Gilleard and Higgs, 2008, 2009; Jones et al., 2008). The question is whether or not these generational values persist or change across the life course (Meredith and Schewe, 1994; Ryder, 1985; Rogler, 2002), and whether or not life events transform consumption patterns in later life.

A generational framework has been applied in the examination of usage of digital technologies across the life course. Members of certain birth cohorts are exposed to certain digital technologies during certain historical time periods,

which affects the usage of these technologies in later life. This 'generational paradigm' proposes that early exposure to digital technologies in young adulthood results in a more profound usage of digital technologies in later life. During young adulthood people are more adaptable, facing the formative years of their lives, and therefore they adopt new technological transformations more easily than adults in regard to acceptability, literacy, and capacity for innovation (Colombo, 2011; Facer, 2011). Thus generational rather than structural or life stage influences are perceived more relevant explanation for usage of digital technologies (Gilleard and Higgs, 2008).

A generational framework for digital consumption involves not only skills and abilities but also a certain identity that is tied up with digital technologies. The application of digital technologies is influenced by the 'generational habitus' that refers to (third) age identities and wider engagement with consumer culture. Digital consumption therefore contributes to the ageing 'successfully' which includes, among other things, minimising the effects of physical ageing (Gilleard and Higgs, 2009). The transformation of digital environments nevertheless results in changes in the role of generational identity. New technological devices are provided to consumers at a fast pace, resulting in technological obsolescence. Generations therefore experience several technological trajectories during their life course, and generational identity cannot be constituted around a particular device anymore (Bolin, 2016).

The relevance of generational categories as an explanatory factor for technology usage has thus been questioned. More focus has been put on the biographical changes that offer opportunities for creation of new routines and leisure activities (Bisogni et al., 2005; Bove and Sobal, 2006; Lamine, 2008; Plessz et al., 2016; Southerton, 2006). Life stage based ageing comprehends changes and transformation that occur in the individual's life course in relation to social and personal relationships, networks and structures. This study proposes that, although these different dimensions of ageing are often intertwined, they can be perceived as independent from each other.

The study utilises the concept of 'digital consumption' to describe the usage of digital technologies for consumer practices. Digital consumption is conceptualised in relation to technology adoption and use, social shaping of technology and digital participation. With respect to technology adoption and use, the understandings of processes related to digital consumption are highly various. From the perspective of technology adoption models, digital consumption is preceded by evaluations of advantages, compatibilities, complexities, expectations, efforts and social influences of use of a certain technology (e.g. Barnard et al., 2013; Davis, 1989; Venkatesh et al., 2003). Technology adoption models nevertheless provide an insufficient approach to the social and human nature of technology, as they conceptualise technology adoption and use only at the individual level, thus ignoring the influence of social relationships on digital consumption.

Digital technologies are also open to social interpretation (Bijker & Law, 1992; MacKenzie and Wajcman; Selwyn, 2012). Technologies can be viewed as

'text' (Grint and Woolgar, 1992), suggesting that digital technologies are interpreted as 'written' in certain ways by social groups. These individuals and social groups are involved in the stages of development, production and marketing of digital technologies (Selwyn, 2012). Hence they create subjective meanings for technologies that are separate from the intentions of designers, financiers and marketers. Consumers create their own understanding of digital technologies that can be detached from the rhetorical and material nature of technology.

Family decision-making processes influence the adoption and use of digital technologies (Røpke, 2003). Digital technologies become known to consumers through marketing efforts, which result in assessment of these technologies in the routines of daily life. Decisions to buy digital technologies are preceded by negotiations between all family members. The domestication of digital technologies typically results in structural and cultural changes. Through micro- and macro-economic processes, new technologies rapidly supersede the old, causing technological obsolescence, i.e. technologies becoming old, out-of-date and disused (e.g. Bartles et al., 2012).

Hence the utilisation of digital technologies in daily life should be understood in relation to a wider digital activity and engagement. This study proposes that digital consumption includes a more profound participation in digital service environments. This includes active creation and co-creation of digital services at a personal level (e.g. Pantzar and Ruckenstein, 2015; Ruckenstein and Pantzar, 2017). As participation in digital service environments transforms into a more personalised practice, the factors that influence on digital consumption should be evaluated on a multidimensional manner.

The study considers the role of age and life course stage in digital consumption from the Finnish perspective. Finland, as a one of the most digitalised societies in Europe, has specific features. When measuring the national capacity to adopt new technological innovations, Finland has been one of the leading countries (Desai et al., 2002). National investments in education typically result to a fast adoption of digital technologies regardless of users' socio-demographic backgrounds. Due to its geographical location and small population size, Finland is highly dependent on digital transformation. The lack of fertility together with the increasing amount of adults aged over 74 (e.g. Grunfelder et al., 2018), create new difficulties to enhance these transformation processes in Finland. This development threatens to limit the opportunities for social and digital growth regarding the scope of digital services.

1.2 Research objectives, questions and structure of the study

In the examination of older adults as digital consumers, the study addresses the characteristics of older adults in relation to digital consumption, the interrelationship between consumption and digital technologies, and the effects of age

and life course stage on digital consumption. The study has three main objectives that are each specified with two research questions (Figure 1).

The first objective of the study is to *characterise older adults as digital consumers*. The study asks the following questions:

- To what extent do older adults differ from younger adults in relation to attitudes towards and practice of digital consumption, if any? (RQ1)
- How do shared understandings of digital technologies vary between older and younger adults? (RQ2)

Objective 1 aims to shed light on older adults as consumers, by examining the development of attitudes towards consumption (article I), the use of mobile technology for online shopping and entertainment (article II), the shared understandings of digital domestic technologies (article III), and the digital participation in electricity company's online services (article IV). An examination of attitudes towards consumption reveals the particularities of older adults with respect to ecological, economical and self-indulgent consumption, while an investigation of the use of mobile technology throws light on older adults as users of mobile-based online shopping and mobile entertainment. With an analysis of the similarities and dissimilarities in the shared understandings of digital technologies among older and younger adults, findings concerning age-specific meaning-making processes of digital technologies are obtained. These age-specific features and meaning-making processes are further examined by addressing the multidimensional role of age in digital participation.

The second objective of the study is to *recognise mechanisms between on consumption and use of digital technologies*. The study examines the following:

- How are consumption practices influenced by digital technologies? (RQ3)
- How are digital technologies conceptualised as objects of consumption? (RQ4)

The purpose of the objective 2 is to detect conceptual mechanisms through which the adoption and use of digital technologies is associated with consumption. Through an examination of the use of mobile technology for online shopping and entertainment (article II), an investigation of the conceptualisations of digital technologies as objects of consumption (article III), and an exploration of the association between digital participation and bodily, mental and biographical aspects of ageing (article IV), the study displays practices of digital consumption that are affected by mobile devices, and examines meaning-making processes of digital technologies as objects of consumption.

The third objective of the dissertation is to *distinguish the effects of age and life course stage on digital consumption*. The dissertation investigates the following:

- To what extent do age and life course stage explain attitudes towards or practice of digital consumption? (RQ5)
- In attitudes towards consumption, are generational or cohort effects pronounced? (RQ6)

Objective 3 attempts to separate the effects of age and life course stage from each other and evaluate their role as determinants of consumption of digital technologies. The study aims to explain consumption of digital technologies by age and life course stage and to identify the generational or cohort effects on attitudes towards consumption among older and younger adults from four angles. First, the study measures the effects of age and life course stage in different time periods on attitudes towards consumption (article I). Second, the study investigates the effects of age and life course stage on mobile-based shopping and entertainment (article II). Third, the study explores socially shared understandings of digital domestic technologies through the concepts of life course and generational experiences (article III). Fourth, the study analyses the multidimensionality of age in relation to digital participation (article IV). The effects of age, life course stage and generational/cohort membership are thus explored both quantitatively and qualitatively, in order to reach both measurable and experiential aspects of generational dimensions.

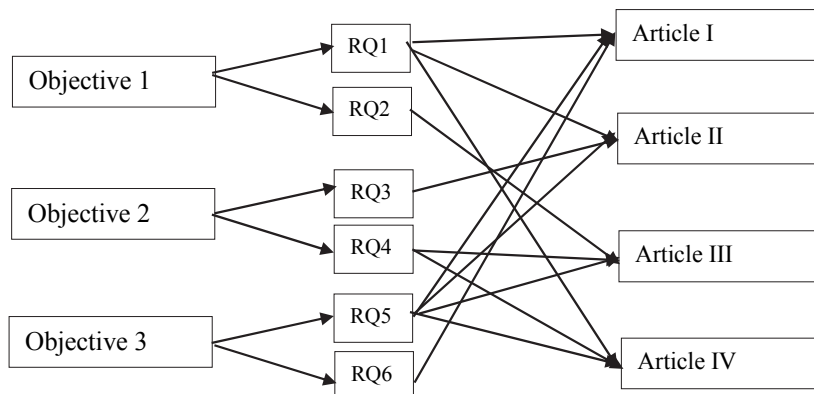


FIGURE 1 Objectives and research questions in relation to articles

The dissertation addresses older adults as a heterogeneous group of individuals and thus applies various age categories to describe older adults in a multidimensional manner. The dissertation conceptualises *older adults* as late middle-agers (46 to 60) (article I), older consumers (55 to 74) (article II), late middle-agers (50 to 65) (article III) and senior consumers (50 to 74) (article IV). The variety of age categories is based on both theoretical and empirical reasons. Theoretically, the study formulates its age categorisations according to developmental studies (Hutteman et al., 2014). In these studies, life phases are categorised into early adulthood (18 to 30 years), middle adulthood (31 to 60 years) and old

adulthood (60 years and older). The study highlights the flexibility of age categorisations and acknowledges the role of societal and contextual factors in defining age-based life transitions (Settersten, 2003). Rather than restricting the analysis to one age group only, the study operates on a continuum between the 'younger-old' and 'older-old' population, focusing its analysis on 'younger-old' individuals. From this standpoint, the study aims to form a more comprehensive outlook on the role of age and life course stage in digital consumption.

Empirically, as the study includes various data sets, age categories therefore vary between the original articles. Each article describes consumption and digital technologies from a unique perspective. As the data collection proceeded gradually, age categories were adjusted context-specifically.

TABLE 1 Age categories in relation to articles

<i>Article</i>	<i>Title</i>	<i>Age categories</i>
I	Ageing and consumption in Finland: The effect of age and life course stage on ecological, economical and self-indulgent consumption among late middle-agers and young adults between 1999 and 2014	Late middle-agers: 46 to 60
II	The use of mobile technology for online shopping and entertainment among older adults in Finland	Older consumers: 55 to 74
III	A risk to privacy or a need for security? Digital domestic technologies in the lives of young adults and late middle-agers	Late middle-agers: 50 to 65
IV	Digital participation in service environments among senior electricity consumers in Finland	Senior consumers: 50 to 74

The study begins with a theoretical literature review that constructs a framework for digital consumption across the life course. In chapters 2 and 3, research on the adoption, use and consumption of digital technologies is introduced in association with age, generations and life course stage. In chapter 4, these theoretical standpoints are integrated. Research design is presented in chapter 5, with a focus on construction of a methodologically pluralistic approach to studying digital consumption. In chapter 6, an overview of empirical findings from four article manuscripts is presented. The theoretical and empirical findings of the study are synthesised in chapter 7.

2 DETERMINANTS OF DIGITAL CONSUMPTION

In this chapter a framework for digital consumption across the life course is constructed. I first introduce individual factors in the adoption and use of digital technologies in relation to older adults' usage of digital technologies. This is followed by an overview of socio-demographic micro factors, which shape the use of digital technologies in all stages of life. Derived from these considerations, an evaluation of the role of interpersonal relationships in individuals' usage of digital technologies is presented. Finally, I propose that digital consumption is influenced by a more profound participation in new digital platforms, and conclude the chapter by approaching socio-economic macro factors as explanatory determinants of digital consumption.

2.1 Individual factors

Technology adoption models provide one approach to conceptualise digital consumption across the life course at the individual level. Technology Acceptance Model (TAM) (Davis, 1989), Diffusion of Innovations Theory (DIT) (Rogers, 2003) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) present behaviouristic patterns of adoption in which technology use starts from behavioural intentions and proceeds by the evaluation of advantages, compatibilities, complexities, expectations, efforts and social influences of use of certain technology.

The Technology Acceptance Model (TAM) (Davis, 1989) describes how individuals use a technology through their evaluations of perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which a person believes that certain technology enhances his or her job performance, while perceived ease of use is defined as the degree to which a person believes that using a particular system would be effortless (Davis, *ibid*). In the TAM, these evaluations result in attitudes towards technology which affect the intention to use and ultimately the actual use of technology.

The TAM model is further expanded to the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), which covers ten variables to explain user behaviour in technology adoption. These variables include performance expectation, effort expectation, social influence and facilitation conditions (Barnard et al., 2013). The experience of the user mediates effort expectation, social influence and facilitating conditions, and the voluntariness of use is associated with social influence (Lian and Yen, 2014). Adoption and use are thus linked to usability and user experience, which is further modelled in the Diffusion of Innovations Theory (DIT) (Rogers, 2003). Usability can be described with the following attributes: easy-to-learn, efficient-to-use, easy-to-remember, and subjectively pleasing (Nielsen, 1993). In Roger's DIT theory, the adoption of innovations is impacted by relative advantage, compatibility, complexity, trialability and observability (Barnard et al., 2013).

Technology adoption models are widely applied to understand the adoption and use of technology among older adults. Following the previous adoption models, Renaud and van Biljon (2008) have developed the STAM model (Senior Technology Acceptance and Adoption Model) with three distinctions in the adoption phases. In the objectification phase, the user forms an intention to use the system, based on social influences and perceived usefulness. In the incorporation phase, the user starts with an experimentation and exploration process, which contributes to the usefulness of the technology. Ease of learning and ease of use are associated with the incorporation and acceptance phases, which draw attention to the user experiences of technology (Barnard et al., 2013). This model, along with other technology adoption models, thus addresses skills and cognitive abilities associated with technology use.

Research typically indicates a negative association between age and computer skills (Czaja and Lee, 2003, 2007). Studies highlight the correlation between self-efficacy and interest in technology (Huber and Watson, 2014). Age-related changes in physical and psychological abilities, such as disinterest in pursuing new goals, resistance to change, and difficulties in learning new skills and remembering new information affect the way people interact with technologies (Czaja and Lee, 2003, 2007; Deng et al., 2014; Morrill et al., 2013). This causes 'technology anxiety' and reluctance to engage with it (Laguna and Babcock, 1997; Lim and Lee, 2010). It is suggested that older adults need specific support in technology learning (Fisk et al., 2009; Hernández-Encuentera et al., 2009), they need to understand the benefit of a particular technology (Hernández-Encuentera et al., 2009, Kim, 2008, Selwyn, 2004a), and family members and friends influence the availability of support in technology use (Schreuers et al., 2017; Piper et al., 2016; Quan-Haase et al., 2016).

Differences between individuals in capabilities to adopt and use technology are inevitably large (Fernández-Ardèvol, 2018). Livingstone et al. (2005) have reviewed factors that affect adult media literacy. They define media literacy as access, understanding, and creation of media. Livingstone et al. show that in the UK, key barriers to media literacy and competences are demographic, such as age, gender, socio-economic status, disability and ethnicity. The key factors that

enable the technology use are the design of technologies and their contents, education opportunities, consumer awareness, perceived value of media, self-efficacy (i.e. skills and confidence), social relationships that support access, family composition and the presence of children in the household and work conditions (Livingstone et al., *ibid.*).

Several factors in older adults' adoption and use of technologies are thus proved significant. A vast amount of research suggests a negative association between age and technology use. Although adults aged 65 and over have become more active online, they use the internet and own digital technologies less frequently in comparison to younger age groups (Czaja et al., 2006; Gilleard and Higgs, 2008; Hale et al., 2010; Haight et al., 2014; Hargittai and Hinnant, 2008; Helsper and Reisdorf, 2013; Niehaves and Plattfaut, 2014; Näsi et al., 2012; Peacock and Künemund, 2007; Rasi and Kilpeläinen, 2016; Räsänen and Koiranen, 2016; Schreuers et al., 2017; Zickuhr and Madden, 2012; Zickuhr and Smith, 2012).

Other socio-demographic factors such as income, socio-economic position and education level are associated with technology use. Individuals in a disadvantaged position more likely lack access to technology such as the internet (Haight et al., 2014; Räsänen and Koiranen, 2016; van Deursen and Helsper, 2015). Socio-economic demographics are nevertheless not a sufficient explanation for digital disengagement (Curran et al., 2007; Eynon and Helsper, 2015; Helsper, 2010; Loges and Jung, 2005; van Deursen and Helsper, 2015), as individual judgements and considerations shape the experience with technologies.

Attitudes towards technologies are sometimes more important than demographic factors in explaining adoption and use of technology (Dutton and Blank, 2015). Older people, for instance, mention a lack of internet attitude, feeling too old, a lack of internet experience, insufficient time and high connection costs (Helsper and Reisdorf, 2013, Lee et al., 2011, Millward, 2003, Morris et al., 2007, Peacock and Künemund, 2007). Lack of internet attitude refers to motivational problems, internet anxiety and attempts to minimise the time spent at the computer (Durndell and Haag, 2002). Older adults mention frustration with their learning experiences (Gatto and Tak, 2008). This technological anxiety is shown to result in lack of access to technology (Czaja et al., 2006). Older adults may consider themselves too old for the internet (Hawtorn, 2007), which indicates the influence of emotional ageing on technology use. Among older adults, previous experience on the internet predicts which activities people engage in online (Zillien and Hargittai, 2009, van Deursen and Helsper, 2015).

Most studies indicate that for older adults, social support, communication and connectedness with family and friends are important driving motivations (Gatto and Tak, 2008; Ling, 2008; Quan-Haase et al., 2016, 2017; Salovaara et al., 2010; Schreuers et al., 2017; Selwyn et al., 2005; Thayer and Ray, 2006). Traditional literacy also affects performance in internet skills (Wilder and Dressman, 2006). Hence the skills of reading, writing and understanding texts are associated with skills related to the internet use.

Digital literacy has become a key concept in evaluating the possibilities for and obstacles to digital engagement among older adults. A lack of digital literacy has been identified as the main obstacle to go internet use (Broady et al., 2010; Gatto and Tak, 2008). This indicates that the nonuse of digital technologies is a result of inadequate skills to engage in online activities (Hargittai, 2002; Schreuers, 2017). Digital literacy involves both technical aspects of using digital technologies as well as cognitive and socio-emotional aspects of use (Haight et al., 2014; Schreuers, 2017). Digital literacy is gained through experience, and since older adults typically lack the experience, they may not be able to develop the required skills (Quan-Haase et al., 2014).

Research suggests a high degree of variability in user experiences within certain generational groups (Jacobson et al., 2016). In supporting older adults in their digital literacy, not only skills but also cognitive and socio-emotional aspects of digital engagement have to be taken into consideration (Haight et al., 2014; Eshet-Alkalai, 2004). The process of developing digital literacy is a social process and it is acquired in social settings where family, peers, mentors and gatekeepers provide the environment for learning (Schreuers et al., 2017). A digital literacy model developed by Schreuers et al. (ibid.) addresses the relationship between digital literacy and experience, addressing the paradox that while experience is required to develop digital literacy, it is difficult for older adults to gain new skills without support.

In technology adoption and use, individual judgements, considerations, evaluations and emotions are thus significant. However, these judgements and considerations are socially mediated and transformed in the social interaction between individuals and social groups.

2.2 Socio-demographic micro factors

At an interpersonal level, domestication theory can be applied to understand the social processes behind digital consumption in the household (Comunello et al., 2015; Comunello et al., 2016; Loos et al., 2012; Silverstone and Haddon, 1996; Silverstone et al., 1992). Domestication theory assumes that technologies represent a practice that can modify social interaction and that people construct their experience with technologies through socially mediated making-sense processes. The domestication approach perceives that technologies influence the social and economic order of the household (Cowan, 1989), where they connect family members (Silverstone, 1990). Within the *moral economy of the household*, i.e. the economic unit of its members, households are engaging with the products and their meanings (Kopytoff, 1986).

Silverstone et al. (1992: 18-23) distinguish four dimensions in the adoption and use of digital technologies in the household. *Appropriation* occurs when the technology is sold to consumers, who become owners of the technology in the household. Both material and immaterial technological contents are appropriated through negotiations of ownership. Older adults may, for instance, buy a

mobile phone due to social pressure even though they may not feel that the mobile is something that they personally need (Comunello et al., 2015). Following appropriation, *objectification* stands for the expression of usage in the spatial environment of the home (Silverstone et al., 1992). Physical devices provide an objectification of the values in spatial environments while transforming and constructing these environments. Physical conditions may, for instance, shape the location of the mobile phone (Comunello et al., 2015).

Incorporation of technologies refers to the functionality of technologies that may be separate from the intentions of the designers or marketers. Functions of technologies can change or disappear according to the moral economy of the household and daily routines (Silverstone et al., 1992). For instance, regardless of their skills, older adults may report using mobile phones as a technique for managing daily activities and changing routines (Comunello et al., 2015; Selwyn, 2004a). Through incorporation, technologies embed functions of temporality, such as control of time, which provides an opportunity for the household to organise time. Incorporation involves questions of age and gender differentiation in the location and conventions of use (Silverstone et al., 1992). For instance, when mobile technology is considered a simple communication tool, age-based stereotypes represent younger people as if they possess 'bad manners' and stereotype women as 'chatterboxes' or 'social groomers' (Comunello et al., 2016).

Conversion of technologies refers to the relationship between the household and the outside world where technologies cross the boundaries between neighbourhood, work and peer groups in the wider society (Silverstone et al., 1992). Private and personal meanings held by individuals, as well as self-presentation and identity construction, are transformed by the moral economy of the household (Haddon, 2011, Silverstone and Haddon, 1996).

In a qualitative study of adoption of information and communication technologies, Selwyn (2004b) investigated older adults' motivations and reasons for computer use in the household. Interviewees aged 60 and over mentioned that computer use was started as a consequence of some significant life event, such as a heart attack, which motivated adults to keep up to date with technology that helped in maintaining independence when financial security and mobility were threatened. Technological innovations thus provide opportunities for independent, safe and secure living for older adults (Comunello et al., 2015; Ling, 2008), and thus challenge the cultural representations of old adulthood as a state of illness and dependence (Jones et al., 2008; Facer, 2011).

In the appropriation of digital technologies, encouragement from children or younger members of the household who want their parents to use technology may significantly influence decisions to acquire new technology (Selwyn, 2004b). In the incorporation of technologies, older adults use social strategies that involve families and friends as driving forces in the acquisition process of technology (Piper, 2016). In all phases of making sense of technology, older adults thus significantly rely on the social relationships that encourage and support them in the acquisition of these devices (Selwyn, 2004b). Incorporation

of digital technologies into daily life is thus influenced by users' networks which affects the social understandings of these artefacts (Comunello et al., 2015, 2016).

The integration of digital technologies into existing practices, needs and routines involves three assumptions that separates it from the behaviouristic approaches (Baym, 2010; Gram-Hanssen, 2007; Hogan and Quan-Haase, 2010; Quan-Haase et al., 2016). First, digital technologies are not conceived of as a separate sphere of human behaviour, but they are integrated into practices like cooking, exercising and social activities. Second, this approach examines technology adoption as a complex set of social processes taking into consideration behavior outside the realm of technology. Third, it contests a binary understanding of technology adoption, as instead of asking 'do you search for information online or not', it examines the social conditions that are needed for online engagement to become relevant (Quan-Haase et al., 2016; see also Wellman & Haythorntwaite, 2002.) In a study by Quan-Haase et al. (ibid), digital seniors embedded information and communication technologies into everyday life under four circumstances: news consumption, library use, information seeking and reading practices. Older adults continued their established practices of reading newspapers in print format while simultaneously adopting new digital formats for news consumption; they valued tradition, comfort and trust in information seeking; in library use, they noted the changes in book reading habits over the life course; and, in general, they preferred reading routines that included both print and electronic media (Quan-Haase et al., ibid). In the incorporation of digital technologies into everyday life, digital seniors thus developed new digital practices that integrated traditional and digital practices into new, hybrid practices.

Following from the discussion above, decisions to consume a technology are thus mediated by social interaction, they are made between individuals in the context of the household and hence they involve a social and emotional element in the decision-making processes. As mentioned previously, for older adults social support and connectedness provided by family members and friends is significant in the access of digital technologies (Gatto and Tak, 2008; Ling, 2008; Piper et al., 2016; Schreuers et al., 2017; Selwyn et al., 2005; Thayer and Ray, 2006; Quan-Haase et al., 2016). Therefore, the household structure can be evaluated as a significant determinant in the consumption of technologies in late midlife (see also Livingstone et al., 2005; Eynon and Helsper, 2015).

Digital technologies are appropriated and incorporated in the household, where different family members affect these domestication processes. The household structure is obviously connected to the practices through which digital technologies are integrated into the organization of everyday life. This involves an element of social interaction between family members and intergenerational relationships in the household. The influence of intergenerational relationship in the adoption and use of technologies as well as consumption practices can be evaluated by addressing the presence of young people in the household. Young people are usually regarded as motivators or teachers in

adults' technology use, by encouraging adults in the same household to go online and use different digital technologies in unfamiliar ways (Selwyn, 2003; 2004b; Eynon and Helsper, 2015; Holloway and Valentine, 2003). Parents, on the other hand, finance, regulate and shape children's computer use (Van Rompaey et al., 2002). Adults are thus presented as newcomers in digital environments in comparison to young children (Facer et al., 2003). On the other hand, children often limit adults' access to digital technologies by dominating the spatial environment of the household (Livingstone et al., 1999; Van Rompaey and Roe, 2000).

The relationship between children's and adults' internet use is thus controversial. Further studies on the effect of the family and household structure on technology use suggest both positive and negative associations within these two factors. In some studies, the presence of children aged 12 to 24 had a stronger effect on adults' internet use than parental education level or household income level (Korupp and Szydik, 2005). In other studies, the linkage between the presence of children and parents' internet use was not pronounced (Chesley, 2006). On the basis of the literature review conducted by Eynon and Helsper (2015), it is suggested that the presence of young people in the home influences adults' engagement with the internet in three ways: first, children provide a reason for adults to acquire internet access; second, children increase adults' interest in using the internet for a range of different purpose; and third, children might teach or motivate adults to improve their digital literacy. Households with young people are more likely to have access to a computer and the internet (e.g. Van Rompaey et al., 2002), because adults believe that having a computer will benefit the child's education (Haddon, 2005). Parents are more likely to use the internet than adults living without children in the household (Helsper and Eynon, 2010), because the internet supports various aspects of family life, such as co-ordination between family members or management of everyday living (Chesley, 2006). Furthermore, parents may wish to improve their computer skills to support their children and ensure they use technology effectively (Korupp and Szydlik, 2005).

The role of social relationships on digital consumption can be further explained with the interrelationship between social and digital inclusion. Helsper (2012) has developed a theoretical model to specify how areas of digital and social inclusion influence each other. The links between social and digital exclusion are understood through combining the cultural, social, psychological and economic resources of individuals, and these links depend on macro-economic, meso-social and micro-psychological factors. *Economic resources* are measured by factors such as income, education, employment and access to financial services. *Cultural resources* refer to the cultural capital that guides the behaviour of a certain group (e.g. Kingston, 2001). These cultural norms include ideas about how a certain group of people is supposed to behave in order to belong to a certain socio-cultural group. *Social resources* reflect the involvement in and attachment to networks that give a person access to the knowledge and support of others. Social resources include networks that offer emotional support (Lin,

2001) and they are built on common interests, activities or family ties, and more and stronger ties are considered indicators of high social inclusion. Resources in the *personal* field reflect the individuals' capacity independent of economic, cultural and social indicators, such as skills, personality and health, that indicate the management of everyday life.

The model (Helsper, 2012) can be applied to understand challenges and obstacles in technology use among older adults. Considering offline resources, older adults can possess both increased and decreased offline resources in comparison to younger adults, depending on the indicator. Economic resources vary across the life course, but generally, older adults can be regarded as having increased offline economic resources in comparison to young adults. The income level of older adults has improved and is at its highest among adults aged 55 to 59 (Ahonen and Vaittinen, 2015; Atkinson and Hayes, 2010). Consequently, a significant amount of research considers ageing adults as well-off consumers (Biggs et al., 2007; Drolet et al., 2010; Jones et al., 2008). In the 21st century, the education level of older adults is relatively high, as in many western societies, Baby Boomers' coming of age was characterised by the development of the educational system, which was associated with steady job markets (Jones et al., 2008).

Similar to economic resources, in *personal resources* such as skills, personality, health and management of everyday life, older adults and particularly late middle-agers are supposed to be in an advantaged position in comparison to young adults. The skills of older adults with respect to digital and physical environments have improved, and the skillset cannot be regarded as the only relevant indicator of participation in computer use anymore (see also Curran et al.; Eynon and Helsper, 2015; Helsper, 2010; Loges and Jung, 2005; van Deursen and Helsper, 2015). In the 2010s, an increasing proportion of population is surviving to the age of 80 (National Center for Health Statistics, 2015), and due to the improvement in educational and economic resources at the individual level, as well as advancement in these indicators at the structural and societal level, the health of individuals can be expected to remain at a relatively high level at the later stages of life (World Health Organization, 2010). With ageing, the personality develops towards greater adjustment, which results in an advantaged position in terms of general social and emotional wellbeing (Easterlin, 2006; Bouchard, 2014; Charles and Carstensen, 2010; Hutteman, 2014). Consequently, it can be assumed that older adults possess and will continue to possess advanced economic and personal resources in comparison to young adults, which provides increased opportunity for engagement with the online activities that are associated particularly with entertainment and leisure as well as information and learning activities (Helsper, 2012).

However, in social and cultural resources older adults may lag behind young adults, which may affect the digital communication as well as creative and productive online participation. Social resources, indicating the involvement in and attachment to networks, offer emotional support that is connected to the willingness to be involved with digital technologies in the everyday life

(Gatto and Tak, 2008; Ling, 2008; Selwyn et al., 2005; Salovaara et al., 2010; Thayer and Ray, 2006). Typically, people rely on informal networks such as relatives or friends when they have problems with online matters (Bakardjieva, 2005) and formal networks such as help desks, colleagues, computer experts and courses (van Deursen et al., 2014). With ageing, both informal and formal social relationships are expected to narrow, due to life transitions which typically follow age-related losses that can be considered normative life events (Charles and Carstensen, 2010). Older adults may possess diminishing social resources, as the frequent contact with relatives, friends or family members declines in later stages of life. In engagement with digital technologies, the disadvantageous position carried by older adults can thus be partly explained by the shrinkage of social relationships, which can be associated with the decreased use of digital technologies for communication and interaction. The same goes for cultural resources, in which older adults are also often in a disadvantaged position. As younger people have been exposed to digital technologies earlier, they have more cultural capital (Bourdieu, 1984) to follow the norms that guide the behaviour of a certain groups in online environments (Dutton et al., 2013, Hargittai, 2008). Therefore, older adults may be expected to show weaker engagement with creative and productive online participation.

Following this theoretical discussion, it can be argued that the quality and extent of social relationships and ties are associated with digital participation among older adults, but social resources alone are insufficient for explaining the consumption of digital technologies in later life, as digital inclusion is additionally associated with economic, personal and cultural resources. In order to further understand the technology use of older adults in the context of consumption, socio-economic macro factors need to be taken into consideration.

2.3 Socio-economic macro factors

The ability to adopt and use digital technologies at the individual or interpersonal level is dependent on structural and environmental changes that occur at the socio-economic macro level. Structural and cultural changes in societies create both supply and demand for new technologies (Dholakia, 2012, Røpke, 2003). These technological developments are associated with social changes. Today digital platforms and mobile applications contribute to various forms of production, distribution and consumption, due to which companies operate in an interconnected and personalised world (Pantzar and Ruckenstein, 2015). Companies are becoming part of people's lives through forms of social networking, sharing and knowledge formation that promote new kinds of interaction and collaborations between commercial agents and consumers (Bruns, 2008). Processes of production and consumption have intertwined, resulting in *prosumption* where users contribute to the corporate process of content creation and profit making (Ritzer and Jurgenson, 2010). Participation, sharing, communication and creativity connect with commercial aims, and digital media inter-

actions such as blog entries, comments and photograph sharing extend the boundaries of consumption (Ruckenstein, 2017). These digital participation practices result in new conceptualisations of selves and others (Abbas and Derwin, 2009), resulting in posthumanism (Feenberg and Barney, 2004) and symbiosis with machines (Turkle, 2011). In a digital world, people have become wired and wireless selves, always logged on (Rainie, 2007; Rainie and Wellman, 2012).

Digital consumption practices thus transform the ways people interact socially, as on digital platforms, social interaction is instant and hyper-social. Digital participation practices require the need and desire for instant responses, sharing status updates, whereabouts and personal information with friends and acquaintances, engaging in public communities and discussions, and checking in at various online and offline places that operate as forms of self-representation (Llamas and Belk, 2013). Connection for the purpose of sharing knowledge and collaborating takes place on social media where blogs, for instance, serve as a platform for self-representation and creation of individual narratives in the form of personal experiences and feelings, while simultaneously offering complex forms of interconnectedness (Arsel and Zhao, 2013). Presenting the self on various social media platforms provides creative identity management and possibilities to explore other selves, fulfill fantasies and engage in self-discovery (Schau and Gilly, 2003). Blogs serve as an arena for creating imaginary narratives and acting out fantasies of the idealised sense of self (Zhao and Belk, 2007).

Digital consumption, such as blogging and other forms of social media, reshapes the boundaries between private and public, as individuals desire to share private and mundane information with strangers, information that they would not share in real life (Belk, 2010). This digital performance breaks the intimacy norms of real life that are constructed around a managed level of intimacy (Arsel and Zhao, 2013). In sharing user-generated content, questions of privacy and social boundary maintenance dominate, as particularly in midlife, adults have to navigate in various social online and offline roles and manage the boundaries between different arenas of life (Quinn, 2016a). Concerns about privacy and security are associated with non-use of social media among older adults, who have typically been seen as cautious about providing private information online (Quinn, 2016b).

In digital consumption practices, new forms of personal and intimate data are thus gathered, which capitalizes on the most intimate aspects of daily life (Ruckenstein and Pantzar, 2017). Data analytics is used to improve products, personalise services, and target advertising more efficiently, and consumers gather and share personal data about themselves in order to reflect different aspects of life (Ruckenstein, 2017). These self-tracking devices and applications shape communication, social life, and identities, as mundane practices such as sleeping or riding a bike are quantified and transferred into the arena of calculation, consumption and prosumption. Wearable tracking technologies offer consumers a sense of lifestyle management, as such products embody cultural

ideals of individual responsibility and self-regulation (Schüll, 2016). The use of digital technology to self-track is expected to expand as electronic sensors become more accurate, portable and affordable, and consumers are offered devices equipped to gather information from their bodies and lives (Halpern et al., 2013). This results in digital self-care that aims at improving the health and wellbeing of individuals whose wellbeing now depends on and is derived from the market choices they make (Schüll, 2016).

Digital participation practices thus highlight producing, consuming and prosuming personal data on various digital platforms. As mentioned earlier, age is one of the most important factors in all online connectivity (Blank and Dutton, 2012; Dutton and Reisdorf, 2016; Reisdorf, 2011; van Deursen and Van Dijk, 2014; Zillien and Hargittai, 2009). However, not all young people are equally skilled in using the internet and older adults may conversely display advanced practices in the adoption of new technologies and devices (Blank and Dutton, 2012). Therefore, when conceptualising the linkage between age and digital technologies, all dimensions of ageing have to be taken into consideration (Dutton and Reisdorf, 2016).

3 THE MULTIDIMENSIONAL ROLE OF AGE IN DIGITAL CONSUMPTION

The adoption and use of digital technologies in the context of personal and social life necessarily involves variation between individuals and social groups. A technological development that is associated with social change inevitably produces practices in which some groups and individuals consume technologies more frequently and in a more versatile way than others. Adoption and use of digital devices is connected to the particular year when technologies become available. Therefore, individuals born in different time periods may prefer certain technologies while rejecting other ones, based on the year when these technological 'trajectories' became available to consumer markets. This results in generational usage of digital devices. In order to more thoroughly comprehend the role of age and generations on the adoption and use of digital technologies, different dimensions of ageing have to be taken into consideration. In the following, these different approaches to ageing are presented, starting from the generational and continuing on life stage factors related to technology use.

3.1 Generational cohorts and consumption

The concept of 'generation' refers to both family and kinship structures and cohorts or age sets. In sociology, it was Mannheim (1952) who originally developed the concept of generation to indicate the social location that affects an individual's consciousness. According to Mannheim (1952: 105, 291), 'individuals who share the same year of birth are endowed with a common location in the historical dimension of the social process [...] which thereby limit[s] them to a specific range of potential experience'. This common location that presents common social problems to the generations requires creative solutions and adaptive strategies (Elder, 1974) which lead to the generation's recognition of its own position (Edmunds and Turner, 2002b). 'Generation' thus indicates the shared way in which individuals understand themselves and collectively expe-

rience life in the contexts of relatedness and co-existence, and identify themselves with certain social groups with a temporal dimension (Burnett, 2010: 9; 25). In everyday language, generations are often conceptualised through certain categories that describe individuals born during certain time periods, such as 'Generation Y', 'Generation X', 'Baby Boomers', or they are described more illustratively, such as 'generation of wealth', 'generation of change' or 'lost generation'. Generations might thus refer to categories spaced by only ten or fifteen years, and they are as likely to be defined by media, fashion phenomena and images from popular culture (see also Burnett, 2010: 23) as by individuals themselves.

The concept of 'generation' is often applied in studies that aim to capture the essence of generations in terms of shared values, understandings and ideals. These studies typically rely on the idea of the shared consciousness that influences individuals' actions, attitudes and behaviours. For Mannheim (1952), the consciousness indicates a form of memory, where personally acquired memories arise from a lived experience and inform discussions and social understandings of the present (see also Burnett, 2010: 37). Memory is thus understood as collective and generational, being influenced by national or world events and changes that have occurred during certain time periods. Such events have been identified in research: the Second World War, the Vietnam War, the fall of the Berlin Wall and moon landings have been found to have a generational or cohort specific character. These formative moments are typically centred on wars, disasters, crises or naturally traumatic moments, such as the murder of the Prime Minister (Olof Palme) or the President (John F. Kennedy), or disasters such as the Chernobyl or the September 11 terrorist attacks. Also less spectacular, more personal and more mundane moments are sometimes conceptualised as formative. People can sometimes remember the exact moment when they discovered an artist, film star or a novel that had a lasting impact on their lives. (Bolin, 2014). More personal events might thus have an equally significant individual impact on memories that can be returned to in later life.

In research, generations are often recognised as a segment of consumers who share strong and homogenous bonds that are reflected in their consumption (e.g. Eastman and Liu, 2012; Parment 2011, 2013; Syrett and Lamminman, 2004, Valentine and Powers, 2013). These studies typically understand generations in terms of 'cohorts' or 'generational cohorts' that share similar values that are derived from the 'defining moment'. The 'cohort' is defined as 'the aggregate of individuals who experienced the same event within the same time interval' (Ryder, 1985: 12). Cohorts are typically constructed by their birth years and by their encounter with a historically defined social life. Cohort studies thus produce attributes and identify characteristics of the cohorts, which create for them a certain kind of 'personality' that is defined by the researcher (Burnett, 2010: 46). For instance, Baby Boomers, generally known as the post-war generation in most western societies, are often characterised by a revolutionary outlook (Karisto, 2007; Parment, 2013; Purhonen, 2007). The post-war generation grew up in a time characterised by economic growth and social change (Burnett,

2010: 77). During the Baby Boomers' coming-of-age years, internationalisation of trade, food and culture blossomed. Travel to new and distant countries took off and Boomers were said to be the first generation to value mobility in life (Parment, 2013). Boomer identity was constructed through consumption, and they became a substantial market, hungry for style and expression (Burnett, 2010: 77). Despite Boomers having grown up during a period of economic and social restraint, the rise of popular media and the emergence of youth culture, Boomers' values are said to be post-materialistic (Wilska, 2011).

In studies of consumption and generations, intergenerational dynamics, i.e., the interaction between members of different generations, have received less attention. The intergenerational dynamics between Baby Boomers and their parental generation, primarily the generation of 'war and depression', may have played a large role in the formation of Boomers' consumer identity. Easterlin (1961) locates the parental generation of the Boomers as the cohort born between 1916 and 1925 that, in most western societies, was a period of war, scarcity and trauma (Easterlin, 1961). As Burnett (2010, 83) specifies, the childhood experiences of Boomers were influenced by the contrast to those of their parental generation. Whereas childhood for some of the Boomers was marked by affluence, the older generation before the Boomers experienced 'despair and helplessness, illness and alcoholism, mothers' emotional distress, humiliation, and a heavy family burden' (Elder, 1974: 273). Elder argues that it produced values and ideals of 'self-sacrifice' and 'earned success', as well as 'extraordinary work commitment, a self-conscious desire for security, an inability to partake in pleasure or leisure without guilt feelings' (Gans, 1967: 277). Boomers were to rebel against this legacy, although they were also influenced by parental protectionism, such as protection from stress and excitement, and shielded from certain kinds of knowledge, such as economic crisis (see also Burnett, 2010: 83). Edmunds and Turner (2002a) thus suggest that the changing political and social climate was a direct consequence of generational change, which was influenced by intergenerational conflict between Boomers and their parents

Generational identity is further discussed in terms of a generational habitus that refers to a 'set of unconscious practices and forms of being that arise from and help shape the cultural field in which they are co-assembled' (Gilleard and Higgs, 2009: 27-30). Lifestyles, habitus and cultural practices embody the history of the field within which they have emerged. As Gilleard and Higgs (ibid., 27) propose, it was the importance of consumption and choice that was realised during the late 1950s and 1960s that significantly influenced the identity of third-agers. The generational habitus of the third agers, or more generally the post-war birth cohort, was constituted around new social movements, personal awareness, cultural autonomy, self-expression and personal choice. Personal choices became political, and social movements addressed national and cultural liberation and the voice of autonomy. Self-expression indicated the freedom to 'reject all that was old, all that represented the old way of doing things' (ibid., 28). Simultaneously, it provided transformation for the urban life. Consumption, therefore, became a way of expressing generational identity, so-

cial distinction and individual freedom, and technological change, interpreted in the framework of consumption, was marked by the development of third age identities.

In previous research, the generational categories presented above are considered as explanatory factors for attitudes towards consumption (e.g. Carr et al., 2012; Eastman and Liu, 2012; Parment 2011, 2013; Syrett and Lamminman, 2004; Valentine and Powers, 2013). Each generational cohort is expected to possess distinguishable attitudes particularly in relation to ecological and self-indulgent consumption (Carr et al., 2012; Parment, 2011, 2013). These attitudes can be understood in relation to a value paradigm that considers attitudes towards consumption as a continuum between ethical values and consumeristic attitudes, the former representing ecological and environmentally conscious attitudes and the latter constituting hedonistic attitudes towards consumption (Holt, 2012). It has been suggested that members of generational cohorts born after World War II possess more ecological attitudes towards consumption, while the members of younger generations appear more self-indulgent in their attitudes (e.g. Carr et al., 2012). While generational or age-based attitudes towards consumption reflect individual factors in digital consumption, they simultaneously provide an approach for comprehending the usage of digital technologies in relation to consumption and consumer environments.

3.2 Generational usage of media

Following the discussion above, each generational cohort is expected to possess a unique generational experience that distinguishes it from others. Particularly late middle-agers of the 21st century are considered a relevant generational group, as they grew up in the post-war era which arguably enhanced the creation of a cohesive generational identity of third age (Biggs et al., 2007; Karisto, 2007; Gilleard and Higgs, 2009; Jones et al., 2008). In the context of technology adoption, historical, social and cultural events experienced by members of generational cohorts are thus assumed to influence the attitudes, skills, frequency and breadth of use of digital devices. People who have embraced new technologies from early childhood on are assumed to possess better digital skills and more positive attitudes towards them, leading to a more frequent and versatile use of digital technologies. This discussion conceptualises adopters of digital technologies as *digital generations*, which describe the position and location that members of a certain generational cohort have in relation to digital devices.

Often young people, being surrounded by and interacting with new technologies from early childhood on, are conceptualised as 'digital natives', the 'net generation' or the 'millennials' (Gasser and Palfrey, 2008; Tapscott, 1998). It is argued that *digital natives* significantly differ from the preceding digital generation as they 'receive information really fast, they like to parallel process and multi-task, they prefer their graphics before their text and function best when networked, and thrive on instant gratification and frequent rewards' (Prensky,

2001; Helsper and Eynon, 2010). People who were born before the digital era, such as the late middle-agers of the 21st century, are referred as *digital immigrants*, being characterised by a location in the past with limited possibilities to understand digital natives (Prensky, 2001). Prensky illustrates digital immigrants with certain qualities that include 'not going to the internet first for information, printing things out as opposed to working on screen and reading manuals rather than working things out online' (see also Helsper and Eynon, 2010). These differences in preference between digital natives and digital immigrants have been argued to result in generational miscommunication, as different digital generations are used to processing information in a different manner.

Despite the established connotations involved in the concept of digital natives, the concept has not remained unambiguous, and research today indicates vast differences within one digital generation, putting emphasis on differences between members of the same digital generation and similarities between members of different digital generations. In an empirical study by Hargittai (2010), it was concluded that digital natives differed in their online abilities and activities, and higher levels of parental education and socio-economic status, for instance, predicted higher levels of online skills among young adults. Even if people cross the connectivity divide of internet access, numerous differences still remain in the incorporation of internet or other digital technologies into everyday life (van Dijk 2005) which may result in not only the divide between use and non-use, but also in the differentiated usage patterns that are argued to aggravate social inequality (van Dijk, 2005; Hargittai, 2008, 2010; Selwyn, 2004c). Despite this, a great amount of research supports the idea that young people are experts in the use of technology (Dutton and Helsper, 2007) and this expertise, such as specific learning style, amount and type of technology use and learning preferences, is somewhat derived from experiences in early adulthood. The distinction between digital natives and digital immigrants should not, however, be generalised to an entire generation (Bennett et al., 2008). The differences between digital natives and digital immigrants may, therefore, not be as much explained by generation as they are by age or experience or expertise with technologies (Helsper and Eynon, 2010).

In order to further understand the complexity and diversity of digital generations, Fortunati et al. (2017) have distinguished the *first digital generation*, which involves people who were born in the late 1970s and the beginning of the 1980s, from the *second digital generation*, born in the second half of the 1980s and the 1990s. The first digital generation experienced the first digital technologies, such as mobile phones and short message services, in a particular life phase that was characterised by a high level of receptiveness to new innovations (Fortunati, 2009; Taylor and Vincent, 2005). The second digital generation encountered digital technologies when these devices were already widespread in everyday life, which probably decreased the enthusiasm that surrounded the devices for the second digital generation. On the basis of empirical findings from five European countries, Fortunati et al., (2017) found that the first digital generation of adolescents was at the top of mobile phone and computer possession in 1996, but

the second digital generation of adolescents lost their leading position in terms of mobile phone and computer adoption, as these devices were already widely adopted and not novel in the late 1990s. This suggests that generational usage of new technologies is a nonlinear and nonprogressive process (Taipale et al., 2018) where digital generations are affected by power structures, with the consequence that increased digital resources do not necessarily lead to increased social resources, as new digital generations and young people in general are faced with several societal challenges related to the changing labour markets and increased income inequality. This may also lead to differences in skill within digital generations, which may support the idea that digital skills are constituted on the basis of changes, opportunities and practices in everyday life, implying that the birth year is losing its significance for the formulation of digital skills, although it may influence what kind of device or online practice is perceived as preferable. When digital and online practices evolve, non-digital practices may simultaneously increase in importance. For instance, college students in Italy (Fortunati and Vincent, 2014) and in Finland (Taipale, 2014) express many advantages to reading and writing on paper in comparison to reading and writing digitally, as using paper for work supports, for instance, the use of both hands as well as the need to annotate while reading (Sellen and Harper, 2002). This supports the idea that digital generations, or young people in general, may prefer non-digital practices instead of or along with digital practices, and earlier exposure to digital technologies does not necessarily lead to a higher preference for digital practices, contrary to what research on generational usage of media has suggested (Tapscott, 1998; Prensky, 2001).

In the discussion of digital generations, older adults have often received less attention, and characterisations of these digital immigrants (Prensky, 2001) are not as common as descriptions of digital natives. Prensky (ibid.) described that learning new technologies among digital immigrants is marked by a certain 'accent' that appears in everyday practices, such as needing to print out a document in order to edit it, needing to print out an email, and bringing people physically into one's office to see an interesting website. Digital immigrants, may, for instance, make a phone call and ask 'did you get my email?' which characterises a certain generational style digital immigrants have in the usage of online environments. The same idea is applied in the concepts of *visitors*, who approach digital environments as 'untidy gardens', and *residents*, who feel at home online (White and LeCornu, 2011; Taipale et al., 2018).

Descriptions of the differences between generations have nevertheless encountered several obstacles in trying to explain people's engagement and breadth and style of use, as they typically rely on two-dimensional conceptualisations of generations, i.e. technologically savvy versus technologically naïve. Such divisions have turned out to be problematic, as generational identity with respect to digital technologies cannot be constituted around a certain device anymore, and therefore the development of digital skills is likely to be nonlinear (Taipale et al., 2018). Due to the fast-paced rhythm of markets and products and the technological obsolescence following this, each generation is expected

to experience several technological trajectories during their life course (Bolin, 2016). The feeling of togetherness that people born during a certain period of time may carry is cumulative, indicating that older people may have a greater amount of 'generational capital' that is likely to be associated with the style and fashion of digital technologies that are used. Rather than facing one another across the much-touted age-based digital divide (Loos, 2012), young and old are spread across a 'digital spectrum' (Lenhart and Horrigan, 2003). What have remained unstudied, however, are the processes that transform these generational experiences in later life.

The discussion above has highlighted some key issues in the discussion of digital generations that indicate the orientation and position each generational cohort has towards digital technologies. Due to the criticism encountered by the generational approach to digital technologies, a new understanding of the social, personal and contextual processes that transform generational experiences and identities in later stages of life is required. Next, approaches to these life transitions are presented.

3.3 Life transitions in late midlife

In addition to generational aspects, the ageing process necessarily involves psychosocial elements that affect the mental aspects of ageing. A psychosocial approach to ageing regards ageing as a matter of psychological and social changes following changes and transitions in the individual life course. The *life course* is a concept used in both social and behavioural sciences to refer to a sequence of stages people move through as they age (Morgan and Kunkel, 2011: 81). Detailed research of the literature across several disciplines reveals that the term 'life course' refers to 'a) life course as time or age, b) life course as life stages, c) life course as events, transitions and trajectories, d) life course as life-span human development and e) life course as early life influences and their accumulation on later adult outcomes' (Alwin, 2012).

In sociology, the concept of life course is typically used to describe the processes, events and experiences that occur in the biographies of individuals, such as changes in roles, opportunities and life events (Shanahan and Macmillan, 2008: 40). These life events and transitions, such as entering and leaving school, acquiring a full-time job, marriage, divorce and retirement (Elder, 2000: 1615; Elder and Giele, 2009; Elder and Shanahan, 2007) occur across the life course and mark transitions from one life stage to another and are accompanied by changes in social and personal roles, expectations and behaviours.

The life course as *life span development* as well as *life cycle*, are concepts used mainly in psychology to refer to biological characteristics and changes in the organism, but also the socially constructed, age-related sequence of stages individuals pass through beginning with birth and ending with death (Hogan, 2000; Alwin, 2012). For instance, theories of the 'family life cycle' address family life as a fixed sequence of stages, such as courtship, engagement, marriage,

birth of the first child, birth of the last child, children's transition to school, departure of the eldest and youngest child from the home, and marital dissolution through the death of one spouse (Elder, 1997: 945).

Among sociologists, these transitions are seen more flexible and connected to certain time periods of contemporary culture: marriage and parenting are often independent of one another, the family size has shrunk, a period of cohabitation may occur before marriage, nontraditional family forms are prevalent, divorce occur in record numbers, children return to the nest, and the joint survival time of spouses has lengthened (Settersten, 2003: 16). The life course thus carries influential and culturally embedded ideas about what people are supposed to do at various stages of life: certain opportunities, decisions and behaviours are considered normative at a certain age (see also Morgan and Kunkel, 2011; 96; Settersten and Hagestad, 1996).

In psychological research of personality development, personal characteristics including values and attitudes have been found to develop across the lifespan, being influenced by environmental influences such as work experiences (Roberts et al., 2006; Roberts et al., 2003) and social relationships (Neyer and Asendorpf, 2001). Among psychologists, each life phase is traditionally defined by developmental tasks that are defined as age-graded normative tasks based on societal expectations about the developmental milestones that should be reached in specific life phases (Havighurst, 1972). Developmental tasks, that nowadays are seen as flexible, are associated with life events, such as finding a partner or starting a family, which are considered significant regulators of change during adulthood (Baltes, 1987). Developmental tasks are nevertheless separate from life events, which are supposed to follow a normative sequence (Hutteman et al., 2014). Having an accident can be regarded as a life event but it is not related to normative societal expectations.

Hutteman et al. (ibid) distinguish factors that affect the development of personal characteristics that are typical for each life stage in a contemporary society. In early adulthood (18 to 30 years), social dominance, conscientiousness and emotional stability, which have been defined as the adjustment of personality development (Roberts and Wood, 2006), increase due to the transitions occurring in age-related social roles, such as marrying, starting a family and finding a job. This indicates that social roles are accompanied by social expectations that motivate people to develop towards greater adjustment (Hutteman et al., 2014). Establishing the first romantic relationship is associated with growth of self-esteem and extraversion (Lehnart et al., 2010) whereas establishing family life, depending on the quality of this transition, such as the temperament of the child and characteristics of the relationship between the parents (Jokela, 2010), is connected to the growth of agreeableness, conscientiousness and emotional stability (Hutteman et al., 2014). Establishing working life has been shown to predict a decrease in aggressiveness and increase in conscientiousness, respectively (Denissen et al., 2008; Specht et al., 2011), although the specific experiences within these transitions may have an influence as well.

In later life, maintaining these social roles encounters challenges, and simultaneously, becomes a developmental task regarding psychological development. Middle adulthood, often described often as a period of full-time employment, family building and adult responsibility (Bernard and Meade, 1993), is divided approximately into early middle adulthood (30 to 45) and late middle adulthood (46 to 60). In middle age, personality changes in the direction of greater adjustment in terms of social dominance, agreeableness, conscientiousness and emotional stability. Maintaining and developing a romantic relationship, family life and working life affect the personality development, and changes in these developmental tasks are associated with personality changes (Hutteman et al., 2014). In midlife, adults encounter challenges in these areas of life (Pilcher, 1995), such as relationship satisfaction, marriage stability, raising adolescent children and adjusting to ageing parents. In working life, adults are expected to complete tasks, attune to others' needs and limit social conflict (Bowen et al., 2011), which contributes to the reaching and maintaining a satisfactory performance in an occupational career as well as work-life balance (Hutteman et al., 2014). Transitions occur in this life stage as children gradually move away from home (Helson et al., 2006; Kokko, 2010). Old adulthood, starting from age 61 (Hutteman et al., 2014) is the age of an active independent life, post-work and post-parenting (Bernard and Meade, 1993). In late midlife and old adulthood, people have to adapt to the decline in physical capacities and adjust to changes in social relationships, such as the death of a spouse and other age-related losses (Hutteman et al., 2014).

The first significant transition in late midlife is the post-parental transition that refers to the phase of the family life cycle that includes the departure of children from the household. The post-parental transition, also known as the empty nest, is a period faced by most parents during their midlife when all children have grown up and are no longer living at home (Bouchard, 2014; Dennestein et al., 2002; Deutscher, 1964; Raup and Myers, 1989). The transition is normative in the sense that parents are aware that their children will become adults and leave home (Crowley et al., 2003; Mitchell and Lovegreen, 2009). In recent years, the post-parental period has lengthened due to the overall increase in life expectancy (Borland, 1982; Deutscher, 1964) and couples spent a longer period of time by themselves after their children have gone (Bouchard, 2014, Cassidy, 1985). In the post-parental transition, parents still remain parents to their children even if they do not live at home. Today, gaining full independence has become postponed (Beaupré et al., 2006; Izuhara, 2013;) and parents may still provide financial security for their adult children.

The departure of children from home is assumed to have both positive and negative consequences for the parents (Bouchard, 2014). The *role loss* approach hypothesis predicts that the end of the role from which parents, particularly mothers, have derived their sense of accomplishment, results in decreased wellbeing among parents (Rogers and Markides, 1989; White and Edwards, 1990). The *role relief* approach addresses the fact that the empty-nest stage leads to an increase in wellbeing among parents, as the presence of children at home

is related to stressors, such as daily demands, time constraints, and work-family conflicts (Erickson et al., 2010; White and Edwards, 1990). When children move away from home, these stressors are relieved, reducing role strain. Following the literature, Bouchard (2014) reviewed the average effects of the departure of children on emeritus parents' marital quality and psychological well-being. Studies consistently revealed a curvilinear U-shaped pattern of marital quality over the family life course, with the lowest ratings in the mid marriage child rearing stages and the highest ratings in the earliest and latest stages (e.g. Kapitus and Johnson, 2003).

The second significant life transition in late midlife, *retirement*, refers to a life stage that involves a departure from a career or a process of separation from employment (Atchley, 1976). Definitions of retirement typically indicate receiving a pension, ending of employment, a departure from the major job or career of adulthood or a significant reduction in hours of employment (Ekerdt and DeViney, 1990). Retirement as a social institution has thus resulted in a general growth of leisure time among certain populations: retired people have a block of unstructured time at the end of the life cycle, and historically speaking, this is a new phenomenon (Morgan and Kunkel, 2011; 187). In the era after World War II pension programs grew rapidly, continuing growth until the 1980s (Employee Benefit Research Institute, 2004). As a consequence of these societal and economical changes, retirees are now more affluent than ever, but they still consume a smaller portion of their income compared to the working-age population, although the consumption expenditure among older adults is rising (Ahonen and Vaittinen, 2015; Atkinson and Hayes, 2010).

Retirement can occur either voluntarily or involuntarily and typically it is preceded by gradual changes in one's involvement in working life, such as participating in volunteer work, acquiring a new (often part-time) job or adopting an active family role (such as a caregiver to one's spouse or parents) (Moen et al., 2000: 84-88). Many elements often affect the decision to retire, such as occupational situation, job satisfaction, the desire to spend time differently, financial situation, the retirement situation of one's partner, and health status (Wolcott, 1998). Retirement is typically accompanied by changes in social relationships and it may force people to reformulate these roles (Salovaara et al., 2010). In the process of retirement, reformulation occurs in three phases, starting from the termination of a career job, followed by a few months of limbo, and resulting in a reorganisation of everyday activities (Luborsky, 1994). Recently retired people typically want to maintain their physical and mental capacity by engaging in project-like actions that help them reconstruct their roles and identities (Salovaara et al., 2010). This may result in the growth of leisure activities and the emergence of the 'third age' identity that regards 'old age' in terms of contingency, diversity, difference and choice (Gilleard and Higgs, 2000, 2009; Katz, 2005). A satisfying lifestyle is thus not solely attributed to working life (Laslett, 1989); the expansion of one's social roles into new areas, getting to know oneself better, managing the use of time in a structured way and becoming active in the

community provide new strategies to develop oneself after retirement (Price, 2003).

Ageing is necessarily accompanied by changes in social and personal relationships, post-parental transition and retirement being perhaps the most visible ones. In late midlife, these transitions are connected to social and emotional wellbeing. Among psychologists, social and emotional functioning are not believed to change along with ageing, but the social and emotional life, however, does change. Social relationships narrow, yet they become more meaningful, and experienced emotions become more predictable (Charles and Carstensen, 2010). The significance of friends and family members as a supportive network increases, and people with strong social relationships report greater emotional well-being (Cohen and Willis, 1985; Charles and Carstensen, 2010). Older adults with strong social relationships and a high level of social activity are less likely to experience declines in cognitive functioning (Barnes et al., 2004), due to the positive emotions that are experienced during social interactions (Blanchard-Fields et al., 2008). People who report less satisfaction with their networks display a greater decline in cognitive functioning over time (Hughes et al., 2008), although causal directions between these two dimensions are difficult to detect.

In old adulthood, age-related losses, such as decreases in social roles and deaths of friends and family members can be considered as normative life events. The parents of late middle-agers tend to have deteriorating health or may have passed away, and their children are starting their own families, turning late middle-aged people into grandparents (Hutteman et al., 2014). Research indicates that ageing people tend to reduce their social relations to fewer and more intimate forms across adulthood (Carstensen et al., 2006), implying that older adults prefer familiar and emotionally close social partners instead of novel social partners (Charles and Carstensen, 2010). Interaction with family members may thus be more important for older adults than for young adults. Across adulthood, people become aware of age-related gains and losses, which leads to selective optimisation and compensation (Baltes and Baltes, 1990). This results in selecting goals, i.e. social and personal relationships, that are important and that can realistically be obtained in life. With ageing, time horizons shrink (Carstensen et al., 2006), and people become aware of the limitations and constraints related to the future. Thus goal orientations change, emphasising the emotions and meanings that social relationships can provide (Charles and Carstensen, 2010).

3.4 Life transitions and digital consumption

With ageing, older adults thus encounter some unique challenges that are related to, most of all, social and emotional changes, but also physical limitations. Understanding the needs of older people thus requires understanding the multidimensionality of age (see also Jiang et al., 2016). To support and enhance successful ageing (Rowe and Kahn, 1997), i.e. low probability of disease, high level

of functionality, and active engagement with social life, bodily (physical), mental (cognitive) and social (interpersonal relationships) factors have to be taken into consideration. Digital technologies may, above all, support older adults in coping with life transitions, by making it easier to retrieve information, to maintain and extend social relationships and to maintain a feeling of being 'connected to the world' (Salovaara et al., 2010). Digital technologies are used to cope with life transitions, as they provide safety and surveillance (Ling, 2004) and assistance in maintenance of independence and autonomy when cognitive abilities have declined (Astell, 2015, Mikkonen et al., 2002). Due to the changes in social relationships, people start to adapt their preferred communication methods to other people's communication practices, which resembles the domestication process with distinctive stages (Salovaara et al., 2010).

In Japan and mainland East Asia, pensioners' transnational mobility and migration have become a phenomenon and relatively young and healthy retirees are now actively seeking to build a second life by means of their retirement pension and savings (Ono, 2015). Retired people now search for better ways of life through seasonal or permanent transnational migration, and information and communication technologies, such as websites, weblogs and social networking sites offer possibilities for tourism and leisure activities for older adults. Older adults are now motivated to move abroad after retirement to make their post-retirement life more meaningful, to gain new experiences, and to expose themselves to different cultures while simultaneously taking advantage of lower living costs that enable financially sustainable retirement (Ono, *ibid.*). Retirees' ambition regarding mobility can be understood as a lifestyle migration that can be defined as 'the spatial mobility of relatively affluent individuals of all ages, moving either part-time or full-time to places that are meaningful and offer the potential for a better quality of life' (Benson and O'Reilly, 2009). Through lifestyle migration, individuals search for escape and self-fulfilment, and a new source of recreation, restoration and rediscovery of their own potential or true desire (*ibid.*, 3).

Due to technological advancements, digital games have become a collaborative, ubiquitous and accessible medium for older adults (De Schutter et al., 2015). The digital game audience has expanded from children and young males to 'casual gamers' who are less likely to spend hours learning a new game and rather search for games that provide instant gratification and social support (Juul, 2008). Middle-aged females and older adults are now involved in digital gaming that is designed to evolve player creativity by modification of new online gaming platforms and communities (De Schutter et al., 2015). For older users, digital gaming can help in maintaining or improving specific cognitive, perceptual or motor abilities and aspects of overall quality of life. Digital gaming has been shown to be beneficial as a therapeutic or medical intervention (e.g. Beasley, 1989), it functions to improve social and emotional wellbeing and entertainment (e.g. Goldstein et al., 1997) and it is related to a greater interest in learning about technology. The overall effects of entertainment are thus related to the quality of life, as enjoyment has been shown to be the reason for older

adults' use of entertainment media technology, implying that perceived ease of use is a secondary motivation for use (Dogruel, 2015). Gaming can enhance intergenerational communication and encourage grandparents and grandchildren to join intergenerational play (De Schutter et al., 2015). For instance, in a study by Pearce (2008), a husband with a passion for digital games encouraged his 59-year-old wife to play adventure games, and they eventually got their adult daughter to join them in playing. Life-changing events, such as illness and a loss of control or mobility may also trigger a computer gaming career (Quandt et al., 2009).

Across the life course the needs and necessities to consume digital technologies thus change, and old adulthood poses new challenges for a digital lifestyle. Old adulthood, typically starting at approximately age 65 and over, involves transitions related to caregiving roles: the older people grow, the more likely they are to need support to perform certain tasks (Prendergast and Garattini, 2015: 199). Today, much emphasis is put on service systems that help older people maintain independence and continue living in their own home despite possible decline and impairment (Iris and Berman, 2015). Spouses, family members and friends provide personal assistance and support, especially in socio-emotional aspects of care (Povlika, 2009). In a digital society, the internet has become an avenue where information about resources, education and age-related health issues is actively sought (Iris and Berman, 2015).

In addition, digital technologies are applied to enhance the overall physical, mental and social wellbeing of older adults, by increasing opportunities for social participation and integration. Older adults may suffer from social isolation or loneliness, due to living alone, widowhood, poor physical and mental health, cognitive impairment, income and education (Victor et al., 2005). Social isolation refers to the decreased scope of social relationships, frequency of contact and level of support, whereas loneliness is used to indicate the negative subjective experience related to a perceived lack of social contact or companionship (Wherton et al., 2015). Many intervention studies show that information and communication technologies are potential tools for alleviating loneliness, and they are used to establish and maintain satisfying interpersonal relationships among older adults. With use of telephone briefing services, teleconference calls and scheduled times for chat, older adults frequently report a sense of belonging, a feeling that somebody cared about them, and gained the self-confidence to become more physically and socially active (Cattan et al., 2011). In old adulthood, therefore, digital technologies enhance social connectedness, which has overall effects on general health and social and emotional wellbeing.

Investigating social connectedness among older adults becomes particularly significant among adults aged 65 and over, who generally may suffer from limited mobility. In a study by Quan-Haase et al. (2017), it was found that digital media helps in mobilising social support as well as maintaining and strengthening existing relationships with geographically near and distant contacts. Once older people start using digital media, it becomes a routine, and social support is transmitted through digital media within practices related to co-

ordination of everyday life, maintaining social ties and pursuing casual conversations. For older adults, social support that is exchanged via digital media was found to be as real as any other kind of support, but they preferred maintaining and strengthening existing networks and more intimate interaction rather than inventing new ones or participating in many-to-many broadcast media (see also Tian & Menchick, 2016). Besides facilitating communication with family and friends, digital technologies can expand older adults' opportunities for lifelong learning, access to health-related information, and exploration of additional resources for personal interests and entertainment (Gatto and Tak, 2008; Schreuers, 2017). In total, digital technologies are applied to improve older adults' quality of life (Bond et al., 2010; Shapira et al., 2007), and hence they require not only a focus on skills, but also on the cognitive and socio-emotional aspects of digital engagement (Eshet-Alkalai, 2004; Haight et al., 2014; Schreuers, 2017).

4 THEORY INTEGRATION

In previous chapters, determinants of digital consumption in relation to age, generational experience and life course stage have been presented. Chapter 2 began with the construction of a framework for digital consumption from the perspective of adoption and use of digital technologies, social shaping of technology, social relationships and household structure, and digital participation. In chapter 3, the multidimensional role of age in terms of generations and consumption, generational usage of media, and life course transitions was presented. Determinants of digital consumption were thus conceptualised from the individual, socio-demographic micro level and socio-economic macro level, and therefore the multidimensionality of age can be integrated into these levels (Table 2).

At an individual level, digital consumption is encompassed as a matter of personality traits such as self-efficacy (Huber and Watson, 2014), loneliness and shyness (Helsper and Reisdorf, 2013) and cognitive abilities such as digital literacy (Broady et al., 2010; Gatto and Tak, 2008; Hargittai, 2002; Helsper and Reisdorf, 2013; Schreuers, 2017) and attitudes towards technology (Dutton and Blank, 2015; Durndell and Haag, 2002). At an individual level, previous experience of digital technologies predicts which activities people engage in online (Zillien and Hargittai, 2009, van Deursen and Helsper, 2015). This constitutes a certain 'user history'. An individual approach addresses the usability of the device, by focusing on the perceived usefulness (Barnard et al., 2013; Lian and Yen, 2014) and perceived ease of use (Hernández-Encuentera et al., 2009; Kim, 2008; Selwyn, 2004).

At a socio-demographic micro level, interpersonal relationships and household structures influence the access to digital technologies, and to what extent and for what purposes digital technologies are applied. The social level emphasises socio-demographic factors such as income, socio-economic position and education level, which are associated with technology use (Haight et al., 2014; van Deursen and Helsper, 2015; Räsänen and Koironen, 2016). Interpersonal relationships, such as the presence of children in the household, particularly affect access to certain devices (Selwyn, 2004b; Eynon and Helsper, 2015). At the

socio-demographic micro level, incorporation of digital technologies into daily life is symbolic (Selwyn, 2004b), indicating the role of cultural resources in digital consumption. Digital technologies are used to manage and express social identity on various digital platforms such as social media (Arsel and Zhao, 2013; Llamas and Belk, 2013). The social level emphasises the role of social support, communication and social connectedness in digital engagement (Cattan et al., 2011; Gatto and Tak, 2008; Ling, 2008; Prendergast and Garattini, 2015; Quan-Haase et al., 2016, 2017; Schreuers et al., 2017; Selwyn et al., 2005; Thayer and Ray, 2006).

At a socio-economic macro level, digital consumption is influenced by availability as well as supply and demand, which enable the access and ownership of certain digital technologies. The macro-economic changes also enable the consumption of certain devices and prosumption on new digital platforms (Ruckenstein, 2017; Pantzar and Ruckenstein, 2015). At the socio-economic macro level, companies and corporate processes are becoming part of people's lives through networking, sharing and knowledge formation which promote new kinds of interaction, collaborations and divisions of labor between commercial agents and consumers (Bruns, 2008; Ritzer and Jurgenson, 2010). Thus digital consumption connects with commercial aims through availability, access and ownership of blog posts, comments and photography sharing (Ruckenstein, 2017). These forms of digital consumption are tied to macro-economic changes and thus they develop as a consequence of structural changes.

TABLE 2 Determinants of digital consumption

	<i>Individual level</i>	<i>Socio-demographic micro level</i>	<i>Socio-economic macro level</i>
<i>Chronological age</i>	Self-efficacy Cognitive abilities Attitudes towards technology	Economic resources	Supply and demand Corporate processes
<i>Generational experience</i>	Digital literacy Previous experience	Digital identity Cultural resources	Macro-economic changes
<i>Life course stage</i>	Perceived usefulness Perceived ease of use	Household structure Social relationships Education Socio-economic position	Availability Access and ownership

To evaluate the role of age and life course stage in digital consumption, the effects of chronological age, generational experience and life course stage may be theoretically separated, although empirically, they are often intertwined. The effects of *chronological age* can be evaluated on all three levels. On the personal level, chronological age is associated with personality traits. Personality traits

develop across the life course and are typically associated with age-related changes that are categorised on the basis of fixed age categories (Hutteman et al., 2014). Self-efficacy, as well as cognitive abilities, are mostly discussed in relation to chronological age, which is typically negatively associated with skills and confidence (Czaja and Lee, 2003, 2007; Huber and Watson, 2014; Deng et al., 2014; Morrill et al., 2013). Attitudes towards technology are associated with chronological age (Durndell and Haag, 2002; Hawtorn, 2007; Helsper and Reisdorf, 2013; Lee et al., 2011; Millward, 2003; Morris et al., 2007).

At the socio-demographic micro level, the role of chronological age is pronounced in relation to economic resources. Income level is often determined by chronological age, which regulates employment (Ahonen and Vaitinen, 2015). At the socio-economic macro level, chronological age signifies the particular time period (year) when digital technologies became available on the consumer market. Thus the length of exposure to certain corporate processes may be best understood through chronological age.

The effects of *generational experience* on digital consumption occur on all three levels, respectively. At the personal level, generational experience defines digital literacy as well as previous experience with digital technologies. Digital literacy, such as understanding and creation of media (Livingstone et al., 2005) can be perceived as generational, as different digital generations understand media landscapes in a unique manner (Bolin, 2016; Bolin and Wessman, 2009). Digital literacy addresses the role of communicative forms and navigational competence in digital environments (Merchant, 2007; Quan-Haase et al., 2014; Schreuers, 2017). Consequently, it may be connected to generational preferences for certain types of communicative forms (see also Jacobson et al., 2016). Previous experience with digital technologies is constituted on the basis of user history and past experiences constitutes on the basis of certain user history (Zillien and Hargittai, 2009, van Deursen and Helsper, 2015).

At the socio-demographic micro level, digital identity can be conceptualised as generational and cultural resource that guide the behaviour of social groups (Kingston, 2001). At the socio-economic macro level, generational experiences are related to macro-economic changes that typically influence the formulation of generational experience (Carr et al., 2012; Parment, 2011, 2013).

The effects of *life course stage* are pronounced at all three levels. At the personal level, perceived usefulness, i.e. the degree which a person believes that technology enhances job performance, and perceived ease of use, i.e. the degree to which a person believes that using a particular system would be free from effort (Davis, 1989) can be best determined by life course stage. Perceived usefulness may change with life transitions, as in different phases of life, usefulness may be perceived differently depending on the developmental tasks of the life stage (Hutteman et al., 2014). Perceived ease of use is determined by life stage, as in many cases, family and friends facilitate the transformation of digital skills (Gatto and Tak, 2008; Ling, 2008; Quan-Haase et al., 2016, 2017; Salovaara et al., 2010; Schreuers et al., 2017; Selwyn et al., 2005; Thayer and Ray, 2006).

At the socio-demographic micro level, life stage factors operate in the interrelationship between household structure and social relationships (Comunello et al., 2015, 2016; Eynon and Helsper, 2015; Livingstone et al., 2005; Selwyn, 2004b). Determinants associated with education and socio-economic position represent the life stage, as the normative timing of major life transitions has become scattered and thus they are no longer tied to chronological age (Green, 2014; Izuhara, 2015; Settersten, 2003). At the socio-economic macro level, availability, access and ownership are transmitted in the context of social relationships (Eynon and Helsper, 2015; Selwyn, 2004b) and thus they are connected to life stage.

Even though the effects of chronological age, generational experience and life course stage may be theoretically separated, empirically they are often intertwined. Therefore determinants of digital consumption were further examined in all four articles. In article I, the role of age and life stage was examined in attitudes towards consumption by addressing household structure, education, socio-economic position and macro-economic changes as determinants for digital consumption. In article II, the role of age and life stage was investigated in mobile-based online shopping and entertainment media by emphasising digital literacy and cultural resources alongside household structure and education as determinants of digital consumption. In article III, the role of age and life course stage was addressed with conceptualisations of attitudes towards technology, digital identity, digital literacy and access and ownership. In article IV, the role of age and life course stage was examined through self-efficacy, cognitive abilities, and attitudes towards technology, digital literacy and corporate processes. The empirical findings aimed to expand the theoretical overview of determinants of digital consumption.

5 RESEARCH DESIGN

In research on digital technologies, two methodological paradigms dominate the discussion. The quantitative paradigm addresses technology adoption and use from behavioural perspective, paying attention to differences in the usage between socio-economic groups and the effect of socio-demographic variables on digital consumption (e.g. Czaja et al., 2006; Gilleard and Higgs, 2008; Helsper and Reisdorf, 2013; Näsi et al., 2012; Rasi and Kilpeläinen, 2016; Räsänen and Koiranen, 2016; Zickuhr and Madden, 2012). The qualitative paradigm emphasises the social meaning-making processes behind digital technologies and comprehends digital consumption as a process which is socially negotiated and maintained (e.g. Comunello et al., 2015; Comunello et al., 2016; Loos et al., 2012). When exploring digital consumption in association with age, the multidimensionality of age needs to be taken into consideration. This requires utilisation of both quantitative and qualitative data in order to address both measurable and experiential aspects of ageing. Therefore, a methodologically pluralist strategy was selected for this study. In this chapter I first present the methodological premises and principles behind the selected approach. This is followed by a description of the process of data collection and data sets.

5.1 Methodological strategy

The methodology of the study can be characterised as a pluralistic strategy. The research strategy is constructed from methodological pluralism, content analysis and an inductive approach to describe older adults as users of digital technologies, the interrelationship between consumption and digital technologies, and the effect of age and life course stage on digital consumption. In all the objectives, methodological pluralism is integrated with content analysis to inductively create data-driven insights on the basis of empirical findings.

Objective 1 with its research questions 'To what extent do older adults differ from younger adults in relation to attitudes towards and practice of digital con-

sumption, if any? (RQ1)' and 'How do shared understandings of digital technologies vary between older and younger adults?' (RQ2) is based on a presumption that older adults are distinguishable objects of research. By examining attitudes towards consumption (article I), the use of mobile technology for online shopping and entertainment (II), and the utilisation of online environments in electricity consumption (article IV), the self-reported behaviour of individuals is possible to obtain. Objective 1 operates with methodological pluralism by combining quantitative and qualitative techniques to create an empirical description on the basis of data.

In objective 2 with its research questions 'How are consumption practices influenced by digital technologies?' (RQ3) and 'How are digital technologies conceptualised as objects of consumption?' (RQ4) the study aims to recognise the mechanisms mediating consumption and the use of digital technologies. Objective 2, in particular, represents an inductive approach in which data-driven insights are created from singular empirical observations and formulated with content analysis.

Objective 3 with its research questions 'To what extent do age and life course stage explain attitudes towards or practice of digital consumption?' (RQ5) and 'In attitudes towards consumption, are generational or cohort effects pronounced?' (RQ6) aims to distinguish the effects of age and life course stage on digital consumption. Objective 3, similarly to objective 1, employs a methodologically pluralistic strategy in which the content of the data is analysed both quantitatively and qualitatively. In contrast to objective 1, however, objective 3 applies an inductive approach to create a more conceptual and abstract understanding of the empirical data.

5.1.1 Methodological pluralism

Methodological pluralism refers to the integration and combination of quantitative and qualitative research design in order to formulate a more profound picture of the research area (Creswell, 2014). It can be characterised as a triangulation strategy (Olsen, 2004). Quantitative design has traditionally applied experimental or nonexperimental designs in explaining human behaviour. In nonexperimental quantitative designs, such as in survey research, the aim is usually to generalise a numeric description of attitudes from a sample to a whole population (Fowler, 2009).

In multiple triangulation, these two approaches are integrated into one research design. Multiple triangulation is a combination of different methodologies that consist of a leading (primary) strategy and a follow-up (secondary) strategy (Bryman, 2001). For instance, a survey methodology may be utilised prior to in-depth qualitative inquiry. Utilising multiple methods in one study may help to increase the validity of the database as well as to engage with the limitations that are involved in each database (Tashakkori and Teddlie, 2010). A qualitative database can help to throw light on the questions that arise in a quantitative database, such as questions that are not answerable with one database only. In the context of older adults' usage of digital technologies, for in-

stance, quantitative data may give insight on the frequency of use or reasons behind use or non-use of digital technologies, and qualitative data produces understanding of the variation between individuals in relation to technology use. In multiple triangulation, these data sets are expected to provide unique perspectives on the research phenomenon rather than complete each other. In order to avoid epistemological incoherence between different data sets (Olsen, 2004), each data set is thus perceived as separate from the others.

Epistemologically, the philosophical background of the study can be characterised as a factist perspective (Vaismoradi et al., 2013). A factist perspective assumes that data is a more or less accurate description of reality (Sandelowski, 2010). Research is conducted to find out about the actual behaviour and attitudes people possess towards an area of research (Ten Have, 2004). This study included the factist perspective as a principle that guided the research process and analytical strategies.

5.1.2 Inductive content analysis

Content analysis is a research technique that aims to interpret meanings from the data by coding, categorising, comparing and counting qualitative or quantitative data (Hsieh and Shannon, 2005). In this study, content analysis understood to comprise both quantitative and qualitative data sets; quantitative indicating the categorising, comparing and counting of the data and qualitative interpreting data through systematic classification processes. Hsieh and Shannon (*ibid.*) distinguish three forms of content analysis. Content analysis can be applied conventionally, when preconceived categories are avoided to support the emergence of new insights (Kondracki & Wellman, 2002). When existing theory or prior research is abundant, content analysis can be utilised directly. Direct content analysis resembles deductive use of theory (Potter and Levine-Donnerstein, 1999) where content analysis validates a theoretical framework. Summative content analysis aims to explore the usage of a particular word or content by quantifying it and focusing on counting the frequency of content (Hsieh and Shannon, 2005; Kondracki & Wellman, 2002).

The methodological technique of content analysis resembles thematic analysis, although these two can be separated from each other. The differences between thematic analysis and content analysis can be understood as a continuum between qualifying and quantifying qualitative methodology, with content analysis resembling the quantifying and thematic analysis the qualifying aspects of methodology. The continuum between quantifying and qualifying data reflects the degree of transformation of data from description to interpretation (Sandelowski and Barroso, 2003). In descriptive phenomenology, such as content analysis, data is thematised with a relatively low level of interpretation, in contrast to hermeneutic phenomenology, such as grounded theory, that requires a high level of interpretation (Vaismoradi et al., 2013). The level of description and interpretation thus become key factors in evaluating the quantification of qualitative data.

This study applies content analysis primarily with quantifying techniques, and qualifying techniques are adopted to support and extend the quantifying technique. Quantifying techniques focus on analysing the phenomena with an exploratory outlook on the unknown phenomena (articles I, II, III and IV). In addition, the study applies qualifying techniques in the analyses to support, extend and enrich the existing understanding (article IV). Content analysis can thus be characterised as a systematic way of analysing quantitative and qualitative data. The systematic approach can be applied regardless of the characteristics of the data.

Content analysis can be applied both inductively and deductively; in this study, the approach is inductive. Inductive content analysis is appropriate in cases where the knowledge of the research area is limited or fragmented (Elo and Kyngäs (2007). No established theoretical framework for older adults' usage of digital technologies existed, so the framework was constructed from multiple sources and theoretical discussions. When content analysis is conducted inductively, it usually aims to create a new model, insight or abstraction of the phenomenon (Krippendorf, 1980). The purpose of the study is to build a conceptual system or categorical map by coding, creating categories and abstractions (Elo and Kyngäs, 2007). The analytical procedure starts by creating headings that describe the content in the best possible way (Hsieh and Shannon, 2005). Analysis then continues to grouping to reduce the amount of categories (Dey, 1993; Elo and Kyngäs, 2007). On the basis of grouping, a new model, insight or abstraction is created (Polit and Beck, 2004).

In deductive content analysis, contrastingly, analysis aims to test existing ideas, concepts or models (Marshall and Rossman, 1995). Data is coded according to existing categories by constructing a categorisation matrix (Elo and Kyngäs, 2007). The matrix can be based on previous theories and literature reviews (Hsieh and Shannon, 2005; Polit and Beck, 2004). Despite the nonexistence of an established framework for older adults' usage of digital technologies, a literature review and previous research findings can be employed as a guiding matrix for analysis. This indicates that only selected aspect is chosen from the data (Sandelowski, 1995). It is thus possible to analyse the data selectively in such a way that it supports the existing literature (Elo and Kyngäs, 2007).

Derived from these approaches, the main analytical strategy of the study can be described as inductive content analysis, where inductive reasoning operates as a leading strategy. In article I, the role of age and life course stage on digital consumption was inductively formulated, by first addressing the differences between older and younger adults as consumers (RQ1) and then investigating the extent to which age and life course stage explain digital consumption (RQ5). From these considerations, conclusions regarding older adults as consumers were inductively formulated. Additionally, the article applied deductive reasoning by aiming to distinguish generational or cohort effects on consumption (RQ6). This resembled hypothesis testing (Marshall and Rossman, 1995), in which previous research on generations and consumption guides the formulation of research questions.

In article II, including research questions 1, 3 and 5, the role of age and life course stage on digital consumption was inductively explored. In response to RQ3, the article aimed to define how consumption practices are influenced by digital technologies, thus assuming that previous research on the interrelationship between consumption and digital technologies is fragmented. Similar to article I, the extent to which age and life course stage explain digital consumption (RG5) was derived inductively from empirical findings considering the characteristics of older adults as consumers of digital technologies (RQ1).

In article III, involving research questions 2, 4 and 5, conclusions were inductively constructed on the basis of shared understandings of digital technologies (RQ2) and conceptualisations of digital technologies as objects of consumption (RQ4). On the basis of this qualitative analysis, the role of age and life course stage in digital consumption (RQ5) was derived from these empirical findings, and thus inductive reasoning was applied in a similar manner to previous articles. In article III, qualitative analysis was conducted in a systematic manner, by formulating categories and sub-categories on the basis of open coding.

Finally, article IV, responding to questions 1, 4, 5, developed the understanding of the role of age and life course stage on digital consumption inductively. Similar to previous articles, responses to RQ1 were inductively formulated, but in responses to RQ4 and RQ5, deductive reasoning was utilised to support inductive thinking. This was carried out by developing a categorisation matrix on the basis of previous literature on older adults' usage of digital technologies.

5.2 Research process

The research material of the study is derived from five (5) data sets. The data include three (3) sets of survey data and two (2) sets of focus group discussions. The data are the following:

- Survey: Finland, Consumption and Lifestyle
- Survey: MTV – Internet Use, Devices and Attitudes Towards the Internet
- Survey: Electricity Consumption and Digital Environments
- Focus group discussions: Housing Fair
- Focus group discussions: Jyväskylä Energy Group

All data sets, apart from the survey *Finland - Consumption and Lifestyle*, were collected during the project 'DIGI50+ Mature consumers, customer experience and value creation in digital and physical environments' (2015-2016). The process of data collection proceeded gradually, starting from findings and observations in the existing data and narrowing and broadening these findings in the next phases of data collection.

In the first phase of the study, the survey *Finland – Consumption and Lifestyle* was analysed in order to constitute an understanding of older adults as consumers. This postal survey, originally conducted in 1999 (N= N=2,417), 2004 (N=3,574), 2009 (N=1,202) and 2014 (N=1,350), covered the consumption and lifestyle of the Finnish population. Each year, questionnaires were sent out to 18 to 74-year-old Finnish speakers, who were randomly selected from the Finnish Population Register Database (Erola and Räsänen, 2000; Erola et al., 2005; Sarpila et al., 2010; Koivula et al., 2015).

In the second phase of the study, eight (8) focus group discussions were conducted to examine the differences between late middle-agers (50 to 65-year-olds) and young adults (18 to 30-year-olds) in a more detailed way (N=68). The focus group discussions were organised in the context of the Finnish Housing Fair between the 10th of July and 9th of August 2015. Housing Fair was selected for the location as it provided the participants with an inspiring environment to reflect housing-related ideals and aspirations. The data collection was guided by the assumption derived from the first phase of the study, indicating that late middle-agers differ from young adults in relation to housing, lifestyle and consumption of digital domestic technologies.

In the third phase of the study, the survey *MTV – Internet Use, Devices and Attitudes Towards the Internet* was carried out. The data collection was conducted by the Finnish commercial media company MTV in co-operation with our DIGI50+ project¹. The survey was administered between the 2nd and 17th of November 2015 to a panel of respondents representing Finnish-speaking television viewers aged 18 to 74 (N=630). The target group of the survey consisted of participants aged 55 to 74 (N=144) with a control group of participants aged 18 to 54 (N=176).

In the fourth phase of the study, the survey *Electricity Consumption and Digital Environments* was carried out. The survey was conducted between November 2015 and January 2016 among Finnish-speaking internet users who were clients of various electricity companies across Finland. The web-based questionnaire was distributed through several online forums² and delivered via the electricity companies. The target group of the survey consisted of participants aged 50 and over (N=743) with a control group of participants aged 18 to 49 (N=623).

In the fifth phase of the study, five (5) focus group discussions were organised for customers of a local electricity, water and district heat provider in the city of Jyväskylä between November and December 2015. Participants (N=29) were recruited in co-operation with the research company HeadLong Oy. By utilising the database of HeadLong Oy, an invitation to take part in group discussions was sent via text message to over 50-year-old electricity consumers living in the Jyväskylä area.

¹ We provided comments and recommendations for the survey questionnaire.

² www.suomi24.fi, www.vauva.fi, www.et.fi, www.anna.fi, www.tiede.fi, www.ksml.fi, www.kaleva.fi

To summarise the data collection process, the relationship between different data sets is presented in Figure 2. The figure demonstrates that the data from the surveys guided the data collection in the focus group discussions. First, the age groups in the focus groups were formulated so that they were adjustable to the age groups in the surveys. Second, the interviews were constructed around the same thematic areas. The same thematic areas were applied in the survey *Electricity Consumption and Digital Environments* and focus groups at the Jyväskylä Energy Group, in particular. In each case, the focus group discussions were conducted to broaden and deepen the understanding that was constructed on the basis of the survey data, while still remembering that the focus group discussions did not reach the same group of individuals as the surveys.

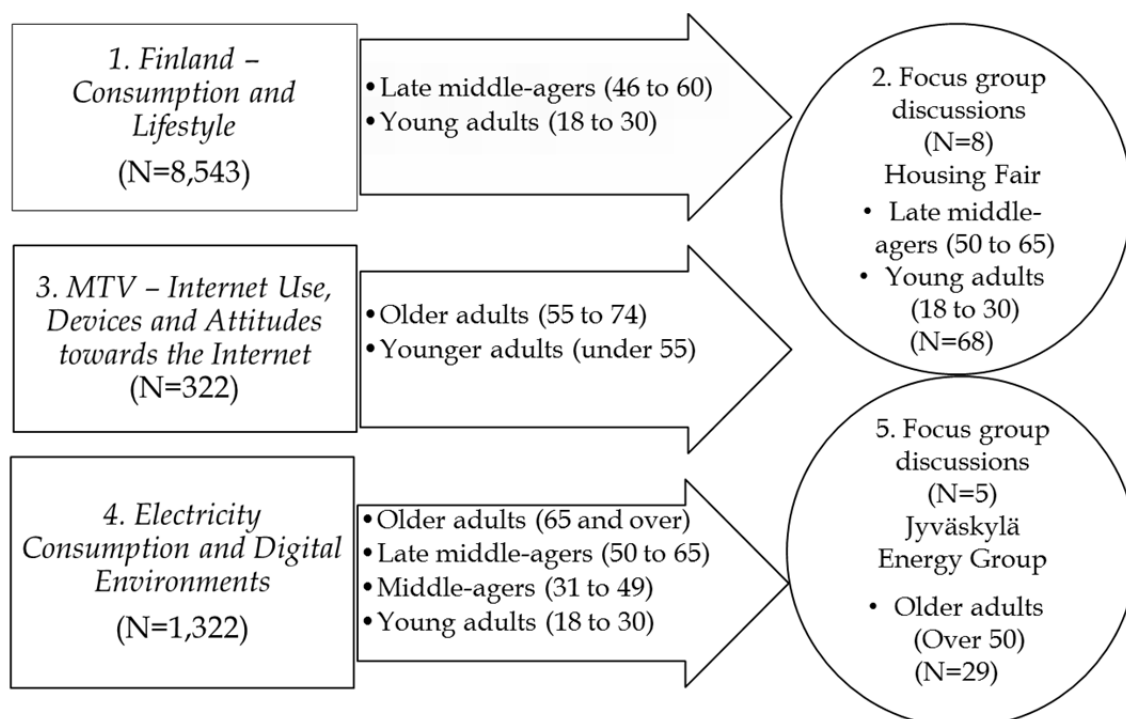


FIGURE 2 The process of data collection

In the quantitative part of the study, three survey studies were analysed with statistical research methods. Statistical analysis was constructed from three components: descriptive statistics, factor analysis and analysis of variance (ANOVA). Factor analysis was carried out in an exploratory manner, indicating that previous research or theory had only a limited effect on the selected methods or questions. Instead, the analysis was conducted in order to build a new way of comprehending the research area. Statistically, factor analysis aims to detect latent variables that cause the covariance of selected variables. Factor extraction aims to expose the factor structure by distinguishing shared variance and unique variance, with shared variance indicating the latent structure (Costello and Osborne, 2005). As an extraction method, the study applied principal axis factoring, which can be recommended when the data is non-normally distributed (Fabrigar et al., 1999).

Analysis of variance (ANOVA) is a collection of statistical tools that aims to show variation among and between selected variables (e.g. Creswell, 2014). In this study ANOVA was applied to detect whether or not the effect of certain variables (e.g. age) persist when the effects of other variables (e.g. socio-demographic background variables) are controlled for. This was conducted with a general linear model as a statistical tool. In the study, the survey questionnaire was constructed around categorical variables that would support the utilisation of ANOVA, rather than a logistic regression model, as the main analytical tool.

In the first survey, *Finland – Consumption and Lifestyle*, the analysis aimed to detect the differences in attitudes towards consumption among late middle-agers in comparison with young adults, and explore whether these differences could be explained by age at the year of the study, life course stage (marital status and household type), and time period (year of the study) when other socio-demographic determinants were controlled for. Ecological, economical and self-indulgent attitudes towards consumption were selected for the study as previous research indicated age-based differences in these consumption attitudes (Berg, 2015; Katz-Gerro, 2002; Wilska, 2002). In the analysis, factor analysis was first utilised to detect the attitudinal dimensions. The ANOVA model was then executed for the 1999, 2004, 2009 and 2014 data sets to examine the effects of age and life course stage on attitudinal factors.

In the second survey, *MTV – Internet Use, Devices and Attitudes Towards the Internet*, the analysis aimed to investigate the differences in the use of mobile technology (smartphone or tablet computer) for online shopping and entertainment between older adults (aged 55 to 74) and younger adults (under 55), and the mechanisms by which age and life course stage explain these differences. Online shopping and entertainment were selected for the study as they represent practices that are typical for older adults yet have received less attention in previous research (Statistics Finland, 2015; Zickhur, 2014). In the analysis, a descriptive statistics was first formulated to address differences between older (aged 55 to 74) and younger (aged under 55) adults among male and female consumers. An ANOVA model was then constructed for statements regarding the use of mobile technology for online shopping and entertainment.

In the third survey, *Electricity Consumption and Digital Environments*, the analysis was carried out to examine to what extent older consumers (aged 50 and over) take part in electricity company online services, and how age and life course stage are associated with digital participation. The analytical focus was influenced by previous literature on the lack of digital engagement among older adults (e.g. Helsper & Reisdorf, 2013; Näsi et al., 2012; Rasi and Kilpeläinen, 2016; Räsänen & Koironen, 2016; Zickuhr & Madden, 2012). In the analysis, a descriptive statistics was first conducted on the usage of an electricity company's online services among different age groups. A factor analysis was then executed in order to reveal the dimensions in the non-use of the electricity company's online services. An ANOVA model was constructed to test the effects of age and life course stage on the reasons for non-use.

TABLE 3 Data sets of the study

Dataset	Participants	Type of data	Method	Article
<i>Finland- Consumption and Lifestyle</i>	A representative sample of the Finnish-speaking population	Longitudinal cross-sectional postal survey (N=8,543) collected in 1999 (N=2,417), 2004 (N=3,574), 2009 (N=1,202), 2014 (N=1,350)	Factor analysis, ANOVA	I
<i>MTV- Internet Use, Devices and Attitudes towards the Internet</i>	A representative sample of Finnish-speaking television viewers	Cross-sectional online survey, collected in 2015 (N=322)	Descriptive statistics, ANOVA	II
<i>Electricity consumption and Digital Environments</i>	A self-selection sample of Finnish-speaking internet-users	Open online survey, collected in 2015 (N=1,322)	Descriptive statistics, factor analysis, ANOVA	IV
<i>Focus group discussions: Housing Fair</i>	50 to 65-year-old and 18 to 30-year-old consumers across Finland	Eight (8) focus group discussions (N=68)	Empirically oriented content analysis	III
<i>Focus group discussions: Jyväskylä Energy Group</i>	Over 50-year-old electricity consumers in the Jyväskylä area	Five (5) focus group discussions (N=29)	Theory-oriented content analysis	IV

In the qualitative part of the study, two sets of focus group discussions were studied with an empirically and theoretically oriented content analysis. In focus group discussions, a group of selected, focused and well-defined participants are formed to investigate a research topic through group interaction (Boddy, 2005; Freeman, 2006). Focus groups were monitored by facilitating discussions through structured questions (Stewart and Shamdasani, 1990). Group interaction and dynamics are perceived significant in the constitution of knowledge and information (Kitzinger, 1995). Thus lived experiences, perspectives and meanings represented in focus groups are socially shared and constituted in social interaction. With focus group discussions, research can reach socially shared beliefs, attitudes and feelings through interpersonal communication (Freeman, 2006). Participants support and encourage each other to explore various opinions, ideas and experiences (see also Boddy, 2005).

In the first set of focus group discussions, carried out at the Housing Fair, the analysis aspired to reach socially shared meanings that young adults and late middle-agers possess towards digital technologies in the context of domestic sphere, and examine whether these socially shared understandings could be

interpreted as reflecting generational experience or the life stage of the participants. The Housing Fair was selected for the context of the study as it represents ongoing trends in the housing industry, involving technological innovations in building, architecture and interior design. Additionally, in the lives of late middle-agers, housing and everyday life represent significant contexts where life transitions take place (e.g. Gilleard and Higgs, 2008; Salovaara et al., 2010).

The analysis followed the principles of empirically oriented content analysis. This analytical technique can be located under the conventional content analysis that aims to describe a phenomenon about which the existing theory or literature is limited (Hsieh and Shannon, 2005). The aim is to create data-driven categories, avoiding classifications that are preconceived (Konracki and Wellman, 2002). Data-driven categories and insights are thus inductively formulated (Mayring, 2000). In the data collection process, this analytical method is characterised by the utilisation of open-ended questions and notes made during the interviews (Hsieh and Shannon, 2005).

In the second set of focus group discussions, collected from among the customers of Jyväskylä Energy Group, the analysis focused on exploring the challenges that older adults report in participation in digital environments, and detecting the conceptualisations of the role of age and life course stage in digital participation. In the analysis, theoretical and conceptual assumptions about the role of age in digital participation guided the analysis (Czaja & Lee, 2007; Eynon & Helsper, 2014; Gatto & Tak, 2008; Helsper & Reisdorf, 2013; Morrill et al., 2013). The analysis was thus driven by theoretically oriented content analysis. This analytical technique resembles directed content analysis, which aims to validate or extend the theoretical framework of the research phenomenon (Hsieh and Shannon, 2005). Categories are formulated deductively (Mayring, 2000), on the basis of existing theory which directs the classifications and coding process. Theoretically oriented content analysis is thus a more structured process, where key concepts are identified on the basis of the existing literature (Hsieh and Shannon, 2005).

A significant part of qualitative analysis is interpretation, which the researcher conducts throughout the research process. As mentioned earlier, content analysis can be understood as a continuum between quantifying and qualifying data, with qualification of data representing a higher level of interpretation than quantifying data (Sandelowski and Barroso, 2003). In the first phase of the focus group discussions, coding and categorisations were conducted by quantifying text, and thus it involved only a limited amount of theory-based interpretation. In the second phase of the focus group discussions, coding and categorisation was influenced by previous research to a greater extent, and thus it involved a higher amount of interpretation based on previous literature. In the second set of focus group discussions, previous research provided a framework through which the main interpretations were formulated.

6 EMPIRICAL FINDINGS

6.1 Development of attitudes towards consumption

The first article investigates characteristics of older adults as consumers by focusing on the development of attitudes towards ecological, economical and self-indulgent consumption between 1999 and 2014. By addressing the characteristics of late middle-agers and young adults as consumers, the article aims to distinguish the effects of age and life course stage in attitudes towards consumption during four different time periods.

In response to RQ1 of the dissertation ('To what extent do older adults differ from younger adults in relation to attitudes towards and practice of digital consumption, if any?'), the article shows that in all the years under examination, older adults reported more ecological attitudes towards consumption than young adults. In 1999 and 2004, the attitudes of older adults appeared more economical, but age-related differences in these attitudes disappeared in later years. In each year, older adults reported less self-indulgent attitudes than young adults, and these age-related differences remained similar throughout the years.

In response to RQ5 ('To what extent do age and life course stage explain attitudes towards or practice of digital consumption?'), the article suggests that in 1999 and 2004, ecological and economical attitudes towards consumption were best determined by age in the year under examination. In later years, these attitudes were more closely related to life course stage, i.e. household type and other socio-demographic determinants. The article concludes that age in the year of the study predicts only certain attitudes towards consumption, and in ecological and economical attitudes, the significance of age is decreasing. The role of the presence of children in the household is relatively strong in ecological and economical attitudes towards consumption.

In response to RQ6 ('In attitudes towards consumption, are generational or cohort effects pronounced?'), the article concludes that generational or cohort effects were pronounced only in economical attitudes towards consumption

among respondents aged 46 to 60 in 1999. In contrast, the significance of age remained throughout the years for self-indulgent attitudes, indicating that self-indulgent attitudes towards consumption cannot be explained by generational or cohort effects.

To summarise the findings, the study revealed that older adults differ significantly from young adults in relation to ecological and self-indulgent attitudes towards consumption. In recent years, these differences have been best explained by life course factors, i.e. household type and other socio-demographic variables. Generational or cohort effects were pronounced only in economical attitudes towards consumption, suggesting that economical attitudes were typical for the 'Baby Boomer' generation in Finland.

The findings characterise attitudes towards consumption from the Finnish perspective. Finland, despite being one of the most digitalised societies in Europe, has still a relatively short history regarding consumer culture. The results can be interpreted as reflecting the values and attitudes of the 'Baby Boomer' generation in Finland, that most likely, differs from other post-war generations in other western countries (e.g. Carr et al., 2012; Parment, 2013). The study addresses the question, whether or not the frugal attitudes of the Baby Boomer generation in Finland have resulted to certain types of digital practices in Boomers' later life? Are economical attitudes towards consumption perhaps preventing or supporting digital participation? Although attitudes towards consumption do not correspond to actual consumer behaviour (Holt, 2012), they may have an influence on or they may characterise older adults' orientations towards consumption of digital technologies. In order to bridge the gap between attitudes towards consumption and usage of digital technologies, the mechanism between consumption and technology use is studied in more depth in other articles.

6.2 The use of mobile technology for digital consumption

The second article explores the mechanisms between consumption and digital technologies by focusing on older adults' usage of mobile technology for online shopping and entertainment. Online shopping and entertainment, representing established practices in digital consumption, is investigated by considering the usage of smartphones and tablet computers for these practices. More specifically, the article explores the use of smartphones and tablet computers for online shopping and entertainment among consumers aged 55 to 74 in comparison to under 55-year-old consumers.

In response to RQ1 ('To what extent do older adults differ from younger adults in relation to attitudes towards and practice of digital consumption, if any?'), the study demonstrates that older adults employ mobile technology for online shopping almost as often as younger adults. The use of mobile-based entertainment is differentiated by age and gender, indicating that older adults apply mobile technology for entertainment less frequently than young adults.

The differences between males and females are especially pronounced among older adults in the use of mobile-based entertainment, revealing that female respondents aged 55 to 74 apply mobile technology for entertainment less frequently.

In response to RQ3 ('How are consumption practices influenced by digital technologies?'), the article identifies mechanisms between consumption and digital technologies. First, digital consumption is affected by digital skills, and particularly mobile-based online shopping requires skills such as management of costs and perception of risks (Lian and Yen, 2014). Second, the article proposes that these digital skills are transmitted within social relationships, such as peer and family relationships. The presence of young people at home influences adults' ability to utilise the internet, which in turn may influence the ability to apply technologies for consumption. The article suggests that these digital skills are particularly relevant in online shopping, but perhaps less relevant in entertainment media (Kuoppamäki et al., 2017b).

In response to RQ5 ('To what extent do age and life course stage explain attitudes towards or practice of digital consumption?'), the article shows that mobile-based online shopping is closely related to life course stage and education. The role of age is particularly relevant during certain life stages: at ages 60 to 64 and 70 to 74 mobile technology is applied for online shopping least frequently. For some people, retirement age (approximately 60 to 64) might decrease opportunities for online shopping as the income level decreases. On the other hand, after retirement people may have more opportunities for leisure activities, which may create new needs and desires to shop online (Bouchard, 2014; Erickson et al., 2010). People aged 70 and over, on the other hand, less frequently own a mobile device, or if they do, they may lack socially transmitted digital skills, perceive more financial or management risks (Kwon and Noh, 2010; Lian and Yen, 2014; Livingstone et al., 2005), or may not consider online shopping as a relevant practice in their everyday life (see also Selwyn, 2004b). The application of mobile technology for entertainment purposes appears to be less determined by household type and instead to be related to age and gender. Similar to online shopping, respondents aged 60 to 64 and 70 to 74 utilise mobile technology for entertainment least frequently. When controlling for other socio-demographic variables, education and household do not remain significant, indicating that in mobile-based entertainment, life stage factors may possess a diminished influence on digital consumption.

Online shopping and entertainment media are digital practices that could be further interpreted from the national context. In Finland, these practices have been well established. Finland, as a Northern European country, is a geographically isolated country. Urbanisation lags behind other Nordic countries, and many regions are still predominantly rural areas (Grundfelder et al., 2018). To be able to survive in a globalising world, digital technologies are needed to minimise the effects of this geographical isolation. For consumers, online shopping and entertainment media as digital practices may provide the only sense of belonging to an international consumer community.

In summary, the study implies that older adults are active online shoppers but less active users of mobile-based entertainment media. The study proposes that online shopping is based on life course factors whereas entertainment media may be connected to generational preferences for certain types of media. In the article, however, it was not possible to detect the effect of social relationships on digital consumption beyond the effect of household structure, or to identify the effect of generational preferences on digital consumption in depth. Therefore, qualitative data from focus group discussions is examined in order to highlight the effects of age and life course stage on meaning-making processes regarding digital consumption.

6.3 Digital domestic technologies in the lives of older adults

The third article examines the role of age and life course stage in digital consumption by addressing shared understandings of digital domestic technologies among older and younger adults. Digital domestic technologies, i.e. digital technologies that are applied in domestic environments, are conceived of as one form of digital consumption. More specifically, the article aims to conceptualise these technologies in the context of housing and living. By analysing socially shared understandings among older and younger adults, the study conducts a qualitative age-based comparison between these two age groups.

In response to RQ2 ('How do shared understandings of digital technologies vary between older and younger adults?'), the study identifies socially shared meanings that are typical of older adults as well as meanings that older adults share with younger adults. First, older adults discuss digital technologies in relation to lacking digital skills and as something they need help with. Older adults perceive digital difficulties as emerging from their own personal qualities. Younger adults, on the contrary, understand difficulties in technology adoption with respect to time management in everyday life. Older adults express that the help received from other family members, particularly children, is significant in learning to use new devices. Older adults perceive functionality and safety as core values in the use of digital technologies. Safety is reflected in terms of relationships with their own parents, and the connection between digitalisation and safety is associated with old adulthood rather than middle age (Kuoppamäki et al., 2018).

In response to RQ4 ('How are digital technologies conceptualised as objects of consumption?'), the article shows that older adults and younger adults share the understanding of digital technologies as consumer objects, reflected through concepts of 'vanity', 'necessity', 'need' and 'desire'. The study suggests that digital technologies are not yet perceived as necessities but rather as commercial products. Digital consumption thus involves negotiations within a moral framework (Silverstone and Hirsch, 1992) that represents the profound distinction between consumer desires and normative restrictions.

In response to RQ5 ('To what extent do age and life course stage explain attitudes towards or practice of digital consumption?'), the study proposes that older adults sometimes see themselves as 'digital immigrants' (Prensky, 2001) who possess inadequate skills and a certain 'generational style' when operating in digital environments. Older adults distinguish themselves from 'digital natives' by expressing their unawareness of technology-based lifestyles that many young people are actively engaged with. However, life stage factors play a role in motivating, supporting and encouraging the adoption and use of digital technologies. For older adults, key motivators are 'staying in touch' with family members and finding suitable solutions for taking care of ageing parents (see also Charles and Carstensen, 2010; Hutteman, 2014; Thayer and Ray, 2006).

Digital domestic technologies have specific features in the Finnish context. In Finland, housing preferences and ideals have typically been associated with socio-cultural norms (Kemppainen et al., 2017). Particularly older people prefer living in a house of one's own, and they value privacy and functionality over aesthetic environment. The preference of living in a house of one's own may however result to a lack of mobility, limited job opportunities, and restricted access to physical services. From the Finnish perspective, digital domestic technologies may thus be utilised to minimize these negative effects related to the lack of urbanisation.

In summary, the article proposes that older adults interpret digital technologies through concepts of personal skills, social relationships and security. For young adults, technologies are conceptualised with meanings related to time management, self-control and privacy. All participants negotiated consumption of technologies with meanings related to need, necessity, vanity and desire. However, in this article it was not possible to examine whether or not the digital skills of late middle-agers actually appear inadequate in comparison to young adults or to detect the multidimensionality of age in relation to digital consumption beyond life course and generational experience. Therefore, in the fourth and final article, digital consumption is explored by considering bodily, mental and biographical aspects of ageing.

6.4 Multidimensional role of age in digital participation

The fourth article addresses the role of age and life course stage in digital participation by considering perceived challenges in online environments from the perspective of bodily, mental and biographical ageing. In this article, digital consumption is extended to digital participation, which involves active engagement in online environments. By utilising a multiple triangulation, the article first analyses the role of chronological age in participation in an electricity company's online services. Second, the article examines life course factors in digital participation from the perspective of bodily, mental and biographical ageing.

In response to RQ1 ('To what extent do older adults differ from younger adults in relation to attitudes towards and practice of digital consumption, if any?'), the study showed that older adults consume electricity company online services more frequently than young adults. Additionally, older adults report a lack of knowledge as a reason for the non-use of electricity company online services least frequently in comparison to other age groups. This indicates that the lack of digital skills is perhaps becoming a less relevant predictor of older adults' digital participation (Kuoppamäki, 2018). Particularly in online services that support the needs and desires of older people, the knowledge gap plays a less significant role than has been suggested previously (e.g. Helsper & Reisdorf, 2013; Näsi et al., 2012; Rasi & Kilpeläinen, 2016; Räsänen & Koiranen, 2016; Zickuhr & Madden, 2012).

In response to RQ4 ('How are digital technologies conceptualised as objects of consumption?'), the article addresses the role of internet-based interaction between consumers and service providers in digital participation (Lutz & Hoffman, 2017, Lutz et al., 2014). The article proposes that older adults may experience difficulties in digital communication with service providers. For older adults, online communication with customer service, connecting with a company's social media networks, receiving advertisement, information and status updates and sharing personal data within social relationships must include a meaningful contact. Maintaining this interaction between older adults requires sensitivity to enhance the customer experience in digital servicescapes (Kuoppamäki, 2018).

In response to RQ5 ('To what extent do age and life course stage explain attitudes towards or practice of digital consumption?'), the study proposes that the role of chronological age in digital participation may be decreasing, but the role of life course factors, such as multidimensionality of age, persist (Kuoppamäki, 2018). These life course factors represent the multidimensionality of age on three levels and can be further examined to characterise the role of life stage in digital participation. On a bodily level, older adults associate the use of digital devices with physical discomfort, which may reduce interest in participation in online environments. Bodily limitations accompanied by ageing may, on the other hand, increase interest in maintaining an active daily life with digital technologies. On a mental level, older adults possess environmentally conscious attitudes (Kuoppamäki et al., 2017a) which may result in limited intentions to purchase new technology but instead motivate older adults to track and save energy online. Changes in everyday routines, activities and relationships can enhance the need for face-to-face interaction and thus limit digital participation, but simultaneously provide new alternatives for social connectedness (see also Lüders & Gjevjon, 2017; Piper et al., 2016; Quan-Haase et al., 2016; Schreurs et al., 2017). On a biographical level, both normative and non-normative life events influence the probability of digital activity. The weakening social relationships typically accompanying ageing (Charles & Carstensen, 2010; Lüders & Gjevjon, 2017) create new needs and desires to improve social communication,

whereas increased leisure time may support active engagement with consumer culture (Kuoppamäki, 2018).

These digital participation practices illustrate many specific features of the Finnish society. Finland, as a one of the leading countries in digital transformation (Desai et al., 2002), has typically been among the first countries to develop new digital practices. Participation in electricity company's online services is one of these. The result show that for older adults, it is easy to adopt such digital practices that can be integrated to their own personal history, generational history, and life phase including multidimensional aspects of ageing. Finnish people with economical attitudes (Kuoppamäki et al., 2017a; Wilska, 2002) prefer such digital practices that embody these economical values. It also describes the pragmatic approach to digital innovations among Finnish population. For the Finns, such digital practices are easy to adopt that offer a clear-cut practical benefit for the users, with a perhaps less significant focus on design and aesthetic values.

In summary, the article highlights that adults 50 and over utilise electricity company online services more frequently than young adults. Seniors report lack of knowledge regarding online environments less frequently than young adults. The article suggests that life course factors (e.g., multidimensionality of age and other socio-demographic variables, such as occupation and income level) may better explain use of electricity company online services among seniors than chronological age.

7 DISCUSSION AND CONCLUSIONS

This dissertation has investigated older adults' usage of digital technologies by focusing on the role of age and life course stage in digital consumption. The study theoretically constructed a framework to conceptualise digital consumption in association with age, life course stage and generational experience. The study empirically investigated older adults as consumers of digital technologies, the mechanisms mediating consumption and digital technologies, and the effects of age and life course stage on digital consumption. In this final chapter, I synthesise the main results of the theoretical and empirical findings of the study.

Based on the theoretical findings of the study, the dissertation suggests that the generational or cohort approach to digital consumption overlooks the influence of life stages and transitions on the individual's propensity to adopt, use and consume certain technology. Despite certain birth cohorts being socialised with certain technologies and ways of using them in a more profound way than others, biographical changes in the individual life course are likely to affect to what extent and for what purposes technologies are used, and whether or not digital technologies are perceived as accessible devices in everyday life.

If the use and adoption of digital technologies is based on a generational or cohort effect, differences between age groups in the adoption and use of digital technologies are temporal, indicating that they will vanish in the future. This argument is supported by many studies, which address the fact that the digital divide will start reversing at the retirement of generations that used the internet in their work life (Friemel, 2014; Gilleard and Higgs, 2008; Peacock and Künemund, 2007). If the digital divide in adoption and use of digital technologies is likely to persist in the future, this suggests that the employ of digital technologies is associated with life course factors. This indicates that older adults permanently lag behind in the uptake of new technology, since new technological innovations evolve rapidly and supersede the old. This results in the transformation, not disappearance of the age-based digital divide. As new technologies and innovations evolve at a rapid rhythm, it can be argued that the 'digital natives' born in the 1980s will not necessarily be familiar with technological trajectories that will have been developed by 2050 (see also Dutton and

Reisdorf, 2016: 17). Therefore a digital divide may still exist in the future between younger and older age groups, particularly because ageing is necessarily accompanied by social and emotional effects that are somewhat universal and not dependent on socio-cultural factors. This results in the conclusion that generational or cohort membership is insufficient in explaining digital engagement, particularly among older adults.

Based on a literature review, this study suggests that the effect of age on digital consumption is increasingly influenced by life stage factors, i.e. changes in social relationships and household structures. Therefore generational categories provide an insufficient approach to the investigation of consumption of digital technologies among older adults. The effect of the life stage on the consumption of digital technologies is particularly significant in later life, where life transitions occur that weaken, not strengthen social and personal relationships and typically result in the decrease of these social relationships. The decrease of social relationships (social exclusion) is associated with digital exclusion (Helsper, 2012) and therefore, in the lives of older adults, where a decrease in social relationships is likely to occur (Charles and Carstensen, 2010), digital exclusion is partly explained by social exclusion, which simultaneously indicates that life course stage is a stronger determinant than generational or cohort membership in the consumption of digital technologies.

The study has highlighted the role of age and life course stage in digital consumption from the Finnish perspective. Finland, as a Northern European country, possesses features that could both advance and prevent digital transformation. The geographically distant location and small population size forces Finnish people to adopt and use digital technologies to survive in a fast-paced globalising world. These characteristics may result to a fast adoption of digital technologies among older adults as well. Older adults in Finland, being part of the 'Baby Boomer' generation, nevertheless have unique features in comparison to post-war generations in other European countries (Carr et al., 2012; Parment, 2013). Finland, having a long history with war, scarcity and economic depression, and a relatively short history with consumer culture, perhaps lacks a willingness and courage to fully engage itself to digital consumer practices. Particularly those practices that are related to gratification could be less identified among the Finnish older population.

7.1 Older adults as digital consumers

Research on ageing and consumption has seldom drawn attention to the uniqueness of the ageing population as consumers of digital technologies. The main predictor for consumption patterns among the older population has been derived from generational experience, identity or category (e.g. Biggs et al., 2007; Carr et al., 2012; Eastman and Liu, 2012; Edmunds and Turner, 2002a, 2002b; Gilleard and Higgs, 2005; Jones et al., 2008; Karisto, 2007; Parment, 2011, 2013; Smola and Sutton, 2002; Valentine and Powers, 2012). In recent years, the

relevance of generational categories as a main predictor of attitudes towards consumption has been contested, and biographical changes have been understood as the main driving forces for new routines and leisure activities (Bisogni et al., 2005; Bove and Sobal, 2006; Lamine, 2008; Plessz et al., 2016; Southerton, 2006). Even though popular images and media representations of certain generations as more self-indulgent than others still remain strong, this study showed that particularly ecological and self-indulgent attitudes towards consumption cannot be reduced to a certain birth cohort or generational experience, but rather that they are connected to life stage, such as household structure and education. Digital consumption patterns are hence influenced by social and cultural changes occurring at both the individual and societal level; the consumer groups that have greater social and cultural resources regarding education and household structure are more likely to participate more actively and consciously in consumer culture (see also Helsper, 2012). This has less to do with generational experience and more to do with other social, cultural and economic resources that change across the life course.

This study partially questions the assumption of older adults as 'digital immigrants' (Prensky, 2001) who are not willing to engage in digital environments and who lack the skills to do so. The study showed that older adults carry out mobile-based online purchases almost as often as younger adults, but mobile-based entertainment use is differentiated by age and gender, demonstrating that older adults apply mobile technology for entertainment in a less versatile way compared to younger adults. This, together with the finding of older adults as more ecological and less self-indulgent, results in the conclusion that digital practices with a focus on entertainment or self-indulgent purposes may not trigger the attention and interest of older adults in the same way as more practical or purposeful digital practices.

Consequently, the question should be how different dimensions of ageing create new alternatives for and appraisals of digital consumption, and how to encourage more active engagement in digital consumption across the life course and for consumers from various social, cultural and economic backgrounds. The study showed, for instance, that ecologically conscious attitudes tend to increase with ageing. Ecologically conscious attitudes nevertheless do not prevent active digital participation, as digital consumption in many cases is immaterial and focused on services instead of physical products. The profound distinction between older and younger consumers may therefore be about the extent to which older adults are willing to enjoy digital consumption, or engage with digital meanings that are constructed around gratification. Unwillingness to engage in digital consumer environments can be regarded as problematic at both the individual and societal level. At the individual level, digital participation requires understanding and a heightened sense of cultural meanings related to digital environments (see also Helsper, 2012). Without participation at the individual level, the cultural capital of digital consumers may remain undeveloped. This, on the other hand, promotes the underappreciation of digital culture at the societal level and may result in underdevelopment of digital services

that support the enhancement of quality of life, leisure activities, and mental and physical wellbeing.

In contrast to previous research (e.g. Helsper & Reisdorf, 2013; Näsi et al., 2012; Rasi & Kilpeläinen, 2016; Räsänen & Koiranen, 2016; Zickuhr & Madden, 2012), this study proposes that digital skills are becoming a less relevant predictor of an individual's tendency to adopt, use and consume digital technology. Older adults recognise that they need more help with digital technologies, but at the same time, they do not report lack of skills as a reason for the non-usage of digital services more frequently than young adults. In fact, adults aged 50 to 65 report lack of knowledge as a reason for the non-usage of electricity company online services least frequently in comparison to other age groups. Hence, it may not be a question of the actual skillset itself, but rather of older adults' own evaluations and perceptions of their skill level. Hence, this study supports the finding that self-efficacy (Durndell and Haag, 2002; Huber and Watson, 2014; Livingstone and Helsper, 2010), i.e. a positive evaluation of one's own capability to cope in difficult situations, may better determine interest in engaging in digital environments than the actual lack of a digital skillset. Hence, the study concludes that older adults are willing to learn new digital skills if they perceive that they have the necessary social and other resources to support the learning of new skills.

Research on social shaping of technology has addressed the role of socio-emotional conditions in the adoption and use of digital technologies (e.g. Shreuers et al., 2017). This study concludes that late middle-agers consider functionality and safety to be core values for digital devices. Safety is reflected in terms of social relationships, such as relationships with parents, and the connection between digitalisation and safety is associated with old adulthood rather than middle age. The need and desire for safety may reflect socio-emotional developments in late midlife (Charles and Carstensen, 2010). Psychological changes, such as changes in time horizon and perceived limitations (Carstensen, 2006) may result in changes in values placed on technologies. As ageing is sometimes accompanied by limitations and restrictions related to mobility or functionality, digital technologies may provide new resources to cope with these limitations. Safety as a core value may represent a need and desire to experience continuity. Thus digital technologies may minimise the perceived negative aspects of ageing, and ageing can provide new opportunities to apply digital technologies in ingenious ways. Active participation in digital consumption may therefore be regarded as one indicator to measure growth and wellbeing at the societal and individual level, suggesting that a higher level of active participation in digital consumption promotes better growth, wellbeing and development of cultural resources among individuals and societies.

In conclusion, the study proposes that older adults are selective users of digital technologies. They want to participate in meaningful digital environments that support their personal needs, goals, desires and aspirations. Although older adults sometimes perceive themselves as inferior in digital environments, they do not necessarily lack digital skills, or if they do, the skillset

only rarely becomes a conclusive factor in usage of digital technologies. Instead, other social and cultural resources define the extent to which older adults need encouragement or support in participation in digital consumption.

7.2 Mechanisms between consumption and digital technologies

On the basis of a theoretical literature review, this study proposed a framework for digital consumption that integrated literature on adoption and use of digital technologies, social shaping of technology, social relationships and household structure and digital participation. Considering theoretical approaches and empirical findings, the study categorises the mechanisms between consumption and digital technologies into skills, needs and desires and digital interaction. These categorisations describe the processes that integrate consumption and digital technologies and they can be further examined in relation to adoption and use of digital technologies, social shaping of technology, social relationships and household structure and digital participation.

First, digital skills are required to apply digital technologies in consumption and consumer practices. The role of digital skills is addressed in the adoption processes of digital technologies, in particular. In order to apply digital technologies in consumer practices, digital skills are acquired for management of various digital environments. In the adoption and use of digital technologies, this 'digital management' may thus become one factor through which to evaluate individual probability of online engagement. 'Digital management' can be understood as creation and co-creation of digital media in which consumers actively include themselves in digital environments through conscious participation, communication and online-based interaction. The concept of skills should thus be extended from access and understanding of online content to include active participation and co-creation of digital media, and primarily understood as such (see also Livingstone et al., 2005). As access to and ownership of digital technologies has spread throughout the consumer groups, and as in countries like Finland lack of access only rarely becomes a conclusive factor in digital engagement, other factors representing 'digital management' or active co-creation of digital media may become contributory factors for digital inequalities in the future. Through 'digital management' or 'management in digital environments' individuals and consumers are expected to consciously shape, manage and control their engagement, participation and presence in consumer environments. This, on the other hand, supports the idea that individuals should be, and most of all, have to be responsible for the learning and development of their digital skills on their own.

Research on adoption and use of digital technologies has previously addressed the role of personal factors, such as personality traits, attitudes and cognitive abilities in active online engagement (e.g. Barnard et al., 2013; Broady et al., 2010; Czaja and Lee, 2003, 2007; Gatto and Tak, 2008; Huber and Watson, 2014; Helsper and Reisfidorf, 2013; Dutton and Blank, 2015; Durndell and Haag,

2002; Morrill et al., 2013; Schreuers, 2017). These personal factors may have an influence on skills needed to manage digital environments in various ways. With ageing, personal factors can be argued to change: the personality develops, as do attitudes and cognitive abilities (e.g. Hutteman et al., 2014). These factors may influence the probability of adopting new digital skills or learning digital management in later life. Therefore, skills that are required for online shopping, for instance, may be difficult to acquire in later life.

Additionally, the study supports the finding that digital skills are shaped and transmitted within social relationships. The role of social relationships in gaining digital skills is nevertheless difficult to measure or confirm. Previous research proposes that social support that is received from social relationships plays a significant role in the adoption and use of digital technologies among older adults Gatto and Tak, 2008; Ling, 2008; Piper et al., 2016; Schreuers et al., 2017; Selwyn et al., 2005; Thayer and Ray, 2006; Quan-Haase et al., 2016). Particularly the presence of young people influences the probability of older adults' digital engagement. Young people may provide a reason for acquiring digital technologies, they may increase interest in utilising technologies for various purposes, or they may teach or motivate adults to improve digital skills (Eynon and Helsper, 2015).

However, the study was not able to detect a straightforward relationship between digital consumption and social relationships. On the one hand, the presence of children in the household may positively affect older adults' tendency to apply mobile technology in online shopping, but in mobile-based entertainment, such a connection was not pronounced (Kuoppamäki et al., 2017b). On the other hand, older adults frequently mention the role of children and other family members in motivating and teaching digital skills (Kuoppamäki et al., 2018). The role of social relationships, or the presence of children in the household, in the development of older adults' digital skills may therefore be entangled. Young people may positively affect older adults' digital participation in cases where the level of digital skills required is high and where older adults already possess an interest in certain online activities. The role of social relationships in digital skill acquisition can therefore be characterised as 'mediating', rather than 'conclusive'.

Second, consumption of digital technologies is influenced by consumption styles, patterns, preferences and attitudes. This suggests that the way people orient themselves towards consumption in general may represent attitudes and ideals regarding digital technologies in particular. Therefore this study proposes that digital consumption should be conceptualised in relation to, and moreover cannot be distinguished from consumer lifestyles. Among older adults, this may suggest that digital consumption is perceived through a moral framework. This study highlighted that older adults possess more ecological and less self-indulgent attitudes towards consumption than young adults (Kuoppamäki et al., 2017a). These attitudes may support or prevent digital consumption. On the one hand, more ecological attitudes towards consumption may result in a smaller tendency to purchase new digital devices on a frequent basis. From this

perspective, digital consumption is equated with purchasing new consumer goods that appear on the market at a rapid pace. On the other hand, ecological attitudes reported by older adults may enhance digital consumption *if* these digital practices simultaneously support environmentally conscious activities or socially responsible ways of living. A fundamental contradiction between older adults' values and digital consumer culture may exist until older adults start co-creating their own digital arenas and platforms that transform and contribute to the diversity of digital culture.

Digital consumption, and digital culture more generally, typically embraces values related to self-indulgence. Self-indulgent attitudes towards consumption, however, are more typical for young adults than for older adults (Kuoppamäki et al., *ibid.*). This indicates that older adults may be hesitant to participate in digital practices that embrace self-indulgent values. The needs and desires of older adults, which ultimately define the connection between usage of digital technologies and consumption, can be conceptualised as altruistic. This constitutes an enduring challenge for the application of digital technologies in consumer practices among older adults.

Third, consumer environments are shaped by digital interaction between consumers and service providers (Lutz & Hoffman, 2017, Lutz et al., 2014). Digital interaction provides tools for consumption and creation of personal data. This study nevertheless proposes that among senior consumers, digital consumption in participatory media may be threatened by perceived difficulties in digital interaction. The development of digital consumer environments highlights the co-creation between consumers and service providers, which simultaneously requires the active input of consumers. Older adults, however, may be unfamiliar with or lack motivation to participate in sharing personal information or creating their personal story in online environments. This can create profound contradictions for participation in digital environments among older adults.

Digital interaction thus connects not only consumers and service providers but also individuals and social groups from wider contexts. Practices of digital consumption highlight the digital interconnectedness between individuals and social groups. This indicates that the role of social relationships in mediating consumption and digital technologies operates on digital and non-digital levels. At the same time, the interaction styles and conventions in digital and non-digital environments may be quite distinct, which is why older adults may perceive difficulties in communication in online environments. Digital consumer environments are transforming into interactive media that create hybrid and integrative practices between the digital and non-digital worlds. This supports the idea that consumption and digital technologies are profoundly intertwined.

7.3 The role of age and life course stage in digital consumption

The main focus of this study has been to characterise, evaluate and construct an understanding of the roles of age and life course stage in digital consumption. This area of research has been investigated in four articles that included five different data sets. Each article and data set has therefore contributed in an independent manner. Despite the fact that data sets should be perceived as independent from each other, it is possible to formulate a deeper understanding on the basis of the different findings. In the theoretical framework of the study, this dissertation aimed to theoretically separate the roles of age and life course stage from each other. In this discussion section, the study continues to cover age and life course stage as factors relatively independent of each other.

First, the study concludes that the role of age in digital consumption is not necessarily static but rather evolves throughout the years. The study found that, depending on the year under examination, attitudes towards consumption are influenced by chronological age in diverse ways. In 1999 and 2004, chronological age appeared as a significant determinant of ecological and economical attitudes towards consumption. In later years, the role of age diminished and ecological and economical attitudes towards consumption were instead predicted by life stage factors, such as household type and other socio-demographic determinants. This supports the finding that the year under examination, which may reflect macro-economic changes in the society, does have an influence on the extent to which different individual and socio-demographic micro factors affect digital consumption. Individual and socio-demographic micro factors thus cannot be separated from socio-economic macro factors, which supports the finding that wider trends in societies influence digital consumer behaviour at the individual level (see also Laaksonen et al., 1998; Wilska, 2002; Räsänen, 2003; Autio and Heinonen, 2004). The role of individual factors, such as chronological age, may therefore be dynamic and changing, implying the unstable role of individual factors in digital consumption.

The influence of chronological age on digital consumption depends on the digital practice. Chronological age influences the frequency and type of use of different digital practices in different ways. The study found that mobile-based online shopping is best predicted by life course stage and education. Chronological age remains significant during certain life stages: from the ages 60 to 64 and 70 to 74 mobile technology is applied in online shopping least frequently. Ages 60 to 64 correspond to the retirement age, when the income level temporarily decreases. After retirement and before age 70, people may invest in leisure activities that support active ageing (Bouchard, 2014; Erickson et al., 2010). After the age of 70, people start to adapt to old adulthood, which may decrease interest in self-indulgent online activities. These empirical findings hence suggest that the role of chronological age and life stage are highly intertwined and in most cases, cannot be empirically separated from each other. Certain life transitions are still connected to chronological age, although people still have

ever more individualised opportunities to pursue personal interests, lifestyles, needs and desires that are separable from chronological age. Therefore the role of chronological age can be illustrated as a fundamental factor or 'influencer' that is later shaped by personal transitions, events, situations and environmental factors that arise across the life course.

The role of chronological age may therefore decrease in some but persist in other online practices. This study showed that use of mobile-based entertainment is a digital practice that is strongly connected to chronological age. As such, some online practices may be less influenced by external or environmental factors. Generational experiences in the usage of digital media could also be constituted of personal and individual memories that remain strong across the life course (see also Bolin, 2014). Some memories, events and circumstances will persist as unchangeable and people may want to return to these memories, events and circumstances in later life. This also constitutes the experience of nostalgia, which is shaped by individual experiences. The results of this study hence propose that instead of understanding generational usage of digital media in terms of a collective identity, it should be comprehended as an individual experience.

The role of age and life course stage in digital consumption can therefore be conceptualised in terms of 'digital identity', which describes the generation-based sense of self in relation to digital technologies. This study showed that older adults sometimes perceived their skills to be inferior or inadequate when operating in digital environments. Rather than lacking actual digital skills, the study proposes that self-efficacy or trust in one's own abilities may play a significant role in the digital activities that older adults perceive as important in their everyday life. This 'digital identity' or perceived sense of self and one's own digital skills may be connected to both generational and life stage factors. On the one hand, older adults may share a sense of themselves as 'digital immigrants' (Prensky, 2001) who possess their own style and habits in the usage of digital technologies. This is pronounced in older adults' speech when they distinguish themselves from 'digital natives' by expressing their inability to relate to the technology-based lifestyle of younger people. On the other hand, older adults' digital identity may be connected to their social surroundings and relationships with other people. The styles, habits and conventions of family members, friends and relatives may be transmitted between older adults and their networks, which may result in both increased and decreased use of digital technologies (see also see also Lüders & Gjevjon, 2017; Piper et al., 2016; Quan-Haase et al., 2016; Schreuers et al., 2017).

This study thus addresses the changing and dynamic role of chronological age in digital consumption. By exploring the diversity of digital practices, the study acknowledges that while the significance of chronological age in digital consumption might be decreasing, the role of life course factors and other dimensions of age persist (Kuoppamäki, 2018). The role of chronological age may be decreasing, particularly in the digital practices that represent values and ideals that older adults regard as important. Taking into consideration the existing

literature on ageing and digital technologies (Czaja & Lee, 2007; Eynon & Helsper, 2014; Gatto & Tak, 2008; Helsper & Reisdorf, 2013; Morrill et al., 2013), this study proposes life stage factors that describe the effects of ageing and life stage on digital consumption. These life stage factors can be categorised into bodily, mental and biographical ageing (Kuoppamäki, 2018).

At these levels, age and life course stage influence digital consumption in a multidimensional manner. First, the life course may be conceptualised at a bodily level, which represents age-related changes that typically follow chronological age. At a bodily level, chronological age may influence physical discomfort associated with the use of digital devices, but simultaneously enhance interest in maintaining an active daily life through digital consumption (Kuoppamäki, 2018). At a mental level, chronological age together with life stage factors may contribute to environmentally conscious attitudes, which may either increase or decrease interest in digital consumption. The bodily and mental levels can therefore be conceptualised in relation to socio-emotional ageing (see also Charles and Carstensen, 2010). Socio-emotional ageing, in turn, may influence digital skills, such as self-efficacy, cognitive abilities and attitudes towards technology (see also chapter 4, Table 2). At the individual level, bodily and mental ageing are thus intertwined with digital skills and attitudes towards technology. Due to age-related changes on the bodily and mental level, the ability to maintain or develop new digital skills may thus be reduced.

Second, the life course may be perceived at a biographical level, which represents life transitions such as changes in social and personal relationships and life circumstances that occur across the life course. As I suggest in my article (Kuoppamäki, 2018), at a biographical level older adults may encounter changes in everyday routines, activities and relationships, which may decrease interest in digital consumption but also provide opportunities for digital connectedness (see also Lüders & Gjevjon, 2017; Piper et al., 2016; Quan-Haase et al., 2016; Schreuers et al., 2017). At the biographical level, the role of the life course is conceptualised in relation to social relationships that are intertwined with both normative life events, such as retirement, and occasional accidents (Charles & Carstensen, 2010; Lüders & Gjevjon, 2017). At the biographical level, social relationships contribute to the creation of new needs and desires related to digital consumption. For instance, a need to develop or maintain social communication together with increased leisure time may result in more active participation in digitally mediated communication. As this study indicated, changes in household structure may be intertwined with attitudes towards consumption (Kuoppamäki et al., 2017a), which supports the idea of interconnectedness between social relationships and attitudes towards consumption.

Third, the life course may be regarded in relation to generational user history, which describes the generational experience with digital technologies across the life course. This study nevertheless proposes that generational or cohort effects have a limited explanatory power in digital consumption. The study concluded that in attitudes towards consumption, generational effects were pronounced among older adults only regarding economical attitudes in 1999

(Kuoppamäki et al., 2017a). In other attitudes towards consumption, generational or cohort effects were not pronounced. Although it was not possible to detect generational effects straightforwardly in other data sets, perceived life course effects together with the existing literature support the idea that generational experience regarding digital technologies is not static or unchangeable across the life course. The study therefore concludes that the life stage factors presented above change and transform generational user history.

As the previous research on determinants of digital consumption implies, generational user history corresponds to digital literacy, previous experience with digital technologies, digital identity, cultural resources and macro-economic changes (chapter 4, Table 2). These factors can be summarised under the category of digital identity. The concept of 'digital identity', discussed above, refers to a 'generation-based sense of self in relation to digital technologies'. This includes digital literacy together with previous experience with digital technologies.

This study nevertheless concludes that digital literacy may be separated from digital skills. Digital literacy may be understood as a more comprehensive tendency to consume or co-create digital media, whereas digital skills refer to a separate skillset of operating digital devices. The study concludes that digital literacy corresponds with generational user history in two ways: first, previous experience defines which technological devices are perceived as favourable, and second, cultural resources provide a generation-based understanding of the digital media landscape. On the basis of both theoretical and empirical findings, the study concludes that digital identity is built in relation to macro-economic changes that define needs and desires related to digital consumption.

Biographical ageing and life transitions, which are connected to digital identity, social relationships, and emotional ageing, transform generational user history. This suggests that although digital identity is defined by generational experience, life transitions influence digital identity and emotional ageing through the role of social relationships. The empirical findings of this study propose that the role of social relationships is particularly intertwined with needs and desires, attitudes towards consumption and digital skills. Rather than straightforwardly determining these factors, the relationship can be characterised as interactive. As presented in chapter 4, Table 2, perceived usefulness and ease of use can be interpreted as reflecting life stage and thus they represent consumer needs and desires related to digital consumption. Additionally, the empirical findings of the study found that household structure and interpersonal relationships influence needs and desires (Kuoppamäki et al., 2018), attitudes towards consumption (Kuoppamäki et al., 2017a) and digital skills (Kuoppamäki et al., 2017b). The role of social relationships in these three factors can thus be evaluated as relatively strong.

7.4 Concluding remarks

All data necessarily include limitations that may influence the interpretations and conclusions that are constructed on the basis of the data. In quantitative research, reliability refers to internal consistency or research design, whereas validity indicates the ability of research design to measure the content they were intended to measure. In qualitative research, reliability refers to the consistency of the research approach across data collection, and validity indicates that the researcher checks the accuracy of the findings (Creswell, 2014: 160-161, 201). In order to minimise these limitations, this study utilised several data sets to construct a more profound understanding of the research area. Despite this, the selected data sets necessarily involve certain limitations that should be taken into consideration.

The first limitation has to do with the representativeness of the data. Apart from the survey *Finland – Consumption and Lifestyle*, the survey data represented only a self-selected group of internet-users. In the first survey, *Finland – Consumption and Lifestyle*, the data was representative of the Finnish-speaking population aged 18 to 74. In the second survey, *MTV – Internet Use, Devices and Attitudes towards the internet*, the data represented a sample of Finnish-speaking television viewers of a Finnish media company. In the third survey, *Electricity Consumption and Digital Environments*, the data covered a convenience sample of Finnish-speaking internet users. In the focus group discussions, consumers of a certain company were self-selected for the interview. Therefore, each data set provided a unique but not all-encompassing view of digital consumers. Each data set formed a one-of-a-kind glimpse of digital consumers and thus contributed to the enrichment of the understanding of older adults as digital consumers.

The second limitation has to do with the comparativeness of the data. As each data set reflected a unique set of consumers, the data sets cannot be compared to each other but should rather be evaluated as separate from each other. In the traditional form of mixed method research, integrating quantitative and qualitative data is typically understood as if they describe the same phenomenon of the research area (see also Creswell, 2014). However, the data sets utilised in this study give unique descriptions of the phenomenon. The survey *Finland – Consumption and Lifestyle* describes consumers aged 46 to 60 and 18 to 30. The survey *MTV – Internet Use, Devices and Attitudes Towards the Internet* describes consumers aged 55 to 74 and under 55. The third survey, *Electricity Consumption and Digital Environments*, involves consumers in the age groups 18 to 30; 31 to 49; 50 to 65; and over 65. In the focus group discussions, the age groups consisted of consumers 18 to 30 and 50 to 65 and over 50. The difficulty in defining just one group of older adults illustrates the inconvenience associated with fixed age categories more generally. The age categories utilised in this study should not be evaluated as fixed classifications but rather as different techniques for approaching the question of age in digital consumption. Therefore

each data set characterises older adults as digital consumers in an independent way. Despite these limitations, the data sets employed in this study provided a comprehensive overview of the research area, including both nationally representative and self-selection samples, and participants in various age groups from both local areas and across Finland.

In the examination of the role of age and life course stage in digital consumption, the study has focused on older adults', approximately aged 50 to 74, usage of digital technologies. This age group covers those adults who are living their active old age, and who are healthy enough to take part in digital consumer environments (e.g. Ahonen and Vaittinen, 2015; Atkinson and Hayes, 2010; Biggs et al., 2007; Drolet et al., 2010; Jones et al., 2008). Even though the usage of digital technologies continues across the whole life course, in this study it was not possible to include adults aged 74 and over. For the 'oldest old', challenges and opportunities for digital participation are different in comparison to 'youngest' old. The future study could therefore build a new understanding of the transition phases between 'young' and 'old' adulthood to detect those factors that change in the later stages of early old adulthood in relation to digital consumption.

As a result of versatile data and analytical strategies, the results of this study have several theoretical and empirical implications for future research. From a theoretical perspective, the study created new insights on the multidimensional role of age in digital consumption. In previous research, these dimensions of ageing have not been previously synthesised. The focus of previous research has been either on chronological age (e.g. Czaja and Lee, 2003, 2007; Deng et al., 2014; Durndell and Haag, 2002; Hawtorn, 2007; Helsper and Reisdorf, 2013; Huber and Watson, 2014; Lee et al., 2011, Millward, 2003; Morrill et al., 2013; Morris et al., 2007) or generational experiences (e.g. Bolin, 2016; Bolin and Wessman, 2009; Gillear and Higgs, 2009; Zillien and Hargittai, 2009, van Deursen and Helsper, 2015). Although the role of life stage factors in usage of digital technologies has been acknowledged (e.g. (Comunello et al., 2015, 2016; Eynon and Helsper, 2015; Gatto and Tak, 2008; Ling, 2008; Quan-Haase et al., 2016, 2017; Salovaara et al., 2010; Schreuers et al., 2017; Selwyn et al., 2005; Selwyn, 2004b), the understanding of these factors has been limited in relation to both consumption and usage of digital technologies. This study theoretically synthesised the previously disparate knowledge on the multidimensional role of age in digital consumption. The study showed that, although empirically the effects of these factors are often intertwined, theoretically different dimensions of ageing can also be evaluated separately from each other.

At the empirical level, the proposed conceptualisation of the role of age and life course stage in digital consumption has implications for future research. This study created a new understanding of the life stage factors that can be distinguished at bodily, mental and biographical levels (Kuoppamäki, 2018). Empirically, future research could focus on these aspects of ageing and digital technologies in a more detailed way. For instance, body changes accompanied by ageing can have a lasting impact on the usage of digital technologies. Bodily

changes or individuals' perception of these changes are nevertheless highly subjective, and meanings and ideals related to these changes are socially and culturally maintained. Hence an age-positive approach to bodily ageing, or a more conscious recognition of bodily limitations in general, could decrease the sense of inconvenience that older adults may experience in the usage of new digital technologies or service environments. A broader application of digital technologies in old adulthood requires cultural changes related to perceptions, ideals and values regarding bodily ageing.

From the perspective of mental ageing, the study concludes that some values and attitudes do change with ageing and across the life course (Kuoppamäki et al., 2017a). Therefore, life stage should be perceived as a relative indicator of a person's level of digital engagement. The role of age should be understood in relation to a more profound understanding of the person's life stage. As individual life courses become more personalised and fragmented, traditional socio-demographic factors, such as education, household structure and income level may lose their explanatory power in the future, or at least the role of these factors should be comprehended in relation to other factors, not as separate determinants of digital consumption. Similar to bodily ageing, the aspect of mental ageing is also highly subjective and personalised, and mostly describes the subjective experience of ageing, rather than the measurable aspects related to it (such as chronological age). These subjective experiences could be the focus of future research regarding ageing and digital technologies.

In the future, biographical changes across the life course should be examined in more detail. The focus of this study has been on the household structure, which provides an insufficient approach to changes in social and personal relationships. Throughout the study, this dissertation has proposed that the social environment, networks and personal relationships form a framework for older adults' usage of digital technologies. Future research could create a new measurement technique to evaluate the role of social relationships in digital consumption. This measurement technique would have to involve understanding of the various mechanisms mediating consumption and digital technologies, which in this study were categorised into digital skills, needs and desires, and digital interaction. A focus of future research could be, for instance, the extent to which social relationships influence or transform emerging needs and desires, and the processes through which digital interaction could be improved to ensure active digital engagement across the life course.

YHTEENVETO (FINNISH SUMMARY)

Digitaaliset teknologiat ovat osa arkipäivän kulutusympäristöjä. Kulutus yhdessä muiden yhteiskunnan toimintojen kanssa on muuttunut digitaaliseksi, mikä tarkoittaa digitaalisten teknologioiden hyödyntämistä kulutuksen välineenä tai sen kohteena. Digitaalisten teknologioiden käyttö osana kulutusta tai muita arkipäivän käytäntöjä on kuitenkin eriytynyt yksilöiden, ryhmien ja yhteisöjen välillä. Aiemmassa tutkimuksessa erityisesti vanhempien, noin 50-74-vuotiaiden on havaittu käyttävän digitaalisia teknologioita nuoria kuluttajia vähemmän ja erilaisiin käyttötarkoituksiin. On esitetty, että digitaalisten teknologioiden käyttö on iän mukaan jakautunut niin, että nuorten ja vanhempien välille on muodostunut digitaalinen kuilu.

Väitöskirjatutkimuksen aiheena on vanhempien aikuisten, noin 50-74-vuotiaiden digitaalisten teknologioiden käyttö osana erilaisia kulutusympäristöjä. Väitöskirjatutkimuksessa tätä aihepiiriä lähestytään tutkimalla iän ja elämänvaiheen moniulotteista yhteyttä digitaaliseen kuluttamiseen. Tutkimuksen teoreettinen viitekehys muodostuu teknologian omaksumisen ja käytön sekä sukupolven ja elämänvaiheen käsitteistä, joiden pohjalta muodostetaan kehys vanhempien aikuisten digitaalisen kulutuksen tarkasteluun.

Tutkimuksen ensimmäisenä tavoitteena on muodostaa käsitys vanhemmista aikuisista kuluttajina tarkastelemalla eroja vanhempien ja nuorempien kulutusasenteissa ja digitaalisten teknologioiden käytössä. Tutkimuksen toisena tavoitteena on käsitteellistää niitä mekanismeja, joiden kautta kulutus ja teknologioiden käyttö ovat yhteydessä toisiinsa. Kolmanneksi tutkimus pyrkii erottamaan iän ja elämänvaiheen vaikutukset toisistaan kysymällä, missä määrin ikä ja elämänvaihe selittävät digitaalista kulutusta, ja voidaanko digitaalisessa kulutuksessa havaita sukupolviin liittyviä asenteita.

Tutkimuksessa hyödynnetään sekä kvantitatiivisia että kvalitatiivisia aineistoja ja menetelmiä. Tutkimuksen ensimmäinen aineisto koostuu Suomi - Kulutus ja elämäntapa postikyselytutkimuksesta, joka on kerätty edustavana otoksena suomalaisista vuosina 1999 (N=2,417), 2004 (N=3,574), 2009 (N=1,202) ja 2014 (N=1,350). Tutkimuksen toisena aineistona on online-kysely internetin käytöstä, laitteista ja asenteista, joka on kerätty edustavana otoksena suomalaisen televisiokanavan katsojapaneelistä (N=322). Tutkimuksen kolmantena aineistona on online-kysely sähköyhtiön asiakkuudesta, joka koostuu itse valikoiduista suomenkielisistä internetinkäyttäjistä (N=1,322). Tutkimuksen neljäntenä aineistona fokusryhmähaastattelut (N=8), jotka toteutettiin Asuntomessuilla vuonna 2015 68 osallistujalle. Tutkimuksen viidentenä aineistona hyödynnetään toisia fokusryhmähaastatteluita (N=5), jotka kerättiin Jyväskylän alueen sähköyhtiön asiakkaille (N=29).

Tutkimuksen tulokset osoittavat, että kaikkina tarkasteluvuosina vanhempien aikuisten asenteet kulutusta kohtaan olivat nuoriin aikuisiin verrattuna ekologisemmat ja vähemmän nautintohalusimmat. Vuosina 2009 ja 2004, vanhempien aikuisten kulutusasenteet näyttäytyivät nuoriin aikuisiin verrattuna säästäväisemmiltä, mutta erot säästäväisissä kulutusasenteissa eivät säily-

neet myöhempinä tarkasteluvuosina. Vanhemmat aikuiset käyttävät mobiiliteknologiaa, eli älypuhelinta tai tablettitietokonetta verkko-ostamiseen lähes yhtä usein kuin nuoret aikuiset. Mobiilivälitteinen viihdekulutus sen sijaan on eriytynyt iän ja sukupuolen mukaan siten, että vanhemmat aikuiset, ja erityisesti 55–74-vuotiaat naiset käyttävät mobiiliteknologiaa viihteeseen nuoria aikuisia harvemmin. Vanhemmat aikuiset hyödyntävät sähköyhtiön sähköisiä asiointipalveluja useammin kuin nuoret aikuiset. He eivät myöskään ilmoita taitojen puutetta syynä digitaalisten palveluiden käytön esteelle yhtään useammin kuin nuoret aikuiset. Vanhemmat aikuiset kuitenkin keskustelevat digitaalisista teknologioista taitojen näkökulmasta ja mainitsevat niiden käyttöön liittyvistä epämukavuuksista kuitenkin nuoria aikuisia useammin. He ilmoittavat saavansa tukea perheenjäseniltä, ystäviltä ja lapsilta digitaalisten teknologioiden käytössä ja mainitsevat arvostavansa laitteiden käyttöön liittyvää toiminnallisuutta ja turvallisuuden kokemusta.

Tutkimuksessa todetaan, että digitaalinen kulutus on yhteydessä digitaalisiin taitoihin, ja erityisesti mobiilivälitteinen verkko-ostaminen vaatii erityisiä digitaalisia taitoja digitaalisten ympäristöjen hallintaan ja koettuihin riskeihin liittyen. Digitaaliset taidot siirtyvät ja välittyvät osin sosiaalisten verkostojen, kuten ystävyys- ja perhesuhteiden välityksellä. Digitaaliset taidot ovat tärkeitä verkko-ostamisessa, mutta hieman vähemmän tärkeitä digitaalisen viihteen kulutuksessa. Tutkimuksessa haastatellut vanhemmat aikuiset suhtautuvat kriittisesti digitaaliseen kodin teknologiaan, ja uusimpia kodin digitaalisia sovelluksia ei vielä koeta välttämättömiksi arjen kannalta. Sen sijaan vanhemmille aikuisille verkossa tapahtuva digitaalinen vuorovaikutus on tärkeässä roolissa digitaalisen aktiivisuuden vahvistamisen näkökulmasta.

Tutkimuksen pääasiallisena tuloksena on uudenlainen ymmärrys iän ja elämänvaiheen yhteydestä digitaalisen kulutukseen. Iän ja elämänvaiheen vaikutusta digitaaliseen kuluttamiseen tarkasteltiin kulutusasenteiden, mobiilivälitteisen verkko-ostamisen ja viihdekulutuksen, digitaalisten kodin teknologioiden sekä sähköyhtiön digitaalisten palveluiden näkökulmasta.

Vuosina 1999 ja 2004, ekologiset ja säästäväiset kulutusasenteet olivat vahvimmin yhteydessä vastaajan kronologiseen ikään. Myöhempinä vuosina erot kulutusasenteiden välillä olivat vahvimmin yhteydessä elämänvaiheeseen, jota tässä tutkimuksessa tarkasteltiin kotitaloustyyppin ja muiden sosiodemografisten taustatekijöiden näkökulmasta. Tutkimuksessa todetaan, että vain säästävien kulutusasenteiden kohdalla kulutusasenteista oli havaittavissa lievä sukupolvivaikutus. Tämä oli näkyvissä vuonna 1999 ikäryhmään 46–60 kuuluvien vastaajien kohdalla. Sen sijaan nautintohaluiset asenteet kulutusta kohtaan liittyivät vahvimmin vastaajan ikään, ja niiden kohdalla sukupolvi- tai kohorttivaikutusta ei havaittu. Vastaajan kronologinen ikä selittää vain osan kulutusasenteista, ja erityisesti ekologisten ja säästävien kulutusasenteiden kohdalla kronologisen iän yhteys kulutusasenteisiin on viime vuosina lieventynyt. Kotitaloustyyppin, ja erityisesti lasten läsnäolon kotitaloudessa, vaikutus kulutusasenteisiin on melko vahva ekologisissa ja säästäväisissä kulutusasenteissa.

Tutkimuksen mukaan mobiilivälitteinen verkko-ostaminen on yhteydessä elämänvaiheeseen, jota tässä tarkasteltiin kotitalouden rakenteiden ja koulutuksen kautta. Mobiilivälitteinen viihdekulutus ei ole yhteydessä elämänvaihemuuttujiin, kuten kotitaloustyyppiin tai koulutukseen, vaan ensisijaisesti ikään ja sukupuoleen. Keskustellessaan digitaalisesta kodin teknologiasta vanhemmat aikuiset tekevät eronteon oman sukupolven ja nuoremman digitaalisen sukupolven, ns. diginatiivien välillä. Elämänvaiheeseen liittyvät tekijät vaikuttavat siihen, millä tavoin ja missä määrin vanhemmat aikuiset saavat tai kokevat tarvitsevansa tukea, apua tai motivaatiota digitaalisen teknologian omaksumisessa ja käytössä. Tutkimuksessa todetaan, että kronologisen iän merkitys digitaalisessa kulutuksessa on siten vähenemässä, mutta elämänvaiheeseen liittyvien tekijöiden vaikutus säilyy. Nämä elämänvaiheeseen liittyvät muuttajat voidaan käsittää fyysisellä, henkisellä ja elämänkulullisella tasolla. Fyysisellä tasolla vanhemmat aikuiset voivat kokea epämukavuutta digitaalisen teknologian käytössä, mutta toisaalta ikääntymiseen liittyvät fyysiset muutokset voivat motivoida ja kannustaa digitaaliseen kulutukseen. Henkisellä tasolla ympäristötoiset asenteet voivat vähentää vanhempien aikuisten kiinnostusta uuden teknologian ostamiseen mutta samanaikaisesti motivoida sellaiseen digitaaliseen kulutukseen, joka tähtää ekologiseen elämäntapaan, kuten sähkön säästämiseen. Elämänkulullisella tasolla sekä normatiiviset että ei-normatiiviset elämäntapahatomat vaikuttavat halukkuuteen sitoutua digitaalisten palveluympäristöjen käyttöön.

Tutkimuksen johtopäätöksissä todetaan, että vanhemmat aikuiset ovat valikoivia digitaalisia kuluttajia; digitaaliset taidot, tarpeet ja digitaalinen vuorovaikutus muokkaavat digitaalisia kulutusympäristöjä, ja iän ja elämänvaiheen vaikutus digitaaliseen kulutukseen on muuttuva ja dynaaminen. Pääasiallisena johtopäätöksenä tutkimus esittää, että digitaalisen kulutuksen tarkasteleminen vain digitaalisten sukupolvien näkökulmasta on lähestymistavaltaan riittämätön, ja toteaa, että elämänvaiheeseen liittyvät tekijät, kuten fyysinen, henkinen ja elämänkulullinen ikääntyminen muuttavat yksilön taipumusta kuluttaa digitaalisesti.

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ORIGINAL PAPERS

I

AGEING AND CONSUMPTION IN FINLAND: THE EFFECTS OF AGE AND LIFE COURSE STAGE ON ECOLOGICAL, ECONOMICAL AND SELF-INDULGENT CONSUMPTION AMONG LATE MIDDLE-AGERS AND YOUNG ADULTS BETWEEN 1999 AND 2014

by

Kuoppamäki, S., Wilska, T-A. & Taipale, S.

International Journal of Consumer Studies, 41 (4), 457-464.

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Ageing and consumption in Finland: The effect of age and life course stage on ecological, economical and self-indulgent consumption among late middle-agers and young adults between 1999 and 2014

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Abstract

Previous studies on ageing consumers have mainly focused on chronological age and generational values or studied ageing and consumption with cross-sectional data. Few quantitative studies exist that examine the effect of age together with life course on consumption using longitudinal data. To bridge this gap, the article examines ageing and attitudes towards consumption in Finland, focusing particularly on late middle-agers (46–60 year-olds) in comparison with young adults (18–30 year-olds) between 1999 and 2014. The article explores three consumption patterns based on attitudinal statements: ecological, economical and self-indulgent consumption. Through analysis of a nationally representative survey study in Finland (N = 8,543), the article reveals that in all years under examination, late middle-agers reported more ecological attitudes towards consumption than young adults. In 1999 and 2004, the attitudes of late middle-agers appeared more economical, but age-related differences in economical attitudes disappeared between 2009 and 2014. In each year, late middle-agers reported less self-indulgent attitudes than young adults, and these age-related differences did not remarkably change between 1999 and 2014. The results indicate that in 1999 and 2004, ecological and economical attitudes towards consumption were best predicted by age at the year of the study. In later years, ecological attitudes were more closely determined by life course stage, that is household type and other socio-demographic determinants. Regarding economical attitudes, generational or cohort effects were pronounced among late middle-agers in 1999. In contrast, the significance of age remained throughout the years for self-indulgent attitudes, indicating the absence of generational or cohort effects.

KEYWORDS

age, attitudes, consumers, late middle-agers, life-course, young adults

1 | INTRODUCTION

Ageing consumers are rapidly becoming the most affluent consumer segment in the marketplace (Biggs, Phillipson, Leach, & Money, 2007; Drolet, Schwartz, & Yoon, 2010; Jones et al., 2008). In Finland and worldwide, the income levels of those aged 55 to 65 have risen and this group also consumes more than 30 years ago (Ahonen & Vaittinen, 2015; Atkinson & Hayes, 2010). The factors that affect the consumption patterns of older people are not entirely known. Previous studies of ageing consumers have mainly focused on chro-

nological age (Drolet et al., 2010). The majority of such studies have interpreted the consumption patterns as reflecting generational values (Carr, Gottlieb, Lee, & Shah, 2012; Eastman & Liu, 2012; Parment, 2013), and studied consumers with cross-sectional data (e.g., Katz-Gerro, 2002; Wilska, 2002). Most quantitative studies on ageing consumers have ignored the effect of life course stage, typically understood as biographical changes and changes in household structures, on consumption (Elder & Shanahan, 2007; Hutchison, 2011; Settersten, 2003). During periods of economic growth, older adults nevertheless have decreased financial responsibility for their

children and more opportunities to spend on themselves as daily consumption is no longer affected by the needs of other family members (Jones et al., 2008). Intergenerational relationships, being influenced by macro-economic situations, might, however, be subject to change due to the long-standing economic depression and the increased income inequality among the working-age population (Ahonen & Vaittinen, 2015).

In previous research, age and life course-related differences between consumers have been found particularly in terms of ecological, economical and self-indulgent consumption (Berg, 2015; Katz-Gerro, 2002; Wilska, 2002). Therefore, the article examines the development of ecological, economical and self-indulgent attitudes towards consumption in order to reveal the effect of age and life course stage on consumption during different time periods. In the analysis, we compare the attitudes of late middle-agers (46–60 year-olds) and young adults (18–30 year-olds) in 1999, 2004, 2009 and 2014. Both age groups are experiencing a life stage that involves changes in social relationships and household structures (e.g., Hutteman, Hennecke, Orth, Reitz, & Specht, 2014). In specific years under examination, cultural and societal changes might have an impact on values and attitudes, causing generational or cohort effects on consumption (Carr et al., 2012; Mannheim, 1952; Turner, 2002). Presently, these age groups belong to generational cohorts known as Generation Y (1979–1994) and Generation X (1964–1978) which allegedly possess different attitudes towards consumption (Carr et al., 2012; Eastman & Liu, 2012; Parment, 2013). In Finland, the Baby Boomers (1945–1955) are known to share common values and generational identity (Karisto, 2007; Purhonen, 2007), which may have an influence on their consumption attitudes, respectively. By comparing distinctive life stages over a long time period, the overall effects of age and life course on consumption can be better distinguished.

The rest of the article begins with an overview of explanatory approaches to consumer decisions with respect to age, life course and time period. This is followed by an empirical analysis of longitudinal data derived from four surveys carried out in Finland in 1999, 2004, 2009 and 2014. Findings and implications are discussed in terms of age, the life course, and consumption, especially highlighting the findings regarding late middle-agers.

2 | CONSUMER DECISIONS, AGE AND LIFE COURSE

The *ethical value paradigm* argues that consumer choices are shaped by personal values like consumerism, described as hedonism, materialism, possessive individualism and narcissism, or sustainable values, described as religious traditions, radical ecology and other values outside the modern capitalist marketplace (e.g., Crompton, 2010; Holt, 2012). Empirical studies show significant differences in attitudes towards consumption among consumers at all ages; younger adults' attitudes are more materialistic and hedonistic than the attitudes of the middle-aged or the elderly, who report more economical, ethical and

environmentally conscious attitudes and interest towards cultural consumption (Atkinson & Hayes, 2010; Berg, 2015; Katz-Gerro, 2002; Purhonen, Gronow, & Rahkonen, 2011; Wilska, 2002). Personal value orientations have shown to change along with ageing, as people in late midlife start to value benevolence, that is, the promotion of the well-being of close relatives, universalism, that is, taking care of other people and nature, and safety, implying the security of society, personal relationships, and life in general (Charles & Carstensen, 2010; Pulkkinen & Polet, 2010).

Accordingly, consumption practices are explained by the *life course approach* which addresses the roles of household resources and life-course events on consumption (e.g., Plessz, Dubuisson-Quellier, Gojard, & Barrey, 2016). Biographies and biographical transitions, such as the initiation of cohabitation with a partner or the first child's birth offer opportunities for alterations of new routines and leisure activities (Bisogni et al., 2005; Bove & Sobal, 2006; Plessz et al., 2016; Southerton, 2006). Many consumption practices are linked to parental responsibility, especially in consumption that is related to nutritional and health norms (Plessz et al., 2016; Régnier & Masullo, 2009). Young adulthood, involving transitions such as leaving the parental home, finishing education, entering working life, forming a romantic relationship and becoming a parent (Elder & Shanahan, 2007; Settersten, 2003) differs from late midlife that is characterized by the approach of the zenith of one's career and life's highest social position and income. Important transitions also occur as children move away from home and leisure time increases (Helson, Soto, & Cate, 2006; Kokko, 2010). Life transitions in certain cultural, societal, geographical and historical contexts (Pilcher, 1995) might nevertheless be under change due to the risks and constraints related to job markets and decreasing financial resources. In societies with advanced economies, many life transitions related to achieving full independence have generally become postponed, as the life transitions that used to occur earlier, in people's 20s, now often occur in their 30s (e.g., Izuvara, 2015).

3 | CONSUMER DECISIONS, TIME PERIOD AND GENERATIONAL COHORTS

As the values and attitudes in comparison with individuals' behaviour show major contradictions, the consumption patterns of individuals are understood in respect to *market construction paradigms* that specify how market actors repurpose particular cultural, institutional and technological resources to construct and transform markets; hence, the consumption patterns of individuals get constructed as markets evolve (Holt, 2012). The macro-economic situation of society, including economic booms and recessions, necessarily affects material values, attitudes and individuals' behaviour. The economic depression in Finland during 1990–1994 as well as the following economic boom in the late 1990s and early 2000s caused major changes in consumption patterns and attitudes towards consumption (Autio & Heinonen, 2004; Laaksonen, Laaksonen, & Möller, 1998; Räsänen, 2003; Wilska, 2002). The global financial crisis in 2008 and 2009 in most developed countries

increased poverty and deprivation (Saunders & Wong, 2012). The effect of time period on consumption can thus cause generational or cohort effects on consumption (see also Mannheim, 1952; Turner, 2002). In previous studies, cohort effects were pronounced in the dimensions of early adoption of new products, conscious consumption and personal debt, indicating that members of Generation X, born in the 1960s and 1970s, exhibit the highest rates of overconsumption and competitive consumption while also displaying the lowest rates of conscious consumption (Carr et al., 2012).

In Finland, the Baby Boomers experienced the post-war economic boom and the rise of the welfare state (Karisto, 2007; Purhonen, 2007) and the values of the Boomers are often described as post-materialistic (Wilska, 2011). However, the life course effects may also be in play, and thus consumption patterns can change when moving closer to the retirement age. Many consumption-related values and attitudes, such as attitudes towards ecological and ethical issues, have become established as socially desirable opinions during the past decades (Aro & Wilska, 2014). Thus, recent studies show little variation between age groups or generations in these attitudes (Huttunen & Autio, 2010).

4 | RESEARCH QUESTIONS

The study examines ageing and consumption in Finland by distinguishing the effects of age and life course stage on consumption among late middle-aged and young adult consumers in 1999, 2004, 2009 and 2014. The research questions are the following:

RQ1: How have ecological, economical and self-indulgent attitudes towards consumption developed among late middle-agers (46–60 year-olds) and young adults (18–30 year-olds) between 1999 and 2014?

RQ2: To what extent does age in the year under examination and life course stage (i.e., household type and marital status) explain attitudes towards consumption between 1999 and 2014 when other socio-demographic background variables are controlled for?

5 | DATA AND METHODS

5.1 | Data

The data used in this study are derived from the postal survey 'Finland – Consumption and Lifestyle', first carried out in 1999 (N = 2,417) and repeated in 2004 (N = 3,574), 2009 (N = 1,202) and 2014 (N = 1,350), making the total N = 8,543 (Koivula, Räsänen, & Sarpila, 2015). Each year questionnaires were sent out to 18- to 74-year-old Finnish-speakers, who were randomly selected from the Finnish Population Register Database. In 1999, the response rate was 61%, in 2004 60%, in 2009 49% and in 2014, 46% (Erola & Räsänen, 2000; Erola, Räsänen, Halenius, Vasunta, & Haapanen, 2005; Koivula et al., 2015; Sarpila, Räsä-

nen, Erola, Kekki, & Pitkänen, 2010). In the final data, some age groups and genders were over or under-represented, which was corrected by weighting the data by age and gender.

5.2 | Measurements

The study focuses on respondent selection of attitude statements regarding ecological, economical and self-indulgent consumption; these standardized statements were used in all years under examination. With each statement a five-point Likert scale, with values ranging from 'Completely agree' (1) to 'Completely disagree' (5), was provided to respondents.¹ Almost the same questionnaire was used from 1999 to 2014, with only small amendments. The statements in the original questionnaire in 1999 were formulated in the light of theories in the late 1990s regarding ecologically conscious values and attitudes (e.g., Heiskanen & Pantzar, 1997), frugal and thrifty consumption (Autio & Heinonen, 2004) and consumption related to hedonism and individualism (Bauman, 2005; Warde, 1994). From these statements, aggregate variables were formulated and tested with a factor analysis using 13 attitudinal statements regarding ecological, economical and self-indulgent consumption.

Ecological, economical and self-indulgent attitudes towards consumption were explained in 1999, 2004, 2009 and 2014 by age at the year of the study and life-course stage including marital status the household type. Control variables were gender, education, employment position, socio-economic position and income per consumption unit. The coding of socio-economic position was conducted on the basis of the ISCO-08 (International Standard Classification of Occupations) classification used by Statistics Finland. The variable 'income per consumption unit'² was created using the OECD's scale³ and recoded into five different income quintiles.

5.3 | Statistical procedures

The analysis started with a factor analysis using attitudinal variables of ecological, economical and self-indulgent consumption that were available in the data from 1999 to 2014. Factor analysis was carried out with the principal axis factoring method and promax rotation to reveal the latent dimension of attitudinal variables.

Three aggregate variables were constituted based on the loadings on each dimension in the factor analysis. To detect the development of the attitudes between 1999 and 2014 among young adults and late middle-agers, the means of the aggregate variables were compared between age groups for each year, by building two-way ANOVA models for each year under examination.

The ANOVA model was further executed to examine the effects of age and life-course stage while the effects of other independent variables were controlled for. The ANOVA models were executed

¹In the analysis, the order of the values was reversed.

²First converted into 2014 euro.

³According to the traditional OECD scale the first adult of the household receives a weight of 1, the second adult receives a weight of 0.7 and children under 18 receive a weight of 0.5.

TABLE 1 Attitudes towards ecological, economical and self-indulgent consumption, factor analysis (1999–2014)

	Ecological	Economical	Self-indulgent
Statement			
'I am worried about the environmental effects of my consumption'	.709		
'The world is overloaded with goods and life is too consumption-oriented'	.343		
'I consciously prefer ecological products'	.707		
'I am worried about the origins and health risks of food that is sold to consumers'	.472		
'Everyone should save money for a rainy day'		.589	
'In my opinion, my lifestyle is economical'		.532	
'I will fund my purchases by saving in advance'		.557	
'I am concerned about what other people think of me'			.414
'I take good care of my looks'			.404
'I want to derive pleasure from my consumption'			.506
'I often eat out'			.390
'I often shop impulsively'			.421
Eigenvalue, % (cumulative %)	21.3 (21.3)	14.1 (35.3)	10.2 (46.0)
Cronbach's Alfa	.645	.567	.525

separately for the 1999, 2004, 2009 and 2014 data sets. The factor scores of the consumption attitudes were used as continuous independent variables and the socio-demographic determinants as categorical dependent variables.

6 | RESULTS

Factor analysis confirmed the latent dimensions of ecological, economical and self-indulgent consumption. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.749 and Bartlett's test of sphericity was significant at the level of $p = .000$. In each of the three factors, the rotation sums of squared loadings varied from 1.12 to 1.90 based on the factor loadings of the attitude statements. The Cronbach's alphas in the factors 'Ecological' (.645), 'Economical' (.567) and 'Self-indulgent' (.525) were rather low, but this is acceptable in attitudinal questions in social science surveys with large number of questions and respondents (Table 1).

6.1 | Ecological attitudes towards consumption

On the basis of the factor loadings, three aggregate variables were constructed: ecological, economical and self-indulgent attitudes. In ecological attitudes towards consumption, the comparison of means between age groups was statistically significant ($p < .000$) in the ANOVA model in all years under examination, except in 2009 ($p = .059$). Figure 1 shows that the differences in ecological attitudes between late middle-agers ($M = 3.84$) and young adults ($M = 3.52$) were largest in 1999 and 2004. In 2009 and 2014, the differences had slightly decreased,

although late middle-agers still had more ecological attitudes than young adults in 2014 ($M = 3.73$ and $M = 3.48$, respectively).

The factor scores of the attitudinal dimensions were tested in the ANOVA model in 1999, 2004, 2009 and 2014, with main effect tests for age-related variables and other socio-demographic determinants, separately in the years 1999, 2004, 2009 and 2014. The factor scores were included in the model as dependent variables. The overall statistical significances of the independent variables are indicated by the F values. The unstandardized parameter estimates (B) describe how much the means of the different categories of independent variables deviate from a reference category. The reference categories (O^3) used in the model were selected on the basis of the lowest value or the reference category with the highest number of cases. The adjusted

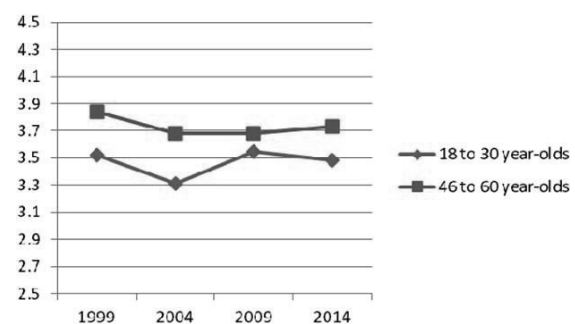


FIGURE 1 Ecological attitudes towards consumption among young adults and late middle-agers between 1999 and 2014 (1 = completely disagree, 5 = completely agree). [Colour figure can be viewed at wileyonlinelibrary.com]

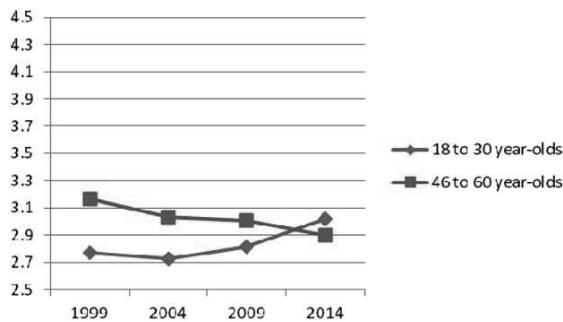


FIGURE 2 Economical attitudes towards consumption among young adults and late middle-agers between 1999 and 2014 (1 = completely disagree, 5 = completely agree). [Color figure can be viewed at wileyonlinelibrary.com]

coefficients of determination (adjusted R^2) show the proportions of variance explained by all independent variables together.

In ecological attitudes towards consumption, age at the year of the study remained a significant determinant in 1999 and 2004 ($F = 10.556^{***}$, $F = 21.811^{***}$). In 2009 and 2014, age was no longer significant. The absence of children in the household predicted ecological attitudes in 2004 and 2009 ($F = 4.298$, $B = .092$; $F = 10.409^{**}$, $B = .240^{**}$). In 2014, age and the presence of children did not remain significant, and other socio-demographic variables predicted these attitudes better than age and life course stage. In the whole period, marital status was not significant.

In all years under examination, ecological attitudes were more typical for female respondents ($F = 24.010^{***}$, $B = .226^{***}$; $F = 92.580^{***}$, $B = .338^{***}$; $F = 12.151^{**}$, $B = .198^{**}$; $F = 5.405^*$, $B = .146^*$, in order from earliest to latest year). High education (i.e., university degree) was a significant determinant between 2004 and 2014 ($F = 4.949^{**}$, $B = .249^*$; $F = 7.097^{***}$, $B = .270$; $F = 2.663^*$, $B = .283^*$, respectively). In 2004, ecological attitudes were most typical for respondents in a manager position ($F = 2.979^*$, $B = .126^*$). Income level was associated with ecological attitudes in all years under examination. Ecological attitudes were least typical for respondents with high income ($F = 4.164^{**}$, $B = -.348^{***}$; $F = 6.300^{***}$, $B = -.267^{***}$; $F = 4.368^{**}$, $B = -.320^{**}$; $F = 4.164^{**}$, $B = -.348^{***}$, in order from lowest to highest income level).

In the ANOVA model for ecological attitudes between 1999 and 2014, the Adjusted R^2 values were .071, .098, .083, .050, in chronological order.

6.2 | Economical attitudes towards consumption

In economical attitudes towards consumption, the comparison of means between age groups was statistically significant ($p < .000$) in the ANOVA model in 1999 and 2004. In 2009, the difference was significant at the level of $p = .01$, and in 2014, at the level of $p = .05$. Figure 2 shows that between 1999 and 2009, late middle-agers reported more economical attitudes towards consumption ($M = 3.16$) than young adults ($M = 2.76$). Differences between age groups disappeared

between 2009 and 2014, and in the last year under examination, late middle-agers reported less economical attitudes towards consumption ($M = 2.89$) than young adults ($M = 3.02$).

In economical attitudes towards consumption, age at the year of the study remained a significant determinant in 1999 and 2004 ($F = 15.502^{***}$, $F = 31.880^{***}$). In 2009, age was less significant than in previous years ($F = 3.032^*$), and in 2014, not significant at all. The absence of children in the household and marital status determined economical attitudes in 1999 and 2004. Economical attitudes were more typical for households without children ($F = 7.732^{**}$, $B = .153^{**}$; $F = 18.301^{***}$, $B = .201^{***}$) and for married respondents ($F = 3.438^{**}$, $B = .226^{**}$; $F = 4.660^{**}$, $B = .198^{**}$). In 2009, the effect of the household type and marital status remained ($F = 10.195^{**}$, $B = .281$; $F = 3.169^*$, $B = .223^{**}$). In 2014, only the absence of children in the household predicted these attitudes ($F = 6.286^*$, $B = .201^*$).

In 1999 and 2004, economical attitudes were more typical for female respondents ($F = 6.408^*$, $B = .111^*$; $F = 13.458^{***}$, $B = .117^{***}$). In 1999, retired respondents appeared most economical ($F = 4.580^{**}$, $B = .389^{***}$). In all years under examination, economical attitudes were determined by income level, and respondents with high income reported economical attitudes least frequently, in order from lowest to highest income level ($F = 4.462^{**}$, $B = -.287^*$; $F = 17.235^{***}$, $B = -.413^{***}$; $F = 6.211^{***}$, $B = -.414^{***}$; $F = 2.444^*$, $B = -.331^{**}$).

In the ANOVA model for economical attitudes between 1999 and 2014, the Adjusted R^2 values were .161, .143, .107, .021, in chronological order.

6.3 | Self-indulgent attitudes towards consumption

In self-indulgent attitudes towards consumption, the comparison of means between age groups was statistically significant at the level of $p = .000$ in the ANOVA model in all years under examination. Particularly in 2014, late middle-agers reported less self-indulgent attitudes towards consumption ($M = 3.47$) than young adults ($M = 4.06$). Differences between age groups remained almost unchanged between 1999 and 2014 (Figure 3).

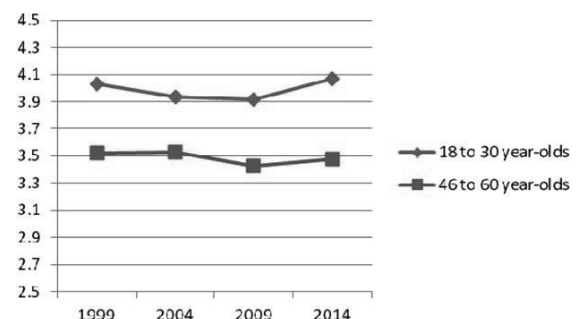


FIGURE 3 Self-indulgent attitudes towards consumption among young adults and late middle-agers between 1999 and 2014 (1 = completely disagree, 5 = completely agree). [Color figure can be viewed at wileyonlinelibrary.com]

In self-indulgent attitudes, age at the year of the study remained the most significant determinant in all years ($F = 10.547^{***}$, $F = 16.377^{***}$, $F = 12.246^{***}$, $F = 8.777^{***}$) in order from earliest to latest year. In 1999 and 2004, married couples reported slightly less self-indulgent attitudes in comparison with singles ($F = 2.531^*$, $B = -.218^{**}$; $F = 2.444^*$, $B = -.109^*$). The effect of marital status did not persist in later years. The presence of children in the household did not explain the self-indulgent attitudes in the whole period.

In 1999, self-indulgent attitudes were more typical for female respondents ($F = 4.739^*$, $B = .104^*$). In 2009, workers in office, service or sale professions reported self-indulgent attitudes most frequently ($F = 3.657^{**}$, $B = .327^{***}$). In 2004 and 2009, people in higher income quintiles appeared most self-indulgent in their attitudes ($F = 7.131^{***}$, $B = .324^{***}$, $F = 2.565^*$, $B = .292^{**}$).

In the ANOVA model for self-indulgent attitudes between 1999 and 2014, the Adjusted R^2 values were .067, .056, .088, .082, in chronological order.

7 | DISCUSSION AND CONCLUSIONS

This study threw light on the connection between consumption and ageing by focusing on the development of attitudes towards consumption among late middle-agers and young adults between 1999 and 2014. The results of the study support to some extent the previous findings of young consumers as hedonistic actors with self-indulgent attitudes, and ageing consumers as environmentally concerned with ecological attitudes towards consumption (Atkinson & Hayes, 2010; Berg, 2015; Katz-Gerro, 2002; Purhonen et al., 2011; Wilksa, 2002). The study revealed, however, that age in the year under examination explains only certain attitudes towards consumption, and currently, the significance of age is decreasing, particularly in ecological and economical consumption. The significance of presence of children in the household is relatively strong, especially in ecological and economical attitudes towards consumption.

The respondent's age remained a significant determinant in ecological attitudes only in 1999 and 2004. In later years, ecological attitudes were better explained by the absence of children in the household and other socio-demographic determinants, such as gender. These findings suggest that the ecological attitudes of the late middle-agers are increasingly explained by their life stage, such as changes in household structures and values related to life stage, such as benevolence, universalism and the wellbeing of others (Charles & Carstensen, 2010; Helson et al., 2006; Kokko, 2010; Pulkkinen & Polet, 2010).

Furthermore, the study exposed a significant change in economical attitudes towards consumption in both age groups under the years of examination. In 1999 and 2004, late middle-agers reported more economical attitudes towards consumption, but the differences between age groups faded away in later years. In fact, in 2014, young adults reported these attitudes more frequently than late middle-agers. The effect of age on economical attitudes remained significant only in 1999 and 2004, but the household

structure was associated with economical attitudes throughout the years. In 1999, there was an economic boom in Finland, but in 2014, a long-standing economic depression persisted. Yet, late middle-agers reported economical attitudes more frequently than young adults in 1999. It is likely that the late middle-agers in 1999, who belonged to the Baby Boomer cohort, possessed economical consumption attitudes regardless of the macro-economic situation. This may indicate a generational or cohort effect on economical consumption. The attitudes of young respondents may be more dependent on economic conditions, and thus the growth in economical attitudes among young adults could be affected by the economic depression that started in 2008. In the whole period, income level was negatively associated with economical attitudes towards consumption.

In contrast, for self-indulgent attitudes age remained significant in all years under examination, and household structure that is the absence of children or other socio-demographic determinants were not remarkably associated with these attitudes. Previous studies have illustrated members of certain generations as particularly hedonistic or prone to status consumption, and interpreted these consumption ideals as typical for certain generational cohorts (e.g., Carr et al., 2012; Eastman & Liu, 2012). In our study, no generational or cohort effects in self-indulgent attitudes were pronounced, and self-indulgence was associated with age in all years under examination.

There are naturally limitations to the study. Although the data cover a long time period and it is unique in that sense, it is not panel data with the same respondents over time. In survey studies respondents often tend to give socially desirable answers and therefore attitudes towards consumption may not correspond with actual consumer behaviour (see also Holt, 1997; Thompson & Troester, 2002). The results are thus limited to self-reported attitudes regarding certain statements in a Finnish context. Despite these limitations, the attitudes reflect consumption ideals and trends over time and across generations in societies of advanced economies. By examining the development of attitudes in a national context, implications for other similar societies can be postulated. However, comparative research and even longer longitudinal studies will also be necessary in the future.

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How to cite this article: Kuoppamäki S-M, Wilska T-A, Taipale S. Ageing and consumption in Finland: The effect of age and life course stage on ecological, economical and self-indulgent consumption among late middle-agers and young adults between 1999 and 2014. *Int J Consum Stud*. 2017;41:457–464. <https://doi.org/10.1111/ijcs.12353>



II

THE USE OF MOBILE TECHNOLOGY FOR ONLINE SHOPPING AND ENTERTAINMENT AMONG OLDER ADULTS IN FINLAND

by

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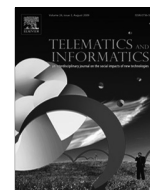
Telematics and Informatics 34 (4), 110-117

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Contents lists available at ScienceDirect

Telematics and Informatics

journal homepage: www.elsevier.com/locate/tele

The use of mobile technology for online shopping and entertainment among older adults in Finland



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ARTICLE INFO

Article history:

Received 17 October 2016

Received in revised form 22 November 2016

Accepted 14 January 2017

Available online 17 January 2017

Keywords:

Mobile technology

Online shopping

Entertainment

Older adults

Smartphone

Tablet computer

ABSTRACT

Older adults are becoming an important market segment for all internet-based services, but few studies to date have considered older adults as online shoppers and users of entertainment media. Utilising the concept of life course, this article investigates the use of mobile technologies for online shopping and entertainment among consumers aged 55 to 74. The data were collected with a web-based survey completed by a panel of respondents representing Finnish television viewers (N = 322). The results reveal that consumers aged 55 to 74 use a smartphone or tablet to purchase products or services online as often as younger consumers. In contrast, listening to internet radio and watching videos or programmes online with a smartphone or tablet are most typical for younger male consumers. The results demonstrate that mobile-based online shopping is best predicted by age, higher education, and household type (children living at home), and use of entertainment media by age and gender.

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1. Introduction

With the ageing of the population and the rapid growth of mobile technology the needs and preferences of older adults as users of digital technologies have garnered increasing interest worldwide. Frequent use of digital technologies among older adults has been shown to be connected to wellbeing, wider social networks, and independent lifestyle, and thus is expected to improve the lives of older adults in many ways (e.g. Choi and DeNitto, 2013; Hills et al., 2015). At the same time many studies indicate that older adults experience more barriers related to technological environments, from usability preferences and difficulties learning the required skills to perceived values and risks (e.g. Barnard et al., 2013; Lian and Yen, 2014). Factors such as age, education, socioeconomic status, access to technology, attitudes and trust, and the perceived benefits of technology influence the use of technologies among older adults (Czaja et al., 2006; van Deursen and Helsper, 2015; Näsi et al., 2012; Piper et al., 2016; Selwyn, 2004; Zickuhr and Madden, 2012). The younger, more economically advantaged, and more educated an individual is, the more likely they are to use the internet for selected purposes (Räsänen and Koironen, 2016).

The digital skills of older adults are improving and they are becoming a more important user segment of all online-based services. During the past decades, the amount of leisure time has increased in all Western societies (Aguilar and Hurst, 2007). In Finland, among older people, time spent watching television has increased, and Finns are less socially active and spend significantly more time at the computer (Räsänen and Koironen, 2016; Statistics Finland, 2011). Personal and mobile devices have become more common, and the internet is used several times per day (Statistics Finland, 2015; Zickuhr and Madden, 2012). The ownership of smartphones has increased among all age groups, but the proportion of smartphone owners is larger

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among younger people (90% of individuals aged 16 to 44 in comparison to 63% of individuals aged 55 to 64). Among older adults (aged 55 to 74), the ownership of smartphones is fairly gendered, as older men own smartphones more frequently than older women do. Ownership of tablet computers, similar to smartphones, has increased in all age groups, and in 2015, about half of Finnish people aged 55 to 64 lived in a household that owns a tablet computer (Statistics Finland, 2015).

This article investigates the use of smartphones and tablet computers for online shopping and entertainment among older consumers (aged 55 to 74). Older consumers refer to a group of individuals who undergo late midlife (roughly between years 46 to 60) and approach old adulthood (61 and over) in their individual course of life (Hutteman et al., 2014). Age-based analysis is conducted in order to further investigate the significance of age and life course on the use of digital technologies (e.g. van Deursen and Helsper, 2015; Eynon and Helsper, 2015; Haddon, 2005; Prendergast and Garrattini, 2015). In previous studies, older adults as online shoppers and users of entertainment have received less attention, despite these activities being typical for older people (Statistics Finland, 2015; Zickuhr, 2014). In addition, few studies have explored particularly online shopping and entertainment in terms of life course stage, understood as age and household type.

This article is structured in the following way. The article first discusses the effect of the life course on the use of digital technologies with respect to age and gender. This is followed by discussion of previous empirical research on older adults as online shoppers and users of entertainment. The use of digital technologies for online shopping and entertainment is investigated with the results of a web-based survey conducted among 322 Finnish-speaking consumers in 2015. Finally, differences between these two online practices are discussed in terms of age and life course stage.

2. Life course and the use of digital technologies

The significance of age in the use of digital technologies is usually based on the time periods of an individual's life: the skills to use technologies are shaped in youth which affects orientations towards technologies in later life (Green, 2008; Haddon, 2005). These generational experiences affect core values of individuals, which may however change with ageing as life events transform the needs and necessities for use. The significance of age in the use of digital technologies emerges from the life course stages, more specifically from changes in social roles and personal relationships (Hutchison, 2011). In late mid-life, important changes occur as children leave home. Leisure time typically increases (Helson et al., 2006; Kokko, 2010), and wellbeing in terms of daily demands, time constraints, and work-family conflicts usually improves (Bouchard, 2014; Erickson et al., 2010). After retirement, people have more opportunities for cultural and educational pursuits as children do not limit their activities (Karisto, 2007; Näsi et al., 2012; Weiss and Bass, 2002). Also family relationships change, as the time spent with the spouse increases, usually improving marital quality and satisfaction in late midlife. The significance of social and personal relationships on wellbeing and happiness becomes more important in old adulthood (Charles and Carstensen, 2010), underlining the significance of using digital technologies for support and fulfilling social needs (Boase, 2010; Ling, 2008; Livingstone et al., 2005; Rasi and Kilpeläinen, 2016; Thayer and Ray, 2006).

Household structure and family context typically have an effect on the use of digital technologies (Livingstone et al., 2005). The presence of young people in the home influences adults' internet use in three ways: young people provide a reason for acquiring home internet access, they increase adults' interest in using the internet for different purposes, and they may teach or motivate adults to improve their online skills (Eynon and Helsper, 2015). For instance, adults often buy computers thinking it will benefit their child's education (Haddon, 2005; Kiesler et al., 2000). Parents may decide to use the internet as a way to support various aspects of family life such as co-ordination amongst family members (Kennedy et al., 2008; Rainie and Wellman, 2012) or parents may aim to improve their internet skills to support their children (Korupp and Szydlak, 2005). As children move away from home when parents approach late midlife, parents do not necessarily have the urgent need or reason for internet use that is typically brought by their children. The rhythm of daily life changes and digital technologies are no longer necessities in terms of time management. Moreover, the developmental challenges related to late midlife and old adulthood (Bouchard, 2014; Charles and Carstensen, 2010; Hutteman et al., 2014) create new demands for technologies, as the significance of social networks in terms of happiness and wellbeing increases. Age differences in online consumption might be blurring, as older people want to take part in the same online activities as younger people (see also Räsänen and Koironen, 2016).

Life course transitions and changes in social roles typically differ between men and women. Parenthood, for instance, typically deepens gender divisions and domestic division of labour in households, which simultaneously affects the use of technologies (Fortunati, 2011). For women, the transition to parenthood increases routine housework hours and the time spent doing housework and simultaneously decreases the time spent on leisure activities such as entertainment (Baxter et al., 2013). Online platforms focussing on entertainment are typically used by men whereas online shopping is less clearly gendered (Dittmar et al., 2004; Helsper, 2010; Papastergiou and Solomonidou, 2005; Räsänen and Koironen, 2016; Traeen et al., 2006). In late midlife, as children move away from home and daily housework decreases, the gender division of housework is expected to change.

3. Older adults as online shoppers and users of online entertainment

In developmental studies, the adult life has been divided into early adulthood (18 to 30 years), middle adulthood (31 to 60 years) and old adulthood (61 years and over) (Hutteman et al., 2014). In social sciences, boundaries of each life stage are

perceived as flexible (Green, 2008). Older adults, typically understood as adults that undergo late midlife and approach old adulthood, are a group of online consumers with high potential as well as challenges. The income level of those aged 55 to 65 has risen and they generally consume more than 30 years ago (Ahonen and Vaittinen, 2015; Atkinson and Hayes, 2010). In Finland, adults aged 55 to 64 use the internet actively for travel and culture related online shopping. The share of the Finnish population making purchases online did not grow in 2015; instead, the share of individuals having made online purchases fell from the previous year by two percentage points in all age groups (Statistics Finland, 2015). Online shopping is typical for well-educated consumers in higher income quartiles (Räsänen and Koironen, 2016). Other factors that influence online purchases are management of costs, perception of the risks related to online purchases, and the influence of social networks on digital skills (Livingstone et al., 2005). Typically, older adults might perceive more risks in purchasing online, such as financial risks or risks related to payment or online security (Kwon and Noh, 2010; Lian and Yen, 2014). The degree of social capital and the importance of social networks, reciprocity and trust are significant in making purchases online. Among young adults, for instance, consumption preferences are affected by online-based peer relationships that among older adults are typically less common (Pfeil et al., 2009). For older adults, social influence and social networks affect the skills required to access these technologies (see also Lian and Yen, 2014; Livingstone et al., 2005).

In Finland, older adults consume internet-based entertainment frequently. Over half (58%) of the population aged 55 to 64 have watched internet-based television programmes during the past three months – this percentage being only slightly less than in the younger age groups (Statistics Finland, 2015). The use of entertainment media is strongly affected by generational experiences of certain media landscapes (Bolin and Westlund, 2009; Bolin, 2014). Generational experiences refer to socially shared values and ideals by each birth cohort that typically remain unchangeable throughout the life course (Mannheim, 1952; Riley, 1973; Smola and Sutton, 2002). People born in the 1950s, for instance, are illustrated as the 'TV generation' that was formed by television and popular culture media, and that was considered the first 'media generation' formed by and in relation to the media (Bolin and Westlund, 2009). Certain types of media landscapes can produce emotions of nostalgia, i.e., sentimentality for the past, typically for a period or place with happy personal associations (Boym, 2001). Adults aged 55 to 65 are likely to prefer a certain type of media on the basis of their individual childhood memories and their socially shared, collective memories formed during the developmental years (Bolin, 2014).

4. Research questions

Previous research has highlighted the significance of age, gender, education and household type in the use of internet and digital technologies among older adults (e.g. Boase, 2010; van Deursen and Helsper, 2015; Eynon and Helsper, 2015; Ling, 2008; Livingstone et al., 2005; Näsi et al., 2012; Rasi and Kilpeäläinen, 2016; Räsänen and Koironen, 2016; Selwyn, 2004; Thayer and Ray, 2006; Zickhur, 2014). As mentioned above, few studies have examined particularly mobile-based online shopping and entertainment among older adults with respect to life course stage (understood as age and household type). By comparing these two mobile-based activities the particularities related to diverse online environments can be better revealed. The research questions are the following:

RQ1: With regard to the use of mobile technology (smartphone or tablet computer) for online shopping and entertainment, in what respects do older adults (aged 55 to 74) differ from younger consumers, if any?

RQ2: In what ways can the use of mobile technology for online shopping and entertainment be explained by life course stage (understood as age and household type)?

5. Data and methods

5.1. Data and participants

This article analyses the results of an online survey conducted among Finnish television viewers of the commercial media company MTV. The survey was administered between the 2nd and 17th of November 2015 to a panel of respondents (N = 630) representing Finnish-speaking television viewers aged 18 to 74. The target group of the survey consisted of participants aged 55 to 74 (N = 144) with a control group of participants aged 18 to 54 (N = 176). The total number of respondents was 322 with a response rate 51%.

In the analysis, a comparison was conducted between 55 to 74 year-olds (i.e. older adults) and under 55 year-olds (i.e. younger adults). Considering that definitions of each life stage vary across disciplines, and 55 to 74 year-olds can be regarded as a heterogeneous group in terms of life transitions (e.g. Hutteman et al., 2014; Green, 2008), 55 to 74 year-olds were further classified into age groups of 55–59; 60–65; 66–70 and 71–74, in order to expose differences among 55 to 74 year-olds. From the respondents aged 55 to 74, 86% owned a smartphone, and 58% owned a tablet computer. This indicates that participants selected for the survey were slightly more active and computer literate online users in comparison to the whole Finnish population (Statistics Finland, 2015). It is thus natural to assume that becoming a member of a media company's research panel inevitably requires higher than average media activity.

The survey questionnaire was composed of 14 questions measuring use of the internet, use of digital devices, and attitudes towards the internet, with six questions measuring the socio-demographic background of the respondents. Internet

use was measured with questions regarding the use of computers, laptops, tablet computers, smartphones, and smart TVs, including questions about the frequency and location of use. The use of smartphones and tablet computers was measured separately with questions about online shopping, entertainment, information and communication technologies, domestic technologies, and health monitoring.

5.2. Variables

The dependent variables consist of four (4) statements measuring the use of smartphones or tablet computers for online shopping and entertainment media. Participants were asked about their use of and intention to use smartphones or tablets with a three-point scale (1 = yes, 2 = no, but interested and 3 = no, not interested). The statements covered the following practices: purchasing products or services online; activating a mobile-based application for payment of purchases; listening to internet radio or music online; and watching videos or programmes online.

The independent variables consist of age, gender, and household type, with control variables of education and residential area. Regarding household type, respondents were given four (4) answer categories: single, co-habitation with a spouse, co-habitation with a spouse and children living at home, and other household type. Regarding education, respondents were given six (6) response options: no education, college degree, vocational training, post-secondary education, Bachelor's degree and Master's degree¹. The options for residential area were: large city (>100,000 inhabitants), another city, urban area, and rural area.

5.3. Statistical procedures

To provide an overview of the interrelations between age and mobile technology practices, the use of, and intention to use smartphones or tablets, a contingency table was constructed and related statistical tests were conducted. A contingency table was constructed for male and female respondents comparing under 55-year olds with 55 to 74 year olds. Pearson's chi-squared test was used to assess the significance between the differences of the two proportions.

The other statistical tool applied was the General Linear Model (GLM). The GLM models were designed and executed to examine the effect of age, gender and household type while controlling for other independent variables (education and residential area). The GLM models also showed which independent variables were significant predictors of engagement in online shopping and entertainment. The continuous variables were singular statements concerning online shopping and entertainment², and age, gender, household type, education, and residential area were used as categorical variables.

6. Results

6.1. The use of mobile technology for online shopping and entertainment

Table 1 shows the contingency table comparing between two age groups for male and female respondents. Older respondents use a smartphone or a tablet computer for online purchases nearly as frequently as younger respondents. Older males report less interest in online purchases in comparison to younger males. Female respondents are equally interested in online purchases in both age groups.

Male respondents aged 55 to 74 are the group which most frequently activate a mobile application for the purpose of paying for purchases. Younger males are most interested in mobile-based payment methods and significantly more interested than younger females. Among older adults, the differences in interest level between genders are less pronounced. Regarding the possibility for mobile-based payment, younger women are the least interested group.

With regard to mobile-based entertainment, older adults listen to internet radio or music online less frequently than younger adults. This finding is pronounced among both male and female respondents. Music or radio listening with a mobile device is most typical for younger males and least typical for older females. Older females responded most often with interest towards internet radio or music despite not having consumed it before.

Younger males use mobile devices for watching videos and online programmes most frequently. Mobile-based videos are watched least frequently by older females. In the other responses, the response distribution between groups is comparable to internet radio or music listening, with older females most often indicating non-use and non-interest in use.

6.2. Determinants for the use of mobile technology for online shopping and entertainment media

The comparison between age groups in Table 1 does not show whether the differences are based on age, or if other variables predict use better than age. Table 2 displays the results from the main effect tests of the GLM for online shopping and entertainment. The overall statistical significances of the independent variables were indicated by the F value. The unstandardised parameter estimates (β) describe how much the means of the different categories of independent variables deviate

¹ In the final analysis the response options were reduced in order to make the interpretation easier.

² In the final analysis, the order was reversed to 3 = yes, 2 = no, but interested and 1 = no, not interested.

Table 1

Use and intention to use mobile technology (smartphone or tablet), cross-tabulation by age among male and female respondents (%).

Which of the following have you done or would you be interested in doing with your smartphone or tablet:		Male				Female			
		Under 55	55–74	Sig. (Pearson Chi-Square); Age, Male	Sig. (Pearson Chi-Square); Gender under 55	Under 55	55–74	Sig. (Pearson Chi-Square); Age, Female	Sig. (Pearson Chi-Square); Gender 55–74
<i>Online shopping</i>									
Purchased products or services online	Yes	62.2	56.6	n.s.	n.s.	62.0	51.7	n.s.	n.s.
	No, but interested	14.6	7.2			12.0	12.1		
	No, not interested	23.2	36.1			26.7	36.2		
	Total	100.0	100.0			100.0	100.0		
Activated a mobile application for payment of purchases	Yes	6.3	7.2	*	**	5.4	3.5	n.s.	n.s.
	No, but interested	46.3	26.5			19.6	22.8		
	No, not interested	47.5	66.3			75.0	73.7		
	Total	100.0	100.0			100.0	100.0		
<i>Entertainment media</i>									
Listened to internet radio or music online	Yes	76.8	53.0	**	n.s.	64.1	39.3	**	n.s.
	No, but interested	6.1	9.6			16.3	23.2		
	No, not interested	17.1	37.3			19.6	37.5		
	Total	100.0	100.0			100.0	100.0		
Watched videos or TV programmes online	Yes	87.7	66.7	**	n.s.	76.1	46.6	***	n.s.
	No, but interested	4.9	6.0			7.6	10.3		
	No, not interested	7.4	27.4			16.3	43.1		
	Total	100.0	100.0			100.0	100.0		

* p < 0.00.

** p < 0.01.

*** p < 0.001.

Table 2

Determinants for use of mobile technology for online shopping and entertainment, General Linear Model.

	Purchasing products or services online	Activating a mobile application for payment of purchases	Listening to internet radio or music online	Watching videos or programmes online
	Parameter Estimates (β)			
Age (Ref. under 55) (F)	F = 2.713 [*]	n.s.	F = 2.892 [*]	F = 3.395 ^{**}
55–59	–0.033	.022	–0.241	–0.385 ^{**}
60–64	–0.399 [*]	–0.144	–0.469 [*]	–0.437 [*]
65–69	–0.079	–0.046	–0.327 [*]	–0.343 [*]
70–74	–0.516 [*]	–0.335	–0.481 ^{**}	–0.411 [*]
Gender (Ref. male) (F)	n.s.	F = 9.517 ^{**}	n.s.	F = 9.244 ^{**}
Female		–0.214 ^{**}		–0.283 ^{**}
Household type (Ref. single) (F)	n.s.	n.s.	n.s.	n.s.
Co-habitation	0.070			
Co-habitation, children	0.303 [*]			
Other	–0.162			
Education (Ref. no education) (F)	F = 3.025 [*]	n.s.	n.s.	n.s.
Vocational training	0.081			
College degree or post-secondary education	0.050			
University degree	0.384 [*]			
Residential area (Ref. rural area) (F)	n.s.	n.s.	n.s.	n.s.
Large city			–0.294 [*]	
Other city			–0.259	
Urban area			–0.043	
R-Squared (Adjusted R ²)	0.089(.045)	0.065(.020)	0.111(.069)	0.116(.075)

* p < 0.00.

** p < 0.01.

from the reference category. The adjusted coefficients of determination (adjusted R²) show the proportions of variance explained by all independent variables together. R-square (R²) value indicates the goodness-of-fit of measures where the higher value predicts the better model fit for the data (e.g. Cameron and Windmeijer, 1997). In the GLM model, the R-square values are relatively, yet not exceptionally, low considering the field of the study. The values indicate that there are other predictors not included in the model that explain variation in the dependent variables. As our main interest is to estimate the relative contribution of each independent variable, R-square values are only of the secondary importance. The determinants for online activities are statistically significant depending on the variable and thus useful in explaining the online behaviour.

6.2.1. Online shopping

Table 2 shows that age remains a significant predictor of purchasing products or services online when other variables are controlled for. Compared to under 55-year-olds, those aged 60 to 64 and 70 to 74 use mobile devices for online purchases most infrequently. Household type is associated with online purchases: respondents who are living with a spouse and who have children living in the household more typically use a mobile device for online purchases. Having a university degree is the strongest predictor of mobile-based shopping, while gender does not remain as a significant factor. As regards activating a mobile-based payment application, the analysis shows gender and age differences, indicating that it is most typical for male respondents and least typical for the oldest age group.

6.2.2. Entertainment media

Regarding listening to music and radio online, age and residential area turn out to be significant predictors of use. Respondents aged 60 to 64 and 70 to 74, as well as those living in a large city, are least likely to use smartphones or tablets for music or radio listening. Gender, education, and household type are not associated with listening to music or radio online. Watching videos or programmes online is determined by age and gender only, as household type, education, and residential area have no explanatory power.

7. Discussion and conclusions

This study aimed to investigate the use of mobile technology for online shopping and entertainment among older adults with a focus on age and life course stage effects. In response to RQ1, the study demonstrated that older adults use smartphones or tablet computers for online purchases almost as often as younger adults. The use of mobile-based entertainment, however, is differentiated by age and gender, demonstrating that younger males use mobile devices for entertainment in a more versatile way compared to older adults. Among older adults, differences between male and female respondents are more pronounced in the use of entertainment than in online shopping, implying that female consumers aged 55 to 74 use a mobile device for entertainment least frequently.

In response to RQ2, mobile-based online shopping is best explained by life course stage and education. In mobile-based online shopping, age is especially significant during certain life stages: in the ages 60 to 64 and 70 to 74 a stage appears in which the use of mobile-based online shopping is the lowest. For some people, retirement age (approximately from 60 to 64) might affect online shopping as income level decreases. On the other hand, after retirement people have more opportunities to shop offline as the time constraints related to work and family typically improve (Bouchard, 2014; Erickson et al., 2010). Those aged 70 and over rarely own a mobile device, or if they do, they might lack social networks that provide digital skills to shop online or they may perceive more financial or management risks towards it (Kwon and Noh, 2010; Lian and Yen, 2014; Livingstone et al., 2005). Our study revealed that the presence of children in the household increases the probability for online purchases. In these households, the necessary technological skills are more easily passed from children to parents, and the need for consumption is typically larger and opportunities to shop offline fewer.

This study supports previous findings about the significance of education in the use of digital technologies among older adults (Czaja et al., 2006; van Deursen and Helsper, 2015; Livingstone et al., 2005; Näsi et al., 2012; Piper et al., 2016; Räsänen and Koiranen, 2016; Selwyn, 2004; Zickuhr and Madden, 2012). Nevertheless, not all internet-based activities necessarily require education-based digital skills, nor does education necessarily affect the use of all digital technologies. For instance, making purchases online requires understanding of the management of costs, the ability to tolerate risks, the capacity to understand visualised content, and simultaneously, the influence of social capital and networks on navigating various shopping environments (e.g. Kwon and Noh, 2010; Lian and Yen, 2014; Pfeil et al., 2009). These skills are perhaps connected to education level. However, our study shows that older people do not significantly differ from younger adults in their use of mobile devices for online shopping. Perhaps those older adults who have access to a mobile device have developed sufficient skills to perform mobile-based shopping with the use of the device. Therefore, a lack of skills probably does not restrict online shopping among mobile device owners under the age of 70.

Mobile-based entertainment, on the contrary, is less predicted by household type, but is connected to age and gender. Similar to online shopping, respondents aged 60 to 64 and 70 to 74 use mobile devices for entertainment least frequently. The use of entertainment is differentiated by gender only as regards video watching, which is more typical for men than women. In terms of life course effects, it is important to note that education and household type do not remain significant predictors for mobile entertainment use when other variables are controlled for. The use of mobile-based entertainment media thus requires less technological skills. Despite this, older adults use mobile-based entertainment clearly less frequently than younger adults. One explanation could be generational preferences for certain types of media landscapes. For those born in the 1950s, television was the medium that further established some of the patterns introduced by radio, but also introduced new ones (Bolin and Westlund, 2009). Hence, the use of mobile entertainment could perhaps be understood through generational aspects of media use. In addition, well-educated older females prefer highbrow cultural activities such as theatre, opera, or classical music (Purhonen et al., 2011) which might reduce the time they spend using their mobile devices for entertainment purposes.

This study supports previous findings that digital entertainment, or entertainment in general, is a gendered and age-specific practice (Helsper, 2010; Papastergiou and Solomonidou, 2005; Traeen et al., 2006). Some studies argue that gender

differences are generational and that they will not remain in the future, since younger females use new technology in a similar way to younger males (Dutton and Helsper, 2007; Fallows, 2005; Helsper, 2010). This study revealed that, in listening to internet radio or music online, gender differences are similar in both age groups, which represents the effect of life stage and the continuity of gendered roles in radio or music listening. Regarding online video watching, gender differences were larger among older adults which might indicate the generational effect on video watching in older male and female media users. Videos were not yet very common in the young adulthood of today's 55 to 74-year-olds which suggests generational preferences in watching videos online or offline (see also Bolin and Westlund, 2009). Moreover, among the oldest generation, gender roles have been more traditional, which could explain the gender differences in the use of entertainment. Therefore, it is likely that the non-use of mobile devices for entertainment purposes, especially among older women, can be explained by both life stage and strong gender roles among the older generation. Future research should thus investigate whether or not gender differences persist, increase or decrease as the younger generations age, and in which ways various life events related to social and personal relationships in late midlife influence the use of entertainment media technologies among men and women.

The study involves certain limitations concerning the representativeness of the data. The survey was conducted among Finnish television viewers which might exclude some part of the Finnish population. The respondents were members of a research panel of TV viewers and thereby, the ownership rates of smartphone and tablet computer were slightly higher in comparison to all Finnish people. Our results represent mainly active and computer literate consumers who probably have better access to mobile technology than the population on average. Despite these limitations, the study distinguished some particularities among Finnish consumers and their use of mobile devices for online consumption and entertainment, which enriches the understanding of ageing digital consumers.

Funding

This work was supported by the Finnish Funding Agency for Innovation (TEKES; project number 2826/31/2014) and the Academy of Finland (project number 265986). The funding sources did not have any particular role in the study design, in the writing of the report, and in the decision to submit the article for publication.

Acknowledgements

The authors thank Ursa Dykstra for proof reading the article.

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III

A RISK TO PRIVACY OR A NEED FOR SECURITY? DIGITAL DOMESTIC TECHNOLOGIES IN THE LIVES OF YOUNG ADULTS AND LATE MIDDLE-AGERS

by

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Digital technologies and Generational Identity. ICT Usage Across the Life Course

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A risk to privacy or a need for security? Digital domestic technologies in the lives of young adults and late middle-agers

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Abstract

This chapter discusses the ways young adults and late middle-agers define their relationship with digital technologies in the contexts of housing and living. By analysing data from eight (8) focus group discussions, this chapter identifies socially shared ideals regarding consumption of digital technologies typical of young adults and late middle-agers as well as ideals that connect people over generational and life course boundaries. Young adults interpret digital technologies through concepts of time management, self-control and privacy. For late middle agers, technologies are conceptualised with meanings related to personal skills, social relationships and security. All participants negotiated consumption of technologies with meanings related to need, necessity, vanity and desire.

Introduction

In studies of consumption, it has been argued that different generations possess unique values and attitudes that significantly affect their daily consumption choices, preferences and behaviours (Carr et al., 2012; Chhetri et al., 2014; Eastman and Liu, 2012; Parment, 2011, 2013; Valentine and Powers, 2013). As a consequence of the development of digital devices, consumption is digitalising and new digital solutions are being provided for consumers regardless of age (Dholakia, 2012). This chapter investigates how digital technologies are perceived by young adults and late middle-agers in daily contexts of housing and living in Finland. More specifically, we investigate what kinds of socially shared meanings young adults and late middle-agers, understood as members from different generations, have towards consumption of digital technologies in domestic environments.

Digitalisation of domestic environments refers to processes where new technologies, such as smart home solutions and other digital devices from smart phones to robot lawn movers, are intertwined with daily practices of home, housing and living (Balta-Ozkan et al., 2014; De Silva et al., 2012; Dholakia, 2012). First, we discuss concepts of life course, generations and the digitalisation of domestic environments in terms of attitudes towards digital technologies. Second, we analyse qualitative data from eight (8) focus group interviews with 68 participants. Third, we discuss the empirical results with respect to new approaches to generations and the marketing of digital devices, arguing that values and attitudes towards technologies are affected by both shared generational aspects and individual life-course events. By utilising data collected in the Finnish Housing Fair environment, the chapter combines aspects of sociology and marketing with qualitative, interview-based research.

Life course stages and new technologies

In life-course literature, the stages of life course are usually classified into young adulthood (years 18 to 30), middle age (years 31 to 45), late middle age (years 46 to 65) and old adulthood (years 65 and over) (Hutteman et al., 2014). Each life stage involves particular transitions, such as changes in roles and statuses and readjustments to new social roles and expectations (Hutchison, 2011). Young adulthood is characterised by identity formation, formation of romantic relationships, and the significance of peers. In late mid-life, transitions occur in work-life balance, in relationships towards ageing parents and children leaving home (Hutteman et al., 2012). In late mid-life, leisure time typically increases (Helson et al., 2006; Kokko, 2010). Consumer decisions, based on economic resources, social capital, health and wellbeing, lifestyle values, and aspirations (Beer and Faulkner, 2011) are therefore necessarily affected by the life-course stage.

Use of new technologies is typically influenced by life experiences. Although late middle-aged adults are familiar with technologies such as the telephone, television and radio, most of them have learnt to use computers, mobile phones and the Internet as adults, and are less familiar with them than young adults who have grown up with these technologies (Green, 2010: 137; Haddon, 2005). In previous research, older adults are often represented as lacking skills in using new technologies (e.g. Barnard et al., 2013), and for expressing less comfort and ease in using technology, and less confidence in their abilities to use new technology (Chen and Chan, 2011; Smith, 2010). For older adults, communication with family and loved ones, as well as access to social support have been the most common motivations for computer and Internet use (Thayler and Ray, 2006). Other motivations include a safety link to others (Ling, 2004) and a way to support independent living (Mikkonen et al., 2002).

Today, the boundaries and lengths of each life stage are flexible and life course transitions, such as transformations in roles and expectations in working life, do not necessarily appear as linear. People have ever more possibilities to transform and adjust their own biographies in non-conventional ways (Beck and Beck-Gernsheim, 2002; Izuhara, 2015; Kohli, 2007). For young adults, for instance, accessing home ownership is often considered a rite of passage to full adulthood, backed by a stable income, career prospects and the need for space for a growing family (Izuhara, 2015). Today, many life course transitions, including leaving the parental home, family formation, and purchasing a home, which used to occur in the 20s, now often occur in the 30s. In old adulthood, as general living standards and life expectancies have risen, people have more possibilities to pursue a lifestyle that addresses quality of life and self-expression (see also Koivula et al., 2015). New technologies and social media applications focused on self-expression, for instance, provide opportunities for creating a life-course of one's own with individualised and customised choices.

Generational archetypes

Studies of generations argue that consumption practices and use of new technologies are influenced by shared generational experiences. The concept of 'generation' refers to a group of individuals who have experienced similar historical events in their early adulthood that later constitute shared experiences or consciousness (Karisto, 2007; Mannheim, 1952; Purhonen, 2007). Generational experiences are said to remain unchangeable throughout the life course, although typically generational experiences are influenced by life course transitions as well (Carr et al., 2012; Meredith and Schewe, 1994; Ryder, 1985). 'Generation' is also applied in marketing studies to understand consumer practices such as buyer involvement, brand loyalty and lifestyle segments of generations, arguing that generations are distinguishable in orientations towards adopting technologies, sustainable consumption practices, and early

adoption of new products (Chhetri et al., 2014; Eastman and Liu, 2012; Parment, 2011, 2013; Syrett and Lamminman, 2004; Valentine and Powers, 2013).

Studies of generations typically argue that each generation shares distinctive features, such as values and attitudes that would be somewhat typical for members of each generation. Members of Generation Y, born approximately between the years 1979 and 1994, aged 23 to 36 in 2015, have spent their early adulthood in a period of economic growth and emergence of new media, and consequently appear as individualistic but well-educated and technologically skilled with positive orientations towards consumer culture and new technological innovations (Paul, 2001). Generation Ys are often illustrated as ‘digital natives’ who possess positive attitudes towards new technologies and carry well-developed technological skills. Also called the ‘Millennials’, Generation Ys have grown up in a global mind set with unrestricted communication where mobile devices are instantly used for social networking (Parment, 2011).

Members of Generation X, born approximately between the years 1964 and 1978, aged 37 to 51 in 2015, are rarely identified as a discrete group of individuals in the Finnish context and have not been empirically investigated to the same extent as other generations. Generation Xs lived their youth during the 80s and became adults in the 90s and consequently encountered the financial recession in adulthood; hence the lives of Generation Xs have been influenced by economic uncertainties (Smola and Sutton, 2002).

Prior to Generation Xs, Baby Boomers, born in the Finnish context between the years 1945 and 1950, represent the first post-war generation in western societies. Growing up during a period of revolutionary societal changes, Boomers are often associated with untraditional and idealistic values (Karisto, 2007; Purhonen, 2007); marketers interpret Boomers as an extravagant and brand loyal generation. Unlike younger generations, Boomers were not

influenced by technological innovations until the age of 35 to 40, indicating that they were not similarly engaged with emerging digital technologies as younger generations.

In Finland, those born in the 60s and currently aged approximately 50 to 55 are not usually acknowledged as members of any particular or well-defined generation based on international classifications. According to Finnish longitudinal studies, the birth cohort born in the 60s, aged approximately 50 and over in 2015, most value benevolence in the form of the promotion of the wellbeing of close relatives, and universalism in the form of taking care of other people and nature (Pulkkinen and Polet, 2010: 82–83). People aged 50 and over also value safety, implying the security of society, personal relationships, and life in general. As the values of different generations are examined, it becomes clear that orientations towards and shared meanings regarding digitalisation are diverse, indicating the possibility of identifying generational values towards digitalisation of domestic environments.

Digitalisation of domestic environments

Digitalisation of domestic environments refers to processes where daily contexts of housing and living are influenced by digital devices. Technology available to consumers have expanded and consumer markets offer constantly changing products related to the digitalisation of households: new smart home solutions, for instance, are presented to consumers (Balta-Ozkan et al., 2013; De Silva et al., 2012; Ehrenhard et al., 2014). Content creation is not limited only to certain service providers; consumers have become the creators of technology via communication platforms which also aid consumers in organising their lives (Dholakia, 2012: 17). Consumption of technologies occurs in households where socio-cultural resources, as well as family dynamics, significantly influence the use and adoption of technologies (Livingstone and Lunt, 1991). In households, technologies are generally consumed for multiple purposes, including entertainment, online shopping, communication and household tasks. At the moment,

these technologies are becoming digital, indicating that digital devices such as smartphones and tablet computers are used for the management of everyday living.

Often, digital technologies have different meanings for different social groups, and these meanings typically differ by age (Oksman, 2006). These meanings, such as values and attitudes regarding technologies, are typically negotiated, reflected and maintained in social relationships (Bijker and Law, 1992; Kline and Pinch, 1999; Pinch and Bijker, 1984; Selwyn, 2012). In the remainder of this chapter, we investigate socially shared meanings concerning consumption of digital technologies in domestic environments. We also present empirical findings from group discussions to highlight the shared meanings among consumers at different life course stages. More specifically, we investigate:

- I. What kinds of socially shared meanings do young adults and late middle-agers express towards digitalisation of domestic environments, and consumption of new technologies in general, during group discussions?
- II. Can values and attitudes regarding digital technologies shared by members of each generation be interpreted as reflecting a generational experience or do they rather emerge from individual life-course events?

Data and methods

Data

This study analyses qualitative interview data from eight (8) focus group discussions that were conducted in the context of the Finnish Housing Fair¹ in 2015. Four (4) of the groups consisted of people aged 50–65 and three (3) groups of people aged 18–35. One (1) group had both older

¹ The Housing Fair is an annual event in Finland that showcases ongoing trends in the housing industry, such as building, architecture and interior design. The Housing Fair is a set area where the houses are built and decorated for the audience to visit. (www.asuntomessut.fi)

and younger participants. A total of 68 participants attended the discussions. Each discussion, conducted as a semi-structured group interview, included 7 to 12 participants and lasted approximately 60 to 75 minutes.

Participants

About half of the participants belonged to the age group of 18 to 35 year olds (N=31) and the other half to the age group of 50 to 65 year olds (N=37). Over half of the participants were women (N=44). The majority lived in an urban area in an apartment building, and the participants were mainly employed, and held a master's or college degree. In terms of family relations, one third were married or in co-habitation and did not have children living at home; another third were married or in co-habitation with children living at home. The participants were randomly selected to focus groups so that each group contained both women and men. About half of the participants attended the interviews as couples or families. Concerning their socio-demographic background, the participants were a rather homogenous group which indicates that the findings are limited to the urban and educated people with a middle-class background.

Procedure

The data was collected in the following way. First, participants were recruited through an advertisement in a decoration magazine, on the Housing Fair's website and on the website and Facebook site of the research project. In the advertisement, two focus groups based on age definitions were recruited: 18 to 35-year-olds (young adults) and 50 to 65-year-olds (late middle-agers). Out of approximately 200 contacts, 70 participants were selected for the interviews. Selection of the participants was based on the order of registration, and participants were awarded free entrance to the Housing Fair area.

Group discussions were organised in the Housing Fair area. Participants were met at the entrance of the Housing Fair and informed of the basic principles of the study. Participants were given 2 hours to walk around the area, after which group discussions were conducted in a separate room. There were two researchers moderating the discussions, and two researchers made notes about the situation and the participants. After the discussions, participants were asked to fill in a background information form that included questions on socio-demographic variables (birth year, gender, residential area, form of dwelling, occupation, education, and family relationships). The discussions were taped and transcribed, resulting in 146 pages of transcribed text.

Methods

The analysis of focus group discussions in which participants represent a specific group of people, such as young adults or late middle-agers, aims to understand and explain shared meanings that participants produce during discussions (Halkier, 2010; Rabiee, 2004; Thomas et al., 1995). These shared meanings are considered to represent and describe the life stage of each participant and, within these shared meanings, it is possible to understand and explain orientations towards digital technologies among different consumer groups. The group discussions conducted during this research were semi-structured, covering three research areas derived from the literature (Carù and Cova, 2015; Coolen and Hoekstra, 2001; Dholakia, 2012): 1) customer experience related to the Housing Fair, 2) consumption behaviour related to housing, and 3) use of digital technologies in everyday life. The sub-questions varied according to situational factors, such as participants' interests, group dynamics and the conversation process. The transcribed text was analysed with a qualitative content analysis method, which aimed to understand and explain meanings in the context of the text (see Hsieh and Shannon, 2005; Rabiee, 2004).

In the first phase of analysis, all data expressions related to use of technologies were separated from the main text. These data expressions comprised sentences and statements that the interviewees articulated during the group discussions. This analysis produced 121 statements related to use and adoption of new technologies. In the second phase, the raw data expressions were interpreted into upper categories that reflected shared meanings towards digital technologies in domestic environments. In this phase, the sentences and statements were interpreted in terms of barriers and difficulties related to the adoption of technologies. This produced 24 upper categories of shared attitudes towards technologies. In the final phase, the upper categories were combined further into main categories, in order to reduce the number of upper categories. A total of 15 main categories were formulated. In all phases, the analysis was grounded in empirical data expressions and the analysis unit was a sentence or statement articulated by one interviewee.

Results

Among all participants the digitalisation of housing and living aroused shared values and attitudes that varied from rejection to careful optimism towards technologies. Participants reflected on their relationship to technologies in an environment that represented housing and living in terms of the latest innovations where new technologies of housing were characterised as expensive commodities. Many participants interpreted digital domestic technologies as unnecessary in daily life and generally, they aroused more sceptical resistance than positive orientations.

Shared meanings among young adults

During the interviews, it was generally easier for younger participants to reflect on the role of technology in their everyday lives than for participants representing older generations. Many young adults interpreted new technologies, already involved in many aspects of their lives, as

inseparable from daily life. Despite this, many younger people saw obstacles to the use of new technologies in domestic surroundings, relating mostly to adopting and becoming familiar with them. Especially younger female respondents saw use of technology as requiring too much time to become familiar with and hence referred to the use of technologies in general as ‘*time-consuming*’:

I don't want the whole house to be digital. (--) It would take so much time to become familiar with it. (--) My stress level would get higher if I had to know how to use all these. (Female, 33)

If I got used to technology, it would be handy, but of course it takes time to adapt to it first.
(Female, 35)

Younger participants also perceived the digitalisation of housing as something they should have control over. The idea that ‘technology takes control over people’ came up among female participants who perceived the domestic environment as something that humans and not machines should have control over. Younger participants understood technology as smart and self-imposed: something that is inherently part of daily life and hence has to be controlled. Controlling the use of technologies was related to time spent with the devices and many shared the viewpoint that technology already occupies too much of their daily lives. Some participants described time spent without digital devices as ‘liberating’ and especially many young participants wanted to ‘shut down’ the technology that is already constantly close to them. For participants in their 30s, it was responsibilities towards work, and for participants in their 20s, responsibilities towards social networks that created the need to control the time spent using technologies.

Many of the younger participants reflected on digital technologies with respect to social relationships; for younger people social aspects of digital technologies were not necessarily perceived as positive. Due to the intertwining of new technologies in domestic environments, maintaining boundaries between personal and social life was perceived as important, especially

by younger females. The idea that *new technologies risk privacy* included negative evaluations of social media in domestic surroundings; from this framework, technologies were not perceived as something that could easily be adapted to private life. Rather, many wanted to make clear distinctions between private and social life with the use of technologies.

Male participants regarded digital technologies above all as consumer goods. New technologies were identified as *incomplete* when they lacked the qualities that would make them worth purchasing. Especially younger male respondents in their 30s identified new technologies as inadequate in terms of functionality and technical characteristics and they wanted ‘to see how they develop’ and not be ‘the first one to buy them’. They were conscious of the marketing and production processes of digital technologies and represented themselves as careful consumers of the latest innovations. This reflects a critical attitude of young males towards purchasing digital technologies in general.

Shared meanings among late middle-agers

Many late middle-agers identified new technologies in domestic surroundings as something they often lack skills to use. Male and female respondents shared experiences of new technologies as difficult and something they need help with. Whereas young adults understood difficulties in adopting new technologies in terms of time management, late middle agers perceived the difficulties as originating from their own inner qualities:

When my computer breaks, I don't know what to do. My kids will help me. (Male, 59)

If I have problems with technology, I need help. It's difficult to solve the problems by myself.

(Female, 52)

I am a technically unskilled person. I have my own support person; he is my son. (Female, 51)

Late middle-agers relied on family members and especially, their children, for help in using technologies. Many older respondents share the perception of their children as ‘digital natives’ who will help them in the adoption and use of technologies. Digital technologies in domestic environments were thus perceived as ‘common’ to the whole family and something the whole family shares together through experiences, meanings, and practices between generations (see also Piper et al., 2016; Selwyn, 2004; Zickuhr and Madden, 2012). The obstacles, and also the motivations, were related to how they are used in interactions between family members, and how the whole family is engaged in their use.

In addition to lack of skills, many late middle-agers recognised characteristics of technologies as not fitting with their lifestyle. In general, older generations, and female respondents in particular, understood technologies as too complicated and dysfunctional and recognised that ‘technologies have to be simple’ in order to fit their own values. From this viewpoint, technologies were not seen as valuable in themselves but only by virtue of their functions:

But I don't want to get it (digital device) for myself, if it's complicated. It has to be good and functional, so that I can utilise it. Making things simple, that's a good thing nowadays. (Female, 53)

In many cases, late middle-agers did not want to see themselves as too dependent on technologies. For older generations, functionality was perceived as a core value for digital devices: digital devices are used for banking, purchasing and shopping, information and communication with others (see also Dholakia, 2012). Dysfunctionality, on the other hand, was conceptualised as a key feature for most devices: ‘Now when it’s all digital, the system does not work in our house’ (Male, 52). Also, power cuts were mentioned as a risk factor in digital technologies. Whereas younger respondents understood technologies as developing devices that are constantly under construction, among older generations, it was scepticism towards the qualities of the devices in general that caused the critical attitudes towards them.

Late middle-agers significantly differed from young adults in their viewpoints on *safety*. For older generations, digitalisation was connected to values of safety, such as safety of domestic appliances or safety of housing and living in general. Late middle-agers reflected on safety in terms of their relationships with their own parents, and the connection between digitalisation and safety was associated with old adulthood rather than middle age. Safety, besides referring to the safety of digital technologies, was defined through personal relationships:

In the future, older people can live a longer life with digitalisation... nowadays, it is known that some floors can identify whether a person has fallen or is standing, this kind of increases safety to the living of old people. (Male, 51)

I was thinking of my mom, she lives alone. It would be a good thing to have digital devices that create safety in living. (Male, 51)

For late middle-agers digital technologies represented something that constituted generational experiences and differences between younger and older generations. Although young adults did not recognise themselves as digital natives, for late middle-agers younger adults were represented as the digital generation that utilises new technologies in a different way compared to their own generation. Late middle-agers identified that generational experiences during early adulthood, for instance growing up with a technology in one's 20s, have a significant influence on the ways people use technologies in later life. In their speech, late middle-agers composed generational experiences and boundaries and their identities through technologies:

We belong to that age group that it [technology] didn't belong to our lives when we were in our 30's. When I'm thinking about my own kids, who are 25 to 30, they take a shower with their cell phones. Let alone the kids in school. They live in a totally different world. (Female, 57)

Last year our son announced that he would like to have a television for a Christmas present, he told me all the models and all. Together we went to see it, and he used the television through a tablet... his generation utilises the possibilities in a completely different way. (Female, 63)

Shared meanings among all participants

Despite the fact that participants shared some values, ideals or attitudes that were age or generation specific, attitudes towards digital domestic technologies also connected participants across generation, age and life-course boundaries. Notably, female participants –regardless of age – shared the experience that they are ‘not interested in technology’, and that technologies in general are not a part of their lifestyle. The use of technologies was interpreted as something that people should naturally have an interest in, and in these respondents’ lives, technologies did not have a significant role. These opinions varied from ‘I’m not at all a digi-person’ (Female, 32) to ‘I’m not at all interested in technology, I use it as little as possible’ (Female, 52).

Fears and anxieties related to digital technologies were common among participants regardless of age, generation, life course and gender. Use of new technologies was perceived as a *risk* – not only in terms of power cuts – but also in terms of health, wellbeing and general safety. In addition, unfamiliarity about the health risks that use of technology involves, such as risk of radiation, was mentioned. The use of digital technologies, and especially smart phones, was also conceptualised as *addictive*; digital devices have already become necessities in most people’s lives and therefore ‘you are anxious when it is not in your pocket’ (Male, 65). Digital devices break boundaries in everyday life practices, and in online shopping, for instance, a fear of losing control appeared in some respondents’ speech:

It is very scary. Many of my friends buy clothes every week on the Internet. They just click and it’s very scary, how easy the shopping has become. (Female, 32)

Moreover, respondents in the different age groups identified the *information flow* of digital technologies as *exhausting*. This was especially connected to the use of smartphones associated with the working environment: ‘My phone rings, I am on the phone all day. After that I want to be in a quiet place’ (Male, 57). In today’s lifestyles, people perceived not having technologies at home as necessary for their wellbeing, and especially in the domestic environments, living without technologies was perceived as ideal:

I think the information flow is very exhausting. Now when I have the smartphone, I’m stuck to it all the time. It would be better for me to claim a place in my house which doesn’t involve technology. (Female, 30)

For all participants, not having technologies at home was justified with the idea that ‘people can do it by themselves’. For late middle-agers, managing daily lives without technologies was almost a matter of a pride: ‘I can manage to turn off the light by myself’ (Female, 55) and ‘I can manage to switch the lighting on and off and push the vacuum cleaner by myself’ (Male, 61). Late middle-agers understood technologies in domestic environments as assisting, meaning that technologies will assist the lives of elderly people, with whom they don’t identify. In the lives of young adults, managing their lives without technologies was associated with the future: ‘We will plant such a small lawn that we can cut it by ourselves’ (Female, 27). In both young adults and late middle-agers, a preference for living without technologies was associated and justified with a desire for physical activity.

In the context of housing and living, new technologies are still perceived as a *vanity*. When technologies are presented in domestic surroundings, people do not acknowledge them as necessities but rather as outcomes of the markets. In participants’ speech, a need for technologies is negotiated between concepts of ‘vanity’, ‘necessity’, ‘need’ and ‘desire’. Consumption of technologies is conceptualised in terms of a moral framework (see also Silverstone and Hirsch, 1992) where the use of new technologies is comprehended as

‘splurging on unnecessary’ which, in terms of housing and living, have negative connotations. Simultaneously, this symbolises the profound distinction between consumer desires and normative restrictions, where consuming technologies for hedonistic purposes is conceptualised as morally suspicious (see also Lehtonen, 1998; 224, 229-231; Sarantola-Weiss 2003, 37-39). Therefore, throughout the group discussions, interviewees reassured us and each other of their ability to manage their home without technologies, although they identified the addictive features of them.

Conclusions and discussion

In many previous studies, Finnish people are typically represented as technologically skilled consumers who adopt and orient themselves positively towards new technologies (Desai et al., 2012). When consumption of digital technologies is discussed in groups, digital technologies arouse more negative resistance than positive attitudes. Well-educated, urban and middle-class consumers are very conscious of the markets and the life cycles of products and services, which may result in critical attitudes towards marketing of new technologies. In Finland, consumer attitudes in general, and those of ageing consumers in particular, highlight values and attitudes of ecological and ethical consumption over the values of self-indulgent and hedonistic consumption (Nyrhinen and Wilska, 2012; Wilska, 2002). This, due to understanding digital technologies as expensive commodity goods, might lead to perceiving them as ‘unnecessities’ and ‘vanity’ in daily lives. Additionally, cultural interpretations of technology reflect the binary codes and symbolic good versus bad, and therefore, this can connote the profound tendency of consumers to label technologies as something suspicious (see also Mick and Fournier, 1998; Pantzar, 2000: 242). The study asked whether these values and attitudes reflect generational experiences or if they emerge from individual life events. The perception of digital technologies as a vanity connected consumers regardless of generational boundaries, which might imply that these attitudes are not greatly affected by generational experiences.

Although digital domestic technologies are predicted to expand in the future (Ehrenhard et al., 2014), participants in our study understood the digitalisation of domestic environments as a risk to privacy and general wellbeing. Moreover, the participants perceived technology as a risk in different ways, depending on their age and life course stage. Young adults highlight the risk to privacy and independence whereas late middle-agers perceive technology as a risk to security. These perceived risks can reflect the life course and generation membership of each consumer: members of Generation Ys are said to value independence (Paul, 2001; Parment, 2011, 2013) which may lead to their need to emphasise privacy in the use of technologies. Millennials, being affected by technologies starting in early childhood (Green, 2008), have experienced the all-encompassing effects of technologies in their social relationships and therefore might highlight privacy as a core value and similarly a risk of technologies.

Moreover, the lives of young adults, involving transitions in social relationships from student to employee or from single to married couples and later on to parents (Hutteman, 2014; Green, 2008) is characterised by rapid changes and juggling between different social roles and responsibilities; thus technologies can also be perceived as a risk in terms of time management, pointing to the need to have control over them. Hence, the commonly known stereotype of those born in the 80s and early 90s as ‘digital natives’ (Dulin, 2008) is not supported in this study; rather, many participants aged 25 to 35 speak about technologies in a belittling way. In young adults’ speech, generational experiences or consciousness in the use of digital appliances seemed nevertheless stronger than among late middle-agers, indicating that young adults might have a stronger generational identity in terms of digital technologies than late middle-agers.

Older adults – those aged 50 and over – generally value safety (Pulkkinen and Polet, 2010) and new technologies represent functions related to safety (Ling, 2004; Mikkonen et al., 2002). In our discussions, late middle-agers connected digital technologies to ideals of security, and in the case of smart home solutions, ‘digital security’ is connected to old adulthood in late middle-

agers' speech. Moreover, late middle-agers were much more insecure about their ability to manage technology which resulted in a careful orientation towards it. Late middle-agers became engaged with technologies in their 30s so they might not have had the opportunity to integrate technologies into their already established daily routines (Haddon, 2005). From this perspective, the use of digital technologies seems to be a matter of generation or cohort experience (Ling, 2008).

In our group discussions, however, insecurities towards technologies were interpreted by participants as stemming from inadequate skills. Rather than generational or cohort experience, attitudes towards digital technologies reflect the life-course stage of late middle-agers: with ageing, maintaining satisfactory social relationships becomes important (Charles and Carstensen, 2010; Hutteman, 2014) and for ageing consumers, digital technologies represent means of maintaining relationships and communication with family members (see also Thayer and Ray, 2006). In this study, late middle agers recognised generational differences in terms of technological skills, but in themselves the differences did not represent a generational consciousness as much as the individual life events related to changes in personal relationships and the need to 'stay in touch' with their family members.

The findings of this study highlight the importance of understanding the particularities of different generations as market segments. Although young adults and middle-agers seem to adhere to similar values and meanings concerning the digitalisation of domestic environments, the subtle differences in perceived risks and benefits of technology provide a basis for cohort-based differentiation of marketing practices. Product design, branding and communication could create personal appeal and a sense of familiarity (Parment, 2013) among middle-agers by demonstrating that digitalised products result in benefits such as safety and the well-being of others. Conversely, privacy and independence are focal concerns for young adults, and thus

brand, product design and communication personalised to this cohort could be designed accordingly.

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IV

DIGITAL PARTICIPATION IN SERVICE ENVIRONMENTS AMONG SENIOR ELECTRICITY CONSUMERS IN FINLAND

by

Kuoppamäki, S.

Technology in Society, 55, 111-118, DOI: 10.1016/j.techsoc.2018.07.003

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Contents lists available at ScienceDirect

Technology in Society

journal homepage: www.elsevier.com/locate/techsoc

Digital participation in service environments among senior electricity consumers in Finland

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ARTICLE INFO

Keywords:

Digital participation
Electricity consumption
Online environments
Older adults
Ageing
Life course

ABSTRACT

Research to date suggests that older adults engage with digital technologies less frequently than young adults. Studies typically focus on chronological age, ignoring the effects of life course factors on the adoption and use of digital technologies. By utilising multiple triangulation, the article investigates the role of age and life course stage in the usage of an electricity company's online services among senior consumers. The data are derived from an internet-based survey study (N = 1366) and six focus group discussions involving Finnish electricity consumers (N = 29). The results suggest that online consumers aged 50 and over utilise electricity company online services more frequently than younger consumers. Seniors report lack of knowledge regarding online environments less frequently than young adults. On the bodily level, senior consumers mention physical discomfort as a challenge and maintaining a physically active lifestyle as a driving force for digital participation. On the mental level, seniors report environmentally conscious attitudes and altruistic values as a challenge and social connectedness as a motivation to digital participation. On the biographical level, a decline in social networks challenges digital participation but simultaneously provides new opportunities for strengthening existing networks. In conclusion, the article suggests that life course factors (e.g. multidimensionality of age and other socio-demographic variables, such as occupation and income level) may better explain use of electricity company online services among seniors than chronological age.

1. Introduction

In a digital society, companies and other service providers now offer various digital platforms in order to engage their customers in active use of online environments. Digital platforms are constituted around producing and consuming personal data to manage various aspects of everyday life [40]. Among consumers, the internet is now used for various purposes ranging from bank services, reading the online newspapers, producing and consuming blogs and other social media, and searching for information on health, nutrition, travel, and leisure activities. In Finland, almost all online activities are performed less frequently by older adults than by middle-aged and young people [46]. For instance, use of the internet for online bank services is most active among adults aged 35 to 44 (98%). The majority (83%) of late middle-agers (aged 55 to 64) have used the internet for bank services in the past 12 months, but among adults aged 75 to 89, the amount is only 27%. In certain online activities, late middle-agers have become active users; still, online activities that involve social participation are more typical for young people [46].

Research on older adults' engagement with digital technologies has proposed various reasons for the use and non-use of online

environments among senior consumers. Although adults aged 65 and over have become more active online, they use the internet and personal smartphones, desktops, laptops, e-readers and tablets less frequently in comparison to younger age groups [19,33,38,41,48] and thus lag behind in digital engagement [14,32,34,44,49]. Along with age, other socio-demographic factors such as income, socio-economic position and education level are associated with technology use such that disadvantaged social groups more likely lack access to technology such as the internet [14,41,50]. Furthermore, behavioural indicators such as attitudes towards the internet and other individual judgements and considerations shape experience with technologies. Among older adults, a lack of internet attitude, feeling too old, a lack of internet experience or skills, insufficient time, and high connection costs have been recognised as barriers causing limited or non-use of the internet [19,24,29,31,34].

This article explores the role of age and life course stage in digital participation among senior electricity consumers in Finland. The study examines seniors, or adults aged 50 and over who are experiencing late midlife (approximately years 46–60) and approaching old adulthood (approximately ages 61 and over) [21]. Representing a specific yet heterogeneous group of consumers, adults aged 50 and over are

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<https://doi.org/10.1016/j.techsoc.2018.07.003>

Received 3 April 2018; Received in revised form 14 June 2018; Accepted 2 July 2018

Available online 03 July 2018

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encountering life transitions related to work and family life [6,21], which may influence the usage of digital technologies.

Previous research on older adults and digital technologies addresses the usage of certain devices, thus paying less attention to the usage of online services. The article focuses first on the usage of an electricity company's online services, and second on the role of age and life course stage in digital participation among electricity consumers. The article begins with an overview of theoretical concepts regarding digital participation across the life course. This is followed by an empirical investigation of digital participation among senior consumers, analysing both quantitative and qualitative data. At the end, the results are discussed with respect to challenges and opportunities in senior consumers' digital participation at the bodily, mental, and biographical levels.

2. Digital participation across the life course

2.1. Participation in digital environments

Participation in digital environments refers to various forms of online engagement which revolve around online-based interaction between consumers and service providers [26,27]. Many companies and service providers, electricity companies among others, now offer digital platforms that enable their customers to manage personal data related to electricity consumption. Through mobile applications and other digital services, consumers are able to track their energy consumption in order to save energy or minimise the costs related to it. In internet environments, consumers are actively recruited into production by offering management tools to quantify and calculate personal data. Participating in an electricity company's online services resembles social media, where digital tools are applied to connect and share information between individuals, social groups, and a customer and a company. These kinds of participatory media [7,43] are associated with questions of social stratification [27], and active online participation is typically considered beneficial for both individuals and companies [26].

In the usage of an electricity company's online services, various participatory forms of interaction and production are involved. These include online communication with customer service, connecting with the company's social media networks, receiving advertising information and status updates, and sharing personal data with a social network. Among consumers, participation in digital platforms may result in user empowerment, such as greater self-acceptance, more self-confidence, and a reduction in perceived isolation [1]. New media can thus strengthen the exchange relationships between companies and consumers [9,42]. Consumers' engagement can be viewed as prosumption, which combines consumption with productive input [5]. The interaction between producers and consumers contributes to collaborative value creation, where consumers of new media actively create their input into the design and production of services [26]. This is expected to improve the customer experience by increasing interactivity as well as lead to an increase in satisfaction and trust [9,42].

In digital servicescapes, consumers apply digital technologies that exist to enhance the customer experience, but quite often, digital technologies make the interaction between consumers and suppliers more complex [3]. Due to the lack of physical attributes, in online servicescapes, maintaining interaction and dialogue, which typically contributes to the customers' sense of wellbeing, encounters challenges, and factors such as aesthetic appeal, layout, functionality, and financial security become key components of virtual space [16]. Social interaction is central to customer experience on the internet [51], and through signs and symbols, consumers' expectations are managed. In digital environments, individuals interpret each other's actions symbolically [4]. In consequence, service providers, consumers, and participants co-create the virtual servicescape reality they are experiencing [3].

2.2. Digital participation in the lives of seniors

Consumer participation in digital environments is expected to increase quality of life by strengthening social networks, providing tools for active ageing, and enhancing active participation in consumer culture [28]. Research on older adults' internet and computer use has typically concentrated on cognitive and motor skills, indicating that older adults possess diminished skills in computer use [8]. The lack of skills has been associated with generational experiences, indicating that older adults, born as 'digital immigrants' [36], lack certain knowledge in relation to digital environments due to delayed exposure to digital technologies in young adulthood. Participating, sharing and connecting in digital environments nevertheless changes across the life course, as people in various stages of life possess different needs, routines, and desires that influence digital activity [47]. The dynamics and processes of digital participation are thus significantly influenced by life stage, which transforms the co-creation of digital services into a more fragmented and individualised process in different groups of people.

The effect of life course stage on digital skills, access and attitudes towards technology can be understood on three levels. On a bodily level, changes in physical condition and perceptual and motor abilities may affect interest and disinterest in technologies [8,30]. On a mental level, older adults may report a lack of internet attitude, feeling too old, and frustration with learning experiences [13,17,19]. Lack of internet attitude indicates motivational problems that are associated with internet anxiety and may result in attempts to minimise the time spent at the computer [10]. On a biographical level, changes in social and personal relationships may influence access to technology. For instance, the presence of children in the household may increase adults' internet use [22], as children may provide a reason to acquire internet access and enhance adults' interest and skills in using the internet [12,47]. Stronger social ties might predict better access to the internet, as those who are lonely mention lack of access as a reason for non-use of the internet more often [19].

Among senior consumers, social support that is exchanged through digital media can therefore enable digital participation. For older adults, social connections and intimate relationships maintained by digital media are sources of emotional strength [28,37]. With ageing, senior consumers encounter changes in social and personal relationships: social networks narrow, yet they become more meaningful [6], and older people have a stronger need for maintaining meaningful ties with established social partners [2,11]. When people become older, these social ties become threatened due to poor health, death of relatives and family members, and residential relocation of friends and family [28]. In later life opportunities for socialising may become more restricted due to decreasing health and mobility [25] and reduced motivation and energy [18]. The weakening of social networks may thus reduce digital activity, as social support that is typically needed for active online engagement becomes less available [20,37]. To advance the understanding of the life stage factors behind digital participation, these biographical factors need to be taken into consideration.

3. Research questions

Previous research on older adults' use of digital technologies has mostly focused on chronological age, putting less emphasis on the life course factors in digital engagement [19,33,38,41,48]. In order to better characterise the dynamics between digital servicescapes and consumption in relation to age, the article takes into consideration the multidimensional role of age in digital participation. The article explores digital participation among senior electricity consumers in Finland by focusing first, on the use of an electricity company's online services and second, on the role of age and life course stage in digital participation among senior electricity consumers. Through this analysis, the article contributes to bridging the knowledge gap regarding age and digital prosumption and highlights the role of life stage factors

in digital consumption. The article asks:

- 1) To what extent do senior consumers take part in an electricity company's online services and report challenges in digital participation?
- 2) How are age and life course stage associated with digital participation among senior electricity consumers?

4. Research material and methods

4.1. Quantitative data

The study utilises data from an online survey conducted among Finnish-speaking electricity consumers (N = 1366) and five focus group discussions conducted among electricity consumers of Jyväskylä Energy Group (N = 29). The online survey was administrated between November 2015 and January 2016 to Finnish-speaking internet users from various electricity companies. The online survey was distributed through several online forums in order to reach a heterogeneous group of respondents.¹ In addition, the online survey was delivered via electricity companies. The target group of the survey consisted of participants aged 50 and over (N = 743) with a control group of participants aged 18 to 49 (N = 623). The age categorisation was based on developmental studies that consider late midlife to start at approximately age 46 [21].

Despite the relatively high number of respondents, the survey sample covered participants who most likely had more frequent access to internet and online services in comparison to the Finnish population on average [46]. When distributing an online survey through online forums it is not possible to gather a population-based sample. Moreover, the age group of participants aged 50 and over was over-represented in relation to participants aged 18 to 49. This indicates that participants aged 50 and over were likely more active internet users in comparison to all Finnish-speaking adults of the same age group. Therefore, when interpreting the results it is important to take into consideration the selection of participants, who in this study represented active internet users with a relatively high interest in electricity consumption.

The survey questionnaire was composed of 17 questions measuring the use of digital services, with 10 questions measuring the socio-demographic background of the respondents. Out of 17 questions, 11 measured the use of or interest in using electricity company online services. These 11 questions measured the frequency of use of, interest in using, reasons for non-use of, and customer satisfaction with online services.

4.1.1. Measurements

In the quantitative analysis, digital participation was measured by the frequency of use of the electricity company's online services in the past twelve months. In addition, challenges and obstacles to digital participation were measured by self-reported reasons for non-use of electricity company online services. The dependent variables consist of eight (8) statements measuring the reason for non-use of online services.

The independent variable consists of age with control variables of household type, education, occupation and income level. Regarding household type, respondents were given five (5) answer categories: single, co-habitation with no children, co-habitation with children living at home, co-habitation with children moved away from home, and other. Regarding education, respondents were given seven (7) response options: no education, vocational training, upper secondary school, post-secondary education, Bachelor's degree, Master's degree

and Doctoral degree.² Occupation level was determined with five categories (5): employed, student, retired, stay-at-home-parent, and unemployed. Income level was measured in euros and recoded into four (4) income quintiles.

4.1.2. Statistical procedures

The analysis started with descriptive statistics on the frequency of use of the electricity company's online services. A contingency table was constructed with related statistical tests in order to compare the frequency of use between different age groups (18–30; 31–49; 50–65; 66–83). Pearson's chi-squared test was used to assess the significance of the differences between the age groups.

The analysis continued with a factor analysis of reasons for non-use of online services. The factor analysis was carried out with the principal axis factoring method and promax rotation to reveal the latent dimension of the variables.

The ANOVA model was designed and executed to examine the effect of age while controlling for other independent variables (household type, education, occupation and income level). The ANOVA model also showed which independent variables were significant predictors of reasons for non-use of online services. The factor scores of reasons for non-use were used as continuous independent variables and age, household type, education, occupation, and income level were used as categorical variables.

4.2. Qualitative data

To deepen and broaden the online survey data, five (5) focus group discussions were conducted for customers of a local electricity, water and district heat provider in the city of Jyväskylä, Finland. Participants (N = 29) were recruited in co-operation with a research company. By utilising the database of the research company, an invitation to take part in group discussions was sent via text message to electricity consumers over 50 years of age living in the Jyväskylä area. Consumers of this age group were selected for the focus groups as they represented late middle-agers who are encountering specific life transitions related to work and family life [21]. In total 122 persons responded to the invitation, and 64 persons enrolled as volunteers for the group discussions. Of these 64 persons, 29 were able to take part in group discussions according to the proposed schedule.

The focus group discussions covered research areas derived from the internet-based survey, e.g., electricity consumption, participation in the electricity company's online services, and the usage of digital services in general. Each discussion, conducted as a semi-structured group interview, included three to seven participants and lasted approximately 60 min. All participants were aged 50 to 74. Of 29 participants, 19 were males and 10 were females. There were two researchers moderating the discussions while one researcher took notes. The group discussions were recorded and transcribed, resulting in 104 pages of transcribed text.

4.2.1. Qualitative analysis

In order to reveal the multidimensionality of age in association with digital participation, focus group discussions were analysed by using a qualitative content analysis method. Analysis was guided by theoretical and conceptual presumptions on the role of age in digital participation [8,12,13,19,30]. In the first phase of the analysis, all expressions related to digital technologies were separated from the main text. In the second phase, expressions were categorised under three categories: bodily ageing, mental ageing, and biographical ageing. In all phases of analysis, the analysis unit was a sentence or statement articulated by one interviewee. The data expressions were interpreted in order to

¹ www.suomi24.fi, www.vauva.fi, www.et.fi, www.anna.fi, www.tiede.fi, www.ksml.fi, www.kaleva.fi.

² In the final analysis the response options were reduced in order to make the interpretation easier.

Table 1
The frequency of use of electricity company online services in the past 12 months among different age groups, % (N).

Age group	18–30	31–49	50–65	66–83	Pearson's Chi Square
0	64.4 (177)	39.5 (118)	25.7 (134)	19.1 (37)	***
1	22.5 (62)	22.4 (67)	20.3 (106)	18.6 (36)	
2–3	7.6 (21)	20.7 (62)	25.3 (132)	30.9 (60)	
4–5	2.2 (6)	5.7 (17)	7.7 (40)	8.2 (16)	
6–9	1.1 (3)	3.3 (10)	6.0 (31)	4.6 (9)	
> 9	2.2 (6)	8.4 (25)	15.0 (521)	18.6 (36)	
Total	100.0 (275)	100.0 (299)	100.0 (521)	100.0 (194)	

*** $p < 0.001$.

understand and explain the association between age and digital technologies [15].

5. Results

5.1. Digital participation among senior electricity consumers (RQ1)

Table 1 shows the contingency table comparing the use of the electricity company's online services in the past 12 months among different age groups. Online consumers aged 50 to 65 and 66 to 83 utilised the electricity company online services most frequently. Of consumers aged 50 to 65, 25% participated in the electricity company's online services two to three times in the last 12 months, and among consumers aged 66 to 83, the amount was 31%. Among young consumers, only a small percentage participated in online services more than six times in the last 12 months, but among seniors aged 66 to 83, 19% utilised the electricity company's online services more than nine times in the last 12 months.

To further investigate the role of chronological age in the use of online services, a factor analysis was conducted to reveal the latent dimensions of reasons for non-use of electricity company online services (Table 2). The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.693 and Bartlett's test of sphericity was significant at the level of $p = 0.000$. In each of the three factors, the rotation sums of squared loadings varied from 1.10 to 1.45 based on the factor loadings of the statements (see Table 3).

The factor scores of the dimensions were tested in the ANOVA model, with main effect tests for age and other socio-demographic variables. The factor scores were included in the model as dependent variables. The overall statistical significances of the independent variables are indicated by the F values. The unstandardised parameter estimates (B) describe how much the means of the different categories of independent variables deviate from a reference category. The reference

Table 2
Reasons for non-use of electricity company online services, factor analysis.

	Lack of usability	Lack of knowledge	Lack of skills	Lack of routines
Registration for the service is too complicated	.508			
Services do not function properly	.675			
I didn't remember or wasn't aware of the service		.526		
I don't have enough information about the service		.652		
I don't have the skills and know-how that are required for the service			.801	
Using the service is too difficult for me			.475	
I generally don't favour online services				.699
I'd rather use traditional services				.369
Eigenvalue, % (cumulative %)	18.4 (18.4)	10.3 (28.7)	8.6 (37.3)	8.0 (45.4)
Cronbach's Alfa	.472	.475	.603	.442

categories (0^a) used in the model were selected on the basis of the lowest value or the reference category with the highest number of cases. The adjusted coefficients of determination (adjusted R^2) show the proportions of variance explained by all independent variables together.

In the ANOVA model for reasons for non-use of the electricity company's online services, age did not remain a statistically significant predictor for lack of usability, lack of skills, or lack of routines. In lack of usability, education level, occupation level and income level were more significant determinants of reasons for non-use than chronological age. Respondents with a vocational degree, upper secondary degree or university degree reported lack of usability less frequently than respondents with no education. The employed as well as those with a lower income reported lack of usability most frequently. Respondents in higher income quintiles reported lack of usability less frequently. Household type did not remain a significant predictor for lack of usability.

In lack of knowledge, age remained a significant determinant for non-use of online services. Lack of knowledge was least typical for respondents aged 50 to 65. In addition to age, income level predicted lack of knowledge, and the respondents in higher income quintiles reported lack of knowledge least frequently. In lack of knowledge, education, occupation, and household type did not remain significant predictors.

In lack of skills, age and other socio-demographic variables did not predict non-use. In lack of routines, the only statistically significant determinant of non-use was income level, and the respondents in higher income levels reported lack of routines least frequently.

5.2. The role of life course stage in digital participation among senior consumers (RQ2)

In the ANOVA model of reasons for non-use of online services, chronological age thus appeared to be a less significant predictor in non-use of online environments than other socio-demographic variables. Therefore, six focus group discussions were analysed in order to consider other dimensions of ageing in relation to digital participation. The focus group discussions provided an approach to the reasons and purposes behind digital participation on a broader level and therefore extended the analysis of participation beyond just a certain electricity company's online services.

5.2.1. Bodily aspects of ageing

Particularly female consumers discussed participation in digital environments in relation to bodily dimensions of their daily life. Bodily consequences that accompanied ageing were conceptualised as challenges to digital participation. Female participants mentioned physical symptoms such as discomfort and aches that related to using a digital device, e.g., dry eyes or a dizzy feeling that were caused by spending time at the computer. Physical discomfort was associated with increased time spent online, particularly if the respondent was still in working life and had to use computers during the work day:

Table 3
Determinant for reasons for non-use of electricity company online services, ANOVA.

	Lack of usability	Lack of knowledge	Lack of skills	Lack of routines
Age (ref. over 65) (<i>F</i>)	n.s.	F = 3.183*	n.s.	n.s.
18-30				
31-49				
50-65		-.211*		
Household type (ref. single) (<i>F</i>)	n.s.	n.s.	n.s.	n.s.
Co-habitation, no children				
Co-habitation, children at home				
Co-habitation, children moved away				
Single parent				
Other				
Education (ref. no education) (<i>F</i>)	F = 3.659*	n.s.	n.s.	n.s.
Vocational degree	-.411			
Upper secondary degree	-.399			
University degree	-.377			
Occupation (ref. unemployed) (<i>F</i>)	F = 4.319**	n.s.	n.s.	n.s.
Employed	.300**			
Student				
Retired				
Other				
Income level (ref. quintile I) (<i>F</i>)	F = 3.432*	F = 3.762*	n.s.	F = 4.100**
Quintile II				
Quintile III				
Quintile IV	-.290*	-.324*		-.339**
R Squared (Adjusted R ²)	.029 (.018)	.039 (.028)	.011 (–.001)	.023 (.011)

Don't your eyes suffer [from being constantly online]? My eyes dry out and I start to feel dizzy, my back and shoulders ache. I just hate it, I really hate it when being online takes so much time. (Female, B2)

For those participants who were not actively participating in working life, bodily aspects were perceived as triggers and motivators for digital participation. Some interviewees mentioned that engaging in online activities provided opportunities for a more active lifestyle, indicating that participating in digital activities is justified as physical and mental activity in the same way as other leisure activities. Thus the lack of routines did not prevent active online engagement:

It doesn't consume my time away from anything else. Previously I was reading and watching movies. Now I have replaced it by being online, it's a bit more active. (Female, B3)

Digital devices were also evaluated with respect to time management, where digital participation was conceived of as a risk threatening healthy and active living. Spending time in online environments results in limited time spent doing other activities, and particularly the respondents who were actively engaged in working life preferred offline activities to online ones in order to support a physically active lifestyle. A female respondent who had children living in the household was worried about the addictive features of digital devices in the children's everyday life:

You get so addicted to it. I have two sons, and I am constantly wondering why they are staring at the screen all the time. How can you get pleasure from watching a screen that blinks and sparkles, there must be something that affects your brain. (Female, B2)

Usage of digital technologies was thus described in relation to bodily activities, such as sleeping, sitting on a computer, sitting on a couch, and staring at a screen. As such, digital participation aroused many emotions that varied from wonder to excitement and from worry to anger [45]. Excitement with digital participation was connected to practices that enabled active engagement, whereas consternation was experienced when the perceptions of digital technologies contradicted the ideals and values of the environment. Anger was experienced in frustrating and time-consuming practices such as registration for online platforms. Questions of time, therefore, revolved around certain daily

routines such as sleeping, and they were interrelated with online participation:

If I watch television late in the evening, I might fall asleep. But if I'm online, I can stay awake very late and not even notice the time that I spend at the computer. (Female, B3)

I won't let myself get into it, I won't approve it. (–) I have only once visited the online service system. I try to avoid sitting at a computer because it takes time, you go deeper and deeper into it. It consumes all your time. And when you have to register for something ... It makes me so angry (–). I don't want to spend my time at the computer. (Female, B2)

For senior females, bodily positions in the usage of digital technologies thus significantly affected level and style of engagement. Some referred to an unpleasant position such as sitting at a computer being the main obstacle to online activities. Others had developed daily routines that supported active online engagement, such as standing up while being online. Traditional computer screens were favoured in comparison to small screens as they provided more individualised and personal opportunities for incorporation of technology into daily life:

I have an old-fashioned computer at home, it's the best option for me. It's ergonomical (–) because of the sitting position. You have the possibility to stand up and leave whenever you need. I like that the computer is in certain place at home. I don't want to carry it with me, or like to use my cellphone online. It has such a small screen so it's not a pleasant experience. (Female, B3)

Limited mobility was not perceived among seniors as restricting active engagement in consumer environments. Bodily dimensions of ageing may result in restricted mobility, as in later life, people may not be able to travel to new and distant destinations. For senior consumers, enjoyment and experiential aspects related to consumption were perceived as important, and new experiences were obtained through digital consumption such as information and learning based e-shopping:

[Ordering from the internet] is so fast. You are sitting at home on your couch and I have ordered books from Amazon for a much cheaper price than in Finland. Two days, and the package is at my door. It's so much faster than if you order something from Helsinki. I'd rather order it from New York. (Female, B3)

5.2.2. Mental aspects of ageing

In group discussions, both male and female respondents reflected on ageing in terms of changes that occurred in their outlook on the environment and other people. These mental aspects of ageing revolved around participants' own reflections about the role of age in daily decisions regarding consumption and online environments. Many participants shared the understanding that ageing is accompanied by changes in the ways they perceive themselves and other people, such as changes related to routines, mindsets, and viewpoints. This 'mental ageing' was embodied in practices such as turning off the lights, saving energy, questioning the needs and necessities of daily life, and it was associated with becoming older:

Now when I'm becoming older, I relate differently to electricity consumption. I'm turning the lights off when it's not needed. I use energy saving lights and I try to consume energy as little as possible. (–) Maybe it's the age that makes me think more profoundly. (Female, B2)

A female participant characterised how her attitudes, thoughts, interests and 'state of mind' have changed with ageing, and these changes in particular are emphasised in environmentally conscious practices. Young adulthood was conceived of as a life stage characterised by a carefree attitude, but when people become older, they become more aware of how their own actions influence other people, which may inspire them to act in a more responsible way. This responsible and altruistic attitude was pronounced among male participants, who contemplated the contradictions between personal desires and actual needs and necessities in daily living:

I am constantly thinking, what do I need personally. I own a lot of stuff. What do I even need anymore. And then I will focus on that. And learn it. (–) But it doesn't make any sense to go online just for fun, for me, there's no value. (Male, A7)

Participants thus articulated mental ageing in association with contradictions between personal needs and desires. In middle age and late midlife, people typically become less self-centered as they need to adjust to other people's needs and limit social conflict [21]. For senior consumers, this altruistic attitude was embodied in appreciation of and satisfaction with the current stage of life, instead of desiring something new and missing. Mental ageing manifested in willingness to strengthen existing bonds and practices instead of desiring novel ones [6]. This emotional aspect was associated with digital participation, as seniors were willing to learn in relation to existing practices and equipment that they already perceived as meaningful and important [44]. However, seniors were selective in what kind of online environments they conceived of as worthwhile, as pure enjoyment or pleasure was not a sufficient motivation to participate online.

It would be good if someone helped us to use them [digital technologies]. If I just go to a store and buy [a device], it's just an impulse buy. Then I forget it and it just lays somewhere. After six months, the batteries are empty and I don't know how to use it. Of course they are interesting, at least I am very interested in trying out new things. (Male, A4)

In digital participation, senior consumers thus longed for purposeful participation and social connectedness that was related to online and offline interaction [37]. Seniors were interested in new technological devices and wanted to buy them, but without a profound meaning attached to purchases, they did not recognise the value of some technology. Consuming in online and offline environments thus appeared as a social activity, and through social interaction, seniors obtained abilities and expertise to utilise technological devices. Seniors were open about their limited skills, but the skillset was perceived as a less important obstacle than the desire for the technology to have meaning, which supports the findings of the quantitative analysis.

For seniors, communication in online environments may thus give

rise to difficulties despite eagerness and interest in participation in online communication. Differences are not necessarily evident in the technical aspects of use, but in the social and conventional style of use. Conventions and habits shared by seniors may have conflicted with the styles and fashion of juniors, leading to communication difficulties in consumer environments:

I chatted with the online bank's customer service a few days ago. I had a problem, they couldn't help me. I didn't get the response I was looking for. And, I wanted to contact one online store since I was looking for a pair of jeans. I called them and asked (–). They couldn't help me. (Female, B3)

5.2.3. Biographical aspects of ageing

Older adults reported life transitions as motivators to go online and take part in various digital platforms. Retirement was identified as a transition that leads to a decline in social networks. As people retire, their daily social contact might decrease, and online activities provide a way to connect socially and take part in activities that enhance the feeling of connectedness. A retired female participant described how engaging with online platforms provided a sense of belonging to communities and improved the opportunities for social communication:

I am retired now. I have a computer and the internet is the only possibility to be in contact with other people. For me the computer is the straightest way to other people. (Female, B3)

Retirement was thus perceived as a transition that is followed by limited mobility and limited social contacts. For older adults, meaningful leisure time was nevertheless important, and many older adults wanted to participate in activities that involved aspects of enjoyment, fun, and entertainment. Spending 'too much' time at the computer was perceived as a risk, yet online activities provided a sense of enjoyment that outweighed the negative aspects of use:

I have a bad habit of game playing on the computer. I don't gamble but I play just for fun and entertainment. For me it's normal to spend 8 h at the computer when my husband is at work. I'm online during that time. (Female, B3)

The participants who were still actively involved in working life identified accidents or single events that may have influenced their orientations towards online environments. A female participant described how power cuts at the workplace affected daily practices of online engagement, as they resulted in a more conscious and cautious orientation towards computer use. Being prepared for risks involved in online activities was especially related to work environments:

A year ago we had a power cut in our workplace. It lasted 45 min. It is unbelievable, how much electricity you need for various purposes. You have to be prepared for power cuts, and now we have electric torches on our desks. Now I've learned to save each file I'm working on to the computer. (female, B2)

Thus, biographical changes as well as occasional accidents affected practices related to online environments. Biographical changes in late midlife are typically associated with increased leisure time [21] that offers older adults new opportunities for entertainment and cultural activities [41]. In participants' speech, online environments offered a new sense of freedom, as they provided opportunities for fast decisions and instant responses which enabled individualised routines for leisure time:

When I went to see a show, I bought the ticket 1 h before the show, it was very handy. You could just 'ex tempore' decide that you'd go. I was messing a bit with the online system because it had so many phases, you had to register first, it was complicated. I would like to have it more straightforward. I'm impatient, I need it easier and faster. (Female, B2)

Despite older adults' encountered difficulties with participation in digital platforms, increased leisure time turned out to be an important driving force for digital participation. Biographical changes thus helped overcome the challenges related to the usability of the device. In this sense, digital participation enabled 'successful ageing' in terms of active engagement with life [39]. Digital technologies contributed to the strengthening of interpersonal relationships as well as exchange of information, emotional support, and direct assistance. Senior consumers, therefore, desired digital participation to support the cultural activities that enable ageing successfully. Through digital media, seniors may thus acquire new cultural capital that helps them to participate as consumers and acquire new and desirable products while simultaneously giving them a sense of belonging in consumer culture:

I was looking for a car for my wife. Certain model and such. Then I started to receive advertisements on my Facebook account. So of course, it's much easier to make a decision. (Male, C4)

6. Conclusions and discussion

By utilising multiple triangulation, the study investigated the participation of senior consumers in digital platforms and the role of age and life course in digital participation. In response to RQ1, the study reveals that online consumers aged 50 and over utilise electricity company online services more frequently than younger consumers. Senior consumers, typically possessing more ecological attitudes towards consumption than young adults [23], may have a stronger interest in tracking electricity consumption online in order to minimise the environmental effects of electricity consumption. In contrast to previous research [19,33,38,41,48], older adults do not report lack of skills as a reason for the non-usage of digital services more frequently than young adults. In fact, adults aged 50 to 65 report lack of knowledge as a reason for the non-usage of electricity company online services least frequently in comparison to other age groups, indicating that the knowledge gap is perhaps becoming a less relevant predictor of older adults' digital participation. Particularly older adults who already have access to digital devices and services possess advanced digital skills, although the usage of the devices is associated with socio-economic position, such as education and income level [19,41]. This supports the idea that not only skills, but also access to technology affects digital activity, since access and skills are closely intertwined [44]. If access declines across the life course, skills may remain undeveloped, and without skills, access is difficult to maintain across different life stages. This makes mediated participation vulnerable to and highly dependent on outside circumstances.

In response to RQ2, the study suggests that while the significance of chronological age in digital participation might be decreasing, the role of life course factors and other dimensions of age persist. These life course factors that aim to characterise the multidimensionality of age may be utilised when explaining the usage of electricity company online services. On a bodily level, physical discomfort associated with the use of digital devices may reduce interest in taking part in electricity company online services, but also improve opportunities to maintain an active daily life and improve physical routines associated with electricity consumption. On a mental level, environmentally conscious attitudes may decrease older adults' interest in purchasing new technology [23] but simultaneously motivate them to track and save energy online. These changes occurring in relation to the self and other people may have an influence on the type of digital activity older adults prefer in later life. Due to the changes in everyday routines, activities and relationships, older adults may prefer face-to-face interaction, which may reduce interest in digital activity but provide opportunities for social connectedness [28,35,37,44]. On a biographical level, both normative life events, such as retirement and accidents affect willingness to engage in digital servicescapes. A transformation in social networks [6,28] creates new needs and desires to improve social

communication, and increased leisure time may result in more active participation in consumer culture. This may minimise the perceived negative aspects of ageing in relation to digital technologies [13,17,19] and provide new mechanisms to apply digital technologies in ingenious ways. These life stage factors thus provide tangible instruments to define the multidimensional role of life stage in mediated participation. Through these instruments, it is possible to build an understanding of the association between ageing and digital consumption that expands the generational experience of chronological age in digital participation.

Consumer participation, revolving around internet-based interaction between consumers and service providers [26,27], involves many symbolic attributes that may give rise to contradictions between senior consumers and service providers. The results of this study suggest that, among senior consumers, engagement in the proscription of personal data is compromised due to difficulties in communication with service providers. Among senior consumers, online communication with customer service, connecting with a company's social media networks, receiving advertising information and status updates, and sharing personal data with a social network requires a sense of meaningful contact. Maintaining interaction and dialogue with senior consumers requires sensitivity to enhance the customer experience in digital servicescapes. To investigate mediated participation across the life course, these issues should be explored in more detail, to create new mechanisms for including the aged population in the co-creation of digital services.

The study contains certain limitations concerning the representativeness of the data. The respondents of the survey represent only Finnish internet users who probably possess better access to the internet and other digital devices than the population on average. With a web-based survey it was not possible to reach respondents who lacked internet access. The selection of participants was focused on adults aged 50 and over, in particular. Older adults may be more likely to use electricity company online services in general, and therefore they were overrepresented in the survey sample. Therefore, the survey sample covers mostly users who are both active online in general and interested in electricity consumption in particular. In addition, the interview data covered local electricity consumers from a certain company and area. Despite these limitations, the study was able to shed light on the multidimensionality of age in relation to digital participation and contribute to the discussion of older adults' usage of digital technologies across the life course.

Conflicts of interest

Author certifies that she has no affiliations with or involvement in any organisation with any financial interests.

Author biography

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Acknowledgements

The author wishes to thank Ursa Dykstra for proofreading the article. The research discussed in this study received financial support from Tekes (project number 2826/31/2014) and Finnish Cultural Foundation. The funding source did not have any particular role in the study design, in the writing of the report, or in the decision to submit the article for publication.

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