

## Consumers and technology in a changing world

*Introduction*

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The internet and other technologies have changed our lives substantially. These days, you can be sitting in a café and stream almost any music instantaneously, order something to arrive at your home the next day, video chat to your friend on the other side of the world, send a birthday card, control the climate in your home, keep track of your physical activity by syncing with your smart watch and many other things; all with a thumb press on a smart phone or some other connected device. While such actions seem quite normal it is sometimes easy to take them for granted and perhaps forget that they are based around products which are relatively recent innovations enabled by advances in mobile connectivity and other technologies. Take, for example, personal and mobile music. Such a concept did not really exist until the Sony pioneered portable music through the Walkman and Discman in the 1980s. Then came MP3 players and the iPod, released in the early 2000s, where you were able to carry around a personal music collection on a much smaller device enabled from syncing with your music library and transferring songs to your device. After this came the iPod Touch which boasted a Wi-Fi connection and a link to the iTunes Store wherever you could connect to Wi-Fi. These technologies represent the birth and evolution of personalised and portable music. Before this, you would have had to listen to a personal music collection likely in your home, while stationary and through some kind of Hi-Fi system or vinyl record player. It was only in the 1870s, when Thomas Edison invented the phonograph that you could listen to any kind of personal music collection at all (and apparently this was of very poor quality initially). Prior to this a music lover would have had to make do with the music being played by musicians in their local area, or if really eager and with the means, would have travelled elsewhere to listen to something they wanted to; in fact listening to quality music may have been a once in a lifetime experience if you were lucky enough to have the means to make this possible. In a recent MIT Technology Review article Bill Gates cites the plough as a technological marvel and states that the plough, like many other technologies “is about creating more of something and doing it more efficiently, so that more people can benefit” (Gates, 2019). Clearly, such technologies have impacted our lives immensely (even if we have not adopted them personally!) However, while the consequences of such technological change are often shown to lead to positive benefits for consumers and society, there are sometimes negative and unanticipated consequences. Given such radical and recent changes to technology and its impact upon our lives, it seems pertinent to take stock of what we know about technology and consumers and highlight some research issues around these themes.

Theories about technology adoption and usage remain relatively robust and highly cited within the literature, perhaps because of their intuitiveness and ease of use – e.g. Innovation Diffusion Theory (Rogers, 2003), the Technology Acceptance Model (Davis, 1989), the Unified Theory of Acceptance and Use of Technology (Venkatesh *et al.*, 2012). However, as the technological environment has advanced the nature of technology has also changed (e.g. delegation to autonomous technology, ubiquitous computing, consumer connectedness, virtual and augmented environments, technology facilitated information processing), and the socio-economic environment has evolved (e.g. digital democratisation through the increased use of technology across cultures, growing emerging markets etc.). Thus, new markets have emerged which are not well understood; this was the impetus for this special



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issue. It therefore seems pertinent to re-examine what we know about consumer adoption of innovations and technology in these emerging domains.

This editorial serves as an introduction to the special issue on Consumers and Technology in a Changing World. Inevitably, this special issue will raise more questions than provide answers to these pressing issues. However, reflection on technology and consumption issues can help us to consider the state of our knowledge in this area and what the key research issues are in this rapidly changing environment. Hopefully, this special issue and the articles in it can stimulate future research in the area and serve as a platform to motivate research into some of the pressing challenges that exist.

This editorial is structured as follows. First, we highlight various technological trends that are occurring, identifying some positive and negative consequences of these trends for consumers, we then discuss the articles in the special issue and the themes that bind them together. Future research areas are identified and the special issue concludes with acknowledgments.

#### *Consumers and technology: trends and implications*

Discourse about technology has largely been positively framed with a view that technology predominantly provides consumers and society with benefits. Undoubtedly, this is often the case and many technologies can be attributed to timesavings, lower costs and enhanced benefits. Recent years have seen unprecedented technological change and once market leading innovations have since been relegated to storage space or disposed of in some other way. Some have referred to our current period of technological and industrial change as the Fourth Industrial Revolution or Industry 4.0 such has been the veracity of change experienced and its different conditions (Kagermann *et al.*, 2011). “Change” is a concept that emerges with most studies about innovation and consumers; significant innovations change our behaviour. From the consumer’s perspective, much of these changes have been a consequence of the ubiquity of smartphones and other mobile devices where the internet can be accessed on demand (Smith, 2015) and where information flows more freely between consumers and intermediaries; the device becomes an enabler. While there are many important technological advances with the potential to impact consumers a scan of industry based technology reports points to key trends such as faster connectivity (e.g. 5G, Edge computing), increased connectivity (e.g. the Internet of Things, artificial intelligence), greater levels of automation, (e.g. autonomous cars, robotics, blockchain) and enhanced immersive environments (e.g. virtual, augmented and mixed reality) (Briggs and Buchholz, 2019; Forbes Technology Council, 2018; Gartner, 2018).

The picture is complex and what the future brings is inherently uncertain but some key consequences for consumers can be envisaged around this changing nature of technology. Zolfagharian and Yazdanparast (2019) in their article in this special issue suggest that the very fabric of technology and its role in society has changed from being a “passive vehicle that provides consumers with problem-solving tools to an active partner in everyday life” (p. XX). This partnership brings with it some benefits but also some challenges. On the one hand there has been a notable shift in power to consumers rather than sellers (and this has touched many parts of the world where technology previously did not reach), improved livelihoods through the freeing of time for other activities, enhanced productivity, instant gratification and products and services that are available at our fingertips. Technology and big data has also been associated with the ability to tackle societal health concerns that previously seemed insurmountable (Raghupathi and Raghupathi, 2014), to offer new ways of tackling health issues like dementia (Freeman *et al.*, 2018) and phobia of heights (Rhodes, 2017), to provide environments of social support which stimulate engagement in virtual

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health communities (Lowe and Johnson, 2017) and to aid information processing to affect health behaviour change (Balcombe *et al.*, 2016; Lowe *et al.*, 2015; Lowe *et al.*, 2013). These positive consequences are facilitated through greater connectivity and information flow.

However, technology is not a panacea and recent advances in technology have also been associated with a number of negative social consequences beyond the usual technology paradoxes (Mick and Fournier, 1988; Johnson *et al.*, 2008). As connectivity and information flow has proliferated questions have (re)emerged around privacy and digital ethics (Brusoni and Vaccaro, 2017), misinformation and rumour spreading (Arun, 2019), digital addiction (Griffiths, 2000; Sussman *et al.*, 2011) and its associated consequences (Katz and Rice, 2002; Young, 2004), scepticism towards traditional forms of medicine (Johnson and Lowe, 2015), environmental issues (Ongondo and Williams, 2011), loss of information control (Hajli and Lin, 2016), loss of control to machines (Anderson *et al.*, 2018), gambling addiction (Gainsbury, 2015), impulse buying (Wells, Parboteeah and Valacich, 2011), online bullying (Breitsohl *et al.*, 2018; Kowalski *et al.*, 2014), and many more.

This special issue alone cannot resolve the issues highlighted. However, it should be able to add to ongoing dialogue around these themes and raise new questions that researchers can ponder. Next, we discuss the articles in the special issue.

#### *Articles in the special issue*

It comes as little surprise that most of the articles in this special can be linked to the notion of “change” in some way; how that change manifests itself and how consumers respond to that change. Specifically, the articles in the special issue can be classified around a few key themes including coping, communities, connectedness, channels, and consumer characteristics and these themes indicate the nature of the broad research issues that scholars researching at the intersection of consumers and technology face.

The first article in the special issue by Zolfagharian and Yazdanparast, 2019, looks at the proliferation of technology in our daily lives and terms this an “Immediacy Pandemic”. In this article the authors provide a lived-experience account of how consumer engagement with mobile and virtual technology is changing and impacting upon our daily lives, leading to what is termed an “immediacy pandemic”. They do this through qualitative methods (in-depth interviews and personal essays) by exploring the increasing embeddedness of technology within our daily lives and the consequences of its use (both positive and negative). Building on work in the area of technology paradoxes and coping strategies (Johnson *et al.*, 2008; Mick and Fournier, 1988) Zolfagharian and Yazdanparast explore the technology paradoxes and coping strategies that exist within a largely interconnected world. Their article identifies that this immediacy pandemic leads to consumers having to engage in more real-time problem solving and the development of strategies to cope with this, including unbundling of presence, temporal gain and synchronisation, task continuity work fun integration and multi-tasking. More broadly, this paper highlights an important shift in how technology has proliferated within our daily lives and the effects this has on how we behave as consumers.

Building on the theme of change the next article by Hubert *et al.*, 2019, looks at the adoption of smart home technologies in an increasingly interconnected technological world. As our level of technological interconnectedness changes and homes, become increasingly connected to smart home technology systems, the nature of the technology adoption decision changes. In their article, they compare and augment existing theory on technology adoption through an empirical study of adoption and acceptance of smart home systems within Germany. The literature on innovation adoption is replete with various overlapping models of technology adoption and choosing one model or another, perhaps based on

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preference or experience, may lead the researcher to ignore some potentially relevant predictors. Taking a model comparison approach similar to that of Venkatesh *et al.* (2003) the authors compare the explanatory power of some widely used adoption models including the Technology Acceptance Model (Davis, 1989), Innovation Diffusion Theory (Rogers, 2003) and Perceived Risk Theory (Featherman and Pavlou, 2003). As has been illustrated in prior research (Venkatesh *et al.*, 2003; Hasan *et al.*, 2019a, 2019b) technology adoption is often context specific and no one model can provide an adequate explanation of the drivers of adoption, yet most well used models provide some degree of explanatory power. Consequently, such hybrid models developed from this horse race approach can lead to the development of more comprehensive models suited to the context under investigation. For example, for smart home systems the authors find that compatibility and perceived usefulness are positive influencers of adoption and perceived risk is an impediment. Interestingly, in recent meta-analysis work Arts *et al.*, 2011 find that compatibility is not always a key predictor within the studies they analysed. However, with smart home systems this makes intuitive sense, as the user will want to be sure that the various attributes of the system work together. One key implication of such a finding is that technologies are not a homogeneous mass and their adoption needs to be understood in their surrounding context with careful conceptualisation of the relevant social and situational parameters. Other implications for the marketing of smart home systems are discussed.

Consumers may use technology as a way to express themselves (Roehrich, 2004) illustrating the importance of individual motivations in the technology adoption decision. Using televisions as an example, Sadik-Rozsnyai and Bertrandias (2019) examine how consumers evaluate a new technological attribute (Multiview). In doing so they illustrate a mechanism by which the addition of the new technological attribute will increase willingness-to-pay for the new product. This is consistent with the notion of technological newness identified by Lowe and Alpert (2015) as a key antecedent of a consumer's perception of innovativeness. Specifically, they relate their study to the consumer characteristic of social innovativeness. Social innovativeness is a dimension of innovativeness as per prior definitions and reflects a consumer motivation to adopt new products and services to fulfil uniqueness needs (Roehrich, 2004). With a choice experiment conducted on a national sample of French residents they find that even when the new attribute is highly valued, only those consumers high in social innovativeness exhibit lower price sensitivity and are willing to pay more for the product. In other words, the functional value of the new attribute may increase the intention to purchase the product but alone is not sufficient to increase the willingness to pay for it. Therefore, consuming innovative products seems to provide those consumers who are willing to differentiate themselves with a social value that they are prepared to pay more for.

Lee and Lee (2019) look at the changing role of distribution channels for digital services. Specifically they examine how consumers have reacted to digital platforms for buying art. Taking Saatchi Art as a case study the research uses direct observation, documentary reviews and online comments from buyers and users on the website to assess the value gained from buying art in an online environment. In this market, intermediaries have traditionally been seen to add value to buyers through providing curatorial direction but have often been limited in accessibility to certain groups of novice art collectors within particular geographic markets. Platforms such as Saatchi Art still perform a similar function by providing curatorial direction but overcome a number of impediments to traditional offline art markets, as there are few geographical constraints, fewer information asymmetries and no intimidating psychological atmosphere. This research reinforces the validity of the TAM's core constructs (ease of use and usefulness) but also suggest the

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important need to build trust as with other research in the area of virtual communities (Johnson and Lowe, 2015). However, despite increased information flow the value of art in such markets is still primarily determined by curatorial direction where the website as an intermediary co-constructs the cultural meaning (and value) of the artwork.

Amongst all this change and in a world where digital technology proliferates (e.g. music, books, education etc.) Fernandez and Beverland (2019) examine the passionate attachments some consumers exhibit with legacy technologies such as vinyl records. This may be likened to a desire not to change in spite of such rapid external change. Digital technologies typically offer the user convenience, accessibility, ease of sharing, greater variety and portability. However, while often useful due to their functional attributes, digital technologies often see some push back by consumers, perhaps because of nostalgia and some consumers being less willing to realise their benefits. Through the development of an ethnographic study with vinyl collectors and longitudinal participant observation at music events, the authors take a somewhat contrarian perspective around digital technologies by explaining why some passionately collect vinyl records. They find that the material nature of such legacy technologies leads to the development of “passionate” relationships between consumers and these products making them significant in their daily lives. The findings suggest that legacy technologies could be reframed and positioned around self-expression through authenticity. Examples of this might include Roberts Radio’s Revival range or Leica’s M-System range.

The next three articles relate to social media and communities and touch on issues related to our changing social fabric in an online environment. Dwivedi *et al.* (2019) assess how consumers develop emotional attachments to a range of well-used social media brands, including Facebook, Twitter, Instagram and LinkedIn. The role of emotions in consumer behaviour is widely studied (Bagozzi *et al.*, 1999; Watson and Spence, 2007) and the branding literature shows how important emotions are to the development of brand equity (Keller, 1993, 2016). Yet there is little research so far that helps us to understand how consumers develop emotional attachments to social media brands. Social media brands may differ from other brands in a number of ways and may be characterised by high levels of absorption. The characteristic of absorption has been studied in a social media context previously and seems to be an important indicator of how happy and engrossed consumers are (Agarwal and Karahanna, 2000; Harrigan *et al.*, 2017). As such, there is a need to further examine how consumers form such emotional attachments. The research finds that emotional brand attachment within a social media brand context explains much of the variation in consumer based brand equity. This article contributes by showing how emotional brand attachment shapes consumer brand equity for such brands.

Akman *et al.* (2019) take a look at online innovation communities and try to understand what motivates consumers to become involved in such activities and the value that this generates within the community. They seek to understand how individual and social factors (individual: motivation, opportunity, ability; social: social interaction, trust, shared vision, centrality) facilitate value co-creation within an online community from the community member’s point of view. In doing so the article develops a framework of the value co-creation activities that occur within such communities (information sharing, providing feedback, helping, rapport building) and empirically assesses the individual and social factors that lead to value co-creation. The research also empirically assesses how learning mediates the impact of the individual and social factors upon the value co-creation activities and shows how these activities transpire in value within the community. Participants within such online innovation communities were from the USA and were accessed through a panel provider. The findings revealed that individual and social factors were found to explain a

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high degree of variation in these value co-creation activities, reinforcing the need to take a psychological and social approach when conducting research in the area. Learning was found to fully mediate the effects of the individual and social factors on value co-creation activities. This suggests that efforts to enhance value creation activities in such communities would be most influential when learning by community members is facilitated.

Social media messages are often communicated *en masse* to a global audience. Typically, they originate from countries high in what is termed social capital, which represents the resources that individuals accrue through their relationships with others (Jin and Phua, 2014). Krishen *et al.* (2019b) study the effectiveness of social media in cultures with different levels of social capital. By studying social media effectiveness across cultures high (the US) and low (Poland) in Social Capital Achievement, a measure of social capital, they are able to derive and test how such cultures respond differently to social media. The study contributes to the literature through its application of social capital theory in this new and important context building on other work in the area (Krishen *et al.*, 2019a). Specifically, it is found that in societies with lower social capital there is lower social networking capital (the strength and quality of bonds with other users) on the social network and lower perceived information platform quality (perceived quality of the content in the network). The findings have implications for how marketing communications can build trust for firms communicating in low social capital environments.

The special issue ends with an article by Viswanathan and Sreekumar, 2019) which speaks to the immense changes taking place in subsistence marketplaces and the role that technology has played in creating that change. This was an invited article based around the impactful work into subsistence marketplaces being done by Professor Viswanathan and colleagues (Viswanathan and Rosa, 2007; Viswanathan, 2013). The work being done here involves research, education and social enterprise at the confluence of poverty and marketplaces. The insights derived in this article come from years of pioneering research in this area and also years of using technology in these marketplaces to enhance education and social enterprise outcomes. Typical discourse around consumers and technology focuses on the adoption and use of popular consumer technologies for segments with a high disposable income, often with hedonic purchase motivations. However, increasingly research is tackling questions about technology adoption and use among consumers in what are termed subsistence marketplaces (Hasan *et al.*, 2019a, 2019b; Miller and Mobarak, 2014; Nakata and Weidner, 2012). The subsistence marketplaces literature complements work in the area of the so-called Bottom-of-the-Pyramid (BOP) and takes a bottom-up approach to understanding these consumers and marketplaces. In this paper, Viswanathan and Sreekumar (2019) discuss the characteristics of consumers in subsistence marketplaces and how these characteristics relate to technology use. Key themes emerge from the article, including the importance of an individual's social sphere in the use of technology (e.g. children, for example, as helpers with technology usage), reference groups and opinion leadership (e.g. learning that occurs from proximate others when marketplace literacy is low), the cultural environment and understanding usage in context (e.g. understanding the unexpected social ramifications of technology adoption). Their article highlights the importance of taking a bottom-up approach to understanding consumers and the communities that they live in to develop a deep-rooted cultural understanding. The article then proceeds to provide insights from having implemented a number of initiatives involving technology and a case study around the adoption of use of improved cookstoves. Such cookstoves are a fascinating example of a pro-poor innovation that has often been associated with low levels of adoption in different countries around the world (Khandelwal *et al.*, 2017). Again, insights around the success of improved cookstoves reflect a deep-rooted

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need to carefully understand the social and cultural context of consumption rather than a focus purely on functionality. The article ends by discussing the notion of reverse innovation; that is the process of spreading innovations from subsistence marketplaces to economically wealthier countries.

*Future research issues and closing thoughts*

What can we observe from this eclectic range of articles? First, perhaps the key thread that brings these articles together is the notion of change and how change manifests in different contexts and environments amongst consumers. While there are many well-known technology adoption and usage frameworks, their effectiveness seems to be largely context dependent. Therefore, an innate understanding of the context in which technology emerges is crucial to understanding technology adoption/usage and its antecedents and consequences. Adopting existing and well-used models may not always work in new contexts so taking the most useful and relevant aspects from existing and overlapping models can end up being useful and insightful. This calls for careful conceptualisation about the context and its parameters and empirical verification of key relationships. Second, studying technology needs a range of methods. What was interesting in this special issue was the number of studies which used qualitative methods to look at technology and change within our lives. Within this eclectic mix of articles, it is encouraging to see the wide variety of methods and methodological perspectives employed from ethnographic to statistical model comparison approaches. Indeed, technology and its impact on our lives is having such profound changes that conventional quantitative methods can sometimes seem insufficient in capturing the complexity and richness of these changes.

While these articles help us to understand the way in which technology is shaping the world around us and coalesce around many common themes (e.g. coping, communities, connectedness, channels, and consumer characteristics), the variety of articles and their topic areas lead to more questions. Key observations and questions emerge from the extant literature and this special issue and these are outlined below.

- The discourse on technology adoption and usage has predominantly focussed on technology adoption as a positive and frames adoption related issues around benefits to the consumer. However, there is an increasing literature around the negative aspects of technology usage and as certain technologies become more widespread (e.g., robots and other automated technologies) the discourse around them is becoming more focussed upon concepts such as wellbeing ([Partala and Saari, 2015](#)). What are the negative consequences of technology adoption and usage and how does this vary by different technologies? In what way is an individual's wellbeing impacted and how? How does wellbeing play a role in the decision to (dis) adopt a technology?
- Much of the research literature on technology adoption uses well cited models such as the TAM ([Davis, 1989](#)) or Innovation Diffusion Theory ([Rogers, 2003](#)) to understand the adoption decision. Usually the models are augmented with new variables to better explain some phenomenon. This has led some to comment that the TAM is in a state of theoretical chaos and confusion ([Benbasat and Barki, 2007](#)). There is a good deal of evidence to show that adoption antecedents are likely to be context specific. What context and situational influences affect how these models work? What underlying frameworks might help to explain when antecedents are more or less likely to predominate? Work around this area might help to explain the

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often fragmented and inconsistent nature of such models and the effects of their antecedents.

- The TAM and Innovation Diffusion Theory are probably well used because of their intuitiveness and simplicity. Yet they have also been widely critiqued ([Bagozzi, 2007](#)) and tend to be predominantly focussed around individual decision-making. Beyond these models, what other ways can innovation adoption and usage behaviour be explained?
- Many technologies are becoming increasingly autonomous. While automated technologies have been around for some time they have either been at a low level of autonomy or have been used in low risk situations. Autonomous cars, for example, are being trialled with higher levels of autonomy and some manufacturers are apparently trialling fleets in 2019 with level 3 autonomy according to SAE's Levels of Driving Automation ([SAE International, 2018](#)). In such a scenario consumers will have to delegate control to a machine in a high risk situation. Research is primarily based around technologies where the consumer has a high degree of control so technology adoption and usage models need to adapt in such situations. How will users react to this type of scenario? How should models be updated to reflect this fundamental change in how the consumer interacts with technology?
- New technologies typically do not operate in isolation. They are often part of a larger interconnected network of companies often visible to the consumer. How do network effects influence research models about adoption and usage? What implications does this have for brand equity when operating within such networks?
- Technology has now become ubiquitous and it is not uncommon for people to have multiple devices in a permanently "on" state. Hardware is cheaper, abundant and more mobile than it used to be. Social media operates through this hardware and messages reach us at an increasing frequency if we let them. How have our technology habits changed and in what way is this impacting upon our wellbeing as consumers?
- Much of the research literature about technology adoption and usage was developed based on research with consumers in economically affluent countries in North America, Europe, Japan, and Australasia. Research highlights that consumers learn differently in such developing and subsistence contexts ([Viswanathan \*et al.\*, 2005](#)), often focussing on visual cues to develop a better understanding about products and services ([Hasan \*et al.\*, 2017](#)). How is technology being used in new and relatively under researched contexts like subsistence marketplaces? What technologies are being adopted? For what purpose and what effects do these have on consumers? How do such technologies affect wellbeing? How should adoption and usage models be adapted to these new contexts?
- The majority of research tends to be about evaluation, adoption or usage and very little research work is about disposal despite the increased use of technology ([Lehmann and Parker, 2017](#)). Indeed, it was conspicuous by its absence in the special issue with no submitted manuscripts on disadoption or disposal. Yet we find ourselves with an increasing amount of unused technology. What happens to this technology? When do consumers disadopt new technologies? What are the ways in which consumers dispose of technology? What factors affect how technology is disposed of?



These areas and questions are not meant to be exhaustive; they arise from coordinating the review process for the special issue and from the authors' own research experiences. However, hopefully they spark some interest and can prompt some further research in the area.

To conclude this introduction to the special issue on Consumers and Technology in a Changing World we would like to thank everyone involved in making this special issue a success. We had a large number of submissions (over 60), from a diverse range of scholars around the world and in different disciplines, indicating the widespread interest in the call for papers. Thanks to everyone who submitted manuscripts to the special issue. Unfortunately, with popular special issues the number of articles that can be published is limited by publishing constraints. Consequently, as with most popular special issues, some tough decisions had to be made. We are of course grateful to all authors who have contributed their time and patience during the rigorous review process, and for sticking with us to polish their manuscripts for publication. We are also thoroughly grateful to the reviewers who took part – without good reviewers who volunteer their time and goodwill there would be no quality scientific journals. Indeed, it is good to know that the team of reviewers was globally diverse with a range of expertise of relevance to the topic, which we believe will ultimately lead to a timely and impactful special issue.

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