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Digital E-commerce: The need for inclusive representation in the digital apparel retail environment

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Abstract

This paper will extend digital fashion innovation study and research to the arena of human-centered design (HCD) aspects of e-commerce design and delivery. Research indicates that people with disabilities (PWD) can feel ignored by apparel brands and retailers (McBee-Black, 2022) and these obstacles can add to what is often a stressful experience of aspiring to dress stylishly (Annett-Hitchcock, 2023; Kealy-Morris, 2022, 2023). The authors have conducted a scoping review of the current literature exploring the gap in research related to the delivery of apparel e-commerce for people with disabilities. This methodological approach provides an overarching purpose to rapidly map the ‘key concepts’ (Arksey and O’Malley, 2005, p.21) underlying emergent research topics and the central sources available where an area has not been reviewed comprehensively before.

Introduction

The World Health Organization (2023) reported that an estimated 1.3 billion people are disabled, representing 16% of the world’s population. The Valuable Truth (2022) estimated that people with disabilities (PWDs), along with their families, control \$8 to \$13 trillion in disposable income (Return on Disability, 2020; The Valuable Truth, 2022; Casey, 2023), and that three-quarters of businesses are in a good position to deliver digital accessibility to the PWD consumer (The Valuable Truth, 2022). However, the PWD customer has been historically ignored within the marketplace, especially the apparel marketplace, experiencing a lack of clothing they find fashionable and functional to enable full societal participation (Kabel, McBee-Black and Dimka, 2016; Kealy-Morris, 2018, 2023). Further, PWDs are often disillusioned or do not trust the products created for their needs and wants, as brands and retailers fail to include PWDs in apparel research, design, and development (McBee-Black and Ha-Brookshire, 2022). According to a survey conducted by Coresight Research (2022), 48% of respondents who have a disability, or care for someone with a disability, said they faced difficulties finding the clothing they needed.

While some apparel brands and parent companies have developed mainstream fashion forward adaptive apparel for PWDs (e.g., ASOS, Kohls, Nike, Target, Tommy Hilfiger, Uniqlo, Victoria’s Secret, Walmart, and Zalando), access to a wide range of adaptive product categories and price points remains a limitation for PWDs searching for fashionable and functional adaptive apparel

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(McBee-Black, 2022). Further, not all apparel brands use a human-centered design (HCD) focus when researching and designing apparel for the PWD consumer. HCD is a problem-solving design process that places the person at the center of the development process, ensuring that the design solutions meet the needs and wants of the user (Landry, 2020). The aim of this study was to carry out a full scoping literature review of published material relating to adaptive apparel and its availability via e-commerce for consumers with disabilities. A scoping review was designed to achieve the following objectives: (a) to gain a comprehensive understanding of what is currently known about the state of apparel design for PWDs as currently presented via e-commerce channels, (b) to identify where future research on the design and delivery of apparel for PWDs via e-commerce channels should be directed, and (c) to determine why academics, industry leaders, educators, and policymakers should explore the delivery of apparel for PWDs via e-commerce channels. The authors recognize the importance of interdisciplinarity, disability studies theory (Goodley, 2017) and the work of the global disability rights movement seeking liberation from systemic worldwide oppression for PWDs, uniting under the declaration 'Nothing About Us, Without Us' (Charlton, 1998).

Literature Review

This study supports the argument that dressing oneself is an embodied, experiential and situated practice that is at once both intimate and social (Craik, 1993; Davis, 1992; Woodward 2005, 2007; Entwistle, 2015; Kealy-Morris, 2023). The intimate familiarity of clothing to the body gives it material power to display and represent the self and therefore plays an important role in management of identity ambivalence within society (Davis, 1992). This paper extends embodied dress theory into the methodological arena of critical disability theory (Hirsch [1998] 2003; Garland-Thomson, 2002; Klepp and Rysst, 2017; Linthicum, 2006; Stauss, 2020) to enable a specified study of the lived experience of online shopping by PWD. The concept of 'body dressing work' was developed by Kealy-Morris (2023) to recognize the daily stressful negotiated effort PWD must engage in to curate outfits from their wardrobe to enable 'fitting in' to social settings and groups via careful, conscious clothing of their bodies. This paper expands this concept through recognizing that prior to this daily work of getting dressed, PWD must expend great effort and time to research, seek, locate and purchase the right clothing to match their style and their disability via online and bricks and mortar shopping.

The researchers define adaptive apparel as modified or adapted clothing which accommodates the needs of PWDs or impairments to better support donning and doffing of clothing and carry out daily tasks and activities. The majority of literature published on the construct of adaptive apparel has focused on design processes and methodologies such as user-centered design (UCD) (Carroll and Gross, 2010; Jung, Lee and Ahn, 2010), social model of disability as a framework for design (Lamb, 2001), and disability-specific design processes (McAndrews and Brooks, 2022; McBee-Black, 2022; McLeod et al., 2020; Nguyen, Doan and Pham, 2022). Literature exploring consumer behavior among PWDs is limited. Online shopping behavior has been explored (Childers and Kaufman-Scarborough, 2009; Li, Zhao and Srinivias, 2023) as has the physical retail environment for PWDs (Menzel-Baker, Holland and Kaufman-Scarborough, 2007). Virtual shopping experience literature has also received attention (Annett-Hitchcock and Xu, 2015). However, while designing apparel for the PWD consumer is a priority to ensure

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consumer satisfaction, there remains a dearth of literature exploring inclusive representation within the apparel e-commerce retail environment.

E-commerce is a term used in many constructs including trading and supply chain management, communication of services and products to consumers, or providing online payment via technology systems, corporate transactional processes and online shopping and distribution of goods, and information through the Internet and other online resources (Jain, Malviya and Arya, 2021). For this study, e-commerce has been contextualized within online apparel shopping for PWD consumers. The literature explored related to accessibility for consumers with disabilities within an e-commerce platform using the Internet of Things as a context;¹ accessibility to online shopping for the visually impaired (VI);² design of user-interfaces for the aging population;³ usability guidelines for VI consumers;⁴ and e-commerce design related to baby boomers with impaired color vision.⁵ While literature exists focusing on VI consumers' experience in an e-commerce environment, extensive searches found no literature focusing on delivery of apparel to PWDs through e-commerce channels.

Scoping Review Method

According to Arksey and O'Malley (2005), a scoping review rapidly maps the 'key concepts' (p.21) underlying a research topic and the central sources available, especially where an area has not been reviewed comprehensively. There are four common reasons why a scoping review would be undertaken: (a) to investigate the range and nature of research activity within a particular topic; (b) to determine if a full systematic review is necessary or relevant; (c) to summarize and share research findings; and (d) to identify research gaps within current literature (Arksey and O'Malley, 2005). Therefore, scoping reviews are often used in place of a systematic review method when the constraints of a systematic review cannot be met when a topic is limited or has not yet been comprehensively reviewed (Munn et al., 2018; Sucharew and Macaluso, 2019). Thus researchers focus on a reflexive method, repeating steps to ensure the literature identified is comprehensive. The stages of a scoping review consist of (a) identifying the research question; (b) identifying relevant studies; (c) study selection; (d) charting data; and (e) collating, summarizing and reporting the results (Arksey and O'Malley, 2005).

The first step in a scoping review is to identify clearly defined research questions that are broad in scope to guide the study (Sucharew and Macaluso, 2019). For this study the authors developed the following research questions relating to the emergent subject of e-commerce for PWD:

- **RQ1:** What is currently known about the state of apparel design for PWDs as it is presented via e-commerce channels?

¹ Sohaib, Lu, and Hussain, 2017.

² Buzzi et al., 2011; Cohen, Fresneda and Anderson, 2023; de Araújo Cardoso et al., 2015; Duttaroy et al., 2022; Williams, 2021; Kangeswaran et al., 2021; Liu et al., 2019; Prakash et al., 2023; Qamar, Rahman and Komal, 2015; Stangl et al., 2018; Villegas-Ch, Amores-Falconi and Coronel-Silva, 2023; Wang et al., 2021.

³ Buzzi et al., 2011; Cohen, Fresneda and Anderson, 2023; de Araújo Cardoso et al., 2015; Duttaroy et al., 2022; Williams, 2021; Kangeswaran et al., 2021; Liu et al., 2019; Prakash et al., 2023; Qamar, Rahman and Komal, 2015; Stangl et al., 2018; Villegas-Ch, Amores-Falconi and Coronel-Silva, 2023; Wang et al., 2021.

⁴ Prati et al., 2021.

⁵ Pelet, McPherson and Papadopoulou, 2013.

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- **RQ2:** Where should future research on the design and delivery of apparel for PWDs via e-commerce channels be directed?
- **RQ3:** Why should academics, industry leaders, educators, and policymakers explore the design and delivery of apparel for PWDs via e-commerce channels?

Results

As suggested by Arksey and O'Malley (2005), initially including a comprehensive set of search terms is necessary when exploring an emerging topic. For this study, key concepts and search terms were developed to ensure that the literature review would include disabled consumers, apparel-related e-commerce activity, and web accessibility challenges facing PWD consumers. Further, the databases were identified by exploring scoping review literature and consulting with two university librarians at separate international institutions⁶: one was a subject specialist within business, retail, and apparel, and the other a fashion and textiles subject specialist. The following databases were chosen for inclusion in this scoping review based on the subject and research aims: (a) SCOPUS; (b) Web of Science; (c) EBSCO Business Source Premier; and (d) Google Scholar. Initially 37 search terms were used and were then ultimately narrowed to four: 'disab*'; 'e-commerce or online shopping;' and 'apparel'.

To ensure a comprehensive search that would scan for primary sources on the topic, inclusion and exclusion criteria were identified (Sucharew and Macaluso, 2019). Inclusion criteria included: (a) literature written in English (b) date range of 2000-2023 (c) peer-reviewed academic journal articles, books/book chapters; (d) industry and trade publications; (e) conference proceedings; and (f) grey literature⁷. Exclusion criteria included (a) studies which focused on products other than apparel and (b) Literature reviews, case studies, abstracts, and dissertations were excluded to ensure only the inclusion of articles with well-formed arguments from rigorous data collection and analysis. All search results were reviewed for duplicates and relevancy, then color-coded to identify areas requiring consensus among the study authors: green indicated an article fit all inclusion criteria, yellow indicated a question about the relevance of the article, and red indicated the article failed to meet inclusion criteria. Finally, the full papers were reviewed to make final decisions about their inclusion in the review. After reviewing the color-coded spreadsheet independently and then conferring on the final review, an inter-rater agreement of 100% was reached: out of the original 75 references, 11 were selected for inclusion in the review.

This study includes 11 of the 75 articles charted. The 11 articles were categorized into three areas: (a) online or virtual e-commerce shopping improvements for VI consumers and other PWD consumers ($n=4$); (b) e-commerce accessibility challenges for VI consumers and other PWD consumers ($n=6$); and (c) e-commerce accessibility for elderly consumers ($n=1$). Most articles revealed in this scoping review were published as conference proceedings (73%), which suggests an emerging topic that researchers are exploring through conference presentations, testing results through academic discourse, and gaining perspective from other scholars in the areas. The remaining articles were published in peer-reviewed journals. The articles reviewed for this study were analyzed based on the methods used. Understanding

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⁷ Grey literature is information produced outside of traditional publishing channels (see Mahood, Van Eerd and Irvin, 2013).

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methodology allows future researchers to identify gaps in methods used to analyse data related to the research topic. New and innovative methodologies can be applied to this research topic to elucidate new findings and implications in the apparel marketplace. Of the 11 articles included in this scoping review five (46%) focused on developing website tools or mobile applications aimed at increasing accessibility to e-commerce and online shopping for PWDs, specifically VI consumers. The remaining articles focused on qualitative studies (36%) and quantitative studies (18%) exploring the accessibility challenges or barriers facing PWDs when shopping online through e-commerce channels.

A solid theoretical framework is necessary for a rigorous and robust research study. While seven studies failed to identify an underlying theoretical framework, of the four studies that did, the findings suggest that the focus of the research was HCD (UCD), development and discussion.⁸ One article discussed the social model of disability as an underlying construct in the research.⁹ Understanding a research study's objectives allows future researchers to explore new and innovative ways to explore the data and topic of study. This review found five articles focused on the objectives related to designing and developing a website accessibility tool or a mobile application that increased e-commerce accessibility for PWDs.¹⁰ The remaining six articles focused on objectives that related to identifying challenges, barriers, and preferences of e-commerce shopping for PWDs.¹¹ Nine articles were found to focus on VI consumers,¹² while one focused on those with hearing impairments,¹³ another focused on aging consumers.¹⁴ This review highlights that researching consumers with disabilities is a relatively new area of research, especially in the apparel marketplace and specifically when exploring e-commerce and online shopping accessibility.

Discussion

The outcomes of this scoping review suggest that there is a dearth of literature exploring the gap in research related to the delivery of apparel e-commerce for PWDs. Further, the results of the scoping review provide insight into the lack of diverse objectives and methodology exploring the delivery of apparel e-commerce for PWDs. Most of the research was conducted using qualitative methods,¹⁵ specifically design and development of technology as well as virtual applications to support increased accessibility for PWDs, however the two studies using quantitative methods lacked creativity and rigor.¹⁶

⁸ Cohen, Fresneda and Anderson, 2023; Prakash et al., 2023; Villegas-Ch, Amores-Falconi and Coronel-Silva, 2023; Wang et al., 2021.

⁹ Cohen, Fresneda and Anderson, 2023.

¹⁰ Kangeswaran et al., 2021; Liu et al., 2019; Prakash et al., 2023; Stangl et al., 2018; Wang et al., 2021.

¹¹ Buzzi et al., 2011; Cohen, Fresneda and Anderson, 2023; de Araujo Cardoso et al., 2015; Prati et al., 2021; Villegas-Ch, Amores-Falconi and Coronel-Silva, 2023; Viñarás Abad, Pretel-Jiménez and Quesada-González, 2022.

¹² Buzzi et al., 2011; Cohen, Fresneda and Anderson, 2023; Kangeswaran et al., 2021; Liu et al., 2019; Prakash et al., 2023; Prati et al., 2021; Stangl et al., 2018; Villegas-Ch, Amores-Falconi and Coronel-Silva, 2023; Wang et al., 2021.

¹³ de Araujo Cardoso et al., 2015.

¹⁴ Viñarás Abad, Pretel-Jiménez and Quesada-González, 2022.

¹⁵ de Araujo Cardoso et al., 2015; Kangeswaran et al., 2021; Liu et al., 2019; Prakash et al., 2023; Prati et al., 2021; Stangl et al., 2018; Villegas-Ch, Amores-Falconi and Coronel-Silva, 2023; Viñarás Abad, Pretel-Jiménez and Quesada-González, 2022; Wang et al., 2021.

¹⁶ Buzzi et al., 2011; Cohen et al., 2023.

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This inquiry focuses on e-commerce channels and as such, is complex as it intersects with debates and discussions about the ‘interaction design’ of digital user interfaces. The many regulations in place across the UK, Europe, and the US support accessibility in the digital retail environment but fail to go far enough to require private commercial sites to abide by these regulations, creating barriers to access. Future research could address the expansion of these regulations and propose amendments to increase access to PWDs. Moreover, the pandemic and cost-of-living crisis since the 2008 global banking crisis has disrupted the fashion retail industry, however this offers an opportunity for greater change. Research from 2021 suggests that fashion retail companies need to adapt to survive in the post-pandemic business environment. A top trend for retail consumer experience is personalisation, and that experience is increasingly online for all market sectors (Appinio, 2022). Digital e-Commerce could be a useful solution here to personalize the shopping experience for PWDs by providing information and making products discoverable as found by the Business Disability Forum, ‘finding information related to accessible features about a product’, and ‘making products easy to find’ are the most important attributes of improving the shopping experience’ (2022, n.p.).

The fashion industry is not known for embracing diversity of age and ability, but there is an emerging awareness of diversity as some clothing and apparel brands market to ‘plus-size’, ‘maternity’, ‘modest-dressing.’ This is an addition to those who have introduced sensory and easy-dressing childrenswear ranges or focused adaptive ranges (e.g., ASOS, Kohls, Nike, Target, Tommy Hilfiger, Uniqlo, Victoria’s Secret, Walmart/Asda, and Zalando, and in the UK, Primark and Marks & Spencer). This is encouraging, suggesting some market traction and industry research predicts that retailers and designers that make the effort to ‘focus more on meeting the apparel needs of all communities’ are poised to generate a positive social and economic impact [and] also ‘gain first mover advantage’ (Coresight Research, 2022, n.p.).

Conclusion

Future research should explore specific e-commerce marketplace challenges and barriers for wider needs of the PWD community, including those with mobility challenges. For example, apparel designed for PWDs’ unique needs and wants is growing, therefore, studies exploring the specific e-commerce marketplace challenges and barriers facing PWDs could provide significant insight for the apparel brands and retailers wishing to expand into this market category. Further, studies exploring the e-commerce accessibility challenges and barriers in the apparel marketplace should include those focusing on nomenclature used to describe and define apparel and accessories marketed to PWDs. This practice will provide greater insight for the consumer to determine if the product will accommodate their specific needs. Providing such details will invariably increase traffic to retail e-commerce sites, possibly increase sales, and reduce returns as more information will be available to the consumer, supporting more streamlined purchasing decisions.

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