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'I am the master of my fate': digital technology paradoxes and the coping strategies of older consumers

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ABSTRACT

The UK Government and charity-based initiatives encourage the use of digital devices to improve connectivity and address health care challenges across an escalating, ageing population. However, research on the lived experiences of older adults using technology is limited. The aim of this study is to build on technology paradox theory to provide a greater understanding of older adults' use of digital devices and the associated coping strategies that are adopted. A qualitative approach, employing event-based diaries, reveals functional, social and psychological paradoxes as well as influences on self-worth. The findings also identify how older adults adapt to the challenges of such technology paradoxes by developing novel coping strategies such as, adjusting and acceptance. Furthermore, implications for policy and practice are established.

Introduction

The population in the UK is ageing, with 18% of inhabitants over the age of 65 (Office of National Statistics, 2017). As a result, the Government have identified a number of issues associated with this phenomenon, such as the pressures placed on informal carers as well as healthcare systems and social care, that relate to a negative effect on public spending (Wittenberg et al., 2019). In response, current solutions offered by UK Government and charity-based initiatives encourage the use of digital technologies in order to somewhat alleviate these difficulties. The past 15 years has consequently seen a dramatic growth in older adults using digital technology. In 2006, only 9% of UK residents over the age of 65 were accessing the Internet daily, whereas in 2020, this figure increased to 67%. Furthermore, 53% of older adults currently use a smartphone to access the Internet, in comparison to only 8% in 2011 (Office of National Statistics, 2020). Despite the rapid increase in technology adoption, an understanding of how technology usage influences the consumption experiences of older adults is still limited within the marketing discipline.

Until now, older consumers and their uptake of digital technology have largely been overlooked or stereotyped (Niemelä-Nyrhinen, 2007). Traditionally the 'older consumer' has been described as neglected, rarely being offered products or services specifically developed or marketed towards their needs (Phillips & Sternthal, 1977). This is despite being healthy, active consumers and providing many opportunities for marketers and the economy (Tynan &

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Drayton, 1985). Recent debates have acknowledged the importance of further understanding the lived experiences of ageing consumers, with a view to capturing product use in relation to well-being (Ford et al., 2016; Stone & Gould, 2016). However, within the context of digital technology consumption, extant studies have noted the absence of a marketing perspective (C. Lee & Coughlin, 2015; Mostaghel, 2016; Nikou, 2015; Nunan & Di Domenico, 2019; Wagner et al., 2010). Consequently, there are calls for further research to investigate older adult consumption of technology in order to fully understand the values of this market segment (C. Lee & Coughlin, 2015; Nunan & Di Domenico, 2019).

Recent innovations in consumer technology have created a novel body of literature relating to consumer-computer interaction (Davenport et al., 2020; Mulcahy et al., 2019; Novak & Hoffman, 2019) extending towards how older adults utilise AI, robotics and the Internet of Things (e.g. Heerink et al., 2010; Sivathanu, 2018). For instance, Dehghani et al. (2020) and Sivathanu (2018) develop insight on older consumers' reasons for and against using wearable fitness trackers. These studies develop important knowledge relating to the adoption of innovative technologies, but there is still a fundamental lack of understanding relating to how ageing consumers use well-established digital devices (e.g. smartphones). Considering that tablets, smartphones, laptops and e-readers are more frequently used by older adults (Wilson, 2018), and are often required in order to operate AI and wearables, this paper generates insight on how these devices are experienced by older adults.

The present study uses a qualitative approach to capture the lived experiences of older adults who have newly acquired a portable digital technology, recording their interactions with these devices across an extended period. This in-depth data allows for advances in knowledge that currently does not exist for older consumers and technology usage. Although, extant marketing and management theories tend to employ frameworks that explain technology adoption and acceptance, such as the Technology Acceptance Model (TAM; Davis et al., 1989) and the Diffusion of Innovation (DOI; Rogers, 2004), this paper further extends the Paradoxes of Technology framework (Mick & Fournier, 1998). In doing so, the study moves beyond frameworks that measure metrics impacting usage, towards a framework that identifies the lived experiences of technology consumption. This paper recognises the need to provide a more comprehensive approach to understand how, and in what ways, digital technology is consumed post-acquisition by older adults. Furthermore, following recommendations from Vines et al. (2015), the technology paradoxes framework allows for developing criteria for older adults' success with technology. This is through identifying, not only the paradoxes that consumers experience, but also the successful coping strategies that are employed.

Theoretically, this study contributes to technology paradox concepts by identifying and developing additional coping strategies to the original consumption strategies presented by Mick and Fournier (1998). Practically, the knowledge gained here is used to produce recommendations to enhance the success of older adults engaging with digital technology. The study begins with a review of the marketing literature on older consumers and digital technology usage, alongside technology paradoxes and consumer coping. This is followed by an account of the methodological procedures detailing the use of self-report diaries. An analysis of the data collected from participants is then revealed, identifying technology paradoxes and coping strategies. The findings also include a new paradox of attachment/non-attachment and new coping strategies of adjusting and

acceptance. Finally, a conclusion comprising theoretical and managerial implications, identifies study limitations and ideas for future research.

Literature review

Ageing consumers of digital devices

As technology usage by older adults is an important and pertinent topic, the literature on this subject is interdisciplinary, spanning across gerontology (e.g. Ballantyne et al., 2010; Rosenberg & Nygård, 2017), adult education (e.g. Jin et al., 2019; Lai, 2020), geography (e.g. Hardill & Olphert, 2012; Mansvelt et al., 2020), ergonomics and design (e.g. Gao et al., 2015; Li & Luximon, 2018) and healthcare (e.g. Cattan et al., 2011; Joe & Demiris, 2013; Mortenson et al., 2013). Within gerontology, the largest field, there are advancements in understanding older adults' usage of assistive technology such as electric mobility scooters (May et al., 2010) and digital technology such as the Internet and everyday devices (Ballantyne et al., 2010; Hedman et al., 2013; Tsai et al., 2017; Wilson, 2018). The focus of gerontology research is predominantly on how older adults perceive the usability, functionality, and utility of a device (Chevalier et al., 2013; McCreadie & Tinker, 2005; Slegers et al., 2009). Nevertheless, there are several studies exploring the relationship between technology usage and loneliness, suggesting that devices can help improve social connections and a sense of belonging (Ballantyne et al., 2010; May et al., 2010; Selwyn, 2004; Wilson, 2018).

Although findings from multiple disciplines are beneficial to comprehend older adults' experiences of using technological devices, several recent review papers recognise that the marketing voice is absent from the literature (C. Lee & Coughlin, 2015; Mostaghel, 2016; Nikou, 2015; Nunan & Di Domenico, 2019; Wagner et al., 2010). For instance, C. Lee and Coughlin (2015) contest studies reporting that older adults are unwilling and lack the motivation to use technology (McCreadie & Tinker, 2005; Peacock & Künemund, 2007). Instead they propose that there are merely under-researched differences in the functional, psychological and social values of this market segment. It is noted that although older adults' value social connections, independence and privacy, many technologies designed specifically for this segment focus on physical assistance and safety (C. Lee & Coughlin, 2015). Moreover, Nunan and Di Domenico (2019) recommend that for marketing to improve consumers' quality of life, the discipline must consider the needs of all consumers, especially the ageing society and their uptake of technology. However, despite these calls for further research, a review of the literature reveals only ten empirical studies on older adults using digital devices within marketing, advertising, retail, and consumer behaviour journals (see Table 1).

The studies included in Table 1 represent the extant literature on older adults using everyday digital devices. The most prominent technology is the smartphone, while other digital devices such as tablets, laptops and e-readers require further investigation. There is a body of marketing research on older adults using the Internet and its services (e.g. for mobile banking and health), but these studies have been omitted from the table due to a lack of focus on a particular device (Eastman & Iyer, 2005; Gilly et al., 2012; Khvorostianov et al., 2012; Lam & Lee, 2006; Laukkanen et al., 2007; Thanasrivanitchai et al., 2017). Recent research has also explored older adults using AI and wearable technology. However, before exploring consumption of the Internet, AI and wearables, a fundamental understanding of digital device

Table 1. Review of the marketing literature on older adults using everyday digital devices.

References	Technology	Theory/Metrics	Methodology	Key findings
Karavidas et al. (2005)	Computer	Life satisfaction, computer knowledge, computer anxiety and self-efficacy	Quantitative – survey of computer club members (222 older adults aged 53–88)	• Computer use increased self-efficacy and reduced computer anxiety, which increased overall life satisfaction.
Arning and Ziefle (2007)	Personal digital assistant (PDA)	Technology Acceptance Model (TAM) extension with performance, subjective technical confidence and individual variables	Quantitative – experiment and survey (16 young adults aged 18–27 and 16 older adults aged 50–69)	• For the older age group, the interrelationship between technical performance and TAM variables (ease-of-use and usefulness) was much stronger than for the younger age group.
Niemelä-Nyrhinen (2007)	Mobile phone, Internet	Technology anxiety and level of experience	Quantitative – survey (620 older adults aged 50–60)	• Baby boom consumers have low levels of anxiety and high levels of experience with mobile phones and internet use. • Technology anxiety and experience are inversely related.
Ahn et al. (2008)	Home-based devices (e.g. cell phones, VHS players, CD players, PDAs)	Innovation-decision process, Diffusion of Innovation (DOI)	Quantitative – survey (1546 older adults aged 55+)	• Early adopters of computers are the most knowledgeable about new residential technologies. • Assistance with technologies at home, would have great potential for older adults.
Mitzner et al. (2010)	Range of technology at home, work and in health.	Attitudes towards technology	Qualitative – focus groups (113 older adults aged 65–85)	• Positive attitudes outweighed negative attitudes, testing the older adult stereotype. • Technology-supported activities, enhanced convenience and contained useful features. • Technology was also inconvenient, had unhelpful features with security and reliability concerns.
Chiu et al. (2016)	Touchscreen mobile devices	Training course designed on TAM and DOI	Mixed methods – 8-week apps-based training course with data collected via questionnaires and focus groups (20 older adults 50+)	• After the 8-week training programme participants had lower depressive symptoms. • Training needs relate to extended practice, usefulness and compatibility of the touchscreen apps.
Kim and Preis (2016)	Mobile devices (e.g. tablets and smartphones)	Goal-directed behaviour (extended)	Quantitative – survey (241 older adults aged 55+)	• Usefulness and enjoyment have no significant effect on older adults using mobile technology for tourism. • Prior knowledge of ICT has a significant effect on older adults' desire and behavioural intention to use mobile devices for tourism.
Chéron and Kohlbacher (2018)	Product innovations (e.g. TV, smartphone, digital camera, etc.)	Cognitive age, global consumer innovativeness, technology anxiety, number of adopted innovations	Quantitative – survey (1575 middle aged and older adults aged 40–96)	• Cognitive age is positively related to technology anxiety and negatively related to global consumer innovativeness. • Technology anxiety negatively impacts consumer innovativeness. • Innovativeness is positively related to the adoption of high-tech innovations.

(*Continued*)

Table 1. (Continued).

References	Technology	Theory/Metrics	Methodology	Key findings
Petrovčič et al. (2018)	Mobile phones	Segmentation model of older adults in mobile phone market	Quantitative – survey (1581 older adults aged 55+)	• 10 clusters were found, two of which were unique. • Older adults still prefer feature phones over smart phones. • But the mobile phone market has become heterogeneous, with older consumers of feature and smart-phones having distinguishable socio-demographic and life-course profiles.
Bae et al. (2020)	Smartphone	Awareness of age-related change, stereotype threat, consumer innovativeness, and self-monitoring	Quantitative – survey (200 older adults aged 50+)	• Awareness of age-related changes reduces older adults' tendency to adopt novel products. • Older adults who are under stereotype threat reduce their innovativeness to avoid demonstrating their incompetence. • Self-monitoring moderates this relationship: older adults with high self-monitoring cope with stereotype threat by presenting increased innovativeness.

consumption needs to be established, as without this, older adults may be unable to access the Internet or control wearables and benefit from their services (Dehghani et al., 2020).

Noticeably, the pre-existing research in marketing is predominantly quantitative with the majority of studies using a survey-based approach to data collection (see Table 1). Quantitative studies are useful in measuring self-report variables such as life satisfaction, technical confidence, stereotype threat, innovativeness, and cognitive age (Arning & Ziefle, 2007; Bae et al., 2020; Chéron & Kohlbacher, 2018; Karavidas et al., 2005). For instance, Bae et al. (2020) reveal that older adults who consider themselves to be subject to the threat of stereotype, are likely to reduce their innovativeness to avoid appearing incompetent. Additionally, Petrovčič et al. (2018) determine that several older adults using smartphones, only use the functionality of a feature phone (e.g. calling and texting). This demonstrates the limitations of using self-reported behaviour as a metric for understanding adoption. While these findings improve our knowledge of older adults' intentions to use technology, with the exception of studies undertaken by Mitzner et al. (2010) and Chiu et al. (2016), there is a dearth of qualitative research that offers an in-depth understanding of consumption behaviour. Furthermore, only Chiu et al.'s (2016) research uses repetitive measures, with all other studies only capturing behaviour or intention at one specific moment in time. Consequently, there is scope for research to investigate older adults' usage of technology across an extended time period, through an in-depth qualitative assessment of their consumer behaviour.

Table 1 also reveals the different theoretical approaches used to frame investigations examining technology usage by older adults in a marketing context. These approaches vary tremendously and include segmentation models, goal-directed behaviour, cognitive age and technology anxiety (e.g. Chéron & Kohlbacher, 2018; Kim & Preis, 2016; Niemelä-Nyrhinen, 2007; Petrovčič et al., 2018). However, the primary theories adopted as a framework for such studies are Rogers (2004) Diffusion of Innovation (DOI) and the Technology Acceptance Model (TAM; Davis et al., 1989). Within DOI there are five stages of adoption and five categories of adopters: innovators, early adopters, early majority, late majority and laggards (Rogers, 2004). Whereas, the TAM includes variables such as perceived usefulness, perceived ease of use, attitudes towards use and behavioural intention to use (Davis et al., 1989). There have been successes with using these frameworks within the marking literature. For example, Chiu et al. (2016) designed a training course based on these two theories, to help older adults use touchscreen mobile devices. In doing so, they successfully reduced depressive symptoms in participants. However, the fundamental composition of these frameworks i.e. managerial, workplace and intention-based, makes them unsuitable for the current study.

The TAM originates from a management and organisational behaviour perspective and predicts the technology usage of new software or hardware introduced within the workplace (Turner et al., 2010). It is often described as being robust and compelling (King & He, 2006). However, there have been challenges in successfully applying the TAM to different technologies being utilised in alternative environments (Holden & Karsh, 2010; Legris et al., 2003). There have therefore been critiques of the framework indicating that it should not be used outside of the context in which it was validated (Turner et al., 2010). Further critiques question the accuracy of the attitude-based variables and the perceived ease of use measurement, the relationship between intentions and behaviour and the lack of environmental stimuli (Bagozzi,

2007; Turner et al., 2010; Wells et al., 2010). Moreover, the DOI literature pertaining to older adult adoption of technology often perceives older adults to be non-adopters and laggards and has difficulty accounting for the different experiences and knowledge of this user group (Choudrie et al., 2018; Niemelä-Nyrhinen, 2007). Therefore, while useful in determining behavioural intention to use and adopt technology, these theoretical frameworks provide little insight into the functional, psychological and social values of older adults or the intricacy of technology usage.

Interestingly, although previous theoretical perspectives provide insight on either the success or failure, and use or non-use of technology by older adults, findings also suggest that there is further complexity and even dichotomies associated with older adults' use of technology. For example, Chiu et al. (2016) demonstrate that participants reported high confidence levels alongside high technology anxiety levels, which both decreased throughout their training course on how to use touchscreen mobile devices. Kim and Preis (2016) indicate that older adults' positive feelings towards using mobile devices have a positive impact on intention to use, whereas negative emotions have no significant effect. More recently, Mansvelt et al. (2020) in their study of ICT use by the ageing consumer, discover that both pleasure and frustration are experienced within the same task. For example, their participants saw the purchasing of digital devices such as tablets, smartphones and laptops as important, but the use of the devices for the Internet created both pleasure and anxiety. Currently, however, no previous framework explains the contradictions exposed in the extant literature. Given such dichotomies in the context of older consumers' use of technology, further research is necessary to move beyond intention-based frameworks to allow the complexity and duality of such behaviours to be fully examined.

Paradoxes of technology

To address the concerns outlined above, the present study adopts Mick and Fournier's (1998) Paradoxes of Technology to explore how older adults use portable devices. As there are currently few well-grounded and established theories from consumer behaviour and marketing management that apply to older adults' consumption of technology (Mostaghel, 2016), this framework provides a perspective on the lived experiences that older adults have with post-acquisition technology usage. Mick and Fournier's framework (see Figure 1) recognises the complex consumer experiences of using household technologies. In doing so, these authors identify eight paradoxes: control/chaos, freedom/enslavement, new/obsolete, competence/incompetence, efficiency/inefficiency, fulfils/creates needs, assimilation/isolation and engaging/disengaging. The paradoxes create emotions of conflict, anxiety and stress. To combat these emotions, consumers use coping strategies either pre or post acquisition to avoid or confront the technology in question (Mick & Fournier, 1998).

Since its inception, the Paradoxes of Technology framework has been utilised in a number of contexts e.g. retail, employment, communications and investment, and has been explored by considering a variety of consumer segments e.g. vulnerable consumers, working mothers and migrant mothers (Elms & Tinson, 2012; Looney et al., 2006; San Pascual, 2016; Sowon et al., 2018). Within these contexts, the framework has successfully provided insights into post-purchase consumption of technology, which
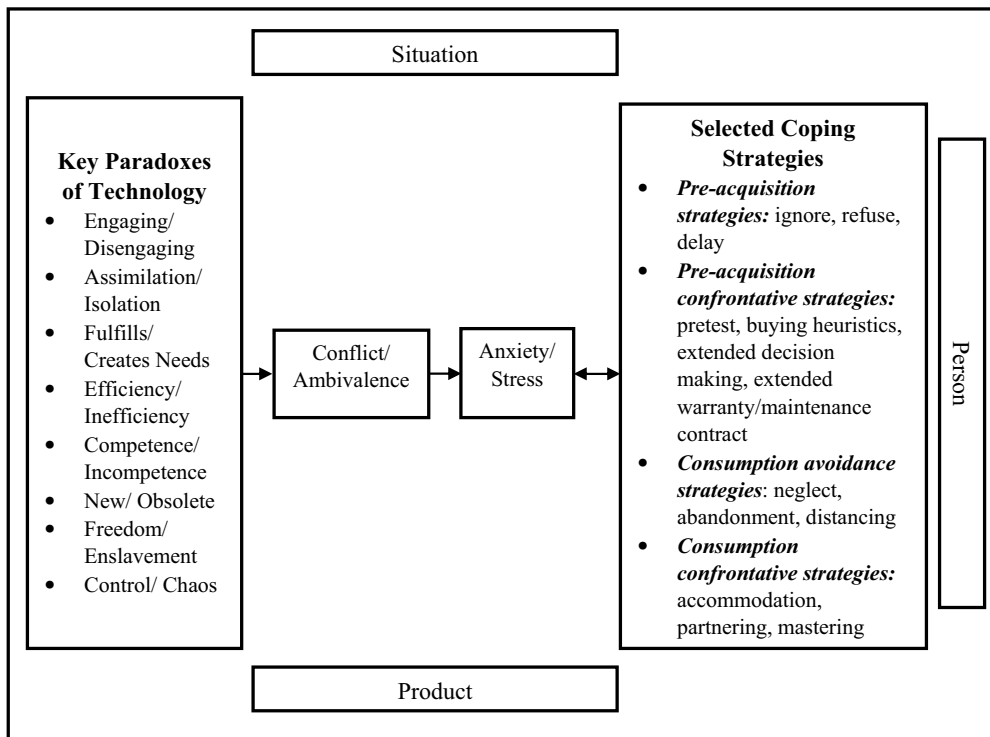
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│  │    Disengaging     │          │    refuse, delay        │  │    │ │
│  │  • Assimilation/   │          │  • Pre-acquisition      │  │    │ │
│  │    Isolation       │          │    confrontative        │  │ P  │ │
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│  │  • New/ Obsolete   │          │  • Consumption avoidance│  │    │ │
│  │  • Freedom/        │          │    strategies: neglect, │  │    │ │
│  │    Enslavement     │          │    abandonment, dist.   │  │    │ │
│  │  • Control/ Chaos  │          │  • Consumption          │  │    │ │
│  │                    │          │    confrontative        │  │    │ │
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Figure 1. Adaptation of Mick and Fournier's (1998) Technology Paradoxes and Consumer Coping Strategies Framework.

is complex, dichotomous, and vital for retailers and marketers to comprehend. For instance, Elms and Tinson (2012) emphasise that people with disabilities employ coping strategies to manage the inherent tensions associated with online shopping services. Despite these in-depth insights into a range of consumer segments, the Mick and Fournier (1998) framework is yet to be applied to the context of older adults using digital devices over time.

Specifically, in a digital technology context, the Paradoxes of Technology framework has been explored in relation to mobile\smartphone experiences in different countries and by a variety of users (Chae & Yeum, 2010; Jarvenpaa & Lang, 2005; Sowon et al., 2018), examining self-service technology and related satisfaction (Johnson et al., 2008), as well as social networking sites (Zhuang et al., 2013) and location-based mobile commerce (J. M. Lee & Rha, 2016). Findings reveal further paradoxes such as planning/improvisation, public/private and illusion/disillusion (Chae & Yeum, 2010; Jarvenpaa & Lang, 2005), and illustrate that technological paradoxes are mediated by perceived performance ambiguity and trust in technology. However, the focus of these studies has tended towards quantitative approaches (Johnson et al., 2008; J. M. Lee & Rha, 2016) and scale measurement (Zhuang et al., 2013). Fewer paradoxes have also been explored in greater depth (Eytam et al., 2017). There are, however, calls for research to further examine the effectiveness of user coping strategies (Jarvenpaa & Lang, 2005) as well as how solutions can be provided to address technology dissatisfiers (Johnson et al., 2008).

As there is little understanding of how technology paradoxes impact older adults, specifically within the context of digital portable devices, the aim of this study is to, (i) identify technology paradoxes experienced by older adults using portable devices and, (ii) explore the post-acquisition coping strategies adopted by older adults in response to experiencing paradoxes. This is with a view to understanding how digital technology is not only adopted but also used in an under-researched consumer segment, and to extend the debate on the strategies and experiences associated with technological products for older adults.

Methodology

In order to explore older adults' usage of portable digital devices in more depth and from a consumer perspective, a qualitative methodology was used. To gather rich data, narratives of older adults' experiences of using technology were collated over a 6-month period. The self-report diary was chosen as the method of data collection for several reasons. Firstly, it has been used successfully in previous studies focussing on older adults' adoption of technology (Buse, 2010; Price et al., 2013). Secondly, the diary is an instrument of self-report that can be used to record everyday behaviours (Alaszewski, 2006; Zarantonello & Luomala, 2011). Thirdly, previous research indicated that diaries can be an extremely useful mechanism for collecting data on private behaviours of a potentially sensitive nature such as suffering, sexuality and secret consumption habits (Alaszewski, 2006; Zarantonello & Luomala, 2011). As technology consumption by older adults is a relatively under-researched topic, it is appropriate to assume that technology use by at least some older adults is a sensitive and private matter (Wagner et al., 2010). Furthermore, the mechanism also records the temporal aspects of people's lives, capturing their thoughts and actions at a specific moment in time (Bolger et al., 2003). Participants were therefore encouraged to write in their diary regarding usage of their digital technology and asked to note any impact that the device had on their lives.

This type of diary entries is often called event-based diaries or event-contingent protocols (Bolger et al., 3003; Wheeler & Reis, 1991). To monitor the diary completion and ensure that participants were correctly entering the timestamp of their reflections, they were asked to write a date besides each entry and to submit their journal once a month for the 6-month period. If, on submission, there were any missing dates or entries, participants were reminded of the guidelines before completing the next month's diary. Furthermore, participants had the autonomy to use any format to write, which resulted in open and expansive data. Most diaries were returned as a word document and in their entirety spanned from 5,000 to 20,000 words per participant, presenting a wealth of data. Diary entries indicated how devices were used, participants' feelings towards the technology, and any associated changes in lifestyle as a consequence of use.

This study used purposive sampling to select participants from areas in England, UK where there is a high ratio of older adults to working adults. Participants were recruited through local University of the Third Age (U3A) organisations by email, newsletters and websites. In order to take part in the research, participants had to be over the age of 65 and have acquired a new digital technology in the 6 months prior to the study. Moreover, as there was no remuneration for collaborating, participants needed to be available, interested and engaged for the entirety of the study, which was facilitated by regular

Table 2. Participant information for the qualitative study.

Pseudonym	Age	Gender	Device	Marital status	Education level	Experience of technology
Pauline	66	Female	Smartphone	Married	Postgraduate	Experienced
Sarah	67	Female	e-Reader	Married	Postgraduate	Slightly experienced
Tessa	67	Female	Tablet	Married	School	Slightly inexperienced
James	68	Male	Tablet	Married	Professional	Slightly experienced
Jennifer	71	Female	Tablet	Widowed	Undergraduate	Slightly experienced
Maria	71	Female	Tablet	Married	Postgraduate	Experienced
Steve	72	Male	Tablet	Married	Postgraduate	Experienced
Emma	74	Female	e-Reader	Married	Professional	Inexperienced
Elizabeth	77	Female	e-Reader	Single	Postgraduate	Slightly experienced
Phoebe	78	Female	Laptop	Divorced	School	Slightly experienced
Jenny	81	Female	Laptop	Widowed	School	Slightly experienced
Christopher	83	Male	Smartphone	Widowed	Professional	Experienced

emails and phone calls to generate rapport. There were twelve participants recruited (see Table 2) who had newly acquired digital technologies including e-readers, tablets, laptops and smartphones. Table 2 presents the relevant socio-economic and measurement information such as age, gender, marital status, education level and level of technical experience. One of the main limitations of the chosen sampling approach is that there are significantly more females (N = 9) to males (N = 3), which is due to there being a higher number of females in an ageing population and the collaborative, educational nature of U3A organisations.

Thematic analysis was used to analyse the diary data as the researchers moved between the empirical materials and theories of technology paradox to extend the current theoretical understanding (Braun & Clarke, 2006). An initial inductive approach was used during the first three phases of thematic analysis: familiarisation with the data, generating initial codes and searching for themes. Once the data had been coded and organised into themes, the researchers also explored the diary entries for emergent ways in which the participants managed or coped with their devices. Therefore, when reviewing themes and defining/naming themes, the researchers moved between the initial analysis and their theoretical understanding of technology usage to identify technology paradoxes and associated coping strategies. During this process, the applicability of the Paradoxes of Technology concept to older consumers of digital devices was established, whilst novel insights into paradoxes and coping strategies were generated.

Findings

The findings reflect six prominent paradoxes relating to older adults using digital technology (see Table 3) and five coping strategies (see Table 4). The paradoxes not only demonstrate the conflict between the opportunities and challenges that technology poses, but also the ability of older adults to confront these tensions. Five of the paradoxes reflect the original Mick and Fournier (1998) framework and include: control/chaos, competence/incompetence, efficiency/inefficiency, freedom/enslavement and assimilation/isolation. The sixth paradox of attachment/non-attachment is an original paradox emerging from the data, demonstrating the emotional relationship that older consumers have with their mobile devices. These paradoxes are discussed under three themes, which indicate the value of digital technology within older consumers' lives: *functional*

Table 3. Paradoxes of technology identified from the data.

Theme	Paradox	Definition	Exemplar quote
Functional	Control – Chaos	Technology can facilitate regulation or order, and technology can lead to upheaval or disorder	One of the reasons for persuading myself I would like an iPhone was that, if I, for instance, entered a date in my diary while out at, say, a committee meeting, I could (1) **be sure the day was clear**, (2) **enter it**, and (3) **it would appear automatically on my iPad and Mac. Great: it works**. What I hadn't bargained for was that almost **everything else appears on almost everything** [other devices], leaving my pocket version (metaphorically) **bulging with spam**, pictures of my loved ones at a football match, and unedited scatterbrain notes on my next project staring me down. (Christopher, male, 83, smartphone)
	Efficiency – Inefficiency	Technology can facilitate less effort or time spent in certain activities, and technology can lead to more effort or time in certain activities	Just got back from a great holiday where **my kindle was invaluable. I read loads of novels but did not need to pack any in my suitcase**. I bought a few via my kindle while I was away. Also, I used it each day to keep up with my emails. **I find it very useful to see what emails are coming in** but, as it is **not easy to reply via kindle** I've responded to anything urgent via text on mobile. (Sarah, female, 67, e-reader)
Social	Assimilation – Isolation	Technology can facilitate human togetherness, and technology can lead to human separation	**Victoria and I** – both very fond of our Kindles – **were discussing minor shortcomings.** I said I would like more space to hold the frame; she thought that the 'forward' and 'reverse' buttons should be the other way round. But there was a definite sense that this was **strictly between ourselves: we wouldn't have said it in front of a Kindle-agnostic.** (Elizabeth, female, 77, e-reader)
	Freedom – Enslavement	Technology can facilitate independence or fewer restrictions, and technology can lead to dependence or more restrictions	I finished my book group book yesterday with a sigh of relief. The books we get are not exactly stretching and can be quite dull. **I was pleased to think I would be able to go back to something good on my kindle** that evening, but when I switched on I was quite put out to have a message saying that **the battery was low and I needed to recharge it before reading any further.** I hadn't thought about it before but this is where the kindle is not as good as a library. You can't just pick up a book and start reading, **you are reliant on remembering to keep the power supply up.** (Sarah, female, 67, e-reader)
Psychological	Competence – Incompetence	Technology can facilitate feelings of intelligence or efficacy, and technology can lead to feelings of ignorance or ineptitude	**Managed to download the BBC iPlayer app** – for use at our house in France later this month. Shut down iJack* then re-opened it to check spelling of Sharif. When I pressed App Store I got the iPlayer app, which I didn't want. **How do I get my list of apps back?** Pressed Home, pressed Newsstand to break the link with App Store, **then kept getting Newsstand up when I pressed App Store! Dumb iPad! Back to Home. Then I remembered I could slide to the left: and there were all 5 of my apps! Dumb Maria!** (Maria, female, 71, tablet) *participant's nickname for tablet

(Continued)

Table 3. (Continued).

Theme	Paradox	Definition	Exemplar quote
	Attachment – Non-attachment	Technology can facilitate feelings of safety and discomfort upon separation, and technology can lead to a reduced enjoyment and relief upon separation	*Overall, I find iJack a **fiddly, time-wasting device that's not nearly as intuitively designed as our PC** – but perhaps that's because I'm used to the PC's foibles. iJack will still serve well for its main purpose: to take travelling to keep abreast of **bank and credit card accounts, pay bills, check email** and listen to news in English. And take pictures. And watch missed TV shows on iPlayer and ITV player. And Play Bridge and spider solitaire. And I guess I'll find it useful eventually for other things. **But it will have to woo me a lot harder before I'll come to love it.** (Maria, female, 71, tablet)*

Table 4. Consumption coping strategies identified from the data.

Coping Strategy	Strategy Type	Source	Definition	Exemplar quote
Neglect	Consumption avoidance strategy	Mick and Fournier (1998)	Showing temporary indifference towards a technological possession or feature	TV giving error message too now and realised one light missing from BT hub and one interface not connected. So, went for it and got my television programmes back, **did not check iPad.** Rather end the day with success, **leave any problems for tomorrow!** (Jennifer, female, 71, tablet)
Partnering	Consumption confrontative strategy	Mick and Fournier (1998)	Establishing with a technological possession a close, committed relationship of heartfelt attachment	A few days ago, I wasn't well and planned to spend the morning in bed. I hadn't anything suitably light downloaded onto my Kindle and **felt quite cross with it – a friend who had let me down. We made up later** – and I found something I wanted to read. (Elizabeth, female, 77, e-reader)
Mastering	Consumption confrontative strategy	Mick and Fournier (1998)	Dominating a technological possession by thoroughly learning its operations, strengths, and weaknesses	Did some shopping online and ordered a new camera from Amazon. Used my laptop to load the PDF file of the camera instruction manual. It's 141 pages long. **Will print pages as required!!!** (Phoebe, female, 78, laptop)
Adjusting	Consumption confrontative strategy	Present study	Altering a technological possession in order to resemble familiar devices, software and past experiences	Having been an architect, and used to drawing boards, paper and pencils since being a student in 1944, **I have used styli on my computers ever since I could get them.** I have got used to the accuracy of (German) Wacom and their pads, so much better than mice. **So I use a Wacom stylus on the IThings,** and this entry is written, in bed, **on the iPhone.** (Christopher, male, 83, smartphone)
Acceptance	Consumption confrontative strategy	Present study	Using previous experience and knowledge to accept the issues associated with using technological devices	**Reflecting on the problems I have had getting all my settings correct to ensure that calendars etc** sync via iCloud, it strikes me that after years of computers becoming more user-friendly in all sorts of ways, **the sophistication of what is now on offer in fact makes them more complex and less-user friendly in important ways.** (Steve, male, 72, tablet)

paradoxes include control/chaos and efficiency/inefficiency, *social paradoxes* include assimilation/isolation and freedom/enslavement and *psychological paradoxes* include competence/incompetence and attachment/non-attachment. Consistent with previous studies adopting this framework, some paradoxes from the original conception, such as new/obsolete, fulfils/creates needs and engaging/disengaging, are omitted from the present study as they are not represented in the data.

Experiences of digital technology paradoxes

Functional paradoxes

The first theme relates to the function and utility that technological devices provide. The two main paradoxes within this theme are control/chaos and efficiency/inefficiency, demonstrating how the function of a digital device can create dichotomies associated with its usage. For instance, digital technology is often used by consumers seeking to control certain elements of their lives such as arranging social meetings, booking professional and health appointments as well as managing digital files. In this study, older consumers are seeking similar elements of control in the form of syncing files, making appointments, checking emails, downloading novels, storing photographs, locating information and managing bank accounts. When feelings of control emerge, the digital technology provides a wealth of benefits to the user. However, participants also experience control simultaneously to feelings of chaos. Christopher (male, 83, smartphone), for example, (see Table 3), uses his smartphone to sync his calendar with other devices. Yet, while controlling his appointments, he also experiences the chaos of unwanted information such as spam, photographs and written files appearing on all his devices.

Phoebe (female, 78, laptop) records a comparable narrative relating to the same paradox of control/chaos. She uses her laptop primarily to control her photographs by 'transferring images from [her] camera', organising them into files, editing her photographs, saving them onto an external hard drive and printing images for her friends and family. While using the laptop to exert control over her photography, Phoebe also experiences episodes of uncontrollable chaos:

> This morning I opened the laptop to discover a TROJAN infection. It must be because it's also *Friday the Thirteenth [highlighted in red]*!!!

A further finding closely connected to the control/chaos paradox is the efficiency/inefficiency paradox, which demonstrates that technology can simultaneously accelerate some activities whilst slowing others down. For instance, Elizabeth (female, 77, e-reader) finds her device makes reading books quicker and easier but equally checking emails is slow and inconvenient. Steve's (male, 72, tablet) diary provides another example of when portable devices facilitate everyday tasks, such as making appointments and adding contacts:

> I will also shortly be using the iPad for scheduling sessions of a colloquium I will be running in my college. It will be very useful to have the iPad with diary in college with me at all times when talking to potential speakers. It will receive much more use than before.

Similarly, his recollection of slow two-finger typing demonstrates how the tablet also creates inefficiency:

> My typing on the iPad screen consists of slow two-finger pecking. I found that using the touch screen keyboard was difficult and the error rate was very high; this is then exaggerated by the predictive spelling facility: a couple of errors in a word produces complete nonsense as the predictive speller tries to be helpful. So much so that it is sometimes difficult to recover the original meaning of a sentence when editing if several words have been turned into gobbledygook.

These findings build on previous studies which state that when the technology is useful, easy to use and functional, older adults are more likely to value the device (Arning & Ziefle, 2007; Mitzner et al., 2010). However, while Mitzner et al. (2010), for example, highlight older consumer attitudes towards the convenience and inconvenience of technology, they do not acknowledge that these experiences could occur simultaneously. In this study, participants are experiencing the utility of control in conjunction with feelings of chaos and the effects of technology efficiency in conjunction with technology inefficiency. Consequently, these dichotomies can be considered as *functional paradoxes*, where features, usability and the utility of portable digital devices can create complexity in the lives of their users.

Social paradoxes

The second theme relates to the social experience of users and how technology impacts their lives. The main paradoxes of this theme are assimilation/isolation and freedom/enslavement, demonstrating how technology influences engagement with others and feelings of independence. For example, it is often thought that technology can improve connectedness with other people, despite geographical and physical barriers (Drennan et al., 2008). Digital technology enables easy communication with friends and relatives, reducing restrictions and facilitating freedom of choice. In the present study, the utility of a device aids how a person integrates within society. Pauline's (female, 66, smartphone) example reveals that when communicating through email and other channels is easy, connecting with friends, family and acquaintances is more likely to occur:

> Away towards the end of the week, found it very useful to be able to access emails whilst away from home, very useful to be able to communicate effectively whilst travelling around.

In addition, Christopher (male, 83, smartphone) demonstrates the importance of his digital devices when communicating with people. In his example, his wife sadly passes away and he uses his technology to inform loved ones, which helps create assimilation after such strong feelings of grief and loss:

> I'm a widower again. My wife has been in a home for about 3.5 years. With frequent visits, now I feel strangely more alone than ever, though I have been living alone and looking after myself all that time. There are so many things to do now, so many people to notify; my computers are now being used for serious purposes. Even for somebody in New Zealand, whose phone and email I don't know, so I typed a letter for airmail.

Noticeably in his narrative, feeling connected occurs in conjunction with feeling alone, which creates the first social paradox of assimilation/isolation. Furthermore, he explains how engaging with games on his tablet and smartphone is an isolating experience, creating a state of seclusion:

> I often play Scrabble with myself on the iPad - I choose to be four players, all me, doing my best each time to play to win each one . . . yesterday I tried Scrabble on the iPhone: I had no choice - it was just me against the machine.

Although the participants in the present study report communicating primarily through email and telephone, they also establish connections with people who share technology as a common interest. For example, Elizabeth (female, 77, e-reader) in Table 3 explains how the e-reader is a topic of conversation between herself and her friend Victoria. This conversation creates a bond between the two e-reader users. However, in bonding with each other over the topic, Elizabeth and Victoria are also isolating themselves from others e.g. the Kindle-agnostics.

In addition to isolation/assimilation, a further social paradox revealed by the data is the experience of freedom/enslavement, where a technology encourages independence but correspondingly increases restrictions and creates dependence. Sarah's (female, 67, e-reader) example in Table 3 indicates that with her e-reader she has the freedom to select and read any book she wishes at any time, however, the e-reader is dependent on battery life. She is therefore restricted by needing electricity and a power socket to charge her device.

Being restricted by battery life is an annoyance for Sarah but in other circumstances this dependence on technology can be more destructive. Jenny (female, 81, laptop) recalls a story of when two of her acquaintances are experiencing car difficulties. They both have mobile phones to improve independence and in case of an emergency, but they are equally reliant on their phones being charged:

> These two sweet ladies, more elderly than myself, compared notes on their uses of mobile phones. They have pay-as-you-go and keep them in their handbags in case of emergency. A few days ago, one of the ladies wanted to use her mobile phone - a car wouldn't start, thankfully not an ambulance emergency . . . you guessed: the battery was flat.

Consequently, technologies which enable independence may also create feelings of dependence and, devices that generate assimilation, may also stimulate isolation. Within the gerontology literature it has been noted that technology usage can reduce loneliness and encourage successful ageing (Ballantyne et al., 2010; Kirkevold et al., 2013). However, our findings reveal that not all technology use reduces loneliness, as isolation occurs in partnership with assimilation. This is especially evident when users distance themselves from other groups of people or become overly engaged with a device. Within the marketing literature, the focus is primarily on the utility of a device and not on the social impact it has on the consumer (see Table 1). The present results are therefore the first to indicate that social paradoxes are created for older consumers using digital devices. These findings reveal that the social side of technology is complicated with paradoxes of assimilation/isolation and freedom/enslavement evolving from its usage.

Psychological paradoxes

The third theme emerging from the data refers to how a technology impacts the ability of older consumers to express themselves and develop feelings of self-worth. Consequently, the two paradoxes encapsulated by this theme are competence/incompetence and attachment/non-attachment. These *psychological paradoxes* occur when participants develop feelings towards themselves and the technology in question. For instance, the

paradox of competence/incompetence is experienced by the majority of participants who feel a sense of achievement when successfully using digital technology, but concurrently feel deflated when unable to use the device. Maria's (female, 71, tablet) narrative in Table 3 is an example of this; she is content to have successfully downloaded an app, however in the process she loses access to her other apps, which results in the use of a self-deprecating expression: 'Dumb Maria!'.

Christopher (male, 83, smartphone) also demonstrates the impact of the paradox of competence/incompetence. Whilst recalling using his smartphone and other digital devices, he indicates a sense of achievement when he successfully deciphers the technology:

> I tried this OCR app on a paragraph from a book: no trouble, it worked. You snap a picture, send it to yourself by email, open it up and there's both picture and transcript; the picture helps to corroborate the correct transcription.

The exclamation of 'it worked' indicates competence and a sense of accomplishment. However, in the same passage of text, Christopher also specifies how not being able to use technology creates feelings of incompetence and self-doubt, with the expression 'Is it me?':

> Sometimes I have to go back to my Microsoft laptop because Apple's system is so bad. Even their screen looks like a teenager's bedroom windowsill. Oddly enough, Apple are a Which? Best Buy, and O2 are a members' favourite. Is it me?

Previous consumer behaviour studies often focus on how feelings of incompetence occur when older adults use technology. For instance, Bae et al. (2020) report that participants reduced their use of innovative technology to avoid appearing incompetent. Moreover, Arning and Ziefle (2007) maintain that when a device provides technical difficulties, older adults suffer from reduced technical confidence and begin to question their own worth. Until now, few studies have acknowledged the simultaneous occurrence of competence and incompetence as a paradox and the implications of this contradiction for the older consumer.

The final paradox, attachment/non-attachment is a novel concept emerging from the data. When experiencing attachment, participants have feelings of security whilst using the device but discomfort upon separation. When experiencing non-attachment, participants experience a reduction in enjoyment from using their portable device and relief upon separation. The data reveals two different aspects to attachment, with participants attaching themselves to both the device and the content included within it. For example, in Table 3 Maria (female, 71, tablet) demonstrates attachment towards her device by naming her tablet 'iJack' and feeling safe to use banking functions. Whereas, Christopher (male, 83, smartphone) is more attached to the information stored on his technology, as it has emotional connotations:

> The other day a recent carer in my wife's nursing home took it into her head to take my wife out to the local park in a wheelchair, for the first time out for over two years. I was delighted. She helped to pick blackberries, and the carer gave her an ice cream in a cornet; she took a picture on her iPhone of both of them . . . I asked her to email it to me.

However, in accordance with their feelings of attachment, both Maria and Christopher experience non-attachment relating to their use of digital technology. Maria, for example,

(see Table 2) specifies that despite her 'iJack' having a number of different useful functions, she also finds it both fiddly and time consuming, indicating that she is yet to 'love it'. Likewise, Christopher who keeps his phone secure in his 'breast shirt pocket', still experiences detachment and unenjoyment:

> 'No service' has never seemed as bad as this. The nice young lady in the O2 shop said it might be because I had 4G switched to 'on'. Its poor little brains were trying to do two searches, for phone and internet, and managed neither. Isn't it supposed to? Isn't it sold on that basis? She switched 4G off. I switch the phone on: at first, a weak signal with 'O2' alongside of it . . . seconds later, 'no service.'

Similarly, Phoebe (female, 78, laptop), who feels attachment towards the information stored on her laptop, simultaneously exhibits technology non-attachment. She uses the laptop to manage her family photographs, such as 'shots of [her] granddaughter's birthday visit'. At the same time, however, she demonstrates non-attachment with a sense of relief from not using her device and a lack of enjoyment when the device is switched back on:

> Switched everything off. Laptop can have a 24-day holiday!!!! . . . Switched everything back on. Updating took ages!! 230 E-mails awaiting attention!!!

Extant gerontology research reveals the attachment older consumers have to technology, albeit for alternative technology types such as assistive scooters and care robots (Heerink et al., 2010; May et al., 2010; Wada & Shibata, 2007). In the present study, older consumers are experiencing the same attachment but towards digital devices, indicating that these feelings can emerge for different technologies with varying characteristics. Furthermore, no known marketing literature explores the attachment of older adults towards digital devices (see Table 1). While studies show an attachment between younger adults and their mobile phones (Trub & Barbot, 2016), this is the first study to reveal that older adults experience the same emotions towards digital devices. In this instance, feelings of attachment and non-attachment, relating to technology, co-exist to formulate a paradox.

It has generally been theorised that the existence of a paradox leads to conflict, which triggers stress and anxiety for the individuals experiencing the paradox (Goldman, 1989; Mick & Fournier, 1998). In this study, the feelings that older adults experience manifest differently to respondents in previous technology paradox literature (Chae & Yeum, 2010; Jarvenpaa & Lang, 2005; Mick & Fournier, 1998; Sowon et al., 2018). Not only do the *psychological paradoxes* presented in this section lead to conflict and stress, but they also result in a reduction of self-worth. For example, Jennifer (female, 71, tablet), demonstrates how her frustration with online activity leads to self-doubt, which eventually results in disturbed self-worth (Nagpaul & Pang, 2017):

> Advertising email from Holland and Barrett, reminded me to check if I have collected any points on my reward card but it still appears, despite purchases I've not been awarded any. This is where I find on-line activity frustrating . . . 'is it me doing something wrong?'

Similarly, for Christopher (male, 83, smartphone) who is attached to many technological devices, especially his smartphone, a lack of self-worth often appears in his narrative when he is experiencing stress or conflict:

> These molehills amount to cliffs I'm now reluctant to try and climb. I was an architect for buildings worth millions of pounds, and dealt with other professionals and MDs of companies (now they call them CEOs) - often older and more senior than me - discussing problems and giving instructions. 'How are the mighty fallen.'

In other words, the findings indicate that the impact that technology paradoxes have on older consumers' manifests with feelings of conflict and anxiety, as previously theorised. However, diverging from extant literature, older adults also experience self-doubt and consequently a lack of self-worth. The 6-month nature of the data collection reveals that despite feelings of self-doubt and lowered self-worth, participants continue to use their devices. Older consumers respond to experiencing negative feelings by developing innovative and successful coping strategies to master the challenges of digital technology.

Consumption coping strategies

The six paradoxes identified here create feelings of conflict and stress, which in this instance also impact the users' self-worth. Despite these feelings of uncertainty, older adults develop post-acquisition coping strategies to manage the complexity of emotions experienced as a result of digital technology use (see Table 4). Only one of these coping strategies involves avoidance (e.g. neglect) whilst the others involve confronting the technology (e.g. mastering, partnering, adjusting and accepting). This demonstrates an effort by older adults to overcome paradoxes, and feelings of anxiety and self-doubt, in an attempt to continue using their devices. While coping strategies have recently been associated with older adults facing marketplace problems (e.g. Dean et al., 2014; Ford et al., 2016) and using everyday technology (Golant, 2017; Yagil et al., 2016), this is the first time that they have been revealed in relation to digital technology paradoxes.

Folkman (2011) posits that when a stressful situation occurs, three different coping strategies can be adopted in order to alleviate the internal and external demands. Emotion-focused coping involves regulating the negative emotions associated with stressful events, that is, avoiding or distancing from technology. Problem-focused coping comprises changing the events of a stressful situation, such as mastering a technology. Meaning-focused coping is related to values and beliefs, such as altering personal priorities and aims. The data reveals two novel coping strategies, which are extensions to technology paradox theory. The first is a problem-focussed coping example involving consumers adjusting the technology to be more familiar. The second, acceptance, is a meaning-focused strategy, where users employ their life experience to provide perspective in order to cope with technological conflict.

'I am the master of my fate': coping with paradoxes, anxiety and self-doubt

In the present study, the only consumption avoidance strategy is neglect, which is when users demonstrate a temporary indifference towards a digital device. Neglect was originally established by Mick and Fournier (1998) in the pre-digital era and consequently it has only previously applied to entire technological possessions. In contrast, this study indicates the occasional neglect of a device and/or a device feature. The data reveals that

sometimes participants neglect their technology, such as the example provided by Christopher (male, 83, smartphone):

> But on the iPhone everything was so tiny it made my eyes hurt - even sideways - that I shut them off. The games and the eyes. I also deleted the games.

However, this instance demonstrates a temporary avoidance of a particular feature such as gaming applications rather than demonstrating a permanent severance from the device. Even the example in Table 4, specifies that Jennifer (female, 71, tablet) who abandons her device, only does so temporarily, postponing any problems for the following day.

Generally, however, older consumers develop confrontative coping strategies to master, adjust to, accept and partner with their devices. Partnering, the first consumption confrontative strategy, is an interesting coping strategy originally established by Mick and Fournier (1998). Some of the participants develop a heartfelt relationship with their device by using humanisation as a mechanism. For example, Maria (female, 71, tablet) christens her tablet 'iJack' and wonders 'if it might bite':

> I had a brutish day yesterday – all down to my rotten little iJack! I'm hoping for enlightenment on the little bugger.

Additionally, Elizabeth, (female, 77, e-reader) refers to her e-reader as 'a friend' and describes a very human relationship (see Table 4). These findings establish that when older adults experience difficulties with technology, partnering is an effective and humorous strategy to employ. It therefore extends beyond Mick and Fournier's (1998) pre-digital household technology study towards older adults using digital devices.

The second confrontative coping strategy adopted by older consumers is mastering, which corresponds with the strategy identified in the Mick and Fournier (1998) framework. However, the way in which older consumers dominate a technological possession differs from the original concept of mastering. The similarities include elements of learning e.g. how the technology operates, its strengths and its weaknesses. This is exemplified in Phoebe's (female, 78, laptop) attempt to download and read an instruction manual (see Table 4). Nevertheless, this study reveals that there is also a social side to mastering technology. When experiencing the stress felt from technology paradoxes, participants turn to family and friends for help, subsequently enhancing their social interactions. For instance, Maria (female, 71, tablet) recalls being stressed with her tablet, which encourages her to reach out to family and friends:

> Presumably I can still make appointments to get advice from our local Apple store, and if not I've got techie nephew, his mum, sister and her techie boyfriend to appeal to.

Alongside using social connections to confront the challenges of technology, the participants also address the stress of using digital devices by adjusting the technology to mirror the familiar. This third confrontative coping strategy is labelled as 'adjusting' and has been discovered in addition to the confrontative coping strategies addressed by Mick and Fournier (1998). For example, Steve (male, 72, tablet), who experiences the control/chaos paradox when having problems typing on his tablet, makes adjustments to his technology, which add an element of familiarisation:

> My problems when trying to write at length on the iPad touch screen made me abandon the effort – I bought a wireless keyboard which works very well when typing (I am a fast ten finger typist).

Correspondingly, Christopher (male, 83, smartphone) who used to be an architect, also has issues with using his touchscreen. In this instance, he reflects his self-identity through his coping strategy by adjusting the technology with the use of a stylus, which is a familiar writing aid for him (see Table 4).

Adjusting, as a coping strategy, does not only apply to hardware. Older adults also alter the software of their devices to resemble the familiar. This can either involve using the same software that was used on previously owned devices or downloading apps, books and music which have a feeling of familiarity. Maria (female, 71, tablet), for example, when experiencing paradoxes of competence/incompetence, uses familiar functions such as email and searches for familiar apps:

> Haven't had time till now to fiddle with iJack again. Looked at my gmail. Sent an email to techie nephew, and found that I didn't know how to move the cursor. Asked techie nephew in the email. Later found that I could just tap on the screen at the spot where I wanted to make a change. I found the Search feature, keyed in "bridge" and found Omar Sharif Bridge, which I have on my PC.

The final confrontative coping strategy emerging from the data is an acceptance of the technology and the stress it creates. Acceptance is a novel coping strategy that was not identified within the original Mick and Fournier (1998) framework. It is, however, evident from the participant narratives that having life experience and the perspective of time has culminated in an acceptance of digital technology's foibles. For instance, Steve's (male, 72, tablet) account in Table 4 indicates that he has experienced the evolution of computers and, as such, can reflect upon the complexity of modern systems and how difficult they are to use. Additionally, Christopher (male, 83, smartphone) uses his perspective to demonstrate profound contemplation on and acceptance of the connectivity issues that his device poses:

> There's one sure thing about technology that's as true as it is about life: life will always come to an end, and technology will always go wrong . . . My son's partner, having discovered that texts are free anywhere in the world iPhone to iPhone, sends me texts from their holiday in Tunis. When I try to reply I keep getting 'no service' and my message is refused . . . Since I had a stroke, I know they will be worried if they don't get a reply . . . . when I was a kid, Tunis was a distant desert war zone, with cinema newsreels at least a week later . . . and here's me, older than either of my parents ever got, whinging about lack of almost instant contact.

To compliment his point, he quotes the poem *Invictus* by William Ernest Henley (1875) 'I am the master of my fate, I am the captain of my soul', which appears apt and poignant within the context of the current research. Despite the paradoxes and feelings of self-doubt that Christopher experiences with his digital device, he is still able to master the technology by using various coping strategies to overcome the challenges.

The findings demonstrate the simultaneous opportunities and difficulties experienced by older adults using digital technology. While paradoxes can have a detrimental effect on self-worth, coping strategies are adopted in order to deal with these negative feelings. The majority of consumption coping strategies are confrontative suggesting that despite previous assumptions of lackadaisicalness or unwillingness (McCreadie & Tinker, 2005;

Peacock & Künemund, 2007), older adults are keen to master the technology. Furthermore, the data discloses two novel coping strategies, adjusting and acceptance, which are new contributions to the technology paradox concept and technology consumption literature. They demonstrate how older adults respond to adversity either by adapting their technology or altering their personal perspective on the issues.

Discussion and contributions

This study advances the marketing literature by providing a qualitative understanding of older adults' technology-related consumer behaviour. With the exception of Mitzner et al. (2010) and Chiu et al. (2016), most marketing-based knowledge of older adult technology consumption has been established using a quantitative approach where the dependent variable is either self-reported usage or intention to use, recorded at one moment in time. In contrast, this study provides detailed insight of technology usage across a 6-month period, including behaviour, motivations, thoughts and feelings during the early stages of post-acquisition consumption. These findings reveal that there are dichotomies and coping strategies related to whether the user will continue to accept and use the technology. Consequently, the present research advances the discovery of previous dichotomies in older adults' consumption of technology by providing additional detailed qualitative insights (Chiu et al., 2016; Kim & Preis, 2016; Mansvelt et al., 2020).

Additionally, this study contributes to the sparse marketing literature on older adults using everyday digital devices. The main findings reveal the functional, social and psychological paradoxes related to using technology and the coping strategies that older adults adopt in order to manage the negative emotions associated with experiencing paradoxes. Extant marketing literature explores the impact of device functionality (e.g. ease of use) and user characteristics (e.g. technical confidence, innovativeness) on the intended adoption or acceptance of technology (Arning & Ziefle, 2007; Bae et al., 2020; Chéron & Kohlbacher, 2018). This study, however, reveals the importance of social benefits, such as assimilation and independence, on the actual usage of portable digital devices. Furthermore, it is the first study to demonstrate an attachment/non-attachment between older consumers and their digital technology. As a result, it contributes to the marketing perspective by providing detailed insights into the social benefits of older adults using technology, alongside the emotional connection created between user and device.

Theoretical contributions

Theoretically, this study introduces attachment/non-attachment as a new paradox, adding to the original paradoxes established by Mick and Fournier (1998). When older adults develop a relationship with digital technology, a psychological paradox emerges, creating simultaneous feelings of attachment and non-attachment. This concept originally stems from attachment theory, which acknowledges the bond between caregiver and child (Ainsworth, 1979; Bowlby, 1969). The theory has since evolved to encompass attachments between humans and inanimate objects (Keefer et al., 2012). More recently, studies emphasise attachment towards digital devices, especially for the younger adult segment (Clayton et al., 2015; Ohadi et al., 2018; Trub & Barbot, 2016). For instance, Trub and Barbot (2016), identify that refuge and burden is experienced by younger adults who are

attached to their mobile phones. The present research, however, is the first to reveal that attachment/non-attachment is experienced as a paradox by older consumers of digital devices. This novel paradox should therefore be considered as a concept in future digital technology paradox studies, with further studies exploring whether it emerges for consumers of all ages.

The main contribution to technology paradox theory is the identification and development of new coping strategies that add to the original consumption avoidance and confrontative strategies (Mick & Fournier, 1998). Neglect, mastering and partnering are from the original consumption coping strategies recognised by Mick and Fournier (1998). However, acceptance and adjusting are two new strategies that have been established in the present study, based on the concepts of problem-focused and meaning-focused coping (Folkman, 2011). The introduction of these new coping strategies demonstrates that, in contrast to previous findings, older adults rarely use emotion-focused avoidance strategies. Instead they use problem-focussed or meaning-focussed confrontative strategies in an attempt to change the events or personal priorities of a stressful situation (Folkman, 2011).

Adjusting is a novel coping strategy that resembles the original accommodation strategy but instead of changing oneself to accommodate the technology (Nach & Lejeune, 2010), older consumers are adjusting the technology to suit their needs, which is more in keeping with a problem-focused approach (Folkman, 2011). In the present study the older adults persist with unfamiliar technology but by proactively acquiring and using familiar additions. The examples provided in the data demonstrate that participants are using additional technology hardware that is customised (e.g. keyboards and stylus pens), and altering the software of the technology to resemble the familiar (e.g. previously used apps, functions, and systems). A similar coping strategy, adaption, has been found in different contexts (e.g. Beaudry & Pinsonneault, 2005), but this is the first time that adjusting has been identified in the context of older adult consumption of technology. Extant gerontology research indicates that technology is more appealing to older adults if it is reminiscent of familiar devices they may have used (Buse, 2010; Slegers et al., 2009). However, this is the first study to identify this type of adjustment as a strategy used by older consumers coping with technology paradoxes.

The final new construct is acceptance, which is when older consumers use their experience, wisdom, and life perspective to accept the shortcomings of a technology. In other words, issues with technology are not comparable to the other experiences that older adults have had to conquer. This is an example of meaning-focused coping (Folkman, 2011), where older adults' values and beliefs are used to change expectations and alter priorities in response to technical conflict. While recent gerontology research has discovered 'wisdom' as a similar coping strategy adopted by older adults overcoming loneliness (Morlett Paredes et al., 2021), this study reveals for the first time that acceptance is a coping strategy adopted in the context of technology consumption. It is unclear whether older adults are more equipped to emotionally deal with the low self-worth associated with technology use, than younger generations. As a result, future research could explore the strategy of acceptance in relation to technology paradoxes experienced by all demographics. Furthermore, the findings call for future quantitative research to move away from linear scales measuring functionality and user characteristics, and

towards repeated measurements for functional, social and psychological paradoxes and associated coping strategies.

Managerial implications

The results have important managerial implications, which can help create criteria for the success of older adults consuming digital technology. These relate to the devices being developed for ageing consumers, marketing messages concerning digital technology as well as charities and governments helping older adults to move online. Firstly, the functional paradoxes such as control/chaos and efficiency/inefficiency that older adults experience when using laptops, smartphones, e-readers and tablets, suggest that technologies should be designed to ease chaos and inefficiency. Therefore, further customer research into what makes a device efficient or inefficient, and easy or difficult to control for older adults would help improve the design-to-market process of technology development.

The identified social and psychological paradoxes of assimilation/isolation, freedom/ enslavement, competence/incompetence and attachment/non-attachment also have important implications for the older adult consumer. They can experience dependence on technology and reduction in social belonging, similar to the impact that addiction to video games has on adolescents (Schmit et al., 2011; Wei et al., 2012). It must therefore be recognised, in agreement with C. Lee and Coughlin (2015), that technology designed and marketed to older adults should have more of a focus on being able to develop social connections to improve loneliness, whilst encouraging independence and confidence (Huff & Cotte, 2016). A device needs to provide a balance for the consumer; it should not replace daily tasks and face-to-face communication, but it should motivate and enhance normal activity and communication. Technology should, therefore, be designed and communicated as an addition to current lifestyle, not as an alternative. If, for example, supermarket shopping is replaced with online purchasing through a digital device it may prevent the older adult from leaving the house. This would exclude walking to the shop and socialising with people. However, if online purchasing is suggested for 'bulkier' items, the older adult will still be inclined to leave the house for smaller products.

Alongside preventing paradoxes emerging, marketing strategies could also enable the coping strategies of older adults. For instance, to enhance the adjusting confrontation strategy, devices should be designed to provide an element of familiarity to the technology. This could include familiar commands, buttons, screens and add-ons to previous models. To enhance acceptance as a confrontative coping strategy, marketing messages for digital technology, which are often perceived to be patronising of older adults (Szmigin & Carrigan, 2000), should respect older adults' experiences and life perspective. Finally, enabling the way in which older adults use mastering as a coping strategy, has important implications for customer services provided after the initial purchase of a technological product. For instance, easily accessible information should be available to older adults, and customer service teams should be well versed in providing necessary support. Moreover, if governments are encouraging technology use as a motivator for healthy ageing, when devices are used by older adults, an obvious or explicit support network should be available.

Limitations and future research

The present study provides an in-depth exploration of digital technology use by older consumers in the UK, which has been invaluable to the development and extension of theoretical concepts. However, the sample is representative of a small group of older adults and so future studies should expand the research and consider differing groups of ageing consumers. For example, the participants in this study are independent and not receiving care, consequently the research could be expanded towards vulnerable older adults who require assistance at home. Furthermore, there is a newer generation of consumers who are reaching the older adult age bracket. It would also be interesting to see if this group experience the same technical paradoxes and develop similar coping strategies.

Finally, in the wake of the Covid-19 pandemic, populations across the world have been encouraged to stay home, which has further increased the use of digital technology, as people strive to stay in communication with friends and relatives. Future research could use the present framework to explore how older adults have been engaging with technology during periods of lockdown. It would be interesting to see how an increased demand on using communicative technology and the Internet impacts the lived experiences of older adults, especially in relation to technology paradoxes and coping strategies.

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No potential conflict of interest was reported by the author(s).

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