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Choice is not an option

The experiences of people with dwarfism using self-service technology

Le choix n'est pas une option: l'expérience des personnes atteintes de nanisme dans l'utilisation des technologies de libre-service

Erin Pritchard

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Résumés

English Français
In the UK, for several decades disabled people have advocated for equal access to public spaces, evident in the work of the Union of the Physically Impaired Against Segregation. However, whilst spaces continuously change, including the provision of more self-service technology it is important to investigate the impact this has on disabled people. Oliver (1990) contends new technologies should be used to liberate disabled people as opposed to further disabling them. However, new technology can further disable people with impairments (Ergard & Hansson, 2021; Jokisuu et al., 2016; Sheldon, 2003). Whilst existing research shows that self-service technologies are disabling for a range of consumers, this paper seeks to understand the particular experiences of people with dwarfism and how they interact with them due to a mismatch in height. Drawing on interviews with people with dwarfism, living in the UK, this paper engages with Mick and Fournier's (1998) paradoxes of technological products conceptual framework to explore their consumer experiences, including the resultant emotional impact when using self-service technology. The results show that people with dwarfism engage in numerous coping strategies to deal with them, including dependency, interacting with the facility differently and avoidance.

Au Royaume-Uni, les personnes handicapées militent depuis plusieurs décennies en faveur d'un accès égal aux espaces publics, comme en témoigne le travail de l'Union des personnes handicapées physiques contre la ségrégation. Cependant, alors que les espaces évoluent continuellement, notamment avec la mise à disposition de davantage de technologies en libre-service, il est important d'en étudier l'impact sur les personnes handicapées. Oliver (1990) soutient que les nouvelles technologies devraient servir les personnes handicapées plutôt que de les handicaper davantage (Ergard & Hansson, 2021; Jokisuu et al., 2016 ; Sheldon, 2003). Alors que les recherches existantes montrent que les technologies en libre-service sont invalidantes pour un large éventail de consommateurs, cet article cherche à comprendre les expériences particulières des personnes atteintes de nanisme et la manière dont elles interagissent avec elles en raison d'une inadéquation de taille. S'appuyant sur des entretiens avec des personnes atteintes de nanisme vivant au Royaume-Uni, cet article s'intéresse au cadre conceptuel des paradoxes des produits technologiques de Mick et Fournier (1998) pour explorer leurs expériences de

consommateur, y compris l'impact émotionnel qui en résulte lors de l'utilisation de la technologie en libre-service. Les résultats montrent que les personnes atteintes de nanisme adoptent de nombreuses stratégies d'adaptation pour y faire face, notamment la dépendance, l'interaction différente avec l'établissement et l'évitement.

Entrées d'index

Mots-clés : nanisme, technologie libre-service, paradoxes des produits technologiques, stratégies d'adaptation
Keywords: Dwarfism, Self-Service Technology, Paradoxes of Technological Products, Coping Strategies

Texte intégral

1 Self-service technologies have long been a part of society. Vending machines first appeared in the 19th century, with Automated Teller Machines (ATMs) appearing in the 1950s (Darzentas & Darzentas, 2014). As the name suggests, self-service technologies enable people to perform tasks with little or no personal assistance (Meuter et al., 2000). For example, Self-service checkouts are an alternative to regular checkouts, allowing consumers to scan and bag their own items as well as pay directly for their items using the facility's inbuilt till. As a result, they change the way customers interact with companies to create service outcomes (Meuter et al., 2000). Self-service technology is argued to provide more efficient services that are beneficial for both customers and employees (Bitner et al., 2002). They offer a high level of service, and are available 24/7, but with reduced staffing costs (Petrie et al., 2014). Customers have reported satisfaction with self-service technologies if they save them time and money (Bitner, Ostrom & Meuter, 2022). Other benefits to customers include reduced waiting times (Kokkinou & Cranage, 2013) and not having to interact with staff who may try and force unwanted sales upon customers (Meuter et al., 2000). Self-service technology has also been shown to be favoured by customers wanting to buy products that are often considered embarrassing, such as health related products (Szymkowiak et al., 2014).

2 With the advancement of digital technology, self-service technologies are becoming a more common form of infrastructure. It can be argued that the COVID-19 pandemic, which resulted in the need for minimal human interaction, also encouraged the rise in self-service technology (Chan & Petrikat, 2022; Fernando et al., 2020; Wang et al., 2022). It permitted business to continue, almost as usual and thus not only did people receive a service, but businesses could remain financially stable. Over the past few years more services, such as airports and supermarkets have been introducing self-service technologies, not only to increase efficiency, but also as a cost saving exercise (Andrews, 2019; Chan & Petrikat, 2022). Several self-service checkouts reduce staffing costs as they only require one member of staff to manage them.

3 Most UK supermarkets have introduced self-service checkouts to their stores. In particular, smaller express supermarket stores often only have self-service checkouts. Furthermore, Retail Banking Research (RBR) has predicted that 1.5 million self-service checkouts will be implemented worldwide by 2026 (Chan & Petrikat, 2022). However, it is not just self-service checkouts that are on the rise. There has been a 40% growth in pick-up/drop-off points in the European Union and the United Kingdom since mid-2019 (Ecommerce News, 2021). As a person with dwarfism I find it concerning to see the growth of self-service technologies, from self-service checkouts to self-service parcel lockers as their construction often presents numerous barriers due to a mismatch in height.

4 Self-service technologies have been shown to be inaccessible for older and disabled people (Chen et al., 2013; Darzentas & Darzentas, 2014; Goggin & Newell, 2007; Jokisuu et al., 2016; Nam, Kim & Jung, 2023; Petrie, Darzentas & Power, 2014; Pritchard, 2021). Nam, Kim and Jung (2023) point out that older people have

difficulties using self-service technology due to having lower levels of digital literacy and deteriorating cognitive and physical abilities. Furthermore, Petrie, Darzentas and Power (2014) point out that older people tend to have drier hands which make it more difficult to activate the touchscreen, which is a common feature on a number of self-service technologies. Goggin and Newell (2007), focusing on the paradox of inclusive technology, point out that despite an increase in knowledge surrounding disability and design, technology still remains exclusive for numerous disabled people. They question whether a lack of awareness or disabled people being deemed too costly is the reason for disabling technology.

5 Petrie, Darzentas and Power (2014), who interviewed 22 stakeholders in the supply and deployment communities for self-service technology, argues that they are often reluctant to consider the access needs of disabled customers as they are concerned about the additional costs required to provide accessible self-service checkouts. Chan and Petrikat (2022) further point out that initial installation costs can be very high. Self-service technologies are deemed cost-effective, therefore, the provision of accessible alternatives could be deemed too costly if there are not enough users to override the costs. Commodity relations play a significant role in shaping the social space of capitalist society (Gleeson, 1998: 96). This can also include the provision of accessible self-service technology.

6 Whilst there has been some effort to make Self-Service Technology more accessible for disabled people (Darzentas & Darzentas, 2014; Day et al., 2012; Jokisuu et al., 2015; Lee et al., 2020), including the provision of accessible self-service checkouts, the access needs of a range of disabled people is often overlooked. For example, Lee et al. (2020), who conducted a literature search on accessibility guidelines for self-service technology, found that the majority of access provisions cater for people with visual impairments. Furthermore, whilst Jokisuu, Day and Rohan (2018) whose research explored the experiences of implementing accessibility requirements from an industrial perspective, recognise that touchscreens are often out of reach for wheelchair users, yet gave no attention to the needs of people with dwarfism. Petrie, Darzentas and Power (2014) suggest that suppliers and deployers of self-service technology have limited understanding of the need for accessibility beyond the requirements of people with physical impairments. However, they do not state specifically the types of physical impairments considered by suppliers and deployers. Ensuring self-service technologies are accessible for all disabled people is a challenge due to the wide range of accessibility needs (Jokisuu, Day & Rohan, 2018). According to Vick (2013), disability exists across a spectrum of bodies, however, disability imagery often fails to capture this diversity and instead represents it as one homogenous group, which is reliant on a disability aid. As disabled people have different needs, implementing an accessible self-service checkout does not mean that it will be accessible for people with dwarfism. For example, Pritchard (2019) points out how the “accessible” self-service scanner at the university library was inaccessible, despite it complying with the UK’s Disability Discrimination Act (1995), which she further points out is biassed towards wheelchair users. The average height of an adult with dwarfism is 4’0 (1219mm), but typical heights range from 2’8 (853mm) to 4’8 (1463mm) (Little People of America, 2021). The average stature of a wheelchair user is considered to be 4’6 (1400mm) (Hamraie, 2017). As wheelchair users are often taller than people with dwarfism and are deemed to have an average arm length (Pritchard, 2021), people with dwarfism will still be left in a disabling situation.

7 Access and Equal participation in the retail market are important elements in providing disabled people with full participation within society (Eskyte, 2019). In the UK, the rights of disabled people to be able to access goods and services is evident in legislation such as the Equality Act (2010). However, according to Imrie and Kumar (1998), disabled people’s needs are poorly articulated and regulations are weak. Policies based on providing access for disabled people often contain numerous loopholes that permit the implementation of disabling infrastructure (Jónasdóttir, Egilson & Polgar, 2020). For example, services only have to provide disability accommodations where

"reasonable." Under the Equality Act (2010), reasonable accommodations are only subject if the disabled person is at a "substantial disadvantage." What is deemed a substantial disadvantage can be open to interpretation. The lack of state regulation has aided in the implementation of new disabling technologies (Egard & Hansson, 2021; Goggin & Newell, 2007).

8 Dolmage (2017: 105) argues accessible infrastructure is an indication that "disability is supplementary to society, and that it is an afterthought or an imposition." Accessibility shapes opportunities for disabled people to participate in everyday activities and impact their wellbeing (Jónasdóttir, Egilson & Polgar, 2020). Moving on from how spatial barriers disable people with impairments, it is important to understand how they interact with self-service technology, which may be inaccessible to them. In relation to technology, these interactions, Mick and Fournier (1998) claim, are examples of technology paradoxes. For example, if the main aim is to make people more efficient or independent, a paradox is created if the consumer struggles to use it resulting in inefficiency (Mick & Fournier, 1998). The conceptual framework can help to understand the emotional reactions and behavioural coping strategies consumers have when interacting with technology.

9 Mick and Fournier (1998) interviewed 29 households in order to examine consumers' views and experiences in relation to various technological products. As a result, they devised a conceptual framework on the paradoxes of technological products and their influences on the emotional reactions and behavioural coping strategies of users. The conceptual framework is devised of eight central paradoxes of technological products, including; control/chaos, freedom/enslavement, new/obsolete, competence/incompetence, efficiency/inefficiency, fulfils/creates needs, assimilation/isolations, and engaging/disengaging (Mick & Fournier, 1998: 126). The paradoxes can subsequently provoke various emotions, such as stress and anxiety, which can prompt the user to engage in various coping strategies, including avoidance (Mick & Fournier, 1998). However, "the type of product, situation, or person involved may moderate which paradoxes are salient, the degrees of conflict and stress experiences, and / or the coping strategies undertaken" (Mick & Fournier, 1998: 127). This paper does not engage with all of the eight paradoxes, as not all are relevant. For example, the new/obsolete paradox, which demonstrates how the most recently developed technology practically becomes obsolete as soon as they reach the marketplace (Mick & Fournier, 1998), is of no relevance to understanding the possibly disabling impact of self-service technology upon people with dwarfism.

10 As a result of disabling spaces and facilities, disabled people will often find their own way of interacting with them. However, it can result in unwanted attention (Butler & Bowlby, 1997; Hansen & Philo, 2007; Pritchard, 2021). Hansen and Philo (2007), explore how women with physical impairments are affected by social expectations of how to perform in the "normal" way. Employing their own management strategies, they argue, allows disabled people to access and interact with an otherwise disabling space. However, they are often met with unwanted attention, such as staring from other members of the public. Scully (2010) suggests that there is an ethical difference in the encounters between disabled and non-disabled people due to an imbalance of power. As a result, disabled people must find ways to, not only deal with disabling barriers, but also unwanted social attitudes. Scully (2010) uses the term "hidden labour" to describe the ways disabled people manage or manipulate the interactions with non-disabled people, due to subtle forms of disablism present within social interactions. The labour is hidden, because the non-disabled person is unaware of the work the disabled person is doing, such as manipulation to control the interaction.

11 Using autoethnography to draw on some of my own experiences and analysing data from semi-structured interviews with 22 people with dwarfism this paper engages with Mick and Fournier's (1998) paradoxes of technological products conceptual framework influence the reactions and behavioural coping strategies of people with dwarfism when engaging with self-service technologies. In particular, this paper explores the difficulties they experience as consumers using self-service payment options, and some of the

innovative ways in which they respond to these disabling barriers. This can include, being dependent on others, interacting with facilities differently or avoiding certain consumer spaces.

12 The results are split into three sections, each engaging with Mick and Fournier's (1998) paradoxes of technological products conceptual framework. The first section introduces how the structure of self-service technologies disables people with dwarfism, resulting in people with dwarfism avoiding the facility. The next section focuses on how inaccessible self-service technologies lead to dependency on average-sized people. Further building on Mick and Fournier's theoretical framework, the last analysis section explores how people with dwarfism interact with self-service technologies differently in order to use them.

Methodology

13 The findings from this paper are taken from a wider research project that aimed to understand the socio-spatial experiences of people with dwarfism living in the UK. After gathering the data, I drew upon Mick and Fournier's (1998) paradoxes of technology to understand how people with dwarfism engage with self-service technology. Research in Disability studies is often characterised by having an interest in the personal (Worth, 2008). This research was influenced by my positionality as a person with dwarfism. I was prompted to write this paper as I have begun to encounter more self-service technology, a lot of which tends to be inaccessible to me. Personal motivations to the research can lead to the identification of missing areas in the field (Worth, 2008). As an academic with dwarfism, noticing the rise in self-service technology, that I often found myself having to deal with, led me to wanting to explore the topic further. As research within Disability studies favours research carried out by and often with disabled people, then research that also reflects on the disabled researcher's own experiences should be equally as valid. Hence, why in some parts of this paper I share my experiences using autoethnography. "Autoethnography is a method that allows researchers to draw on their own experiences to understand a particular phenomenon or culture" (Mendez-Lopez, 2013: 280). Autoethnography allows me to share some of my experiences with self-service technology and how these interactions impact my emotions. Sharing my own social experiences aids in providing a first hand account, however, I recognise that other people with dwarfism may interact with self-service technology differently and experience different emotions.

14 My positionality as a person with dwarfism led to my interest in how other people who share the condition me, interact with self-service technology. Do they bypass it? Find alternative ways of interacting with the technology, and if so, how does this impact their emotions? As a person with dwarfism, whilst I was already aware of some of the experiences people with dwarfism encounter when using self-service technologies, I wanted to explore how these experiences may result in different practices and possibly provoke different emotions.

15 Sharing the same identity, that is also the focus of the research (dwarfism), with the participants has both its advantages and disadvantages. While I recognise that non-disabled academics can be useful allies, from experience I am aware that too often disabled people's voices are silenced by non-disabled people, including professionals. Svendby et al. (2018) suggest that research carried out by non-disabled researchers can be hampered by subtle forms of cultural ableism. As Richards (2008: 1717) points out, "an expert on the lived experiences of disability is the person experiencing it." Outsiders can only ever be onlookers, so they never truly know what it is like to be a person with dwarfism. For example, in some research (e.g. Ablon, 1990; Kruse, 2003) dwarfism is argued to be more of a difference than a disability. As a woman with dwarfism, I disagree with this statement, as I have encountered first hand numerous disabling experiences related to my dwarfism. In my doctoral research, the majority of participants identified as disabled (Pritchard, 2014). Furthermore, in my doctoral

research the majority of participants stated that they took part because of my identity as a person with dwarfism. For example,

> Erin: I would just like to ask, did the fact that I also have restricted growth affect your choice in taking part?
>
> Charlotte: Yes. Sometimes non-disabled people do these things and they don't understand. People say they know how it feels but they don't. By having someone the same as yourself means they can understand more of what you are talking about. (Pritchard, 2014: 78)

16 Having a similar identity as the participants can aid in building a rapport with them and therefore the researcher can gain better access to information (Berger, 2013). Whilst there are shared understandings, it is also important for the researcher not to assume the views and experiences of their participants, and thus reflexivity in research is important in order to minimise bias (Finlay, 2002). It was important to recognise other identities I did not share with the participants, including age, gender and class, which could impact my understanding and interpretation of their experiences. For example, the experiences of an older person with dwarfism using self-service technology may differ, not just because of their dwarfism, but also because of factors linked to old age (see Nam, Kim & Jung, 2023; Petrie, Darzentas & Power, 2014). The research would help to generate various views and experiences of other people with dwarfism and thus provide a more diverse account of their lived experiences.

17 To gather the data, 22 semi-structured interviews, with the incorporation of photo-elicitation exercises were conducted with people with dwarfism living in the UK. The interviews were mostly conducted face to face, usually in their home, however, some were via telephone. The telephone interviews were chosen as a result of logistics. As my participants were all based in the UK, some lived far away, thus to reduce costs associated with travel, it was suggested that their interview was conducted via telephone. All interviews lasted for approximately one hour. Semi-structured interviews provided a structured conversation that gathered in-depth information from the participants. Semi-structured interviews grant unique access to the lived world of participants and an insight into their experiences (Kvale, 2007).

18 Photo elicitation involves inserting photographs into an interview (Harper, 2002). The aim was for the participants to share how they would interact within each space and the facilities within them. Using photographs within interviews acts as a stimuli, generating data which an interview alone may not (Harper, 2002). The images helped to support answers and demonstrate how the participants interact with facilities differently. For example, when shown an image of a self-service checkout, they spoke about the numerous disabling aspects of the facility and how they would respond to them.

19 Photographs can originate from the researcher or the participant, but the researcher must decide who provides the photographs (Clark-Ibanez, 2004). The initial idea was to ask each participant, prior to the interview, to take several photographs of spaces, such as their local high street, in order for them to discuss later within the interview. I wanted participants to bring along photographs which were relevant to them and which provoked different feelings and experiences. This idea was later scrapped after a potential participant pointed out that taking photographs was likely to provoke more unwanted attention towards him. As a person with dwarfism I realised that I would feel uncomfortable taking photographs in public spaces, especially if they were of mundane facilities. People take photographs of interesting landmarks and captivating scenery, but not of ATMs and Self-service checkouts. It could arouse unwanted attention by doing something out of the ordinary. It was thus unethical to put the participants in a position which could potentially provoke unwanted attention and in turn affect their emotional wellbeing. Instead I choose several images from Google images. These images were sent in advance to participants who opted for telephone interviews. Using images chosen by the researcher is appropriate when conducting theory driven research (Clark-Ibanez, 2004). I chose to use images of everyday spaces and facilities, including

examples of self-service technology. When choosing images I ensured that the images were of a high quality resolution and contained a variety of information.

20 All interviews were recorded, with the permission of the participants, and later transcribed. Before the analysis participants were sent their transcripts to look over. This allowed them to rectify any possible misinterpretations and to take out anything they no longer wanted to be included. Allowing the participants to review their transcripts and ensuring they are accurate aided in providing more valid data (Thomson, 2011). A thematic-analysis approach was applied to draw out themes by reading and re-reading each transcript (Fereday & Muir-Cochrane, 2006). Themes included spatial barriers, responding to spatial barriers and disabling identities.

21 Prior to data collection ethical approval was sought and approved by the University's ethics committee. Before conducting the interviews an information sheet and consent form was given to each participant, which they were asked to read through and sign. The consent form indicated their rights as participants, such as the right to withdraw from the research at any time. I let the participants read through both forms and asked if they had any questions or if they wanted me to clarify anything before starting the interviews. My contact details were on both forms, as well as the contact details of my doctoral supervisors, and participants were informed that they could contact me or them anytime with any issues regarding the research. To provide anonymity, all participants were given pseudonyms and the area where they lived was made vague. For example, if a participant lived in Manchester, the place where they lived would be referred to as North west England. As Shakespeare et al. (2010) point out, anonymity is important when conducting research with people with dwarfism because a lot of them know each other through being members of various associations. Other forms of recruitment helped increase anonymity, but did not guarantee it.

22 Several recruitment tactics were employed, including attending conventions held by associations for people with dwarfism, recruitment via social media (Facebook) and snowballing. Attending conventions held by associations for people with dwarfism provided the opportunity to meet a large number of potential participants in one space. There are several associations for people with dwarfism based in the UK, including: the Dwarfs Sports Association UK, Little People UK, Restricted Growth Association, Short Statured Scotland and Walking with Giants. I attended four conventions held by two associations. Attending conventions provided a good starting point for recruitment, as I knew no people with dwarfism personally prior to starting my research.

23 As well as attending conventions, I also used the Social Networking Site, Facebook to recruit participants. Due to Facebook's widespread use (over 1.86 billion users worldwide, Fiegerman, 2017) and various forums, the site also offered an easy way to recruit participants (Brickman Bhutta, 2012; Pritchard, 2021). Using Facebook as a recruitment tool minimised logistical problems and allowed easy interaction with other people with dwarfism, especially as I was already a member of several Facebook groups for people with dwarfism. Advertising on the group pages provided a platform that was used to reach people who could not make it to any convention or who were not part of any association.

24 After I started interviewing participants I also began to recruit others via snowballing. Snowballing aided in recruiting participants, especially those who are not members of any associations, who would otherwise be difficult to contact. Snowballing is often used as a recruitment technique when the people being researched are hard to reach (Browne, 2005). Not always being able to attend conventions reduced my ability to recruit a large number of people in one place. The method relies on participants knowing other potential participants and being willing to pass on my details or give me other people's details, with their consent. This recruitment method also aided in building trust with other potential participants, as the participants who notified them about me and my research were able to vouch for my reliability. In other words, they could reassure potential participants that my research was a chance for them to disclose their experiences, with a person who shared the same condition as them and thus would more likely be empathetic to their experiences.

25 Overall, 20 women and 2 men were interviewed. I had planned to interview both men and women, but after being sexually assaulted by one potential participant, who was male, and then sexually harassed by a male participant I had just interviewed (see Pritchard, 2020 for more details) it was decided by my supervisors and I that I would just interview women. However, one other man was interviewed as part of a paired interview with his wife. The majority identified as British, middle class and white. This is unsurprising as most participants were recruited via associations, where the majority of members are white and middle class (Adelson, 2005). All participants were over 18, but most were in their late twenties to early thirties. The majority of participants lived in large towns or cities, with the expectation of a few living in villages outside of large cities.

Results

Avoidance

26 When shown an image of a self-service checkout, all 22 participants spoke about how they were difficult or impossible to use due to different parts of the facility, such as the item scanner and touch screen, being out of reach:

> I despise those [self-service checkouts]. I find them too high. I am not very good with lifting stuff above my shoulders which is very low. I often can't see the screens. They are not clear when you are lower as they are usually wide-angle screens. When you look up the screen is usually dark, because the contrast isn't good from a wide-angle. I find getting the chip and pin machine down very awkward and then also having to cover your PIN (Personal Identification Number) is difficult. I don't like self-service machines at all. (Naomi)

The struggle to use the self-service checkout has an impact on Naomi's psycho-emotional wellbeing causing her to "despise" them. Not only is Naomi unable to use the self-service checkout, but being unable to cover her PIN also demonstrates a security issue as people will be able to see her bank details which places her in a vulnerable situation. Drawing on the fifth paradox of technology, efficiency/inefficiency, according to Mick and Fournier (1998: 126) "technology can facilitate less effort or time spent in certain activities, and technology can lead to more effort or time in certain activities." Although the scanner and card reader should provide customers with a quick method of paying for their shopping, for Naomi, the out of place facilities means that she cannot or struggles to complete the task, resulting in the technology being inefficient.

Whilst in some countries there are members of staff purposely employed to refuel a customer's vehicle, in the UK there is more reliance on the customer filling their own vehicle and paying in the shop attached to the forecourt. Furthermore, not all disabled people are aware of assistance available to them at petrol stations (Prigent et al., 2008). Across the UK, many petrol stations are introducing new self-service pumps that aim to provide more choice to the average consumer. In fact, many supermarkets that also have their own petrol station, tend to be mostly self-service (Visa, 2023). These petrol stations, which account for 18% of all petrol stations in the UK (Statistica, 2023), make it more difficult for disabled people to refuel their vehicles (Scott, 2007). For example, I pulled up to one petrol station in the UK, only to find that it was fully self-service and I could not reach the petrol pump. If a petrol station is not accessible then disabled people are forced to use alternatives, which may be more expensive or further away (Scott, 2007).

> [...] some garages have put on their pumps a choice for you to pay at the pump or in the kiosk. You have to put in your choice first before filling your car but I can't reach so I can't use any garage which has that system. (Amanda)

27 The option to pay at the pump is considered to be a time saving form of technology, as not only does it remove the need to queue at the manned checkout, but also allows customers to fill up 24/7, a service which is not available at all petrol stations (Galdolage, 2021). This provides more freedom and efficiency to consumers. However, for Amanda, the inaccessible self-service pump restricts her from being able to use that pump at any time. This creates a paradox, as the self-service pump becomes inefficient to the user who cannot reach the payment option. As a result, several participants, including Amanda, mentioned avoiding the petrol station if it was inaccessible. Avoidance can be argued to be a strategic behaviour for coping with the resultant technological paradox (Mick & Fournier, 1998). However, participants also engaged in other coping strategies, including depending on other people to help them use the self-service technology.

In/Dependency

28 The way the built environment has been constructed affects the independence of disabled people (Imrie & Hall, 2001). Dependency can be defined as "the inability to do something for oneself and consequently the reliance upon others to carry out some or all of the tasks of everyday life" (Oliver, 1990: 83). Although everyone at some point is dependent on someone else, disabled people are marked out as different due to their degree of dependence on others (Oliver, 1990). The implementation of more self-service technologies, with limited consideration of disability access is only likely to further increase a disabled person's degree of dependence. Due to a mismatch in height people with dwarfism are more dependent on average sized people to fulfil tasks, such as shopping (Pritchard, 2021). Asking for assistance in order to negotiate a spatial barrier allows a person with dwarfism to carry out everyday tasks, such as shopping. However, an example of a paradox of technology is when it is meant to encourage independence, but instead leads to further dependency. This can be related to Mick and Fournier's (1998) paradox of freedom [independence] / enslavement [dependence]. According to Mick and Fournier (1998: 126) "Technology can facilitate independence or fewer restrictions, and technology can lead to dependence or more restriction." Whilst Self-service checkouts should provide freedom to consumers, due to the ergonomic construction of self-service checkouts, they are often left dependent on others to use them:

> There is always somebody working there so I actually do that [use the self-service checkout] but the touch screen is too high so I have to ask somebody to assist me out or ask the person behind me to touch the screen for me. (Myraar)

29 There is usually only one member or staff in charge of several self-service checkouts and they are used to assist people for specific reasons, including when purchasing items with a security tag or age restriction, such as alcohol. Thus, the customers still rely on a member of staff to a certain degree, but not for example when scanning items, such as everyday groceries, or using the touch screen to decide what methods of payment to use. A self-service checkout gives customers more independence than they previously had as prior to their installation people always had to rely on the cashier to serve them, including to scan items and take payment for them. Not relying on staff as much as they used to means that other members of the public have a higher degree of independence, whereas people with dwarfism are still more dependent on assistance where it is not expected. Scully (2010) points out that, if disabled people have to ask for assistance then the social encounters involved in asking for assistance would have to be free of any embarrassment or hostility, which is not always the case:

> I have to keep asking people and if they are not nice or they don't want to do it they ignore you or just walk away. (Aerial)

30 Having to spend time finding a member of staff who will assist, results in the facility being inefficient. Furthermore, dependency requires the person assisting to be compliant. However, whilst shop assistants are meant to aid customers, it has been reported that they often ignore or do not know how to properly assist disabled customers (Eskyte, 2019). For example, I once asked a member of staff to touch one of the instructions on the touchscreen, which was clearly out of my reach. Instead of noticing this physical barrier, the member of staff thought I did not know how to use the machine. This resulted in her speaking to me in a patronising tone, which made me feel embarrassed. To avoid unwanted reactions when needing assistance, people with dwarfism are more likely to rely on people they know, such as friends or family:

> No chance, absolutely no chance. I have tried to use one [self-service checkout] once, luckily enough I was with my sister because I couldn't do a thing [...] I couldn't reach the screen or chip and pin. (Amy)

31 Being accompanied by a friend or relative allows less reliance on other members of the public, who may be either too busy to provide assistance or who may react in a negative way when assistance is asked for. Scully (2010) suggests that relying on familiar networks, such as family or friends, reduces the risk of encountering unwanted attention. Whilst it reduces time wasted finding a member of staff, their choice of when to go shopping will be affected by when their friend or relative is available. As self-service technology is promoted as efficient, as it is usually available 24/7, for people with dwarfism a paradox is created as they can only access the technology when accompanied by someone else, rendering it inefficient to them. Driedger, Crooks and Bennet (2004) argue that needing assistance, such as from a member of your family, is an infringement on a person's independence. If they are by themselves then the alternative is to find their own way of using the facility.

Doing something differently

32 The purposeful ergonomic construction of spaces and facilities means that people are expected to use them in a certain way. Disabled people are often pressured to pass as normal, including using spaces in the way expected (Hansen & Philo, 2007). However, due to their ergonomic construction of self-service technology a person with dwarfism will have to find an alternative way of interacting with it if they have to use it. Hansen and Philo (2007) suggest that spaces have been created for the non-disabled body and in order for disabled people to fit into these spaces they have to employ their own way of doing something. Using a facility differently disrupts the normative parameters in regards to how that facility should be used. People with dwarfism overcoming a socio-spatial barrier in their own way can be seen as a form of resistance to a disabling environment. Using their own management strategies means that people with dwarfism will not be using spaces and facilities in the way expected.

> I can't reach the touch screen and so I end up bashing it with a piece of shopping. (Lydia)

> If you can't reach to put in your pin number you have to get your purse out and tap it in with your purse or with a ruler that you might have in your bag or a pen. Again, these are all things that make other people look at you because you are doing it differently from what somebody would normally do. (Monica)

33 As a way of using the machine, Lydia and Monica use an item to strike them, which can be seen as an extension of their arms making them long enough to use the relevant part of the machine. Whilst self-service checkouts are meant to result in less time and effort spent paying for items, the extra task makes the facility inefficient, resulting in a technological paradox. Having to come up with her own management strategy is a way of overcoming a socio-spatial barrier and acts as a form of resistance to an otherwise disabling facility. The downside is that the situation draws unwanted attention, as

Monica mentions, because it disrupts the normal way people are expected to behave within public spaces. All participants spoke about being stared at in public. In their study, Shakespeare et al. (2010) 98% of their participants with dwarfism reported being stared at by other members of the public. Having to do something differently only exacerbates the unwanted attention they already receive. This unwanted attention can affect how people with dwarfism interact within public spaces, often restricting them from overcoming a socio-spatial barrier and thus contributing to their disablement (Pritchard, 2021).

Conclusion

34 This paper has explored how people with dwarfism respond to self-service technologies, which often are inaccessible due to a mismatch in height. Drawing on Mick and Fournier's (1998) conceptual framework, this mismatch in height results in several paradoxes of technology, which triggers different coping strategies. There are three main ways in which people with dwarfism interact with self-service technologies; dependency on someone of average stature, finding their own way of using the facility or avoidance. Avoidance is often a result of the unwanted attention people with dwarfism encounter when interacting with self-service technology in their own way. Accepting what Hansen and Philo (2007: 493) call "the normality of doing things differently" would allow people with dwarfism interact with self-service technology in their way. It is about making people aware that facilities can be used differently and that there should be no set way of doing something.

35 Self-service technology should not be difficult to use or draw unwanted attention to the user. An easy to use "call for assistance" button on the facility would aid in reducing unwanted attention and providing assistance. However, it challenges the purpose of a self-service checkout, which is to save time and to reduce dependence on staff.

36 Increasing the economic advantages for companies, or providing more choice and convenience to average sized consumers, not only infringes on a disabled person's right to access spaces and facilities but also demonstrates that limited consideration has been made in regards to providing access for them and further tells them that they do not belong. In particular, self-service technology is inaccessible for those with less recognised impairments, such as dwarfism. However, self-service technology could actually be beneficial and usable by people with dwarfism if their needs were considered. For example, a low level keypad at self-service hotels would mean that people with dwarfism could avoid high check in desks (Pritchard, 2021).

37 A limitation of this research relates to the lack of diversity regarding participant demographics. Whilst I had set out to interview a range of people with dwarfism, most were white, female, middle-class and of working age. However, specific individual factors may moderate sensitivity to technology paradoxes. It has been previously suggested that, "older consumers are often more cognizant than younger consumers of the competence / incompetence paradox" (Mick & Fournier, 1998: 132). Thus, older people with dwarfism may also encounter other paradoxes, including "competence/incompetence." Furthermore, females are more sensitive than males to the assimilation / isolation paradox (Mick & Fournier, 1998). As I mostly interviewed women this project does not include how men with dwarfism may interact with self-service technology differently. A broader range of demographics would provide a more intersectional understanding of their experiences with self-service technology

38 Lastly, further research with designers and implementers of self-service technology could be carried out to understand their access needs of people with dwarfism and to uncover the reasons why self-service technology is not currently made to accommodate them.

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Auteur

Erin Pritchard
Liverpool Hope University, School of Social Sciences, Hope Park, Liverpool

pritche[at]hope.ac.uk

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