Older Consumers, Digital Marketing and Public Policy:
A Review and Research Agenda

Daniel Nunan
Portsmouth Business School
University of Portsmouth
Portsmouth, PO1 3DE
United Kingdom
daniel.nunan@port.ac.uk

MariaLaura Di Domenico
Surrey Business School
University of Surrey
Guildford GU2 7XH
United Kingdom
m.didomenico@surrey.ac.uk

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Abstract

Addressing the challenges created by rapidly aging populations is a topic of intense interest for marketers, policy makers and researchers. However, relatively little research has been undertaken so far into the ways that older consumers are adopting or rejecting new digital technologies. With shifting economic power and growing digital adoption rates amongst older consumers, understanding how they adopt technology and use digital channels is becoming increasingly important to marketers. In order for marketers and policymakers to fully understand the future shape of a data-driven digital society, research must take more account of its influence across different older generational cohorts. This paper focuses on identifying research gaps across key digital marketing areas in relation to older-age consumers' adoption and use of digital technology. Through a multidisciplinary review of the literature on aging, using the theoretical lens of generational cohorts, the authors identify key research challenges, opportunities, and implications for both marketers and policy makers.

Demographic changes and aging populations are macro-trends that impact on most aspects of 21st century socioeconomic life (United Nations 2015a; 2015b). Consumer demand is evolving with each generation's changing needs, wants and values (Schewe and Meredith 1994; Noble and Schewe 2003). Those defined as elderly, aged 65+ (Drolet, Williams and Lau-Gesk 2007), now include baby boomers who differ from earlier elderly generations (Schewe, Meredith and Noble 2000), and will in turn be different from those of the future (Eastman and Liu, 2012; Parment 2013). Although research on older consumer perspectives is recognized as important (e.g. Agogo, Milne and Schewe 2014; Moschis 2012; Sheth and Sisodia 2005; Sternthal and Bonezzi 2009), there is a paucity of research into the ways different cohorts of older consumers adopt or reject digital technologies. This is reinforced by incomplete, under-refined, relatively unchanged perspectives on older consumers (Sheth and Sisodia 2005), driven by outdated stereotypes that put the elderly into a single group (Niemela-Nyrhinen 2007). However, the "Baby Boomer I" generation (the "young-old" aged 65-74), differ from the "old-old" generation who are defined more by experiences of World War II (Schewe, Meredith and Noble 2000). A lack of digital technology adoption is most likely to be found among the latter (Morrell, Mayhorn and Bennett 2000). Yet, increasingly as "young-old" consumers actively adopt a broad range of digital technologies and represent a growing segment of social media users, the generation cycle will dictate that with each new "young-old" generation, further research is needed to understand public policy implications and inform marketing strategies. "Simply assuming… that tomorrow's seniors will respond to marketing activities in similar ways as todays seniors could lead to disastrous results" (Noble and Schewe 2000, p. 129).

The commercial importance of understanding each older generational cohort lies in their economic power (Abdel-Ghany and Sharpe 1997; Cohen 2014) and the opportunities for digital technology to improve products and services (Manyika et al. 2011). Also, a failure to

address this market segment raises public policy implications. If many elderly consumers cannot access the hardware, software or infrastructure needed to consume certain products or services, they risk digital exclusion (Warren 2007). Due to the role that digital platforms play in communication, including through social media or messaging apps, digital exclusion creates a follow-on risk of social exclusion (Walsh et al. 2012).

The purpose of this paper is to develop a theoretically grounded research agenda linking interdisciplinary literature on older-age generational cohorts to the challenges from digital technologies. We first set out the theory of generational cohorts as our lens to explore aging. We then examine different research perspectives on aging that we align with core areas in digital marketing to identify the extent of the digital divide. A research agenda, digital marketing challenges, and the public policy implications are then set out.

Aging and Generational Cohorts: A Theoretical Lens

Changes in population structure matter due to the extent to which organizational and social lives are often built on past notions of age rather than on present and future changes. Thus, life in industrial nations has been typically structured round age-related transitions from education to employment to retirement (Gratton and Scott 2016). The embedded economic assumption was that there were sufficient numbers in work to support those not working. Aging populations, with recent improvement in incomes, health and nutrition resulting in increasing longevity, raise marketing as well as major public policy challenges (Gratton and Scott 2016). Similarly, flexible working practices and gradual transitions between life-stages result in more heterogeneity among older individuals, making re-examining earlier views of aging necessary. In

marketing, age is often conceptualized in chronological terms, whereby product ranges are targeted to those above a certain age, such as 65. Yet, within this broad age range, it is necessary to take account of cohort differences, by segmenting consumers into those entering systems at approximately the same time, often with similar shared past experiences (Mason and Wolfinger 2001). A cohort may have been affected by political, social and other events, which have influenced their values (Noble and Schewe 2003). Schewe and Meredith (2004) show that generational cohorts differ across national contexts due to the various contextually-based social, political and economic events they experienced. Thus, the 65+, often more individualistic "young-old" of the Baby Boomers I generational cohort, had key formative experiences in the 1960s economic boom, Vietnam War and other parallel social and political events. Likewise, earlier and subsequent cohorts also had distinctive coming-of-age events (Schewe and Meredith 1994; Schewe, Meredith and Noble 2000). Aging can thus be perceived through the theoretical lens of generational cohorts. Yet this lens is also a multifocal one in relation to the research perspectives that emerge from the multidisciplinary literature, which we use to inform this research topic.

Research Perspectives on Aging

Aging is a multilevel, multidimensional construct, and older consumer decision-making and behavior can be explained through different disciplinary perspectives (Moschis 2012). These perspectives reflect the biological/ physical, psychological/ cognitive and social dimensions of aging (Agogo, Milne and Schewe 2014; Hooyman and Kiyak 2008; Moschis 2012). The environmental context in which aging takes place must be explored also. We add value to these perspectives by abstracting from the literature themes relating to the ways that older consumers

adopt/ reject digital technology. We also identify what is not included in the literature in terms of important gaps, issues requiring attention and those with policy implications. This leads to the identification of the marketing and public policy implications of these digital technology challenges for older generational cohorts.

Biological/ Physical Perspectives

These perspectives consider aging as a biological function, specifically associated with the body's physical changes over time that affect physical health and functionality (Hooyman and Kiyak 2008). This perspective is typically used to explain differences in how people physically age, such as sensory decline in vision and hearing (Fozard and Gordon-Salant 2011). It forms the design basis of products or services for older consumers, incorporating assumptions around, for example, poor mobility or vision. Chronological age is often used as a proxy for biological/ physical aging, despite a weak relationship given the extent that the latter varies (Moschis 2012). Age effects due to biological/ physical aging differ from those due to the impact of the environmental context and other experiential factors.

Psychological/ Cognitive Perspectives

These perspectives take into consideration factors linked to age-related differences in cognitive ability, personality and the ways decision-making changes as individuals get older (Yoon, Cole, and Lee 2009). Although researchers have noted that physical and psychological aging are not necessarily linked (Baltes and Carstensen 1996), age-related influences on personality affect consumer behavior in later life (Moschis

2012). Williams and Drolet (2005) also highlight how emotions impact on decision-making and age-related differences in the responses to advertisements. In terms of motivational states, older consumers (aged 65+) have "more favorable attitudes toward affective (vs. rational) ads, regardless of product category type" (Drolet, Williams and Lau-Gesk 2007, p.211). Using a lens of generational cohort theory (Noble and Schewe 2003), it is of interest if research focuses on older individuals, and whether they, show differences in decision-making compared to younger adults. Psychological factors must be considered in relation to these cohorts in terms of purchase decision-making and marketing practices.

Social Perspectives

The social context of aging, and its implications for individual relationships, plays an important role in understanding the behavior of older groups. Schewe and Meredith (2004) argue that social generations form in different national contexts based on the cultural and political events experienced. Edmunds and Turner (2005) counter-argue that wider global generations form because of globally experienced events. Social perspectives include how individuals relate to each other across the generations, reflecting growing questions about intergenerational equity (Williams 1997), and generating public policy debates, such as on health policies and responsibilities to future generations (Rosa Dias and Jones 2007).

Environmental/ Contextual Perspectives

Scholars in fields such as geography and social gerontology have long recognized the link between aging and the physical environment, and the ways in which environmental changes might improve experiences of aging (Golant, Rowles, and Meyer 1989). In societies with some of the highest levels of aging, such as Japan and Italy, there has been a migration of younger members of society to the cities with elders being left behind in rural areas (Tanaka and Iwasawa 2010). The question of physical location is particularly relevant to the extent that the virtual nature of digital channels can enable older consumers to overcome limitations of the physical environment. For older generational cohorts, it is recognized that: "The (often confounding) impact of environment on values, behaviors and attitudes" must also be taken into account as "period effects" if "attempting to identify generational, cohort or age-related impacts" (Parry and Urwin 2011, p. 84). Holbrook and Schindler (2009) refer to the critical-period-effect when preferences for products and other tastes are established, usually occurring in late adolescence or in early adulthood.

The Digital Divide and Demographic Gap in Marketing

The problem of "demographic denial" in marketing scholarship (Sheth and Sisodia, 2005, p. 11), with a neglect of the elderly and focus on youth markets regardless of shifting economic power, has for some time been widely discussed (e.g. Moschis 1994; Nataraajan and Bagozzi 1999; Schewe 1988; Sheth and Sisodia 2005; Sternthal and Bonezzi 2009). Two research reviews of aging in a marketing context (Moschis 2012; Yoon, Cole, and Lee 2009) summarize the challenges, highlighting the paucity of marketing research on aging, and the notable lack of a theoretical lens to research associated phenomena. Moschis (2012) suggests a weakness of existing research is the focus solely on how age-

related factors, such as physical, psychological or social changes, influence behavior. By ignoring the contextual and temporal factors influencing purchase decisions, research studies have insufficiently developed or nuanced analysis of the ways older consumers behave.

Age-related behavioral changes reflect the complex, subtle ways that aging influences consumer decision-making. For example, this can be seen with telephone market research when older respondents tend to select the most recently stated response (Knauper 1999). Younger researchers' negative views on aging can also influence their approach to asking questions, and generate negative cognitive judgments or lower self-esteem in the minds of older respondents (See and Ryan 1999). Instead, research focused on nostalgia can engage, and address the influence of past experiences on older cohorts' brand preferences "towards objects (people, places, or things) that were more common (popular, fashionable or widely circulated) when one was younger" (Holbrook and Schindler 1991, p. 330). Nostalgia reflects how coming-of-age preferences can influence values (Noble and Schewe 2003) and later-life consumption patterns. The age limit for formative experiences influencing nostalgia depends on product category, but it is generally considered to be in the 20s (Schindler and Holbrook 2003). Lambert-Pandraud, Laurent, and Lapersonne (2005) identify the need for granularity, highlighting that while younger consumers are more likely to select new brands, they change brands more often and thus are a more ephemeral prospect than older consumers who stick with brands for longer, but are still willing to try new products. This indicates that older consumers could be more valuable due to their willingness to switch brands when presented with a more compelling offer, while also sticking with brands with which they are satisfied. Yet, despite these studies, research into aging and marketing remains relatively limited in scope. One explanation is that aging carries symbolism isolating it from a

research agenda increasingly focused on digital channels characterized as primarily a younger age group phenomenon. This is embedded in stereotypes of older consumers and generational cohorts that have little in common with the real-world usage patterns of the present or future.

Given the generalizability of the concept of aging, it is unsurprising that the large body of research on aging in other fields has touched upon the consumption of goods and services. Yet this carries with it limitations in terms of applications to digital marketing. Firstly, as such research on aging is typically framed by health concerns, there is a focus on those with the greatest health needs, creating a shift to the oldest cohort, such as when exploring perceptual barriers to adoption for those not using the internet for social media, engaging with public services or making purchases (Lee, Chen, and Hewitt 2011; Xie et al. 2013). While understanding why the "old-old" do not use online services is important, it risks obscuring understanding the needs of those who do, such as the "young-old" cohort. From a marketing perspective, focusing on consumption through the lens of health needs has the potential effect of reinforcing existing assumptions and stereotypes about older individuals' capabilities, while ignoring their needs as consumers. A stream of research in management literature focuses on technology adoption patterns where age is often used as a variable. Thus, in the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003), perhaps the most commonly featured of these models, age is presented as a moderator of behavioral intention and user behavior. Despite the large number of studies investigating UTUAT, few are based around consumer technologies (Williams, Rana, and Dwivedi 2015) and few identifying a significant relationship between age and technology adoption (e.g. Payne 2008; Wang and Shih 2009; Wang, Wu, and Wang 2009). Additionally, even where age is a variable, this does not mean studies focus on aging. Some studies that focus

on age consider differences between children and adults (e.g. Laumer Eckhardt, and Trunk 2010) or samples of consumers with a relatively young mean age and few older consumers represented (e.g. Brown, Dennis, and Venkatesh 2010).

A second limitation relates to the framing of research outside consumer perspectives, where the driving interest is not in delivering customer value but in identifying/ resolving problems associated with aging. Where digital technology is positioned as a solution to these problems it is typically a means of healthcare delivery (Lee et al. 2012) rather than as a channel for accessing or purchasing goods or services, or as a communication tool. One barrier has been the use of stereotypes around what it is meant to be old. For example, older consumers may be considered to be "a vulnerable group of old people" (Leventhal 1997, p. 1) who lack financial means and are reliant on others for support. More bluntly the stereotype of "set in their ways, tightfisted 'old-folks' that might have been thought to exist [by marketers] in the past" (Leventhal 1991, p. 34) impedes effective understanding. A corollary of this relates to marketers taking an overly positive view of aging, characterized through a denial of the aging process and the commercialization of anti-aging (Katz 2001). An effective research agenda shifts the focus from one of problems to one of establishing how to meet the needs of older consumers, however varied and challenging they may be.

As well as different older generational cohorts' consumer needs, subjective age must be considered. The trend is of decreasing subjective age among baby boomers, whose health and social connectivity are aided by their willingness to learn new skills that expand their cognitive abilities. This encourages a redefinition "of the aging experience by their ability to bend time in ways that have not been done

previously" (Agogo Milne and Schewe 2014, p. 388). Digital technology can aid the desire to "bend time", such as by facilitating more communication with their healthcare providers (e.g. via FaceTime).

Having set out the theoretical lens and research perspectives, and identified a gap in marketing in terms of older consumers' use and adoption of digital technologies, we develop a research agenda to better understand how this gap can be addressed. In Table 1 we provide a synthesis of the research perspectives highlighted earlier, relating each one to the thematic foci, and the implications for marketers and public policy. Along with the previous sections, Table 1 helps us to frame our focus and provides a context for the paper.

Insert Table 1 about here

A Research Agenda for Improved Understanding of Older Consumers' Use and Adoption of Digital Technologies

In this section, we align the research perspectives with seven core areas where we identify older consumer adoption or use of digital technology and the impact on marketing and public policy, putting forward a research agenda for each identified area. Opportunities for value creation are highlighted by our theoretically informed analysis of older consumers' needs, categorized around these seven areas. This is of increasing research importance, as age specific stereotypes characterize discussion of older consumers and digital technology. Generational differences in use and adoption of certain technologies can be related to the timing and history of exposure (Prensky 2001; Charness and Boot 2009), rather than any differences embedded in the aging process. First of all, *social media* and *digital advertising* are two common technology contexts in contemporary marketing literature. Consumer adoption of social media provides a platform not just for fostering

customer relationships (de Vries, Gensler, and Leeflang 2012), but for customers to influence purchasing behavior by sharing their experiences of online of products and services (Chen, Fay, and Wang 2011). Shifting to online advertising brings issues over engagement and declining financial returns (Calder, Malthouse, and Schaedel 2009). Given the digital economy's dependence on advertising, understanding how to engage all groups is a major research area. Three aspects of technology must also be highlighted in retail and service delivery. The growing role of *service automation technology* (e.g. self-service machines, apps), where technology replaces customer-facing staff, raises questions over how automation influences perception of service quality across different consumer groups. Separately, the shift to *online retail* has a fundamental impact on the range of products available to consumers, while calling into question the viability of much of the existing retail environment. Moreover, delivery of effective *online customer experience* is now a key strategic imperative for marketers (Rose et al. 2012). This includes ways online services can replicate experimental aspects of offline service offerings, and the more technical aspects of user experience of web services design or the applications themselves. Finally, *privacy & personal data* and *digital exclusion* are societal factors with direct public policy implications. The growth in "big data" and widespread collection and use of customer data raise concerns about consumer privacy, the potential for personal data to be reidentified and compliance with legal norms across borders. It has implications for consumer trust and the most effective ways firms can gain permission from customers to use their data (Krafft, Arden, and Verhoef 2017). While it is important to remember the digital divide and those who are not internet users are among the oldest segments of the population (Friemel 2016), digital exclusion is not unique to older consumers and can take many different forms beyond the availability of internet access (Warren 2007). Ability to use and access specific internet services and availability of social ties are required to make use of social media. For

each of the seven technological contexts, research issues and opportunities are identified and developed as key research challenges around aging, digital technology and marketing (see Table 2).

Insert Table 2 about here

Social Media

Although social media use has been widely associated with younger consumer groups, as technologies mature, its use is becoming increasing ubiquitous amongst internet users, as evidenced by the 2.2 billion active monthly users of Facebook (Facebook 2018). The limited data available suggest that existing platforms provide significant utility for older consumers who are also internet users. For example, at the end of 2016 in the US, 62% of *online* adults over 65 used Facebook compared to 72% in the 30-49 age group (Pew Research 2016) What is notable about these data is the adoption rate of increase for the over-65s, growing from 48% to 62% in one year. Social media can be characterized as playing an increasingly important role in how older internet users communicate online.

Being able to form and maintain social relationships has been identified as an important factor in maintaining wellbeing as people age (Leist 2013). After good health, positive relationships with friends and family is the most important factor determining quality of life for the over-65s (Bowling 1995). Yet aging can bring factors making social relationships difficult. Loss of connections after exiting a workforce, distance from family members or other physical factors, all reduce opportunities for face-to-face encounters (Cornwell and Waite 2009). By enabling online relationships, social media provide ways to overcome barriers to face-to-face interaction, even replacing physical with virtual interaction. For researchers, this raises two questions: What are the drivers and barriers of adoption of social media by older cohorts? In what

ways do age-related factors influence engagement and usage patterns within these platforms? From a marketing perspective, the question of usage relates to how user generated content (UGC) is created or engaged with.

Use of social media can be characterized as a form of self-presentation (Kaplan and Haenlein 2010). The level of engagement with social media platforms is driven by the extent to which self-presentation is required, or expected, and individuals' willingness to disclose information about themselves as part of self-presentation. One emerging area of research considers the extent to which psychological traits impact upon online behavior, with certain personality traits being associated with greater online engagement (Marbach, Lages, and Nunan 2015). There is some evidence for personality factors being related to age in relation to social media use (e.g. Correa, Hinsley, and de Zúñiga 2009).

One age-related difference relates to number of connections in each network, with younger users having substantially larger numbers of "friends" on Facebook (Kezer et al. 2016). This does not necessarily lead to stronger social connections. Although social media has been identified as a source of bridging capital, it has been identified as relatively weak as a source of bonding capital, the form of social capital older groups value most (Ellison et al. 2011). Similarly, encouragement by friends and relatives who are social media users is an important factor in adoption (Friemel 2016). Other factors influencing the amount of information older users willingly disclose on social media include concerns over privacy (Xie et al. 2013), the ability to follow and respond to social norms (Leist 2013) and to maintain control of the online context in an environment where the anonymity or pseudo-anonymity may cast doubt over the intentions of others (Pfeil, Zaphiris, and Wilson 2009).

Evidence over the role of age in determining engagement with, and creation of, UGC is limited, with a reliance on practitioner studies rather than academic research. As with other aspects of social media, younger customers are more likely to check online reviews and incorporate them into their decision-making (Pew Research 2016). However, even in the oldest segment in this study (aged 65+), around two-thirds of respondents made some use of online reviews. The question is not so much one about whether people use online reviews, but in what ways the different types of review might influence decision-making.

These factors suggest there are age-related aspects in the use of social media that require more research. Even if older users have smaller social networks, willingness to incorporate others' opinions into their decision-making processes makes understanding the impact of social media more important. Indeed, lower levels of self-expression associated with older groups' use of social media can lead to potentially greater roles for collaborative UGC that could in turn generate positive word of mouth (Leist 2013). The importance and ubiquity of social media makes filling in this research gap even more critical.

Digital Advertising

Advertising has been identified as having a major impact on how society perceives older individuals, driven by their absence and negative stereotyping in advertising (Bai 2014; Szmigin and Carrigan 2001). In addition to considering differences in generational responses to advertising (e.g. Sudbury-Riley and Edgar 2016; Williams and Drolet 2005), older groups think they are portrayed negatively (Bradley and Longino 2001). This is unsurprising given the way advertising propagates the "youth market" and excludes or caricatures older individuals

within advertising imagery (Szmigin and Carrigan 2000). However, a more technical factor is the quality and granularity of age-related targeting data available to advertisers. Data collected via social media, search engines and other online activities create opportunities for accurate chronological age to be used as a variable. Thus, even where users are not logged, Google can "infer their demographic information based on their activity from Google properties or the Display Network." (Google 2017). This suggests that increasing the accuracy of chronological age could make it a more effective variable for use within advertising for targeting older generational cohorts in the future.

In the context of digital advertising, one emerging factor is the extent to which individuals seek to disengage with online adverts, such as through the growing use of adblockers. As with other digital technologies, adoption of adblocking plugins and software has a demographic skew, although this is more prevalent around gender than chronological age. Thus, the annual Pagefair report into adblocking in the US (Pagefair 2017) found use among 18 – 24-year-old males (20%) was similar to that among 55 – 64-year-old males (19%), whereas sharp drop-offs were only found among over-65-year-olds.

Service Automation

A key driver of services marketing is the standardization of service delivery to be more efficient and consistent (Lacity and Willcocks 2016). As technology advances and reduces costs, automation of service roles is seen as a route to efficiency and consistency. Although the driver is typically labor-saving (Tristano 2017), removal of customer-facing staff risks lowering the quality of service directly by eliminating the social function embedded in service encounters. Research has long indicated that reductions in personal service through the introduction of self-

service technology reduces customer satisfaction and commitment (Beatson, Lee, and Coote 2007), although these effects can be mitigated through use of engaging and interactive self-service technology (Sands, Harper, and Ferraro 2011).

Service automation can therefore bring both advantages and disadvantages for older consumers. Given the general decline in decision-making capability as individuals age (Yoon, Cole, and Lee 2009), an automated service system can provide a higher level of customized services and even patience. For example, the restaurant chain McDonalds finds that order values and upsells increase when self-service kiosks are used (Gavett, 2015). Automated services can be engineered for flexibility, and research shows customers are more likely to leave detailed instructions and order items with difficult to pronounce names (Goldfarb et al. 2014). Older consumers wish to avoid negative social judgements (Gavett 2015), and so benefit from automated service interactions being accurate while not judging the customer's mistakes or physical limitations. Yet, research also indicates that face-to-face service interactions form an important part of the service for older consumers who are likely to rely on other individuals in making decisions across a range of services (Yoon, Cole, and Lee 2009). This includes delegating decisions on health to care professionals (Finucane et al. 2005), but could also include more routine contexts such as asking workers in retail or hospitality contexts for recommendations or advice. For automated systems to successfully respond to these situations depends on their ability to respond to unstructured problems and requests, a factor that the improvements in artificial intelligence (AI) based software are beginning to solve (Sneider 2017). Finally, face-to-face interactions such as those delivered by customer-facing staff can play a role in maintaining social interaction among older people, and minimizing the impacts of social exclusion (Walsh et al. 2012).

Online Retail

Unlike social media, where data are ambiguous with regards to older consumers, evidence shows they are as willing to adopt online retail as younger consumers (Lian and Yen 2014). Online retail provides the practical advantage of purchasing items without being limited by physical difficulties associated with loading and moving a grocery cart. Also, purchasing online allows individuals to reduce cognitive overload and enhance decision-making by being able to easily select from prior orders or pre-existing preferences. While these factors focus on the negative aspects of aging, an economic motivation is that older cohorts are more likely to use online shopping if and when they have more economic power and higher disposable incomes (Farrell et al. 2008). However, online purchases come with their own challenges and risks, including lack of curation, presence of too much choice and difficulties consumers might have in identifying products of low or substandard quality. This is important as older consumers tend to engage in lower levels of information search (Yoon, Cole, and Lee 2009), and demonstrate lower likelihood of switching brands (Lambert-Pandraud, Laurent, and Lapersonne, 2005). If digital channels enable carrying out information searches more easily, particularly in terms of identifying higher or lower quality goods and services, then higher levels of brand switching could be encouraged.

One macro level consequence of the shift to online retail can be seen in the impact of online retailers upon the profitability and viability of physically located retailers in main streets and shopping malls. This raises questions about how social aspects of shopping can be replicated online. Unlike some digital channels, online retail generates the potential for face-to-face contact where products are delivered. While delivery may be viewed as a utilitarian service, reflected in growing interest in automating it with robots or drones (Wingfield and Scott 2016), face-to-

face connections create opportunities for differentiated delivery of services during the delivery process. Digital ordering may be combined with more personal, face-to-face delivery for older adult consumers. For example, combining digitally-ordered food with a more personal touch when delivering it, as with Peapod or Grubhub, may not only bridge the gap between online and face-to-face retail, but may also result in older adults eating better and enjoying social contacts and convenience.

Online Customer Experience

Creating superior customer experiences is a key tenet of effective marketing strategies (Meyer and Schwager 2007; Verhoef et al. 2009). Yet effective customer experiences are often based on high-touch connections with staff members or the physical environment of the store (Verhoef et al. 2009). This creates a challenge for services delivered online, as gains in efficiency or ease-of-use must be weighed up against potential loss in the quality of experience through a lower "fidelity". The human elements influencing affective and cognitive decision-making in offline experiences are replaced by factors that relate to the experience of the technical interface with a digital platform (Rose, Hair, and Clark 2011).

Driven by legal and regulatory requirements, such as the US Section 508 Guidelines and the Web Content Accessibility Guidelines (W3/WAI), the need to make websites accessible to a broad population is understood by those building digital services. Yet these guidelines typically relate to a specific definition of disability that excludes many older individuals. In the field of user-experience (UX), there has been

growing recognition of the broader commercial benefits of adopting technology to meet the needs older consumers face with declining sensory or perceptual capabilities (Fozard and Gordon-Salant 2011).

While much research into customer experience is based on using computer-based websites, the range and nature of touchpoints with technology is changing, such as the growth in mobile devices and the broadening range of media types. Early research into mobile devices has indicated that, as devices become more complex, older users struggle with navigation (Ziefle and Bay 2005). Additionally, though there is a body of research on text-based media, communication on digital channels is increasingly characterized by video, photo, audio and hybrid media forms such as emoticons (Derks, Bos, and Von Grumbkow 2007). Age-related physiological and cognitive changes can influence the way media are perceived by older adults (Fisk et al. 2009). Age also influences the perception of colors or sounds (Charness and Boot, 2009), and use of video, interactive, or 'gamified' content can improve social functioning among individuals in their 70s or 80s (Allaire et al. 2013). However, new devices with novel forms of input that are not touch-based raise the question of whether some devices are more appropriate than others. For example, voice activated devices such as the Amazon Echo, Amazon Show or Google Home rely on using voice recognition and artificial intelligence to address customer queries directly. In doing so, they can potentially overcome the limitations of touch-based devices.

Privacy & Personal Data

The potential for digital technologies to generate privacy concerns has become a common theme in discussion around the use and collection of data for marketing purposes (Nunan and Di Domenico 2013). Consumers have three broad areas of concern in relation to their privacy (Rapp et al. 2009). These are awareness of data being collected; security of information when it is stored; and ensuring that they have a means of redress when issues occur. When older consumers feel that privacy issues have not been addressed, or aspects over privacy have not been fully disclosed, then it is likely to negatively impact their experience and likelihood to purchase (Miyazaki 2008).

Just as aging is a complex construct, so too is privacy. Perceptions vary about what is, or should be private, and commercial organizations' rights over the personal data they collect. For example, one major difference in perceptions of privacy between individuals and firms relates not to the amount of data collected, but the extent it is shared with marketers who, unsurprisingly, prefer free exchange of data (Milne and Bahl 2010). On an individual level, determinations of privacy are highly dependent on contextual factors relating both to the content of the data and the social context in which it is being disclosed (Nissenbaum 2004). With regards to digital channels, attitudes and behavior towards social media are driven by a "privacy paradox" (Barnes 2006), where concerns about privacy and personal data are not backed up by actions that actually protect privacy (Acquisti and Gross 2006). Research suggests that older individuals are more likely to have congruence between attitudes and behavior towards privacy than younger individuals (Kezer et al. 2016). Related to this is the question of privacy "from whom", with older internet users more concerned than younger users about data security and the ways that their data may be used by corporations (Fleming and Adkins 2016). Much of the online digital economy is based on widespread collection of customer data. Economic success is thus dependent on an ability to effectively build and generate trust so that competitive advantage from disclosure of data

can be maintained. If decisions on the relationship between privacy and customer behavior are based around assumptions about younger users'

behavior, then there is a risk that higher levels of disclosure will be assumed than actually exist, especially with the high levels of trust that

millennials demonstrate towards organizations (Gallup 2016).

Questions as to how older consumer groups feel about privacy, and their resulting changes in behavior, is an area where there is a

paucity of research. There is a broader question as to whether older consumers are more willing to disclose information that can be potentially

harmful to their interests. This is based on the assumption that older people are *de facto* a more vulnerable consumer group due to physical or

cognitive frailties. Some research has indicated that any vulnerabilities related to physical or cognitive limitations may be mitigated by an

ability to make better decisions (Berg 2015). Yet there is a gap in research when evaluating how age-related differences influence information

disclosure. Although Trottier and Gordon (2018) found similarity of decision-making for students aged under 40 and managers aged under 65,

they did not include individuals over 65. It is thus of interest to explore if responses vary among different older generational cohorts.

Digital Exclusion

Although this review has focused on active internet users, it is important to consider those who are not internet users or who have limited

access to digital technologies. Those people without access to the internet cannot benefit from services delivered over digital channels and, in

an era of increasing "digital business" they risk exclusion from a wide range of commercial products as well as public services (Friemel 2016).

Digital exclusion can also negatively impact the democratic process, with age being the dominant factor in explaining lack of online political

participation (Hoffman, Aeschlimann, and Lutz 2014). Lack of internet access reduces the likelihood of contacting elected officials (Sylvester and McGlynn 2009) while internet users are more likely to focus on online forms of political participation (Anduiza, Cantijoch, and Gallego 2009). There are also major questions about understanding older customers who do not use the internet. For example, given the dominant use of online panels in generating insight, how can the customer's voice work when the customer cannot access the channel through which they can be given a voice?

Older cohorts are not the only ones that have been identified as being excluded from internet use. Internet use is related to gender, income and education level, while people in single person households, with physical disabilities, or living in rural areas, are also less likely to be internet users (Berry 2011). Care must be taken against categorizing members of the older generational cohorts as not using the internet because they are old. Rather, they may be digitally excluded because they are also more likely to be poor, physically disabled or living in rural areas that are poorly connected to good internet infrastructure.

Given the increasing importance of internet access, in terms of using commercial services as well as access to the public services delivered online, there has been a stream of research exploring the extent of internet exclusion, suggesting possible ways to redress it. This research broadly identifies that in older population groups there is significant digital exclusion, a rate increasing substantially with older generational cohorts. Yet, research in this area suffers from two issues. The first is that research it is reliant on data that are quickly obsolete as patterns of internet use shift in the intervening period. Secondly, the multifaceted nature of digital technology and usage patterns are in danger of being ignored.

Research into the digital divide has focused on the rationale behind non-internet use (Wong et al 2009) rather than more granular discussions of differences in behavior among internet users. For example, as banks move their services to smartphone based apps, access to appropriate hardware may be more of an issue than internet access. Similarly, if people are not willing or able to make online purchases or engage with social media, then they can still have a high level of exclusion from aspects of society that are digitally driven while still being measured as connected to the internet. This suggests that internet exclusion encompasses two separate issues. One of people who don't, won't or can't use the internet, and the second of people who have access but are not sufficiently engaged with digital services to leverage their full potential. If many customers, or potential customers, are not willing to use digital channels, this creates more costs in running both online and offline services, or risks losing access to the segments. On the other hand, it represents an opportunity for firms to generate competitive advantage if they can find ways to encourage excluded, or disengaged, groups from participating, such as particularly those in the oldest cohorts. Instinctively, firms may characterize the question of engaging older users as a matter of corporate social responsibility, rather than core business strategy. Yet, such an attitude is embedded in stereotypes of older consumers outlined earlier in this paper. Given the economic value of older consumers, addressing exclusion or disengagement from digital channels is as much a question of commercial interest as of social interest.

Implications for Public Policy

New digital technologies provide significant benefits for the growing number of older members of society (Kim et al 2017). They can reduce levels of isolation associated with old age through enabling connectivity with friends and family members (Olphert and Damodaran 2013). E-commerce services provide fast delivery of goods to those with mobility issues. More broadly, public service providers have begun to build their own services upon digital platforms, including social networks, to disseminate information and advice. Given the economic benefits of serving older consumers, it could be argued that the market will eventually address any gaps and that a current digital divide is a function of different rates of technology adoption. Nevertheless, policy making remains vital in order to narrow the digital divide, such as facilitating the provision of easily accessible broadband, not only for later life age cohorts but also low-income populations, two categories that are often intertwined for many households. The Lifeline program, an example of a means-tested program overseen by the US Federal Communications Commission (FCC), provides qualifying monthly household subsidies to address the issue of socio-economic status and the affordability gap for broadband access. This enables access to essential service providers, healthcare and other care services, with more than 40 percent of older adults eligible for the subsidy (FCC 2019).

Not all technical innovations are positive for all consumers (Veríssimo 2016). The shift to online and mobile banking services provides convenience but can reduce the options for those who are unable or unwilling to move from physical store banking services. The question for policy makers is about the steps that can be taken to ensure that there is no exclusion of older consumers from digital channels and that access is still maintained. A challenge is that the forms of exclusion discussed here are typically implicit rather than explicit (Friemel 2016). Digital platforms are delivered by commercial firms operating in highly competitive markets where older cohorts are not specifically excluded from

adopting these platforms. While there are issues related to physical accessibility of services, widespread legislation exists that relates to the use of web platforms by impaired users. For example, recent debates and legal disputes center around how existing legislation such as the ADA (Americans with Disabilities Act) is applied and enforced in the digital economy (Lapowsky 2015).

More difficult to address are forms of implicit exclusion that occur on platforms where network effects dominate. While the focus of interpersonal connections on social networks around younger individuals is well understood, this pattern could be replicated around the sharing economy. For example, where the ubiquity of services such as Uber results in the closure of public transport services (Brustein 2016), is the extent of coverage driven by the needs of younger early adopters who dominate the network? If low cost or fast deliveries of services are only available in urban locations where the population is likely to be younger, is there then another implicit risk of excluding older consumers?

We suggest that blanket policy recommendations based around age are unlikely to be effective due to the varying ways in which age can influence consumption decisions and needs. Many of the challenges identified, such as those relating to disability, may be correlated with age, but they can also impact other segments of the population. Hence, some organizations, most notably the Internet Society, have an explicit agenda that is not specifically age driven. They seek to influence public policy through the stated goal of effecting generic and sustainable internet access, which is seen to be under threat by a "range of social, economic, regulation and policy issues that interfere with an open and sustainable Internet" (Internet Society 2019).

Nevertheless, there are age specific policy factors that are relevant. There remains a large group amongst the older population, mainly but not exclusively in the oldest generational cohorts, who are not technically savvy. They are likely to be individuals who grew up without technology in the work place, but it is also related to socio-economic status. Arguably, they may be more susceptible to being targeted by online scams or fraudsters. The Federal Trade Commission (FTC) in the US is an example of an agency carrying out public policy work in this area. It specifically addresses the issues of scams against older Americans and has brought law enforcement action against the perpetrators.

While the proportion of individuals who are on the wrong side of the digital divide is declining over time, it remains a large group, consisting of many of the most vulnerable members of society (Friemel 2016). Policy makers must consider the circumstances where non-digital options should be retained when services are digitized, such as the double benefit of ordering food and groceries online combined with a more personalized delivery service. This paper has also identified generational age-related variations in usages of digital platforms. Those providing public services should be mindful of the limitations in reach by operating on one or more specific platforms. Use of app-based mobile banking for example lags behind adoption and use of social networks. Policy makers should consider which software and hardware platforms are necessary for the delivery of essential services.

Conclusion

This paper identifies the implications of aging populations in the increasingly technology driven marketing environment, moving beyond the narrow foci of health and economic costs. In doing so, we have sought to shift the discussion from the problems of aging to opportunities to use digital technologies that create value for older customers. Although aging populations create broad implications for market structures and customer needs, there remains a paucity of empirical studies into digital marketing contexts. Thus, when considering the relationships between aging and new technologies, the marketing "voice" is often absent in the literature. There is a limited availability of data relating to age and current usage patterns of digital services. Even in public reporting of data, the age profile of users of services is rarely deemed an important variable. For example, in public filings Facebook provides details of its users in terms of gender, ethnicity and geography, but with no acknowledgement of age profiles (Facebook 2018). This study makes the case for using the lens of generational cohorts as a research frame that presents a rich stream of research topics that are key to understanding the future consumer landscape. For marketing to focus effectively on improving the quality of life for consumers, it must take into account the needs of all consumers. More than this, marketing cannot disengage itself from the major issues that are shaping societies. The failure to investigate the role of technology-enabled platforms in terms of our aging societies represents a major gap in research. We hope this paper will encourage researchers to consider this important area as a research focus.

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Making and Aging: Current Knowledge and

Table 1. The digital technology divide: Key research perspectives on aging; thematic foci; implications for marketers and public policy

Key Research Perspectives on Aging	Thematic Foci	Implications for Marketers	Implications for Public Policy
Biological/ Physical Perspectives	• Decline of the body over time (Hooyman and Kiyak 2008; Moschis 2012) • Drivers of differing rates of decline (Moschis 2012) • Sensory decline in vision or hearing (Fozard and Gordon-Salant 2001)	• Moving beyond simple chronological age factors in identifying specific consumer needs. • Facilitating access to products/ services	• Shifting policy discourse towards a more nuanced focus on different categories of technological need in terms of biological/ physical factors, rather than purely on chronological age. • Addressing the digital divide and rates of technology adoption in terms of biological/ physical factors. • Recognizing and ensuring policy addresses the physical vulnerability needs of older consumes so that digital provision can be inclusive and fit for purpose.

Psychological/ Cognitive Perspectives	• Age-related influences on personality (e.g. Moschis 2012) • Impact of motivational states and emotions on decision-making (Drolet, Williams and Lau-Gesk 2007; Williams and Drolet 2005) • Constraints on information searches (Yoon, Cole, and Lee 2009)	• Taking account of the role of technology in aiding and enhancing consumer decision-making.	• Considering limitations in reach of specific platforms due to generational age-related variations in usage of digital platforms (e.g. app based mobile banking lags behind adoption of social networks). • Addressing psychology of the digital divide and technology adoption rates. • Ensuring no discrimination/ exclusion of older consumers from digital channels and maintaining their access. • Considering the potential psychological/ cognitive vulnerability of older consumers in terms of digital access, adoption, adaptability to changes in cognitive needs, and ease of usage.

| Social Perspectives | Social isolation (Victor et al. 2001) Inability to maintain social connections (Forbes 1996) Social connectivity between generational cohorts (Williams 1997) Social generations forming around special formative experiences (e.g. Edmunds and Turner 2002; 2005; Schewe and Meredith 2004) Brand loyalty/ nostalgia (Lambert-Pandraud and Laurent 2010). | Understanding consumer decision-making where not based on word of mouth. Taking account of the impact of long-standing brand preferences. | Enacting social policies not based on chronological age alone as these can be discriminatory/ counterproductive to wellbeing in older age Feeding into public policies that address strategies for tackling (social) isolation affecting those in later life. Supporting policies that enable ease of online communications to enhance connectivity with service providers and support networks including friends and family members. Ensuring no discrimination/ exclusion of older consumers from digital channels and maintaining their access |

Environmental / Contextual Perspectives	• Role of physical environment on aging (Golant, Rowles, and Meyer 1989) • Age-related migration patterns (Warren 2007; Tanaka and Iwasawa 2010) • Period effects on environmental impacts (Holbrook and Schindler 2009; Parry and Urwin 2011)	• Understanding the role of physical location and environmental factors past and present in determining decision-making in older consumers. • Delivering consumer services in urban and more remote areas.	• Considering which software and hardware platforms are necessary for the delivery of essential services. • Ensuring no discrimination/ exclusion of older consumers from digital channels and maintaining their access • Considering the circumstances where non-digital options should be retained/ combined with digital options, when services are digitized.

Table 2. Technological contexts: Research Challenges for addressing older consumers' use and adoption of digital technologies

Technological Context	Corresponding research issues and challenges
Social media	* Identifying drivers behind adoption of social networking platforms by older users and the characteristics of social connections that underlie them. * Exploring factors that determine how older consumers engage with content on social media and its influence on the purchase decision-making process. * Understanding the factors that drive older consumers to generate or share reviews of products or services on social media.
Digital advertising	* Developing effective proxies for age-related segmentation in digital advertising. * Understanding determinant factors in adoption of ad blocking technology by consumers from older generational cohorts. * Understanding how physical limitations associated with aging influence the effectiveness of advertising on mobile devices.

Service automation	* Understanding face-to-face services in older consumers' evaluation of service quality. * Developing effective techniques for addressing unstructured customer requests through self-service. * Understanding how self-service techniques can effectively improve service quality through addressing cognitive and physiological limitations of older age.
Online retail	* Understanding how delivery services for online retail might be differentiated to meet the needs of older consumers across different generational cohorts. * Building and embedding trust amongst older consumers within online retail offerings. * Exploring the ways in which delivery service elements contribute to overall service offering amongst older consumers.
Online customer experience	* Understanding the influence of aging on effective customer experiences delivered through smartphones. * Examining how age influences older consumer responses to different forms of media (e.g. text/ photography/ video etc.) on social media platforms. * Identifying the age-related factors relating to adoption and use of new forms of computer hardware devices (e.g. Amazon Echo, Google Home, Apple Watch). * Analyzing whether existing regulations of online experience designed for users with disabilities are sufficient to address the needs of differing cohorts of older consumers.

Privacy and personal data	* Understanding the relationship between privacy related trust issues and purchase intention for older consumer cohorts. * Understanding contextual factors that determine willingness to disclose information online amongst older consumer cohorts. * Developing policy interventions that take steps to reduce risks of data/ privacy related online fraud amongst older consumer cohorts.
Digital exclusion	* Exploring the factors behind differing patterns of adoption amongst differing digital services or hardware. * Identifying mechanisms to engage digitally excluded consumers with online services. * Maintaining effective multi-channel offerings to reach digitally disengaged consumers. * Identifying policy interventions to prevent potentially harmful exclusion amongst older consumer cohorts.