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ENHANCING INCLUSIVITY: EXPLORING THE ROLE OF VR IN ACCESSIBLE TOURISM EXPERIENCE

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ABSTRACT

This research addresses the challenges faced by people with mobility impairments within accessible tourism, focusing on the potential of virtual reality (VR) technology to improve their inclusion. The study uses a phenomenological approach and utilizes in-depth interviews and content analysis to identify patterns and insights. The research identifies constraints within the tripartite model of leisure and categorizes them as constructed environment-related, resource-related, attitudinal/behavioral-related, and psychological state constraints. Key findings highlight that travel motivations are about relaxation, and gaining new experiences, while challenges primarily relate to transportation, accommodation and architectural barriers. The safety aspect is primarily associated with traveling in company. Furthermore, the study sheds light on the perceived benefits of VR technologies in promoting greater participation in tourism activities for people with mobility impairments. However, participants assert that VR cannot fully replace actual tourism experiences as it cannot provide the multi-sensory richness of physical travel. The importance of this research lies in exploring VR experiences from the perspective of people with mobility impairments, particularly in relation to the destinations they visit, a dimension that has been overlooked in previous literature. This summary provides a brief overview of the key findings and conclusions, highlighting the potential of VR in accessible tourism while recognizing the inherent differences between virtual and physical travel experiences.

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INTRODUCTION

Tourism is considered a human right for all people (Melubo & Doering, 2022). However, the participation of people with disabilities (hereafter PwDs) remains comparatively low (Kamyabi & Alipour,2022). According to the United Nations (2023), there are more than 1.3 billion PwDs and more than 900 million elderly people worldwide. By 2050, the number of aging people is expected to increase to more than 1.4 billion, the majority of whom will have functional limitations or health problems. To this end, accessible tourism aims to provide leisure and recreational facilities for all people, including PwDs or special needs. Considering the likelihood that anyone will require accessible services at some point in the future, governments are trying to facilitate destinations by focusing on "tourism for all" to ensure that all people, regardless of disability, can use tourism products and services, which is not only economically profitable but also more socially inclusive (Rubio-Escuderos et al., 2021; Sisto et al., 2022). Therefore, accessibility to all tourism services and facilities should be a key component of any policy and economic developments (Reindrawati et al., 2022; Nyman et al, 2018), including technological developments.

Recently, digital technologies have blurred the boundaries between the real and virtual worlds, which makes tourist experiences more immersive. In particular, virtual reality (hereafter VR) has the ability to enhance tourists' experiences at destinations, before visiting destinations, and especially when remembering the destination (Beck et al., 2019). The potential in VR technologies make their role in enhancing inclusivity of PwDs important within tourism context (Iftikhar et al., 2022). Therefore, there is still a significant gap for tourism scholars to work on accessibility challenges in tourism and give voice to different marginalized groups, as well as the role of technological developments in providing accessibility (Gillovic et al., 2021; Iftikhar et al., 2022). To address these gaps, this study poses the following research questions:

1- What are the particular constraints faced by people with mobility impairments in accessible tourism?

2- What are the travel motivations for individuals with mobility impairments?

3- What are VR technology's perceived benefits and limitations in enhancing the tourism experience for people with mobility impairments?

4- How can VR technology be integrated into accessible tourism practices to promote greater inclusion and participation?

In accordance with previous recommendations and calls for further studies on accessible tourism experiences of PwDs (e.g., Devile & Kastenholz, 2018; Gillovic et al., 2021; Reindrawati et al., 2022; Rubio-Escuderos et al., 2021), the current study aims to better understand accessibility challenges grounding on tripartite leisure constraints (structural, interpersonal, intrapersonal) and explore the role of VR technologies in accessible tourism experiences. Additionally, the study aims to address the gap by exploring the potential of virtual reality (VR) to enhance tourism experiences for individuals with mobility impairments. Utilizing a phenomenological approach and conducting in-depth interviews, this research seeks to identify the specific constraints faced by this demographic. These constraints are categorized within the tripartite model of leisure: constructed environment-related, resource-related, attitudinal/behavioral-related, and psychological state constraints. This paper has specific objectives, which involve exploring: (1) the travel motivations, (2) leisure constraints faced as well as their impacts, (3) the factors affecting their engagements in VR experiences, and (4) the perceptions over VR technologies as a means of increasing inclusivity of people with mobility impairments.

The present work is significant in several aspects. First, the results of the study could help to raise awareness in society in general. This is critical when considering society's attitude towards PwDs. Another important element of the study comes from the promotion and support of further accessible practices to make tourism accessible to all and to reduce discrimination between disabled and non-disabled travelers. From an academic perspective, this study is crucial as it contributes to both an under-researched topic in tourism research as well as to the theoretical literature on accessible tourism experience and smart technologies. This study helps researchers to better understand the topic and provides guidance for further studies. It also provides practical implications to service providers and policy makers.

LITERATURE REVIEW

Accessible Tourism Experience

Accessible tourism is an emerging segment of tourism marketing all around the world (Shelton & Tucker, 2005). It represents a type of tourism that is

operated in public spaces without any kind of barriers that PwDs face (structural, social, communicational, informational, psychological, behavioral and attitudinal) (Sisto et al., 2022; McKercher & Darcy, 2018). Accessible tourism allows social inclusion of PwDs in any sector, including tourism. It leads to developing a strategic approach to facilitate the citizenship rights of people with access considerations (Darcy & Dickson, 2009). From this point of view, accessible tourism is defined as a "*process of enabling PwDs and seniors to function independently and with equity and dignity through the delivery of universal tourism products, services and environments*". This definition consists of different dimensions of access including hearing, vision and cognitive impairments (Darcy, 2006, p. 3).

Research on accessible tourism experience dates back to the late 1980s and early 1990s as mentioned by McKercher et al. (2003). A number of studies focus on the personal characteristics of PwDs, who participate in tourism activities and the potential market they create (e.g. Israeli, 2002). Other studies pay attention to rules and regulations dealing with service provision for people with disability (e.g. UNDESA, 2023). Similar to this research, some research identifies the tourism experiences of PwDs in terms of different constraints using the tripartite leisure constraints (structural, interpersonal, intrapersonal) model (Crawford & Godbey, 1987). Some other studies focus on travel experiences of PWDs these studies indicate that People with disabilities (PwDs) travel for the same reasons as other travelers, including relaxation, the desire to gain new experiences, social interactions, and personal development. Research has shown that travel can greatly enhance the quality of life for PwDs by providing opportunities for socialization, independence, and personal fulfillment (Buhalis & Darcy, 2011; Sisto et al., 2021).

These studies handle the subject from the perspectives of people with different types of impairments including only visual impairments (Devile & Kastenholz, 2018; Small et al., 2012; Qiao, et.al, 2023); only intellectual impairments (Gillovic, et.al., 2021), only mobility impairments (; Rubio-Escuderos et. al., 2021), and those including more than one type of disability (Lehtoa et al., 2017; Poria et al., 2011; Reindrawati et al., 2022).

While examining the literature on leisure constraints, it is possible to see three main categories: structural, interpersonal and intrapersonal. The study by Smith (1987) categorizes the barriers that disproportionately impact participation of PwDs as intrinsic barriers (mainly arising from the individual's own level of psychological and cognitive functions), environmental barriers (involving external limitations) and interactive

barriers (arising out of interactions between the individual and others). The following studies (Bialeschki & Henderson, 1988; Crawford & Godbey, 1987; Crawford et al., 1991; Daniels et al., 2005; Hinch & Jackson, 2000; Israeli, 2002) support these categories, naming them structural (physical constraints), interpersonal (behavioral, attitudinal) and intrapersonal (psychological, cognitive).

Despite a number of studies, the literature on leisure constraints of PWDs is still insufficient. Researchers call for more studies to foreground the voices of disabled people, make them more visible, make tourism products and services accessible to tourists with disabilities as much as they are to non-disabled ones (Hansen & Fyall, 2021; Orakani et al., 2021; Tao et al., 2019). Previous studies also point out the importance of cultural differences in understanding travel behaviors in general as well as the behaviors of PwDs (Poria et al., 2011; Reindrawati et al., 2022). Researchers suggest that findings from one country/culture might not be completely applicable for PWDs in other countries/cultures (Poria et al., 2011). Therefore, studying with PwDs belonging to different cultures and verbalizing their accessibility issues are of great importance within the context of accessible tourism experience.

Virtual Reality (VR) and Accessible Tourism Experience

Technology plays a crucial and substantial role in tourism experiences. One of the technological applications that offer opportunities for accessible tourism experiences is VR. For PwDs, new information and communication technologies promise to eliminate the constraints, and increase accessibility and inclusion in education, leisure, employment. In other words, to provide PwDs with social and labor integration (Foley & Ferri, 2012; Gea et al., 2016). In accordance with these targets, VR offers a new digital environment experience through creating a spatial presence in a particular destination (Coxon et al., 2016; Yalon-Chamovitz & Weiss, 2008). When evaluated within tourism, VR enables pre-purchase product experiences, emotional experiences, city tours, museums, and many other touristic attractions. VR also provides a safer and more controlled environment in which they are able to experience real-world circumstances. They can also develop some talents that might help them better integrate with tourism activities (Tecău et al., 2019).

VR enables access to the attractions, where perceptual or physical barriers may not be easily removed. VR tourism experience describes the sense of user's physically existing in a virtual environment. VR experience

of tourism users has been stated to impact satisfaction, the joy, wellbeing, etc. (Marasco & Balbi, 2019). According to tourism research (Dieck et al., 2019), VR technology was found to be valued due to the possibility to access to some parts of the site that would otherwise be unreachable. Another study (Tecău et al., 2019) revealed that VR technology VR could facilitate the decision-making process for families with disabled children through providing a way to experience a tourism product/destination before travelling.

Another study (Shaker et al., 2019) that focused on VR as a form of therapy put forward that individuals with intellectual and developmental disabilities liked the experience to easily and freely navigate a location at their own pace and interpreted the experience to be lifelike. The researchers deduce that VR could also reduce social pressure and make PwDs feel more included in leisure activities (Suntikul, 2014). Wyld (2010) studied the influence of virtual entertainment such as virtual rafting trips, and amusement park activities for visitors with disabilities. The research put forward that this virtual world enabled some experiences that only existed in particular corners of the world. Even though there is a consensus that VR technology provides some considerable advantages for PwDs, the applications of VR to complement or replace actual travel experiences are still controversial and need further research (Beck et al., 2019; Huang et al., 2016; Iftikhar et al., 2022; Mura et al., 2017).

The present study is one of the few studies which explores the role of VR as a means of enhancing inclusivity of PwDs in travel experiences, grounded in accessible and leisure tourism theories, and using a leisure constraints model.

METHODOLOGY

Research Method

This research adopts a qualitative research design due to the complexity of accessible travel experience. There is insufficient available data on PwDs within tourism studies in general and their tourism experience in particular (Poria et al., 2011). A qualitative design is significant in accessible tourism experience studies to better understand the complexities of disability. (Orakani et al., 2021). This study is inductive and exploratory in nature because it aims to explore the accessible tourism experiences of people with reduced mobility and relies on generalizing the results beyond the observations at hand (Woo et al., 2017). Additionally, qualitative analysis

enables us to examine the perceived advantages and drawbacks of VR technology from the viewpoint of PwDs. This insight is crucial for evaluating the potential of VR to enhance participation in tourism activities and for pinpointing areas where VR may not replicate the multi-sensory experience of actual travel.

This study employs a phenomenological approach, which is associated with uncovering relational, affective and unique lived experiences narrated by the perspectives of PwDs under research. This approach emphasizes the importance of personal perspectives and interpretations and identifies the commonalities shared by all participants in their experience of a phenomenon (Creswell et al., 2007). Further, phenomenology provides temporality (experience of time); spatiality (experience of space); embodiment (experience of one's own body); intersubjectivity (experience of relationships with other people); and selfhood (experience of the self) (Ashworth, 2003). From this perspective, this study utilizes Interpretative Phenomenological Analysis, which regards the lived experience of the individuals, including their emotions, and understanding of behaviors (Sedgley et al., 2017). Both phenomenology and IPA have been used in tourism research and are in line with the aim of the present study to shed light on travel challenges of PwDs.

This study employs in-depth interviews as data collection technique, consistent with research design. This technique is appropriate to deeply understand the perceptions of PwDs (Devile & Kastenholz, 2018). This technique enables the data collected to be analyzed in greater depth. A semi-structured interview was chosen as the data collection tool to achieve a deeper understanding of the experiences of accessible tourism and to provide participants with more freedom of speech, comfort and convenience to explain their opinions and feelings on the proposed topics based on their own tourism experiences. This tool has been found to be commonly used by researchers studying experiences of PwDs. (Condie, 2021; Devile & Kastenholz, 2018; Gillovic et al., 2021; Orakani et al., 2021; Small et al., 2012; Tao et al., 2019).

The semi-structured questionnaire contained included structured questions including demographic information (i.e. age, gender, employment status), as well as open-ended questions regarding accessible tourism experiences (“*What are the most important challenges that you encounter during your travel*?”; “*How do you feel during a vacation/holiday?*”) based on three-dimensional (structural, interpersonal, intrapersonal) leisure constraints model (Crawford et al., 1991; Condie, 2021; Devile &

Kastenholz, 2018) and opinions of their VR experiences ("*What type of VR tourism experiences have you practiced so far?*"; "*What do you think about the replacement of VR technologies with actual tourism experiences?*"). As Creswell (2009) suggests, open-ended questions allow researchers to listen more closely to what respondents say and what they do in their living environment. Therefore, this data collection tool is aligned with the aim of the study and the nature of the target audience.

This paper uses contents analysis, which involves efforts to reduce the qualitative data and identifies commonalities and interconnections across the interviews around the structural, interpersonal and interpersonal constraints (Patton, 2014; Sedgley et al., 2017). This method helps researchers comprehend a social reality in a subjective but scientific way (Shava et al., 2021). The data was manually transcribed and analyzed using a simple coding structure and framework to reveal travel experiences of PwDs. The findings of the study were mainly divided in two stages: firstly, displaying leisure constraints, that were categorized by the authors in four themes named as constructed environment-related, resource-related, attitudinal/behavioral and psychological state-related; highly corresponding to tripartite leisure constraints model (Crawford & Godbey, 1987). Secondly, the perceptions over the role VR technology in accessible tourism experiences. In line with our phenomenological method, the study provides quotes of participants.

Research Population and Sampling

The population of the current study consists of Turkish citizens (over 18 years old) who were diagnosed with different types of mobility impairments, had a travel experience within the past 12 months (in order to achieve and reflect a recent point of view), and experienced VR technology. The participants were selected among those with mild to moderate level of mobility impairments, excluding complex or severe cases (Corby et al., 2015; Gillovic et al., 2021). These criteria were adopted as it was thought to be crucial with ethical concerns in regard to the capacity of the respondents' willingness to consent and communicate on his/her own in a more comfortable way (Boxall & Ralph, 2011).

As stated by Ellis (2016), a sample of 6 to 20 participants would be sufficient for the studies using phenomenological approach. This leads to gaining greater insights into comprehensive and individual meaning of a certain phenomenon (Gillovic et al., 2021; Szarycz, 2009). A total of 12 participants (7 males, 5 females) were interviewed within almost 6 months

(beginning of January through the middle of June). Purposive sampling methods were used for the first five participants. The rest of participants were recruited through snowball sampling with the assistance of the first participants. They provided contacts of people with reduced mobility and had VR experiences. The researchers also followed the ethical process of the Cyprus International University (EKK23-24/01/008). The participants were informed about the content of the study as well as the importance of their consent and comfort.

The current study recruited the participants through a number of associations of PwDs (Rubio-Escuderos et al., 2021; Poria et al., 2011) in addition to few hotels located in İstanbul, İzmir and Antalya, which are the most popular tourism destinations in Turkey, attracting a wide range of travelers from other regions, and possess the highest rates of international airports (Gillovic et al., 2021) as well as providing different virtual tourism experiences. Firstly, the researchers contacted authorized persons in the aforementioned facilities, introduced their research and for their assistance. Once they agreed, they recruited some members (associations) and customers (hotels), whom would be willing to participate.

After the first five interviews and a mutual trust, first interviewees helped to reach more participants. Each participant was reached either by email or by a phone for an introduction and a brief explanation related to interview questions. This was also considered significant to reduce the feeling of anxiety of the participant. No judgmental statements or questions were placed on interview questionnaire. The interviews were conducted on Zoom videotelephony software program at a time determined by the participant and was recorded with the permission of participants. Each interview took between fifty and ninety minutes. The interviews were performed in Turkish. Then, each recording was converted into plain texts. Afterwards, member checks were conducted to verify the accuracy of the data. No changes were made after the interviews were converted into text. Later, Turkish manuscripts were translated into English. Turkish and English manuscripts were sent to three linguists, who were proficient in both English and Turkish to evaluate the content of both manuscripts. After approval, the manuscripts were used within study.

Another significant point about studies on PwDs is to avoid homogeneity. Disability is heterogeneous in its nature. The current study has taken this principle into consideration and heterogeneity is provided through age, gender, socio-economic status (Small et al., 2012), type of disability, the origin of disability, travel patterns (Devile & Kastenholz,

2018), education level (Figueiredo et al., 2012), tourism motivations of participants (Iftikhar et al., 2022), travel frequency and travel nature (Gillovic et al., 2021). These criteria allow the researchers to identify the different determinants and analyze the phenomenon based on the different conditions and lifestyles (Devile & Kastenholz, 2018).

FINDINGS AND DISCUSSION

The analysis of data collected started with listing the demographics of participants. The data indicates that 7 of 12 participants are male (58.33%). The participants vary between 21 to 55 by ages and secondary to postgraduate by their education level. When they are examined by type of disability, two participants had amputation, four of them had multiple sclerosis, one of them had spinal cord injury, three participants had cerebral palsy and the remaining two had motor paralysis. When the travel frequency of the participants is checked, they seem to be quiet active travelers with a companion. All other demographic information of the participants is indicated on Table 1.

In accordance with the aim of study, the participants were asked what tourism meant to them. All the participants seemed to have an "excitement and wanderlust". Especially, they expressed their wish for more travels in the future with comments like "*I wish I can see as many places in the world as possible*", "*I'm dreaming of more travels to unexplored cultures and parts of the world*". Consistent with other studies, the most common travel motivations of the participants were to relax, to give a break, to gain new experiences, to leave the monotony of life, to enjoy their lives, and to experience new cultures (Gillovic et al., 2021; Shi et al., 2012). Another important motivation expressed by the majority of participants was "to face challenges and experience new adventures", which is consistent with previous studies (Gillovic et al., 2021; Kastenholz et al., 2015; Pagan, 2014; Shi et al., 2012). Another important purpose of travel for participants was to enhance the social inclusion and engage more in communities, which is considered to be very important in terms of understanding their feelings. This finding is also confirmed by aforementioned studies. Visiting family/relatives, to feel more independent, to feel more normal are other motivations of participants. As is seen tourism gives a sense of normality which was also voiced by Gillovic et al. (2021).

Table 1. *Profile of Participants*

Code of Participant	Gender	Age	Nature of Mobility	Origin of Disability	Education Level	Occupation	Income ($)	Travel Nature	Travel Frequency	Travel with…	Support Equipment
Prtcpnt1	Male	28	Multiple sclerosis	Congenital	Bachelor's degree	Student	Up to 1,000	Domestic International	Once within a year	Family	Electric wheelchair
Prtcpnt2	Male	35	Cerebral palsy	Congenital	Secondary level	Self-employed	1,000-1,500	Domestic International	More than 2 in a year	Friends	Electric wheelchair
Prtcpnt3	Female	32	Spinal cord injury	Congenital	Bachelor's degree	Self-employed	1,000-1,500	Domestic International	Usually 2-3 times	Friends	Electric wheelchair
Prtcpnt4	Male	55	Multiple sclerosis	Congenital	Secondary level	Retired	1,000-1,500	Domestic International	Not less than 3 times	Friends	Manual wheelchair
Prtcpnt5	Male	21	Motor paralysis	Congenital	Bachelor's degree	Student	Up to 1,000	Domestic International	At least 2 times	Family	Manual wheelchair
Prtcpnt6	Male	41	Amputation	Acquired	Bachelor's degree	Self-employed	1,000-1,500	Domestic International	1-2 times	Family/ relatives	Prosthetic leg
Prtcpnt7	Male	33	Multiple sclerosis	Congenital	Secondary level	Unemployed	Up to 1,000	Domestic International	Once in a year	Family/ friends	Manual wheelchair
Prtcpnt8	Female	43	Spinal cord injury	Congenital	Secondary level	Self-employed	1,000-1,500	Domestic International	2-3 times	Family	Electric wheelchair
Prtcpnt9	Female	38	Cerebral palsy	Congenital	Post-graduation	Self-employed	1,000-1,500	Domestic International	2-3 times	Family/ friends	Manual wheelchair
Prtcpnt10	Female	50	Cerebral palsy	Congenital	Bachelor's degree	Retired	1,000-1,500	Domestic International	Usually 2 times	Family/ relatives	Manual wheelchair
Prtcpnt11	Male	35	Amputation	Acquired	Post-graduation	Unemployed	Up to 1,000	Domestic International	Usually 2-3 times	Family/ relatives	Crutches
Prtcpnt12	Female	30	Spinal cord injury	Congenital	Bachelor's degree	Student	Up to 1,000	Domestic International	More than 3 times	Friends	Manual wheelchair

After the analysis of demographics and travel motivations, the next step consisted of the interpretation, and the identification of themes and categories, regarding leisure constraints of participants. Table 2 shows Leisure constraints of the participants.

Table 2. *Leisure Constraints of Participants*

Category	**Sub-dimensions**	**Constraints Identified**
Constructed environment- related constraints	Transportation-related Accommodation-related Architectural barriers	Inadequacies transportation services, lack of accessibility knowledge, adaptive equipment and professional training, accessibility issues in accommodation, architectural barriers, accessibility challenges in restaurants.
Resource-related constraints	Monetary constraints Time limitation	Need for extra time, extra travel expenses, use more expensive services to ensure better accessibility.
Attitudinal/behavioral constraints	Dependence on companion The influence of family/friends/others	Dependent on family/friends, need a companion/caretaker, facing social inhibition and unhelpful attitudes, communication issues, erroneous perception of service providers towards disability, the fear of bothering others, fears expressed by family/friends, overprotection.
Psychological state-related constraints	Mental and emotional states	Feeling limited, lack of freedom and independence, orientation/adaptation difficulties, anticipation of problem, feelings of helplessness and loss of confidence.

Constructed Environment-related Constraints

The data of the current study indicates that the participants encounter challenges mostly related to constructed environment that is highly compatible with the findings of Devile and Kastenholz (2018) and Devile and Moura (2021). Transportation-based, accommodation-based and architectural are the most frequently- mentioned barriers. They especially emphasized the lack of assistance in transportation services at the airports, train or public transportation stations. Another challenge related to

transportation mentioned by the participants is unhelpful attitudes and behaviors by the staff as sometimes make them feel offended and humiliated. These findings are also supported by previous studies (Orakani et al., 2021; Rubio-Escuderos et al., 2021). Even if airways were mentioned to be somewhat more accessible (Orakani et al., 2021), they still face serious problems such inappropriate toilets of aircrafts, serious mobility restrictions and impolite attitudes of stewards. Transportation-related inaccessibility issues mentioned by the participants are not only limited to airways, but also in other modes (metros, trams, subways, intercity bus stations etc.). Railway travel was thought to be relatively more comfortable for the participants and made them feel more independent despite some existing inaccessibility issues (lack of assistance, lift problems etc.). These findings are also supported by the results of the studies by (Poria et al., 2010; Rubio-Escuderos et al., 2021). Especially, if they are outside Turkey, transportation related issues felt more difficult, and they witnessed how much burden they created for their family/friends/relatives. The importance of transportation for them can be better understood from the quote below:

> "During my travels, both in Turkey and abroad, I often face transportation barriers. Still not having accessible transportations everywhere is a matter of frustration. Inaccessible transportation limits our already existing reduced mobility more, which result in more limited opportunities and independence. Each time, I spend a lot of time to see accessible options of the destinations that we want to travel." (Prtcpnt8)

Other barriers mentioned by participants include some architectural barriers at destinations and tourist attractions. These include improperly arranged and inappropriate seats, inaccessible entrances, lack of elevators and ramps in some museums, ancient cities, galleries, etc., and narrow aisles or corridors that they cannot pass properly, etc. They stated that it is sometimes very difficult to overcome these obstacles without getting into distress. Uncomfortable and uneven sidewalks, ramps, parking lots, surfaces (such as cobblestones and gravel) on the paths pose a great challenge for people with mobility impairments and people who use assistive devices (wheelchairs, crutches, etc.). These findings were also found to be significant structural limitations in earlier studies (Darcy et al., 2017; Poria et al., 2011; 2019). For those taking a "sun, sea, sand" holiday, going to the beach and walking on the sand was very strenuous and challenging (especially for the participants with a prosthetic leg and crutches). This result shows parallels with previous studies on people with reduced mobility (Orakani et al., 2021; Reindrawati et al., 2022).

Another commonly voiced challenge is about accommodations. For PwDs, accommodation gains more significance as can be understood by the participants of the current study. It is determined that they mostly stay at highly ranking hotels as well as few Airbnb and similar experiences. One of the first challenge they mentioned is the lack of accessibility knowledge. They think that service providers do not generally know what "accessibility" really means. This result is especially supported by the study on hotel experiences of PwDs (Poria et al., 2011). Similar to other findings (Darcy & Dickson, 2009; Lehtoa et al., 2017; Small et al., 2012), accommodation-related issues are listed as lack of accessibility information on websites, lack of trained employees, the height of service counters, lack of adapted equipment and accessibility in the common areas (lobbies, restaurants, dining halls) as well as in the rooms (inappropriate beds, bathrooms, inaccessible toilets, inappropriate furniture). The participants all agreed that the accommodations are far from being accessible in general. They mentioned that all these deficiencies make them more dependent on someone with them as they may not overcome these difficulties alone. This issue can be well understood from the words of Prtcpnt3:

> "For one of my domestic travel, I called the hotel that I searched on internet to confirm how much it is convenient for PwDs. They assured me about staying and praised the facility. However, what I found was just the opposite. They really don't comprehend that even one stair can be a big problem for us."

Resource-related Constraints

These constraints refer to monetary and time limitations. They especially face time-related challenges when they fly. At the airport, they need extra time. Passing through security and X-Rays takes extra time for them and the people traveling with them. Security and passport control processes as well as boarding and/or disembarking take longer as they wait for assistance from airport staff and companions. As they cannot move as easy as the others and need to organize their support equipment, they require more time.

These findings support previous studies (Devile & Kastenholz, 2018; Orakani et al., 2021). In addition to time constraints, financial barriers are also of great importance. The majority of participants mentioned that they had fewer disposable funds for travel due to their necessary expenses related to their disability. This requires them to be financially supported by their families/relatives. Another point emphasized was the high prices of accessible services and facilities, which constituted obstacles for them to

travel (Devile & Moura, 2021; Rubio- Escuderos et al., 2021 ;Ying et al, 2021). However, having to pay for caregivers' or companions was not an issue for the participants of the current study unlike previous studies (Darcy, 2006; Devile & Moura, 2021; Orakani et al., 2021).

In addition, financial barriers pose a considerable challenge for people with disabilities (PwDs). On average, high-quality VR headsets range from $300 to $600, with additional expenses for compatible devices, software, and maintenance. For PwDs, who often face higher living costs due to medical expenses and adaptive equipment, these expenses can be substantial. In terms of accessible tourism services, additional expenses frequently arise due to the need for specialized transportation, accessible accommodation, and personalized support services. Estimates suggest that these costs can increase travel expenses by 30% to 50% compared to standard travel options. For instance, accessible accommodations may be priced higher than their non-accessible equivalents, and specialized transportation options, such as adapted vehicles, can incur extra charges.

Attitudinal/Behavioral Constraints

The relational connections of PwDs involve those with their families/relatives, caregivers or other people that they encounter during travel (Gillovic et al., 2021). The erroneous perception of service providers and others towards PwDs came forward as the most voiced relational challenge by the participants. They stated that they are mostly not differentiated from each other. As mentioned by Prtcpnt4 and Prtcpnt10, PwDs are frequently considered to be homogeneous in terms of their needs and expectations (Daruwalla & Darcy, 2005; Richards et al., 2010):

> "They don't think that PwDs also have different levels even though they are suffering from the same disability." (Prtcpnt4)

> "Most people assume that we are all pathetic, victims or defenseless." (Prtcpnt10)

Another challenge arises from overprotective attitudes/behaviors of family members/friends/service providers that overwhelm them, make them nervous and anxious, scare them about the risks of travelling and reduce their faith in what they can really do (Devile & Kastenholz, 2018). To them, this makes it difficult for them to evaluate their potential to face the difficulties (Rubio-Escuderos et al., 2021). As mentioned by Prtcpnt5:

> "I usually travel with my family. During a travel, they become more sensitive than normal. Their behaviors lead to increased feelings of

dependency, resulting in reduced self-confidence and psychological well-being."

Overprotection is regarded unhelpful as supported by previous findings (Poria et al., 2011). They believe that disability shouldn't be mixed with inability, and they want to get the joy of exploration. Some of them mentioned that they usually gave up on some activities due to these overprotective behaviors and fears expressed by the family/relatives (Devile & Kastenholz, 2018).

Communication challenges and undesirable attitudes both by tourism staff and society itself were also frequently mentioned by the participants. Sometimes, they unfortunately encounter impolite staff at touristic attractions/facilities. They often encounter people who avoid eye contact with them which also supports the previous findings (Orakani et al., 2021). Consistent with the study on hotel experiences (Poria et al., 2011), hotel staff display ineffective communication styles, behind the high reception desks, that already make the communication impossible. On the other hand, check-ins/check-outs are carried out by their companions, as they are not preferred by the staff. In these cases, they sometimes feel that their presence disturbs some people. This is another important reason that reinforces the need to be dependent on someone. They admit that they need at least a companion to overcome certain barriers that they may face in an unfamiliar place and among unknown people. The majority of the participants see the presence of a companion as a source of confidence and safety (Devile & Kastenholz, 2018). Those who mostly travel with their families see them as a safe harbor as they reduce their burden while overcoming difficulties in a new environment.

Psychological State-related Constraints

These constraints refer to psychological and emotional outcomes resulting from physical and health-related problems of a person (Bialeschki & Henderson, 1988; Crawford & Godbey, 1987; Smith, 1987). Feeling insecure and nervous were frequently voiced by the participants of current study. The possibility of adverse incidences during travel, especially international travels, (i.e. loss of or any damage to the support equipment, any problems at security gates, possible encounters with impolite people, fear of being mistreated, etc.) result in psychological and emotional constraints for PwDs. The participants particularly mentioned about first day anxiety and worries they face in an unfamiliar environment.

The need for assistance and support make PwDs rely on someone in their everyday life activities as well as during tourism experiences. It is understood that this need also brings psychological dependence in addition to physical dependence, as they sometimes may feel that they are burden for people with them or they depend on others' decisions. The feeling of being limited is also a very common psychological and emotional state among participants. They recognize that it's not possible to be on their own, while experiencing lack of accessibility almost everywhere. Similar issues were also voiced in previous studies (Devile & Moura, 2021; Orakani et al., 2021). In addition, the difficulties they face in orientation/adaptation, the constant anticipation of unpleasant surprises also drag them into distress and discomfort (Devile & Kastenholz, 2018; Reindrawati et al., 2022). On the other hand, some of the participants stated that a bad experience or accessibility barriers can easily increase the loss of confidence and diligence to think over further travels. This may also canalize them into planning short-haul travels or visiting relatives/friends, which provides more convenient conditions (Devile & Moura, 2021; Richards et al., 2010; Small et al., 2012; Tao et al., 2019).

The Role of VR in Accessible Tourism Experiences

The data indicates that the participants use various apps and websites for virtual experiences. These experiences involve museums, amusement park activities, landmarks and other touristic attractions both within Turkey and other countries. For example, Prtcpnt1 mentioned his VR experience in VR Theme Park (Emaar Entertainment) in Dubai. The fifty-five-year-old participant mentioned Blueplanet VR Explore, an app which provides a range of attractions all around the world. Google Earth VR came out to be the most preferred app for virtual tours. Several participants also mentioned the National Geographic Explore VR app which was described as comprehensive and provides the chance to take photos. Within Turkey, participants mentioned that archeological museums and sites, as well as open air museums were attractions that were virtually experienced through the websites of Ministry of Culture and Tourism in addition to other private apps.

The responses given to the question "what VR technologies mean to them" have been gathered under three themes: leisure activity, curiosity and accessibility. VR is used as a leisure activity since it provides diverse opportunities such as entertainment (i.e. exploring fantastical entertainment activities), relaxation and meditation (participating in virtual meditation and calming environments), gaming (participating in

adventurous and simulation games), socializing (connecting and making new friends) in virtual spaces, travel and exploration without having to travel. These findings support previous studies regarding VR as a way to mediate or moderate tourism experiences in a positive way (Fagernäs et al., 2021; Guttentag, 2010; Lu et al., 2022; Merkx & Nawijn, 2021; Bogicevic et al., 2019; Kim et al., 2018; Wei et al., 2019).

Curiosity is another meaning attributed to the use of VR technologies. It is claimed that the state of curiosity drives participants to explore and learn more about the world, which is consistent with previous studies that describe curiosity as a driving force in virtual environments to increase the movement for more exploration and learning (Zavalani & Spahiu, 2012). In particular, participants who were highly interested in technological innovations showed their curiosity and enthusiasm for experiencing the VR world, supporting the notion that arousing curiosity contributes to the realization of behavioral intentions (Arnone et al., 2011; Calogiuri et al., 2022; Kashdan et al., 2004). As can be seen, curiosity stands out as an important motive for participants with mobility impairments to engage in tourism activities in the virtual world.

The last meaning ascribed to the VR technologies is "the provision of accessibility" in accordance with existing literature (Dieck et al., 2019; Marasco & Balbi, 2019). Especially, for those who use a wheelchair or crutches, visiting very big museums and/or ancient cities might be substantially difficult or impossible. Especially lack of ramps and uneven surfaces in ancient cities located on a huge area are not usable for them. That's why using VR technologies help them not be deprived of these attractions. VR experiences were mentioned to be effective ways to increase inclusion of people with various disabilities. They agreed that VR technologies re-shaped travel experiences for PwDs as well as non-disabled ones. They mentioned that buying the required appliances and having internet could be enough to stroll around a city or be in an amusement park and feel like they were really there. Another important point voiced by several participants was that VR experiences were also important to encourage the involvement in actual tourism activities (Thangaraj & Gomathi, 2019). VR technologies were also considered to eliminate the feelings of being limited and dependent due to difficulties resulting from physical and societal environment. This result supports the previous studies that revealed the potential of smart technologies in decreasing travel barriers for PwDs (Lam et al., 2020; Lin et al., 2022; Qiao et al., 2023). Even though the opinions over the role of VR in accessible tourism experience are

positive in general, there are some oppositions on why VR technologies do not provide full accessibility.

The participants point out the cost issue, which represents a significant barrier for many others. They mentioned that virtual travels cost a fortune as they need special devices and apps which are not cheap enough for everyone. Since high-quality VR hardware are highly expensive, they believe that this tourism experience is still inaccessible to those with limited income and financial resources. Financial constraints can therefore still prevent many PwDs from participating in virtual tourism activities (Tecău et al., 2019). It can be concluded that VR is only able to remove structural barriers to a certain extent, yet many PwDs still suffer from inaccessible tourism services. Another point raised in this study concerns legal and regulatory issues. Participants believe that clear guidelines and regulations are needed to help VR developers integrate accessibility requirements into their products. They also believe that there are still no accessibility standards in the VR industry, leading to inconsistencies between different platforms and applications. These findings are consistent with previous work citing regulatory restrictions (Daniels et al., 2005; Gillovic et al., 2021).

In the final step, participants were asked whether advanced VR technologies could replace actual tourist experiences and improve the inclusion of PwDs in tourist experiences. The answers show that they agree with improving inclusion as long as smart technologies become affordable and adapted to different types of disabilities. They believe that more affordable technological apps and devices need to be developed. They believe that despite technological developments, tourism is still inaccessible for many people with disabilities, especially for financial reasons. They believe that while VR technologies are valuable, they do not contribute to the full inclusion of people with disabilities (Beck et al., 2019; Huang et al., 2016). When it comes to the question of "*replacement*", they display mixed opinions. While few of the participants see VR as a valuable alternative to physical travel, the majority of participants oppose to this idea. Even though they acknowledge that VR can offer a more accessible way to "visit" places and help eliminate travel challenges encountered, they do not believe that VR provides or replicates the emotional impact of physically being on a journey. They believe that VR cannot provide a complete multi-sensory experience like that offered by actual tourism. They do not consider it fair and ethical, as it could lead to social exclusion in some ways. They believe that VR can enable virtual relationships to some extent but cannot capture the richness of interactions with locals and different cultures. They support VR as a complementary tool to improve the inclusion of PwDs in the

tourism industry but would like to see accessibility improvements made to actual tourism activities. They call for more laws and regulations, accessible tourism facilities and structural adjustments to include PwDs more in tourism and travel activities.

CONCLUSION AND IMPLICATIONS

This paper focuses on understanding the travel motivations of people with mobility impairments, travel-related limitations and the perception of the role of VR in accessible tourism experiences from the perspective of Turkish people with disabilities. The main travel motivations mentioned were the need for recreation, new experiences and relaxation, which is consistent with the theory of leisure tourism. (Darcy & Dickson, 2009; McIntosh,2020). However, there are various constraints which make the participation of PwDs in tourism activities difficult. Similar to previous studies (Daniels et al., 2005; Devile & Kastenholz, 2018), constructed environment barriers were very important for people with reduced mobility. These constraints were mainly related to transportation, accommodation and architecture. Given that transportation and accommodation are preconditions of tourism, this finding draws attention to the importance of responsibility shared by stakeholders in transportation and accommodation industries. Findings indicate that the architectural barriers in transportation, accommodation, and other touristic facilities still need effective solutions. In addition, people with reduced mobility encounter time-related constraints resulting from these main barriers. Financial issues are other challenges due to high costs of accessible tourism products and services. As also suggested by Devile and Moura (2021), accessibility policy and planning requires a considerable change in destination management and organizational structure consisting of whole tourism system. The findings are valued to guide tourism stakeholders and authorities to cooperate designing more accessible environments, so as to contribute to sustainable development goals by reducing inequalities and creating more sustainable communities. While considering the growing accessible tourism segment and the rate of people with reduced mobility in this segment, it is of great importance to understand the needs and experiences of the target group as well as the nature of accessibility for tourism service providers (Loi & Kong, 2017).

The findings of current study also signify interrelation constraints involving negative attitudes both from tourism staff and society itself. These results call for more awareness programs and/or events towards

disability and tourism accessibility. Tourism stakeholders need to train employees about how to approach to PwDs in order not to cause any psychological and emotional distress. Particularly, staff should be trained to foster more helpful interactions with PwDs (Daruwalla & Darcy, 2005). Attitudinal and behavioral change could enable more accessible tourism (Devile & Moura, 2021). This paper suggests more sustainable and responsible tourism patterns involving people with mobility disabilities. This paper promotes greater inclusion of PwDs in tourism experiences in the context of "the right to travel". It also calls more attention to pay attention to the dignity and human rights of PwDs. The findings necessitate a tourism model, which embraces human differences and integrate them into the tourism system. This model will undoubtedly provide some benefits for tourism stakeholders through new marketing segments of accessibility.

While virtual reality (VR) technology holds significant potential for enhancing tourism experiences for people with disabilities (PwDs), there are considerable gaps in its design and implementation. Currently, there is a lack of comprehensive accessibility standards specifically addressing VR applications within the tourism industry. This deficiency creates challenges in ensuring that VR experiences are inclusive and accessible to all users.

To address these regulatory gaps, it is crucial to establish robust accessibility standards for VR tourism applications. These standards should be developed collaboratively with disability advocacy groups, VR developers, and industry stakeholders. Such standards would provide clear guidelines for creating VR experiences that cater to the diverse needs of PwDs, ensuring that VR platforms and applications are both usable and enjoyable for everyone.

It is also essential to implement industry-specific accessibility standards for VR tourism applications to meet the requirements of PwDs. Additionally, VR developers should be encouraged to integrate universal design principles into their products, fostering inclusive and accessible VR experiences. Promoting partnerships among VR developers, disability advocacy groups, policymakers, and tourism providers will help address regulatory gaps and enhance accessibility in VR tourism applications. Finally, mechanisms for continuous monitoring and evaluation of VR accessibility standards should be established to ensure they remain relevant and effective in meeting the evolving needs of PwDs.

In addition, this study concluded that VR technologies are considered as complementary means to engage in different types of tourism

activities. However, VR appliances are still in infancy and are not adaptive to people with different disabilities. This paper suggests VR developers create more virtual tours of popular attractions with a focus on accessibility. To eliminate accommodation-related challenges, some VR experiences can be developed that allow PwDs to explore accessible hotel rooms or common spaces before booking. To reduce the anxiety and nervous feelings of PwDs related to transformational challenges, VR developers can offer training simulations to practice different transportation stations. More entertainment activities can be virtually designed to provide the sensory of experiences of actual tourism.

In addition, this paper suggests that VR developers collaborate with PwDs' associations and organizations to ensure that VR travel experiences are designed to meet needs of disabled people and international accessibility standards. More importantly, VR technologies should be improved and diversified without compromising the inclusion of PwDs in actual tourism and leisure experiences. Developers should enhance the multi-sensory experiences offered by VR to better replicate physical travel. Tourism practitioners should incorporate VR as a complementary tool to traditional travel experiences, providing accessible options for people with disabilities.

Further research should explore the usability of VR technology for various types of disabilities (e.g., visual, auditory, or cognitive impairments) to improve the generalizability of the findings. Policymakers and tourism providers can develop and implement industry guidelines for accessible virtual reality (VR) experiences in tourism, ensuring that VR platforms and applications are designed with accessibility in mind. They should also encourage collaborations between VR developers, disability advocacy groups, and tourism providers to create inclusive VR experiences. Additionally, providing training and resources for tourism providers on the benefits and uses of VR technology for enhancing accessibility, along with best practices for implementation, is essential. Finally, they can offer incentives and grants to VR developers and tourism businesses that prioritize accessibility and inclusivity in their projects.

LIMITATIONS AND FUTURE STUDIES

This study contributes to the promotion of accessible tourism that goes beyond the mere issue of accessibility and paves the way for the promotion of "inclusive tourism" (Kamyabi & Alipour, 2022; Kamyabi et al., 2023). In this study, people with mobility impairments were asked to share

their leisure constraints and opinions on the role of VR technologies in accessible tourism experiences. Although awareness of tourism experiences for PwDs in VR is currently limited, there appears to be a growing supply and demand for VR tourism experiences, highlighting the need to further investigate this isolated group of tourists. With this in mind, the government can design websites for attractions and allow tourists, especially PwDs, to share their experiences and rate their facilities (Randle & Dolnicar, 2019).

Furthermore, in order to deepen knowledge in this area, it would be useful to extend the study to people with disabilities who do not have the opportunity to travel. Moreover, this study should be extended to other types of disabilities (hearing disabilities, intellectual disabilities, elderly people, etc.). Due to language differences and access barriers, particularly leisure barriers, it was limited for this study to include more countries and sectors as it is difficult for the researcher to reach a large number of PwDs willing to participate in the research.

Future studies can focus more on the role of VR and augmented reality (AR) technology as complementary tools for destination image and perceived value. As the interviews with participants were conducted in Turkish, the findings reported in this study were translated into English and are therefore conveyed through interpretation, potentially leading to bias. By highlighting these limitations, our study underscores the need for ongoing advancements in VR technology. Future developments could aim to incorporate multi-sensory elements, enhancing the immersive and authentic experience. Moreover, acknowledging these limitations clarifies the difference between virtual and physical travel, offering a realistic perspective on what VR can and cannot provide for individuals with disabilities.

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