Towards an inclusive Metaverse: Maneuvering between acceptance of disability and need for uniqueness

Abstract

Purpose: While there has been a growing interest in the field of Metaverse-related research, its impact on vulnerable segments of the population, particularly those with special needs, is yet to be fully examined. This research develops the underlying scant theoretical knowledge related to the attachment of people with disabilities to the Metaverse and its effects on their need for uniqueness and acceptance of disability, and hence their sense of inclusivity and overall well-being.

Methodology: The study adopted a quantitative approach using an Internet-based survey. The sample size consisted of 530 Metaverse users with a physical disability in the US. The proposed model integrates virtual place attachment alongside disabled consumers' need for uniqueness, and acceptance of their physical disability. SPSS and LISREL were utilized for data analysis and SEM.

Findings: The study underscores the complexity of the interplay between virtual place attachment, disability acceptance, and the need for uniqueness among physically disabled users in the Metaverse. It investigates how the attachment to virtual spaces by people with disability influence their psychological well-being.

Originality: This research adds to the interactive marketing and disabled consumer psychology literature exploring the theoretical and practical implications from an attachment and need for uniqueness theory perspectives.

Keywords: *Metaverse, people with disabilities, need for uniqueness, acceptance of disability, place attachment*

1. Introduction

Online communities have experienced significant growth, particularly with the rise of the Internet and virtual worlds. Improved Internet speeds and the fast development of digital platforms have made it easier for individuals to connect with one another, fostering an accelerated trend in online community development. Online connectivity, particularly social media, has grown significantly from its origins in early online forums and communities to become an essential component of modern life (Jansen *et al.*, 2021; Ramadan et al., 2023c). It has not only changed how people interact, but has also reshaped the marketing environment, offering firms compelling platforms to communicate directly with customers (Wang, 2021; Ramadan et al., 2023a).

Virtual worlds, or what is more commonly known now as the Metaverse, are expected to further increase the engagement between companies and users while changing considerably the marketing landscape. The term "Metaverse" combines "meta" signifying beyond with "universe" denoting the expansion of the physical internet of things into a shared 3D space and virtual realm (Lombardi and Lombardi, 2010; Ramadan et al. 2023b). The Metaverse is defined as an immersive digital world where people can shop, work, interact with one another, and "live" using virtual reality (VR) and augmented reality (AR) (Mystakidis, 2022; Farah *et al.*, 2023; Ramadan, 2024). Virtual reality (VR) allows users to immerse themselves in computer-generated environments that simulate reality; these environments feel real and can be interacted with as if they were physical (Wohlgenannt *et al.*, 2020). Users experience a sense of presence within these virtual worlds, whether they are fictional or based on real-world settings. Augmented reality (AR) integrates virtual and digital elements seamlessly into real-world settings and overlays virtual data onto the physical environment familiar to users, enhancing their perception of reality (Ramadan and Farah,

2017); consequently, users engage directly with their surroundings, which are enhanced by virtual content.

The innovation of the Metaverse is of particular interest for people with physical disabilities (PWD) as is currently the case with several social media platforms, where companies are pursuing more inclusion and accessibility in their products, which can significantly improve customer-brand relationships (Pezzuti *et al.*, 2021; Ramadan et al. 2024). In virtual worlds, users can now meet, interact, and socialize without restrictions in the form of avatars in physical or virtual environments (Dwivedi *et al.*, 2022; Dwivedi *et al.*, 2023). The continuous transition between the physical and virtual worlds and the enhancement of experiences and interactions open an infinite range of possibilities for people who choose to interact with the Metaverse in the future. The Metaverse, as a virtual place, enables high engagement while enhancing the overall experience of users, which could lead to heightened virtual place attachment (Chen, 2024). While research in this area is gaining interest amongst users with physical disabilities, companies and scholars, it is still scarce due to its nascent nature

As complexity in marketing is increasing, organizations need to deliver superior value that fits the needs of their customers and motivates them to interact with them (Romo *et al.*, 2017). Indeed, the Metaverse can be a powerful platform for organizations to engage with their customers (Ramadan, 2023). As this virtual platform continues to evolve, companies are beginning to recognize its potential for transforming their strategies. Some started using computer generated avatars and virtual influencers to adapt and to achieve a better connection with their customers (Laszkiewicz and Kalinska-Kula, 2023). From a marketing perspective, McKinsey's analysis of the Metaverse's potential revealed that virtual product sales through direct-to-avatar transactions

represent a $54 billion market; this underscores the significant opportunity for companies to experiment with new goods and services in innovative ways (Hazan *et al.*, 2022).

From an inclusivity standpoint, Metaverse-related activities can be a huge potential for PWD and the acceptance of their disability in relation to their psychological well-being and representation of their true selves on virtual worlds. The development of graphical user interfaces in technology has led to an increase in the variety of social interaction formats (Bleize and Antheunis, 2019; Farah et al., 2022; Farah et al., 2024). Avatars, which are digital and graphical representations of human interactants in computer-mediated settings, are at the core of this diversity (Lee, 2014). By leveraging the immersive and interactive features of the Metaverse, businesses have the potential to create inclusive marketing strategies that cater specifically to the needs and preferences of PWD (Baker, 2022).

While there has been a growing interest in the field of Metaverse-related research, its impact on vulnerable segments of the population – particularly those with special needs – is yet to be fully examined. In fact, the worldwide number of PWD is estimated to be around 1 billion, representing 15% of the world population (World Bank, 2023). Organizations are in dire need to understand the potential impact of their strategies in the Metaverse specifically on this market segment.

There is lack of theoretical foundation in Metaverse-related studies in relation to psychological needs, in particular among PWD. Accordingly, this research intends to develop the underlying scant knowledge pertaining to how people with special needs perceive their physical disability on the Metaverse and the psychological effects related to their potential need for uniqueness on such platforms. In sum, by delving into their need for uniqueness and acceptance of disability, the research addresses the underrepresented subject of PWDs' experiences in virtual worlds, while

assisting companies to understand the intricacies of targeting this segment of the population on the Metaverse.

2. Theoretical Framework and Hypotheses

The theoretical background of the suggested model revolves around two key theories, namely the *attachment theory* (Low and Altman, 1992) and the *need for uniqueness theory* (Tian *et al.*, 2001).

Attachment theory, as described by Scannell and Gifford (2014), emphasizes the importance of interpersonal bonds and suggests that individuals have an inherent psychological mechanism that governs their closeness to an attachment figure. Additionally, research by Low and Altman (1992) and Lewicka (2011) suggest that people also develop meaningful attachments to places. Place attachment is the phenomenon where individuals form deep emotional ties with locations, combining both affective and cognitive aspects related to their connection with a place, including emotions, memories, beliefs, or knowledge (Scannell and Gifford, 2014). This emotional bond often leads to a desire to be near the place and to revisit it repeatedly (Scannell and Gifford, 2010). Place attachment extends to various types of places (Lewicka, 2011), whether real or virtual, with these bonds being characterized by personal and emotional relations (Oleksy *et al.*, 2023). Recently, there has been growing interest in understanding how these bonds form and change over time, particularly in relation to interactions with virtual environments (Chen, 2024; Dudley *et al.*, 2023; Ramadan et al., 2023d).

Stedman (2002) suggests that place attachment stems from the cognitions and meanings people associate with a particular environment. This attachment forms as individuals assign particular connotation to places, which in turn creates a bond. The environment plays a crucial role in shaping one's life, identity, and overall well-being (Manzo, 2003). Various theoretical and empirical studies

have linked place attachment to both physical and psychological well-being (see Keyes, 1998; Rollero and De Piccoli, 2010; Scannell and Gifford, 2010, 2014, 2017), which is often expressed in terms of relations to various aspects of the physical environment (Moser, 2009). Indeed, understanding people's connection to their surroundings is essential for comprehending their psychological welfare (Horelli, 2006).

Existing research on physical environment relate place attachment to social acceptance and actualization (Keyes, 1998), which in the context of this study pertain to the acceptance of disability and the need for uniqueness amongst PWD. In fact, these constructs are crucial for the evaluation of the inherent psychological aspects for PWD within online social networking sites (SNS), hereby the Metaverse.

The uniqueness theory, proposed by Fromkin (1970) and Snyder and Fromkin (1977), suggests that when individuals have a desire to distinguish themselves from others, they may feel compelled to protect and bolster their sense of uniqueness, especially when their perception of themselves as being unique is challenged. The theory suggests that while people are keen to conform and blend in, they also have a desire to stand out, and accordingly be special (Snyder, 1992). This response emanates from the attempt to preserve a sense of reasonable self-distinctiveness (Snyder and Fromkin, 1980). The key premise of the uniqueness theory is that individuals possess an inherent need or desire to be relatively different from others (Snyder, 1992) as when they perceive a high similarity, their motivation to reaffirm their distinctiveness intensifies. Snyder and Fromkin (1980) suggest that some individuals may possess characteristics that cause them to perceive themselves as unique. In the extant psychology literature, research on the need for uniqueness is wide especially when related to one's body appreciation (Gillen and Dunaev, 2017). Consistent with

this notion, PWD may exhibit a higher need for uniqueness following their need to stand out on the Metaverse, as their physical conditions often lead them to experience a sense of distinctiveness.

The scholarly examination of Metaverse-related studies, particularly concerning the psychological needs of PWD, reveals a notable gap in the related theoretical underpinnings. Accordingly, this research adds to the interactive marketing and disabled consumer psychology literature exploring the theoretical and practical implications from an attachment and need for uniqueness theory perspectives. In sum, considering the importance of having companies cater for the needs of PWD, as advanced by Ramadan, Farah, and El Essrawi (2021), a theoretical framework is proposed in order to describe the relations between place attachment, acceptance of disability, and need for uniqueness (see Figure 1) .

2.1 Place attachment towards virtual places and the need for uniqueness

The concept of "place" is used to describe a collection of spaces transformed through peoples' experiences, emotions, and ideas into meaningful locations. The relationship with a particular place can be of an emotional, cognitive, and/or behavioral nature. With the rapid evolution of technological tools, attention is shifting towards users' increasing attachment to virtual reality (Koles and Nagy, 2021). In the context of virtual reality, place attachment is an emotional connection between people and places whereby users communicate their feelings to certain virtual locations compared to actual places (Hidalgo and Hernandez, 2001; Oleksy *et al.*, 2023). Individuals' attachment to a specific place can affect their emotional connection or love with organizations associated with that place (Liu *et al.*, 2020).

The need for uniqueness can be defined from a consumer's perspective as differentiating oneself from others through acquiring products to boost one's well-being (Snyder and Fromkin,

1977; Tian *et al.*, 2001; Sun *et al.*, 2017). It is a personality feature that leads people to seek out differences and express their distinct selves through the acquisition, use, and disposal of consumer products as a means of establishing their social and personal identities (Tian *et al.*, 2001). The need for uniqueness influences brand-related behaviors on social media (Abosag *et al.*, 2020). The work by Chen *et al.* (2014) empirically demonstrates that customers' intention to create electronic word-of-mouth (eWOM) through exchanging thoughts and content about brands is positively influenced by the need for uniqueness. The major elements of the virtual environments imply that the unique consumer-brand interactions in the Metaverse in particular may transform how consumers and organizations perceive, respond, and process in the online world (Dwivedi *et al.*, 2022; Barrera and Shah, 2023; Hadi *et al.*, 2023). Consumers' perception of product convenience in the Metaverse can be described by the relative degree of likeability, trust, and uniqueness expressed compared to other marketed products that might have been heavily consumed or have become popular among consumers (Toraman and Geçit, 2023).

Over the past decade, consumers' demands have become more complicated as they desire more meaningful experiences integrated with products to make unforgettable memories (Abosag and Farah, 2015; Manser Payne *et al.*, 2017; Seo and Lang, 2019). Virtual places that offer opportunities for self-expression and differentiation tend to attract individuals with a high need for uniqueness and to indirectly increase place attachment (Koles and Nagy, 2021). Individuals that are relatively not involved/attached to virtual places may desire less unique products and personal customization (Choi *et al.*, 2023). Therefore, we propose:

H_1: Place attachment towards virtual places positively affects PWD need for uniqueness.

2.2 Place attachment towards virtual places and acceptance of disability

Acceptance of disability is defined as the acknowledgment and embracement of the changes and limitations associated with a disability. According to Dembo, Leviton, and Wright (1956), the degree of acceptance is connected to how a person minimizes the focus on physical abilities and appearance conflicting with the disabling condition, while refraining to extend the handicap beyond one's physical impairment, and avoiding comparing oneself to others based on limitations (Wright, 1960).

Virtual worlds provide a high degree of social presence and interaction for PWD (Park and Kim, 2022). The immersive experiences that these individuals have in the virtual world might differ from other individuals when constructing their self-images. This explains why virtual reality technologies can change self-presentation preferences and willingness to disclose disabilities (Porter *et al.*, 2017). Despite the accessibility and compatibility features provided in virtual spaces for PWD, research has shown that these individuals face some difficulties in disclosing their physical disability (Porter *et al.*, 2017).

Prior studies have identified three paradigms of identity representation for PWD in virtual environments: (1) a full virtual reconstruction, (2) a hybrid one integrating both the virtual and the physical identity, and (3) a complete true representation of the actual physical identity (Davis and Chansiri, 2018; Davis and Stanovsek, 2021). In the first paradigm, individuals abandon their physical identity to create a new virtual one (Hu *et al.*, 2015). The second paradigm involves selectively integrating physical traits into the virtual identity. The third paradigm relates to individuals entirely representing their actual physical identity on the virtual platform. In relation with disability disclosure, the time and effort that users dedicate to customize their appearances in the virtual world could indicate the extent or the aspect in which they want to reveal themselves (Kafai *et al.*, 2010).

Place attachment offers various positive outcomes for individuals, such as the accurate anticipation of one's well-being, alleviation of stress, reinforcement of one's sense of belonging, and heightened feelings of security (Lewicka, 2011). Additionally, a place can significantly contribute to maintaining self-esteem and self-efficacy (Twigger-Ross and Uzzell, 1996) as it significantly influences one's life, identity, and well-being (Manzo, 2003). Indeed, place attachment is closely related to both physical and psychological well-being, highlighting the importance of understanding people's connection to their surroundings for comprehending the related psychological effects (see Moser, 2009; Rollero and De Piccoli, 2010; Scannell and Gifford, 2017), hereby acceptance of disability in the context of this study.

Therefore, the attachment that PWD develop towards virtual places, and accordingly the need to have an enjoyable and inclusive experience, accessible communication, and psychological well-being, can strengthen the acceptance of their disabilities. Thus, we postulate:

H_2: Place attachment towards virtual places positively affects PWD acceptance of disability.

2.3 Acceptance of disability and the need for uniqueness

People's acceptance of their disabilities is a complex physical and psychological process (Babik and Gardner, 2021). Acceptance involves more than simply acknowledging the presence of a disability; it requires individuals to embrace their disability and incorporate it into their overall self-concept (Goering, 2015). Achieving acceptance of a disability requires individuals to develop a positive mindset, viewing disability as a unique aspect of a person's identity (Lejzerowicz, 2017).

In the context of disability acceptance, the need for uniqueness is a fundamental human motive associated with the desire to differentiate oneself from others (Schumpe and Erb, 2015). It encompasses both intrinsic and extrinsic motivations, fueling a person's need for self-

determination (Van den Broeck *et al.*, 2021). The importance of maintaining social connectedness as one of the main motivation principles (Satici, 2016) can be a reasonable solution for a person to build a unique and adaptive life with his/her disability. By demonstrating an individual's physical disability with this motivational and differentiative acceptance, living a fulfilling and productive life would not remain as a barrier.

Although acknowledgment and motivation are key factors to accept disability, yet defining a person only in terms of this disability overshadows other aspects of one's identity (Jung *et al.*, 2022). As discussed previously, acceptance entails incorporating disability into one's self-concept for the sake of appealing unique, yet it is crucial to highlight that many PWD have formulated their happiness from their disabilities. Disability hence becomes a fundamental part of consumers' identity. Thus, we hypothesize:

H_3: Acceptance of disability negatively affects PWD need for uniqueness.

Figure 1 illustrates the proposed hypotheses and conceptual model.

Insert Here: Figure 1: Proposed Model

3. Research Methodology

3.1 Research Context

While there has been increasing interest in Metaverse-related research, its effects on vulnerable populations, especially those with special needs, have not been thoroughly investigated. Organizations have a pressing need to understand how their strategies in the Metaverse might affect PWD. Our study focuses from a topline perspective on PWD need for uniqueness and acceptance of disability within a virtual world platform. Given the direction of this study, these

key constructs were included in order to synthesize the cornerstone findings related to virtual worlds' attachment, that the suggested model features as a core central variable that influences all other suggested variables.

In sum, this study aims to expand on the limited existing knowledge regarding how this demographic segment perceives their physical disabilities in virtual environments. It also examines how PWDs' perceptions may change in relation to their need for uniqueness and acceptance of physical disability in the Metaverse. By exploring these aspects, the research addresses the overlooked topic of PWDs' experiences in virtual worlds and provides insights into their interaction with virtual places.

3.2 Data Collection

The study adopted a quantitative approach to investigate how PWD feel and behave on virtual worlds to advise companies on Metaverse-related strategies. The latter methodology was used since all the constructs adopted in the proposed conceptual model were derived from the extant literature, and hence previously validated in various different research contexts. In contrast, an exploratory approach is typically implemented when the study conducted aims to uncover themes and potential new constructs. In fact, within the context of this study, a quantitative approach based on survey design and structural equation modeling analysis was deemed to be most suitable to measure and analyze the relationships of observed and latent variables.

The questionnaire included four main sections. Part I featured two pre-selection criteria questions regarding whether the respondent suffered from any type of impaired physical function, and whether he/she had engaged in a Metaverse world at least for at least an hour per week in the past 6 months. Part II addressed the respondent's utilization of various virtual world platforms,

such as frequency of visits and average usage time per week. Part III encompassed the constructs outlined in the conceptual model and their related items. Lastly, part IV consisted of general demographic-related questions such as the respondent's type of physical impairment, age, gender, education level, and occupation. No specific platform was focused on in the design of the questions.

The fieldwork was conducted in the United States through an Internet-based survey composed of a series of closed-ended questions. The survey participants were recruited through Qualtrics, a renowned global research agency. The data collection was completed over a month period in April 2023.

3.3 Sample Profiling

The sample size consisted of 530 Metaverse users with a physical disability who are currently active on a virtual world platform such as Sandbox, Roblox, Decentraland, Metahero, Meta Horizon… The gender split was 53% female, 47% male. The respondents were categorized in the following age groups: 18-24 years (34.71%) bracket, 25-34 (29%), 35-44 (22%), 45-54 (7.1%), 56-64 (3.9%), above 65 years (1.49%), and 1.8% participants preferred not to disclose their age. The education level of respondents included participants with a secondary school level or below (21.5%), bachelor's degree (50.5%), master's degree (14%), PhD (4.5%), and other (9.5%). The respondents' occupation status came as follows: employed (56%), students (15%), unemployed (13.5%), self-employed (10.5%), and other (5%). The type of impaired physical function mentioned by the participants included (either full or partial) vision (28%), hearing (7.7%), or physical mobility impairment (64.3%). The majority of the respondents has been visiting Metaverse worlds for more than a year (37%), followed by 1-6 months (27%), less than 1 month

(19%), and 7-12 months (17%). The reported average hours of use of virtual worlds per week were as follows: 1-4 hours (47%), 5-8 hours (30.5%), 9-12 hours (14%), and over 12 hours (8.5%).

3.4 Measures

The survey included validated multi-item scales related to the various constructs under study (presented in Table 1), as follows: place attachment towards virtual places (Oleksy, Wnuk and Piskorska, 2023), need for uniqueness - avoidance of similarity (Tian, Bearden and Hunter, 2001), and acceptance of disability (Li and Moore, 1998). The measured items were adopted from previous research and were Likert-based scales with the following endpoints: 1-strongly disagree to 7-strongly agree. The survey filling time averaged 11 minutes. Validity checks were conducted to warrant face and discriminant validity. For face validity purposes, an initial pilot study targeted a small sample of 50 respondents who were invited to complete the survey, evaluate the instrument and highlight whether they found it long. They were also asked to comment on whether any of the questions is intrusive or unclear and/or confusing. They provided feedback on the general organization and structure of the questionnaire. Discriminant validity was tested using exploratory and confirmatory factor analyses. SPSS and LISREL were utilized for data analysis.

4. Analysis and Constructs Validation

Cronbach's α coefficients for the utilized scales demonstrated satisfactory internal consistency with the following values: 0.79 for acceptance of disability, 0.91 for the need for uniqueness, and 0.90 for place attachment (Nunnally, 1978). To assess common method bias, Harman's single factor test, an exploratory factor analysis approach, was conducted. No single factor accounted for the majority of the variance: all the un-rotated variables loaded on different factors, with the first

one accounting for 32.3% of total variance, which is less than that the threshold of 50% set by Podsakoff and Organ (1986).

For testing discriminant validity, exploratory factor analysis was employed to measure the distinctiveness between two constructs (Bagozzi, 1991). The results indicated that all measured items loaded correctly and did not cross-load on other factors. Additionally, discriminant validity was tested and confirmed using the average variance extracted method (AVE), whereby a construct is deemed to be distinct if the AVE by the items related to that construct is greater than the construct's shared variance with other constructs. The descriptive statistics, factor loadings, average variance extracted (AVE), and composite reliability (CR) are summarized in Table 1. Both AVE and CR met the general requirements proposed by Fornell and Lacker (1981), with AVE values greater than or equal to 0.5 and CR values greater than or equal to 0.7.

Insert Here: Table 1: Descriptive statistics, factor loadings, and results

All proposed hypotheses were statistically significant, hence supported (see figure 2). The standardized RMR (SRMR), the comparative fit index (CFI), the normed fit index (NFI), the incremental fit index (IFI), as well as the Root Mean Square Error of Approximation (RMSEA) were employed to assess the fit of the model. These latter indices had adequate fits: *SRMR = 0.0482*, *CFI= 0.973, NFI=0.962, IFI=0.973,* and *RMSEA = 0.0667.* Since a value of 0.08 characterizes a reasonable error of approximation RMSEA, the value was considered as being highly appropriate (Browne and Cudeck, 1993; Steenkamp and Baumgartner, 2000). Overall, the estimation of the model showed a good fit with χ^2*=427 (132), p-value=0.00*.

Insert 2: Figure 2: Model Estimation

As hypothesized, place attachment towards virtual places had a significant positive effect on the need for uniqueness (H_1: $\beta = .378, p < .001$), and acceptance of disability (H_2: $\beta = .157, p < .001$). Acceptance of disability had a negative effect on the need for uniqueness (H_3: $\beta = -.197, p < .005$). All the research hypotheses tested were statistically supported.

5. Discussion and Implications

5.1 Managerial Implications

Digital platforms and social media have transformed how organizations interact and establish relationships with their customers through digital engaging experiences, brand presence, and inclusive tactics (Ramadan and Abosag, 2016; Abosag *et al.*, 2020; Makri *et al.*, 2021; Pezzuti *et al.*, 2021). Incorporating diverse representations across SNS among models, creators, and influencers promotes personal resonance and self-brand interactions across populations (Bonilla del Rio *et al.,* 2021). This targeted community building brings underrepresented consumers together around common interests, which consequently improves companies' perceived genuineness and relevance. The advent of the Metaverse has triggered another major change in the digital paradigm (Huang and Chung, 2023); notably, large platforms such as Decentraland and Roblox are pioneering these fully immersive Metaverse spaces, enabling a unique Omni channel experience.

From a managerial viewpoint and given the speed at which virtual worlds are growing, the findings of this study have several implications for organizations. This research expands the understanding pertaining to the relationships between vulnerable segments of the population,

companies marketing approaches, and virtual environments. The implications are vital for marketers seeking to create inclusive, personalized, and successful marketing campaigns that properly target the unique audience of PWD. Moreover, the findings back the wider societal goal of promoting acceptance and empowering PWD within the virtual world. These worlds can become significant social and emotional spaces for PWD, as understanding their attachment to these places can help organizations create more engaging and impactful experiences.

As such, organizations are recommended to foster a sense of inclusivity in virtual places by celebrating diversity and favorably highlighting the uniqueness of PWD. Companies should accordingly design unique experiences within the Metaverse that allow PWD to express their individuality freely. For example, the Deodorant brand “Degree” and Decentraland collaborated to organize an inclusive online marathon. Design aspects for participant avatars included wheelchairs, prostheses, running blades, a range of body shapes and sizes, as well as descriptive audio for those with visual impairments (Kelly, 2022).

Accordingly, what this paper sets forth is that inclusive Metaverse-based worlds featuring physical disabilities, as unique sets of self-definition would rather drive a better sense of self-acceptance, and hence have a positive effect on consumers’ well-being and engagement on the Metaverse. Finding the right balance between promoting inclusivity and celebrating individuality is key in order to allow PWD to feel a sense of belonging, while enjoying a platform that is conducive for personal expression within the Metaverse. Companies can accordingly design engaging and immersive experiences that capitalize on the emotional ties that PWD form with virtual environments, which would facilitate the creation of authentic and emotionally resonant brand-consumer as well place-user connections.

5.3 Theoretical and Societal Implications

From a scholarly perspective, this paper bridges the gap in the literature that pertains to the understanding of the need for uniqueness as well as the acceptance of disability of PWD following their attachment to virtual worlds. In fact, the study investigates how PWD develop emotional connections with the Metaverse, and how such an attachment influences their overall well-being through the lens of both attachment theory (Low and Altman, 1992) and need for uniqueness theory (Tian *et al.*, 2001). This study pioneers the literature with respect to the presence of PWD on the Metaverse and the balance between their need for uniqueness and acceptance of their disability. Indeed, the suggested model acts as a basis for scholars to build future research related to the different dynamics that might govern this segment's psychological well-being in virtual worlds.

The emergence of the Metaverse presents sizeable societal implications across various domains, particularly for PWD. Similar to SNS, the Metaverse is building accessible and inclusive design standards that can provide notable benefits for PWD (Belanche *et al.*, 2024). This allows equal access to immersive digital experiences that are typically unreachable in the real world (Radanliev *et al.*, 2023). Through virtual worlds, individuals can experience self-embodied avatars customized to their specific needs, navigating virtual worlds instinctively adjusted to diverse abilities through personalized interactions, multimodal conversations, and assistive opportunities (He and Zhang, 2023). This inclusive empowerment generates exclusive independence, self-expression, and self-driven participation modalities that integrate impaired users into rich social and cultural environments (Radanliev *et al.*, 2023), hence increasing their quality of life. By leveraging avatars and immersive experiences, this vulnerable segment can participate in virtual environments, potentially enhancing their sense of community and empowerment. Particularly, features such as customizable interface settings, voice commands,

text-to-speech, and language support could remove accessibility barriers (Pezzuti *et al.*, 2021). These advancements would also enable previously marginalized groups enhance their self-expression, and accordingly increase their participation on the Metaverse. Likewise, on SNS, incorporating inclusive design concepts ensures that platforms provide user experiences that are appropriate for different abilities, cultures, languages, and socioeconomic circumstances (Miraz *et al.*, 2021).

Accordingly, the study underscores the potential of the Metaverse to promote social inclusion and empower marginalized communities. By providing accessible and inclusive virtual spaces, the Metaverse can contribute to breaking down physical barriers and fostering a more equitable society. However, it is essential to address challenges related to representation and accessibility to ensure that all individuals, regardless of their abilities or background, realize the benefits of the Metaverse. Hence, the study highlights the transformative potential of the Metaverse in reshaping societal norms and psychological well-being. By embracing inclusivity and authenticity, organizations can leverage the Metaverse to create meaningful experiences, drive positive social change, and build stronger connections with PWD.

5.4 Directions for Future Research

Virtual worlds that implement inclusive approaches reap tremendous relationship benefits (Belanche *et al.*, 2024) with the PWD market segment. Some platforms reveal that accessible features such as flexible displays, audio descriptions, and touch-based interfaces enhance usability and engagement among PWD, a largely neglected market. Prioritizing inclusivity and accessibility portrays organizations as trustworthy partners committed to comprehensive customer

empowerment, exceeding superficial interactions to form deeper bonds that resonate across various abilities.

While virtual worlds have been steadily gaining attention through a growing number of research, the related literature still lacks a fundamental understanding on how vulnerable segments of the population – namely those with special needs – would behave and engage on such platforms. This study provides a much-needed insight on the acceptance of disability and the need for uniqueness within the context of the virtual worlds. The study is yet not without limitations as it focuses only on one market (the US), the current 2-D Metaverse Worlds, and PWD in particular. Hence, this research paves the way for future studies to replicate in the upcoming immersive Metaverse Worlds, as well as in different markets, cultures, and industries. Furthermore, researchers could tackle other types of disabilities, and explore other variables pertaining to vulnerable segments of the population when using virtual worlds.

6. Conclusion

Organizations planning to use the Metaverse are in dire need to understand the potential impact of their inclusivity strategies in this lucrative environment – hereby the Metaverse – on PWD in particular. This research develops the underlying scant theoretical knowledge related to the attachment of PWD to the Metaverse and its effects on their need for uniqueness and acceptance of disability, and hence their sense of inclusivity and overall well-being. The proposed model integrates virtual place attachment alongside disabled consumers' need for uniqueness and acceptance of their disability. The findings highlight that attachment to virtual places, hereby the Metaverse, positively affects the acceptance of one's disability and need for uniqueness. Furthermore, the study shows that the higher the users' acceptance of their disability, the lower

their need for uniqueness. The study hence underscores the complexity of the interplay between virtual place attachment, disability acceptance, and PWD need for uniqueness in the Metaverse.

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