Smart eldercare in Singapore: Negotiating agency and apathy at the margins

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ABSTRACT

Around the world, smart technologies are being embraced as a cost-efficient means of enabling the elderly to be cared for in new, more non-proximate ways. They can facilitate ageing-in-place, and have the potential to relieve pressure on the providers of care. Yet, the fact is that the interface of technology and society is a negotiated one. These negotiations are most acutely felt when technology is used to supplement the hitherto human-centred process of caregiving, especially amongst "marginalised" societal cohorts, like the elderly. With this, there is a need to better understand the ways in which smart eldercare technologies are used, misused, or not used by those that they are designed to benefit. Drawing on qualitative data derived from triallists of three smart eldercare technologies in Singapore, this paper explores how the lived experience of smart eldercare can cause agentic and apathetic behaviours towards technology to manifest. Specifically, we identify four expectations – of understanding, response, compliance and appreciation – that undermine the potential beneficence of smart eldercare. To conclude, we emphasise the need for more collaborative, and more contextually-sensitive, approaches to the design, development and implementation of smart eldercare solutions.

Introduction

Smart technologies are proving to be attractive in theory, but more problematic in application. In theory, they can provide solutions to a range of problems, and make existing processes more efficient. In terms of eldercare, for example, they can enable elderly people to be more independent and autonomous, and thus relieve the pressure on caregivers. However, the promises of smart technologies have been criticised for being 'too abstract' and for 'creat[ing] unrealistic expectations' (Perkins, Ball, Whittington, & Hollingsworth, 2012: 214) surrounding their actual utility. In other words, the extent to which smart technologies are able to yield tangible benefits remains unclear and untested, and has resulted in a growing chorus of researchers calling for more critical understandings of their applied workings in different contexts around the world (e.g. Kong & Woods, 2018; Luque-Ayala & Marvin, 2015; Perkins et al., 2012; Vanolo, 2014). Specifically, research needs to explore how smart technologies are embraced by users and impact everyday lives; how age, language, gender and wealth may (or may not) implicate the uptake of smart technologies; and how established patterns of behaviour can affect their usage and utility (Golant, 2017; Perkins et al., 2012). Further, the extent to which such technologies may also play a more insidious role in 'reinforc[ing] existing power geometries and… inequalities rather than eroding or reconfiguring them' (Ash, Kitchin, & Leszczynski, 2018: 32) provides an equally

important – yet underexplored – avenue of enquiry. This paper directly addresses these gaps. Through an analysis of quotidian experiences at the margins of smart technology ideology and praxis (in particular, a study of how the elderly, technologically illiterate and those of low socio-economic status navigate smart technologies), we interrogate the usage of smart eldercare technologies in Singapore.

Our argument is that the interface of technology and society is a negotiated one; the outcomes of such negotiation are most destabilising and the transformative ideals of smart technologies most undermined when smart technologies are used to augment or replace hitherto human-centred practices, such as care of the elderly. Smart technologies have been embraced as a means of enabling eldercare in more cost-effective, and less resource-intensive ways, yet they have primarily been understood from the functionalist perspectives of engineers and information scientists (e.g. Barnes, Edwards, Rose, & Garner, 1998; Ogawa et al., 2002; Harvey, Luke, Keller, & Anderson, 2008; Demiris, Oliver, Giger, Skubic, & Rantz, 2009; Raad & Yang, 2009; Skubic, Alexander, Popescu, Rantz, & Keller, 2009; Morris et al., 2013; Suryadevara, Mukhopadhyay, Wang, & Rayudu, 2013; cf. Söderland, 2004; Leonardi et al., 2009), and, to a lesser extent, psychologists (e.g. Rogers & Fisk, 2010; Zulas, Crandall, & Schmitter-Edgecombe, 2014; Zulas, Crandall, Schmitter-Edgecombe, & Cook, 2012). These perspectives often overlook the processes of negotiation that occur at the interface of technology and the elderly, even though understanding such

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processes can help to understand the 'huge resistance' to uptake (Aanesen, Lotherington, & Olsen, 2011: 162; see also Suryadevara et al., 2013). Moreover, they often fail to consider how technology can aggravate the marginal position of the elderly in society. In response, this paper explores the ways in which a marginalised population negotiates the usage of smart technologies, which reveals their agency and apathy towards them. Agency is when smart technologies are used or treated in ways that change or negate their purpose or value; apathy is when their purpose or value is not recognised, or undermined by other, pre-existing behaviours or attitudes. When agency and apathy are manifest, smart technologies are less about transformation, and more about resistance through misuse or avoidance.

With these ideas in mind, this paper's contributions to the body of knowledge surrounding smart eldercare technologies are threefold. First, it provides a qualitative assessment of the usage of smart home technologies designed to facilitate the provision of care to a group of elderly triallists in Singapore. By focussing on developing an in-depth and in-situ understanding of the actual *users* of technology, it provides a human-centred analysis of the ways in which such technologies are integrated into their lives. Second, it provides redress to the absence of empirical case studies by contributing an applied understanding of how in-home smart technologies are used in real-life scenarios (Kong & Woods, 2018). Existing discourses of home-based smart eldercare technologies tend to draw on data derived from controlled, almost clinical testing environments that may have limited applicability in the real world. Third, by advancing a perspective from Singapore, it problematises some of the assumptions embedded within Western (and, implicitly, English-language) knowledge production (Kong & Qian, 2017; cf. Zhang & Goza, 2006; Aw et al., 2017; Kong, Fang, & Lou, 2017). Singapore is unique because it is a context in which smart technologies are integral to the country's ongoing urban development (and have therefore been widely embraced), yet the ethnic, linguistic and economic diversity of its population poses hitherto unrecognised challenges to uptake.

From here, this paper is divided into four sections. Section one provides a conceptual overview of smart technologies, whilst section two considers how smart technologies are being developed to address the problem of eldercare around the world. Section three introduces the empirical context of Singapore, and the methodology used to produce the data presented in section four. Section four draws on empirical data to show how the interface of technology and society is defined by agency and apathy in the context of smart eldercare in Singapore. It is subdivided into four subsections, each of which explores how four types of expectation – of understanding, of response, of compliance, and of appreciation – serve to problematise the application of smart technologies. We conclude by proposing key considerations for the ongoing development of smart home technologies, and avenues for further research.

Smart technology as panacea, problem and paradox

Throughout the world, smart technologies are being embedded within, and starting to influence, ever more walks of life. Whilst embedding reflects the potential value of such technologies, the realisation of value remains more elusive, and more variable across different contexts and amongst different user cohorts. This section explores these contradictions in more detail, through an examination of smart technology as panacea, problem and paradox.

As panacea, the transformative potential of smart technologies has been embraced by public sector authorities, private businesses and families, as 'digital technology stands as the primary driver for change' and thus presents 'a futuristic solution brought to the [challenges of the] present' (Luque-Ayala & Marvin, 2015: 2105, 2106). Smart technologies are pre-eminent in their potential to relieve the pressure on strained (public) resources, and to forge more efficient solutions to societal problems. In terms of eldercare, smart technologies have the

potential to ease the pressure on caregivers by enabling "ageing in-place", an approach to care that encourages autonomous living in familiar surroundings (Raad & Yang, 2009). Indeed, this has been described as 'an ideal for care delivery in general for several decades' (Perkins et al., 2012: 214) as it enables 'older people to cope better with the vicissitudes of aging and to have more healthy, independent, comfortable, and active lives' (Golant, 2017: 1). For example, by installing motion sensors within the home, caregivers are able to monitor and respond to the movements of elderly patients without the need for them to be physically present. This means that fewer caregivers can monitor more patients with minimal impact on time or resources. Ironically, however, the promises of smart technologies can easily be diluted – if not negated – through application in the real world. Indeed, the application of smart technologies can render them problematic, as their value becomes relativised by the messy variability of human uptake and usage.

The problem, therefore, is that the assumptions of smart technology are often undermined by the ways in which they are received, applied and (mis/un)used across society and space. The value of smart technologies is often based on a principal of homogenisation – that the problems and processes that they help to resolve can be resolved in the same way, every (and any) time, every (and any) where. Yet, 'far from being passive backdrops', the homes in which smart technologies are installed, and the people that are implicated in their functioning, 'variously complicate, enable, disrupt, resist, and translate' (Luque-Ayala & Marvin, 2015: 2108; see also Schultz, André, & Sjøvold, 2016) their application in the real world. Thus, whilst smart technologies can enable ageing in-place, such enablement is based on an assumption that all homes are the same, that all elderly people engage with the home – and with technology – in the same way, and that all elderly people have the same unmet needs. The fact, however, is that whilst smart eldercare technologies are often developed and tested in the 'relatively standardized spaces of clinics and hospitals designed around professional care practices… there is no such universality of homespaces' (Dyck, Kontos, Angus, & McKeever, 2005: 174; see also Golant, 2017). As much as smart technologies are developed and sold on the promise of homogenising the ways in which stimuli are responded to, such promises are often based on abstraction, which in turn are liable to being undermined by what they can actually deliver.

It follows that the paradoxes of smart technologies emerge from the need to reconcile the promises of smart technologies with their applied workings; the functionalist goals of the designers and buyers of smart technologies with the enduring pragmatism of end-users. Whilst smart technologies have the potential to support the reimagination (and associated transformation) of eldercare, the fact remains that 'there is little room for the technologically illiterate, the poor and, in general, those who are marginalised' (Vanolo, 2014: 883, 893). Moreover, whilst existing research has started to explore the ways in which smart technologies can bring about new forms of governmentality and disciplining (after Foucault, 1977), there has been no consideration of the ways in which they are resisted, subverted and ignored by users. In particular, marginal populations like the elderly have been unproblematically subsumed within the transformative benefits of smart technologies; an oversight that is compounded by the fact that 'few studies have considered [how] race, class or cultural differences' (Perkins et al., 2012: 215) may affect uptake and usage. This reveals a much broader problem, that 'the potential, limitations and broader implications of this transformation have seldom been critically examined' (Luque-Ayala & Marvin, 2015: 2107), not least from the perspective of the margins. Yet, the margins are where the problems and paradoxes of smart technology are most acutely observed, and therefore present a vantage point from which they can be addressed and overcome. With this in mind, we now provide a critical overview of how existing research has sought to rationalise and understand strategies of smart eldercare within the home.