From Disabled Tourists to Impaired Cyborg Tourists: What Would it Take to Transform?

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ABSTRACT

This thesis aims to comprehensively examine the antecedents of tourists with mobility disabilities (TMD)'s acceptance to use and utilize technological implants during traveling. This study is structured with four specific research questions: 1) Are TMD willing to travel as impaired cyborg tourists? 2) What are the antecedents of TMD' acceptance to travel as impaired cyborg tourists to/in a destination? 3) What is the effect of the attributes of innovation diffusion on the subjective wellbeing of tourists with mobility disability during traveling? and 4) What is the effect of subjective well-being, performance expectancy, effort expectancy, social influence and facilitating conditions regarding the use of technological implants on the behavioral intentions of TMD during traveling?

The research design encompasses a sequential exploratory mixed-method approach. Initially, this research has conducted an exploratory qualitative study which involved conducting a video-induced in-depth interviews to explore their perceptions, attitudes, and concerns regarding the use of technological implants during traveling. Thematic analysis was employed to identify recurring themes and patterns within the data, elucidating two main themes: the use of assistive devices during traveling with four sub-themes.

Drawing on the theoretical foundations of innovation diffusion theory, the UTAUT and the results from the qualitative study, a comprehensive quantitative model was developed. The findings of the research demonstrate strong support for all six hypotheses tested, affirming that all the three attributes of innovation diffusion theory including autonomy, perceived convenience, and social inclusion has a significant positive affect on subjective well-being of TMD to use technological implants during traveling. Subjective well-being, performance expectancy, effort expectancy, social influence and facilitating conditions had also a significant effect on TMD intention to use technological implants during traveling. This study contribute valuable empirical evidence, enhancing our understanding of the factors influencing the acceptance of technological implants among this particular tourist segment.

Keywords: accessible tourism, impaired cyborg tourists, theory of innovation diffusion, tourists with disabilities, UTAUT.

ÖZ

Bu tez, hareket engelli turistlerin (TMD) seyahatleri sırasında teknolojik implantları kullanmayı ve kullanmayı kabul etme geçmişlerini kapsamlı bir şekilde incelemeyi amaçlamaktadır. Bu çalışma, dört özel araştırma sorusuyla yapılandırılmıştır: 1) TMD engelli cyborg turistleri olarak seyahat etmeye istekli midir? 2) TMD'nin engelli cyborg turistleri olarak bir destinasyona/destinasyona seyahat etmeyi kabul etmesinin öncülleri nelerdir? 3) Yenilik yayılımının niteliklerinin seyahat sırasında hareket engeli olan turistlerin öznel refahı üzerindeki etkisi nedir? ve 4) Teknolojik implantların kullanımına ilişkin öznel iyi oluş, performans beklentisi, çaba beklentisi, sosyal etki ve kolaylaştırıcı koşulların seyahat sırasında TMB'nin davranışsal niyetleri üzerindeki etkisi nedir?

Başlangıçta, bu araştırma, seyahat sırasında teknolojik implantların kullanımına ilişkin algılarını, tutumlarını ve endişelerini keşfetmek için video kaynaklı derinlemesine görüşmeler yapmayı içeren keşif niteliğinde bir nitel çalışma yürütmüştür. Tematik analiz, verilerde tekrar eden temaları ve kalıpları belirlemek için kullanıldı ve iki ana temayı aydınlattı: dört alt temayla.

Yenilik yayılım teorisinin teorik temelleri, UTAUT ve nitel çalışmanın sonuçlarından yararlanılarak kapsamlı bir nicel model geliştirilmiştir. Araştırmanın bulguları, test edilen altı hipotezin tümü için güçlü bir destek gösteriyor ve özerklik, algılanan rahatlık ve sosyal dahil etme dahil olmak üzere inovasyon yayılma teorisinin üç özelliğinin de, teknolojik implantları kullanmak için TMD'nin öznel iyi oluşu üzerinde önemli bir pozitif etkiye sahip olduğunu doğruluyor. seyahat. Öznel iyi oluş,

performans beklentisi, çaba beklentisi, sosyal etki ve kolaylaştırıcı koşullar da TMB'nin seyahat sırasında teknolojik implantları kullanma niyeti üzerinde anlamlı bir etkiye sahipti. Çalışmanın sonuçları, bu belirli turist segmenti arasında teknolojik implantların kabulünü etkileyen faktörlere ilişkin anlayışımızı geliştirerek değerli ampirik kanıtlara katkıda bulunmaktadır.

Anahtar Kelimeler: erişilebilir turizm, engelli cyborg turistleri, yenilik yayılımı teorisi, engelli turistler, UTAUT.

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LIST OF ABBREVATIONS

AMOS	Analysis Of Moment Structure
AVE	Average Variance Extracted
BMI	Brain Machine Interface
CAN	Cognitive Affective Normative
CMV	Common Method Variance
COVID-19	Corona-Virus
CR	Composite Reliability
DTBP	Decomposed Theory of Planned Behavior
EU	European Union
ICT	Information And Communication Technology
OTC	Ocumetics Technology Corporation
PEOU	Perceived Ease of Use
PWDs	People With Disabilities
PLS	Partial Least Square
PU	Perceived Usefulness
SEM	Structural Equation Modeling
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model
TMD	Tourists With Mobility Disability
TPB	Theory Of Planned Behavior
TRA	Theory Of Reasoned Action

TTF	Task Technology Fit
UN	United Nations
UNAUT	Unified Theory of Acceptance and Use of Technology
UNWTO	United Nations World Tourism Organization
UK	United Kingdom
USA	United States
VR	Virtual Reality
WHO	World Health Organization

Chapter 1

OVERVIEW OF THE STUDY

1.1 Background of the Study

There are more than 1 billion people in the world that are affected by numerous types of physical and cognitive disabilities, which constitute 15% of the world's population [World Health Organization (WHO), 2011]. Unfortunately, the occurrence rate of these various disabilities is increasing day by day due to several reasons, including aging, increasing chronic health conditions, non-communicable diseases and life expectancies, decreasing rates of child mortality, and demographic trends (Bowen, Gibson & Hand, 2002; Office for Disability Issues, 2001; UN, 2015; WHO, 2020). Nearly 2 billion people in the form of caregivers, spouses, and children of disabled people are directly affected by disability, representing nearly a third of the world's population (UN, 2020). This shows that over 3 billion people signify an enormous possible market for travel and tourism.

In terms of spending, people with disabilities (PWDs) in the United States spend an average of over $13.6 billion on travel and take 32 million trips in a year (Open Doors Organization, 2019). The United Nations World Tourism Organization (UNWTO, 2020) report showed that the spending of tourists with disabilities in Spain is more than the spending of able-bodied tourists, with an excess of 800 Euros as compared to over 600 Euros for able-bodied tourists. Baby-boomer generation represents over 50% of travel consumption and commands nearly 40% of spending and 60% of net U.S.

wealth (Stončikaitė, 2022). The impact of boomers on the tourism sector is significant and raised 25% of the travel market by 2020 since more than 40% of boomers retire with some form of disability (Open Doors Organization, 2019). Furthermore, Australian National Visitor Survey estimated that every year 88% of PWDs take holiday trips in Australia which accounts for around 8.2 million overnight trips. These trips account for $8 billion annually, equal to 11% of overall Australian tourism expenditure (Travelability, 2015). Likewise, research conducted by VisitEngland (2015) showed that the spending of PWDs on the United Kingdom's economy is £12.4 billion. However, despite PWDs' greater market share in travel and tourism, the population remained greatly under-served (UN, 2020) and somehow neglected in both the tourism industry and academic tourism literature (Kastenholz et al., 2015).

Due to the rising impacts of population aging, attention has been shifted to the disabled population. The UNWTO (2020) has declared that every one in six people by 2050 will be between the age group of 65 and above in the world. It will be even more in North America and Europe as one in every four people. Therefore, the UNWTO has highlighted the importance of inclusive and accessible tourism for destinations. Inclusive tourism as transformative tourism refers to engaging marginalized or excluded groups such as PWDs in tourism consumption or ethical production and sharing its benefits (Biddulph & Scheyvens, 2018). Factually, PWDs are socially marginalized and excluded groups that lack voice and power. They face hurdles to effective participation and inclusion in sports, arts, cultural life, and recreation (Darcy, McKercher, & Schweinsberg, 2020; UN, 2018). Although the UN has recognized the rights of PWDs and considered responsibilities to ensure that PWDs have access to sporting, leisure, and tourism activities (UN 2006, Article 30), still accessible tourism is a distant dream for many disabled tourists (Gillovic & McIntosh, 2020) and is far from accessibility to all.

The coronavirus (Covid-19) pandemic has severely affected the tourism industry, with a decline of 74% in tourist arrivals in the year 2020, being the worst year with travel restrictions, airplanes on the ground, and closed hotels around the world (UNWTO, 2021). The UNWTO has affirmed that PWDs and seniors due to the pandemic are heavily affected [and therefore] the recovery should be followed based on the theme called “Building Back Better: toward a disability-inclusive, accessible and Sustainable post-COVID-19 Tourism” (UNWTO, 2020). The notion of “Tourism for All” focuses on an increasing segment of travelers with different requirements and needs. PWDs are not a homogeneous group (Darcy, 2010). Therefore, inclusive or accessible tourism is not just about providing wheel-chair accessible facilities. Various types of disabled tourists require various degrees of mobility requirements and access restrictions, such as travelers with invisible impairments, deaf or limited hearing, cognitive or mental health conditions, impaired sensory disorders, and long-term illnesses (Domínguez et al., 2015), that may not be apparent just by looking at them. What is accessible for an invisible impairment traveler, for instance, may be completely inaccessible or difficult to access to another traveler with mobility impairment or any other dissimilar type of disability or other health condition. Therefore, due to the variety and complexity of access requirements in providing the market with accessible tourism products and solutions for different groups of people with different levels of disabilities, the tourism industry has not progressed sufficiently, and the existing literature on this topic remains limited (Altinay et al., 2016; Bowtell, 2015; Darcy et al., 2020).

Simultaneously, technology over the past few years has advanced dramatically in assisting PWDs. New advancements at the junction of computer science, robotics, engineering, and medicine resulted in computer and power-controlled leg prostheses, exoskeletons for people who are paralyzed, cochlear implants for people who are deaf, power wheelchairs, and entirely articulated bionic hands (Meyer & Asbrock, 2018), created the biotechnical metaphor of "cyborg." Chandra (2020) defined a cyborg as a combination of technology and an organic body that blurs the limitations between the machine and the human body. Currently, cyborg products can be classified into insidebles and implantables. Insidebles boost innate human capabilities for non-medical purposes, whereas implantables are used to overcome disabilities or other health problems (Murata et al., 2019). Pelegrín–Borondo et al. (2016) mentioned that in the upcoming years, the human race will experience a technological leap from Homo sapiens to Homo cyborg based on the technologies implanted in the body. However, still, technological implants are already available in the market. There are several examples to show that cyborgs are real. Kevin Warwick was the first person in the world to get a technological implant to communicate with devices (Edgar, 2014). Neil Harbisson was the first to be officially recognized as a cyborg worldwide by implanting an antenna in his skull (Donahue, 2017). In the 2012 Olympics, Oscar Pistorius became the first amputee athlete to compete with artificial legs (Pérez Triviño, 2016). Likewise, there are millions of people around the world that are living with artificial limbs (Pielli & Zlatev, 2020). Fior Markets (2019) have predicted that the global market of implantable devices will reach by 2025 to $30.42 billion with 9.24% CARG from 2018 – 2025. Thus, this shows that cyborgs are enormously a thing of the present and are the next big thing (Hasse, 2017). Despite the widespread application of technological implants, the literature on the existing degree of acceptance of PWDs towards advanced technological implants to overcome disability falls short.

1.2 Tourists with Mobility Disabilities (TMD) and Inaccessibility

Globally, up to 190 million people possess difficulty in functioning and have a disability that requires a wheelchair (Wheelchair Foundation, 2016; WHO, 2015). People worldwide, between 250,000 to 500,000 yearly, suffer from spinal cord injuries, of which more than 50% result in mobility disability (National Spinal Cord Injury Statistical Center, 2015). Figure 1.1 shows the global wheelchair market volume in 2011 and 2018, which shows that as the age of the population increases, this number intends to increase (Fernandes-Ferreira, Damaceno-Leite, & Chang, 2020). According to Fortune Business Insights (2020), the global wheelchair market is projected to increase by $8.06 billion by 2026, at 7.0 CARG. This shows that people worldwide are increasingly becoming mobile, and their travel possibility is rarely seen as a human right (McCabe & Diekmann, 2015). As the demand for the tourism industry is increasing, the absence of physical accessibility and barriers to mobility are seen as prerequisites (Agovino et al., 2017; Lee, 2015). Tourists with disabilities, specifically tourists with a mobility disabilities (TMD), do not feel confident if the physical arrangements of the destinations are not accessible or unable to meet their special needs, e.g., accessible transportation and accommodation, uneven ground surfaces, bars, and ramps, etc. (Guerra, 2003). Although, in recent decades, accessible tourism is attracting increasing public awareness, policymakers, NGOs, tourism stakeholders, and researchers working on disabilities studies, factually, tourism activities are not completely barrier-free and physically accessible for TMD. Studies have shown that 38.4% of TMD between the ages of 15 – 87 have difficulty accessing buildings (Agovino et al., 2017). Cities worldwide do not provide accessible public transport systems, which has been shown as a barrier (Ferreira, Leite, & Chang, 2020). Most countries have inaccessible approaches to railway stations with inaccessible ticket counters, lifts, and ramps, and no available spaces for wheelchair users, including most famous touristic destinations such as Belgium, Italy, Turkey, and Russia, etc. (Agovino et al., 2017). Only 41.5% of railway systems worldwide have full access to the TMD (Ferreira et al., 2018). Likewise, literature on disabled tourism found that it is nearly impossible for TMD to use the spaces of wheelchairs even in places where there is infrastructure for wheelchairs (Cole, Hoback, & Whiteneck, 2016; Eichhorn & Buhalis, 2011; Nyman, Westin, & Carson, 2018; Tecau et al., 2019). Besides, a series of issues related to the air travel of TMD, such as their transfer to airplane seats from their wheelchairs along with their luggage, can be very humiliating and may create many impediments (Darcy, 2012). The bathrooms of the airplanes are also not sufficiently accessible for TMD (McKercher & Darcy, 2018). Hence, it shows that the lack of accessibility components and environmental barriers are still huge, and the available knowledge on this topic remains limited (Darcy, Dieck & Fountoulaki, 2020).

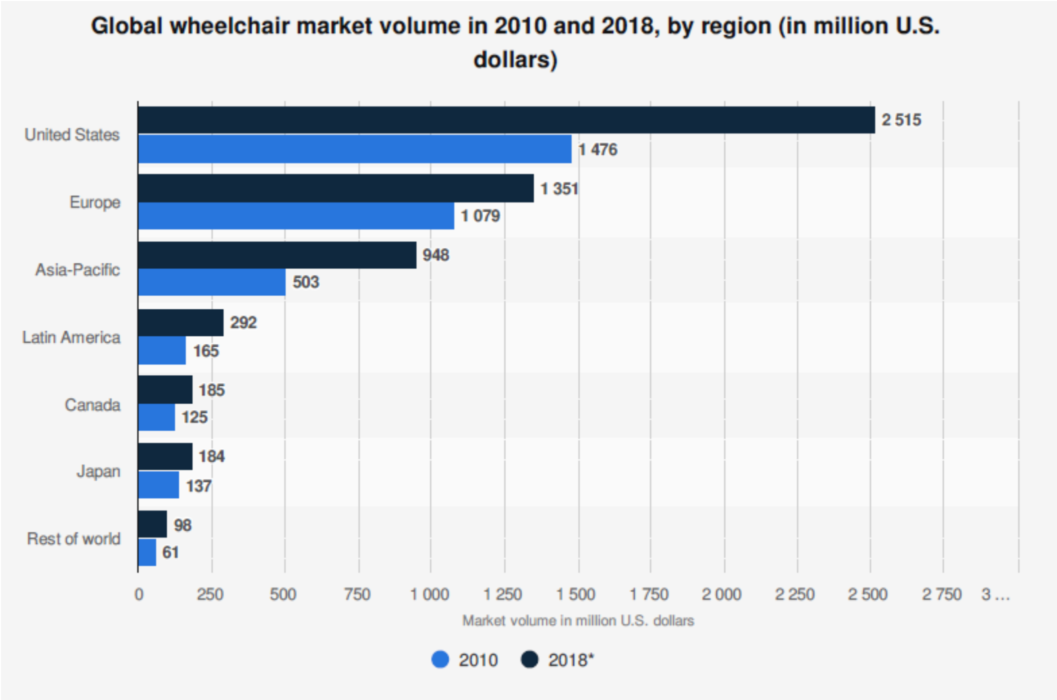

Figure 1.1: Global Wheelchair Market Volume in 2010 and 2018, by region (in a million U.S. dollars)
Source: (Statista, 2020)

1.3 Problem Statement

TMD uses wheelchairs during traveling as there are no other viable alternatives. Therefore, to meet the accessibility requirements, tourism destinations, and businesses are required to change fittings, install ramps and lifts, and change the architectural designs of their products. Such changes impose huge financial costs on tourism businesses and destinations. Besides, manufacturing accessible airplanes and changing already established destinations can be nearly impossible for tourism stakeholders to meet the needs of tourists with all types of disabilities (McKercher & Darcy, 2018). For this reason, the General, former Secretary of UNWTO has acknowledged that technology and innovation in developing accessible tourism for disabled tourists are the most useful tools (UNWTO, 2020). Rupal et al. (2017) also emphasized replacing these traditional wheel-chair-based solutions with cyborg products because it requires minimal changes and allows TMD the possibility to travel as non-disabled tourists.

Technological implants in the form of cyborgs have been suggested to reestablish the functions of PWDs (Quinlan & Bates, 2014). Schermer (2009) found that technological implants for physical disabilities and other health-related reasons are no longer science fiction but have become widespread. Particularly for people with mobility disabilities, the growth in technological implants unlocks greater new opportunities to enable them to autonomous movement. The International Classification of Function (ICF) framework also shows that advanced technology has the potential to fully eliminate mobility disability, specifically for persons with spinal cord injuries, as shown in Fig 1.2 (Boninger et al., 2012). Thus, it shows that technological implants can potentially make inaccessible destinations accessible for TMD.

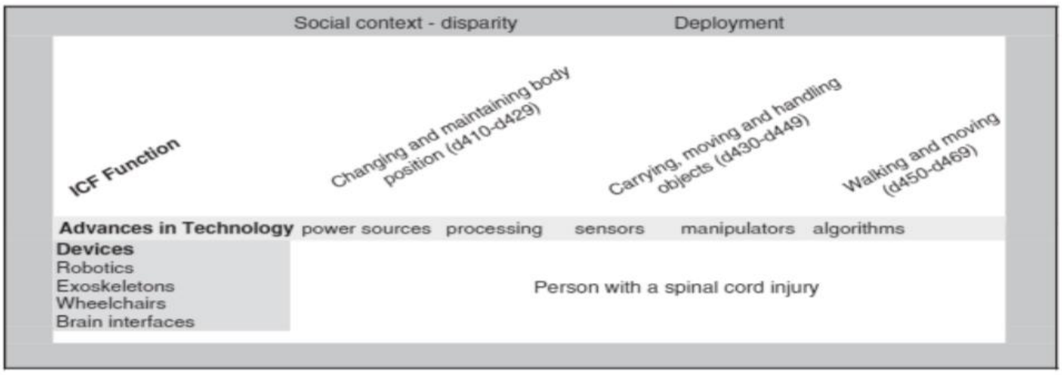

Figure 1.2: ICF Framework
Source: Boninger et al., (2012)

An essential key to the success of technological implants is user acceptance (Lsara et al., 2018; Pelegrín-Borondo et al., 2016; Pelegrín-Borondo et al., 2017). While TMD will be one of the main beneficiaries of technological implants, little is known about their acceptance of technological implants. There are some exceptional studies on the acceptance and perception of the general public regarding technological implants. The closest references in the literature are studies on physical implants for cosmetic reasons

(Adams, 2010; Qureshi et al., 2020; Ramião et al., 2018; Sahuquillo, 2008), implants for increasing innate capacities (Pelegrín-Borondo et al., 2016; Pelegrín-Borondo et al., 2017), physical implants for visual impairment (Bhowmick & Hazarika, 2017; Chandra, 2020), hearing disabilities (Pray & Jordon, 2010; Löfkvist et al., 2020; Wrobel et al., 2021), and heart problems (Hughey et al., 2021; Udlis, 2013). More particularly, to the author's best knowledge, no previous studies on TMD's acceptance of technological implants during traveling to/in a destination exist. TMD might have different concerns, needs, and perceptions as they have fewer mobility options than non-disabled tourists (Huang et al., 2020). Reinares-Lara, Olarte-Pascual, & Pelegrín-Borondo (2018) stated that users' acceptance to become cyborgs is not investigated well. More recently, Cassia et al. (2021) in their study also concluded that disability and accessible tourism suffer from an old-fashioned view of technology and emphasized to study of the role of new technologies in the relationship with tourists with disabilities. Therefore, to formulate a comprehensive and clear picture of accessible tourism and technological implants as a new technological trend, more research is required, specifically regarding disabled tourists' acceptance to travel as impaired cyborg tourists. The primary central question here is whether TMD is willing to adopt technological implants to recover their impaired body capabilities during traveling to/in destinations, and if yes, then how?

Unlike information and communication technologies (ICTs), the user acceptance of medical technology is much more complex and strongly affected by many factors, including personal living conditions, social factors, implant usefulness and ease of use, and health status. From a psychological point of view, the users' acceptance must follow the knowledge about technology, their perception of what it offers, and how new technology may restrain or hinder them (Schaar & Ziefle, 2011). Thus, cognitions, emotions, and assumptions about the consequences of technology should be investigated from the acceptance patterns.

Therefore, by fulfilling all the above mentioned gaps, this study has examined the willingness of TMD to travel as impaired cyborg tourists during travel by conducting an exploratory sequential mixed method research. By utilizing an exploratory mixed method design, first a qualitative investigation (study 1) was carried out to obtain an initial comprehension of the aspects and procedure involved in the antecedents of impaired cyborg tourists. It is important to gain the knowledge and understanding of the problem to identify and examine all the related variables through in-depth interviews with TMD. Thus, the author explored the opportunities and limitations of assistive devices TMD use during traveling and the possible factors that may affect TMD's acceptance to travel as impaired cyborg tourists. Once, the main factors of TMD acceptance towards technological implants were identified, a quantitative examination (study 2) were conducted for the empirical validation of the identified factors on a larger sample size. Since disabled tourism in the context of cyborgs is a new area, the existing theories may not be directly applied. Therefore, this study has integrated both theories of innovation diffusion and UTAUT together with the identified factors from qualitative study to examine and confirm the antecedents of the acceptance of TMD towards technological implants during travel and provide empirical validation. This study has targeted only those tourists suffering from mobility disabilities (e.g., unable to walk, climb stairs, or have severe difficulty). Bezyak, Sabella, and Gattis (2017) in their study mentioned that people with mobility disabilities, as compared to other disabilities, have more barriers to using public transit services and mobility aids such as complications in traveling with wheelchairs and receiving inadequate services from service providers, etc. Likewise, according to Choi, Lehto, and Morrison (2007), the results are more generalizable and have low chances of bias when the data is collected from an expanded sample. Therefore, this study was not limited to any specific location or country, and the data was collected online from the TMD of different locations and countries.

1.4 Research Questions and Objectives

The main aim of this study was to explore the antecedents of the willingness of TMD to travel as impaired cyborg tourists during traveling. Based on the aim of the study, this study had the following research questions and objectives.

RQ1. Are TMD willing to travel as impaired cyborg tourists?

RQ2. What are the antecedents of TMD's acceptance to travel as impaired cyborg tourists during traveling?

The first two research questions through an exploratory qualitative study and the theories helped us in achieving the last two research questions of the study, which were:

RQ3. What is the effect of the attributes of innovation diffusion on the subjective well-being of tourists with mobility disability during traveling?

RQ4. What is the effect of subjective well-being, performance expectancy, effort expectancy, social influence, and facilitating conditions regarding the use of technological implants on the behavioral intentions of TMD during traveling?

Based on the research questions, the objectives of this thesis are the following.

RO1. To determine the willingness of TMD to travel as impaired cyborg tourists during traveling.

RO2. To explore the antecedents of TMD acceptance to travel as impaired cyborg tourists during traveling.

RO3. To determine the effect of the attributes of innovation diffusion on the subjective well-being of TMD during traveling.

RO4. To determine the effect of subjective well-being, performance expectancy, effort expectancy, social influence, and facilitating conditions regarding the use of technological implants on the behavioral intentions of TMD during traveling.

All four research questions were approached through the conduction of two studies (qualitative and quantitative) which gave us a connective point between the two studies in a way as the initial qualitative study using semi-structured in-depth interviews answered the first two research questions (RQ1 and RQ2) and provided a link between the studies to answer the last two research questions (RQ3 and RQ4) through quantitative study with a cross-sectional survey. The connection between both the studies are explained in detail in chapter 3 and chapter 5.

1.5 Significance of Study

The findings of this study contributes to the body of knowledge, practitioners, policymakers, and government. The details are discussed below:

1.5.1 Theoretical Significance

Theoretically, this study contributes to the disabled tourism and hospitality literature, consumer behavioral literature, and cyborg studies by examining the willingness of TMD to travel as impaired cyborg tourists during traveling together with its antecedents. The purpose of this research is to examine the acceptance of technological implants that can overcome disability among TMB, which is far more complex and subtle than other studies portray it. Besides, to create a better understanding, this study expands the theory of innovation diffusion and the traditional technology acceptance models and UTAUT model in the context of cyborg and transhumanism which are very new areas. The creation of this framework appreciates its vigorous nature that are identified by TMD.

As most of the disabled tourism studies are at the exploratory stage, this study has taken disabled tourism literature a step forward by exploring solution-based research in a way as impaired cyborgs and transhumanism can be a solution for disabled tourism and inaccessible destinations. Besides, the findings provide more significant insights into the literature on disabled tourism studies and open up insights from the perspective of TMD in the context of technological implants. This study also focuses on advanced technological implants to overcome mobility disability that is very new that many people may even yet not be aware of it. Additionally, the concept of "impaired cyborg tourists" is very novel and can open up many new insights for future disabled tourism studies.

1.5.2 Practical Significance

The findings of this study help TMD, all the stakeholders of hospitality and tourism businesses, and developers, owners, and managers of medical technological implants who wish to sell or lease the implants. The quantitative framework of this study is self-explanatory for the managerial implications of those who have worked in this sector. In general, it is very common for PWDs to be treated as a single group of homogeneous people who face similar limitations that with similar solutions can be solved. These misperceptions are especially apparent among government tourism agencies that are keen to be appreciated as socially responsible tourism by recognizing PWDs as an underdeveloped community with enormous market potential and the workers of industry who have either no or little experience with this community. The tourism and hospitality industry based on the findings may stop believing that all the PWDs are a homogenous group and accessible tourism is not only about providing wheelchair-accessible services to the TMD. Greater exposure to TMD may provide a better understanding of the community.

Until now, tourists with disabilities especially TMD in the media reports and literature have repeatedly reported the critical incidents that occur with them during every stage of their journey including every tourist experience they undertake and every destination they visit (McKercher & Simon Darcy, 2018). Thus, the findings from the context of medical technological implants to overcome disability may provide huge significant insights to destination management organizations (DMOs) to improve accessible tourism. These results can be a great opportunity for the tourism and hospitality service providers to build customer satisfaction and loyalty by introducing bring your own device (BYOD) facilitating conditions for tourists with exoskeletons or prosthetic limbs etc., by making minimal changes in their hotels, restaurants, and other sectors. The findings can also help the developers of technological medical implants by revealing the design of the implants, and what can be the expected barriers during the application of the implants while traveling. The developers can update the designs of their implants based on the ease of TMD.

1.5.3 Significance to the Policy Makers

The General former Secretary of UNWTO has acknowledged that technology and innovation in the development of accessible tourism for disabled people are the most useful tools (UNWTO, 2017). This study explores the potential of medical technological implants to serve TMD to improve accessible tourism. Besides, Lu et al., (2017) found that government policymakers must take help from increased information on public opinion for the implementation of their policies. Hence, the prospect of TMD towards technological implants may help government policymakers to develop policies and implement regulations suitable for the introduction of technological implants in the accessible tourism agenda. If the information about the disabled tourists' opinions has been obtained, the state agency will supply persuasive information about technological implants together with the manufacturer's promotional communications as some disabled tourists may doubt the commercial advertisements about the new technology.

1.6 Limitations

While this thesis contributes valuable insights and advances our understanding of the willingness of TMD to use technological implants during travel, it is important to acknowledge the limitations inherent in the study.

First, this research primarily focused on the willingness of TMD to adopt technological implants during travel, neglecting other potential contexts and applications. Exploring the acceptance and perceptions of technological implants in various tourism settings and destinations would provide a more comprehensive understanding of their potential impact. Second, the study relied on self-reported data collected through interviews and online questionnaires. This method is subject to response biases, including social desirability bias or recall bias, which could affect the accuracy and reliability of the findings. The inclusion of objective measures or observational data could provide a more comprehensive understanding of participants' perceptions and behaviors. Third, this study utilized a specific sample of TMD who possessed English proficiency and had at least one year of travel experience. The sample size might not represent the entire population of tourists with disabilities, limiting the generalizability of the findings to a broader context. Future studies could consider larger and more diverse samples to enhance the generalizability of the research outcomes. Fourth, this study has collected quantitative data via MTurk which may introduce accessibility barriers for individuals who have limited internet access or face digital literacy challenges. Future research could consider employing multiple languages and alternative data collection methods to ensure broader inclusivity. Fifth, this study was conducted within a specific timeframe, which might restrict the observation of long-term adoption and usage patterns of technological implants among TMD. Future longitudinal studies can provide insights into the sustained adoption and evolving perspectives over an extended period. Sixth, this research did not extensively investigate external factors, such as regulatory frameworks, societal attitudes, or infrastructure limitations, that may influence the acceptance and implementation of technological implants. Examining these external factors can provide a more comprehensive understanding of the broader context in which technological implants are introduced and utilized. Finally, this thesis primarily focused on technological implants without exploring other assistive technologies or accessibility solutions available for tourists with mobility disabilities. Further research could consider comparative studies or explore the integration of different technologies to offer a more comprehensive understanding of available options.

1.7 Organization of Thesis

The presented thesis comprises eight chapters. Chapter 1, the Introduction, commences with a background of the study, and how the idea for this research was conceived. The significance and relevance of accessible tourism and technological implants for tourists with disabilities in tourism are elucidated, along with examples of experiencing these technologies. The chapter establishes the study's goal and main research question, followed by the contribution of the study is also highlighted.

Chapter 2, the Literature Review, commences with an explanation of accessible tourism followed by transhumanism and its applications in tourism. Subsequently, cyborgs, technological implants, and tourists with mobility disabilities have been discussed. Finally, the theories including innovation diffusion theory, cognitive affective normative theory, and technology acceptance models have been discussed in the chapter.

Chapter 3, the methodology includes the approach and design of the study, begins with research paradigms. Further details of the overall research approach are then provided, including the identification of two methodological approaches, namely qualitative and quantitative data collection, and a discussion of their data analysis process.

Chapter 4 of the thesis presents the qualitative findings and results of Study 1, which address the first two questions of the research.

Chapter 5 establishes the connection between Studies 1 and 2. Building on the findings of Study 1, this chapter assists in developing the variables and hypotheses, and a primary framework for testing the antecedents of the acceptance of TMD towards the technological implants during traveling.

Chapter 6 deals with the results of Study 2 and focuses on the second research question. This chapter presents the associations between the concepts to test the primary framework for the antecedents of the acceptance of TMD towards technological implants during traveling.

Chapter 7 of the thesis, titled "Discussion of Findings," consolidates and amalgamates the findings of Studies 1 and 2, thereby delivering a theoretical understanding and interpretation. In this regard, the chapter revisits the initial conceptual framework in light of the study's findings.

Chapter 8, "Conclusion" initiates with the main conclusions of the study and summarizes the key findings, highlights study limitations, and underscores the theoretical and practical contributions of the study to knowledge and policy. Finally, the chapter provides recommendations and suggests further research.

Chapter 2

LITERATURE REVIEW

2.1 Accessible Tourism

The World Health Organization (WHO, 2013) and the World Bank have defined disability as an individual who has trouble with walking, hearing, seeing, communicating, remembering, and with mental conditions. While the Universal Declaration of Human Rights was introduced in 1948 for the equal treatment of all humanity, disability was not included in it until the 1970s. In 1971, disability was first explicitly recognized as a human rights issue through the Rights of Mentally Retorted Persons. Then later on in 1975, it was included in Declaration on the Rights of Disabled Persons (UN, 2006). Besides, the rights for tourists with disabilities through the Convention on the Rights of Persons with Disabilities have been introduced after three decades (CRPD, UN, 2006). Simultaneously, the UNWTO has introduced the vision of "accessible tourism" and led the policy attention on the areas of disability and tourism. Natalia et al., (2019) have defined accessible tourism as the collaboration among the stakeholders to enable people with the requirements of access such as mobility, hearing and cognitive dimensions of access, vision, and enabling them to function independently with dignity and equity through universally designed tourism environments, services, and products. This also includes young people with children, seniors, and those suffering from temporary and permanent disabilities (Buhalis & Darcy, 2011).

The term accessible tourism has been given various other similar terms including inclusive tourism, barrier-free tourism, disability or disabled tourism, universal tourism, and easy-access tourism (Agovino et al., 2017; Biddulph & Scheyvens, 2018; Buhalis & Darcy, 2011). All these terms enrich the desire for the removal of barriers and the inclusion of disabled travelers. The accessibility qualities comprise information availability, affordability or economic accessibility, and spaces and infrastructure for physical accessibility (Darcy & Dickson, 2009). For instance, a single visit to any destination, from an idea to its implementation, contains many aspects including destination choice and trip design (information accessibility), outbound trip (long-distance transportation), staying at the destination (local transportation, availability of food and beverages, accommodation, and shopping), and transfer to another destination or return home as shown in Figure 2.1 (Cassia et al., 2021). This whole journey of the customer from the perspective of tourists with different types of accessibility requirements makes it nearly impossible or difficult to anticipate and accommodate their various needs. For instance, are the website designed in such a way to accommodate people with vision and hearing impairment? Does the hotel offer an easy-to-follow and accessible process to check in/out for guests with disabilities and how easily can they get around within the property? And does the restaurant offer elevator or limited stairs for tourists with limited mobility? This whole process of co-creation to enhance the experience of tourists with disabilities can be affected if any one of the service providers is lacking in terms of accessibility. Hence, it becomes difficult for already established destinations to pass the definition of inclusive and accessible tourism.

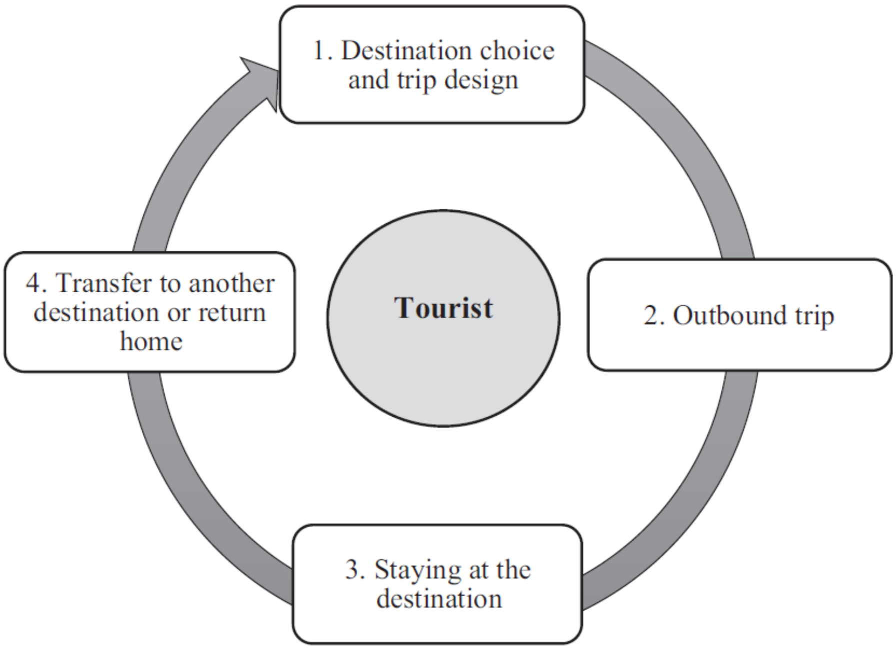

Figure 2.1: Main Stages of Tourism Customer Journey
Source: Cassia et al., (2021)

Literature on the tourism industry showed that the industry in many countries is not yet ready for tourists with disabilities and found some key limitations including obstacles in transportation facilities, lack of staff training, poor environmental conditions and infrastructure (Ozturk, Yayli, & Yesiltas, 2008; Piramanayagam, Seal & More, 2019). In addition, since the access requirements of tourists with disabilities are heterogeneous, it makes it even more complex to remove the barriers. Regarding this, the advanced innovative technological solutions help to solve the challenges of successful tourism development, creation of tourism experiences, and fulfill the access requirements of the tourists with disabilities and accessible tourism core values including dignity, equality, and independence (Buhalis & Darcy, 2011; Sheldon, Fesenmaier, & Xiang, 2017). Yet, the interest of disability scholars and tourism policymakers is increasing towards accessible tourism, limited studies have focused on the tourism by disabled people and medical technological implants about accessible tourism (Freeman & Selmi, 2010; Hersh, 2014; Poria, Reichel & Brandt, 2011; Richards et al., 2010; Soto & Funck, 2018).

2.2 Tourists with Mobility Disability (TMD)

Three main categories within the disability are cognitive (mental health or intellectual), sensory, and physical or mobility (Vila, Darcy, & González, 2015). Mobility includes the ability of an individual to move her or his body in an environment and the ability to control objects. The International Classification of Function (ICF) has defined mobility as the movement of a person by changing the position of body, or location, or by walking, running, climbing, manipulating or moving objects, or by transferring from one point to another through the use of different forms of transportation (ICF, 2011). Based on this definition, Vila et al., (2015) defined mobility disability as changing physical restrictions of mobility that are affecting back, arms or hands, neck, feet, and legs. All these activities together enable a person to pursue the activities of life, which can be compromised by impaired body structures or functions. Mobility impairments can onset either instantly or gradually due to orthopedic disabilities and other multiple reasons including paralysis, limb amputations, cerebral vascular accidents, and loss of sensation with traumatic spinal cord injuries (Cowan et al., 2012). The connection between restricted mobility and impairment is manifest in spinal cord injury and amputations. However, mobility can also be affected by less evident impairments such as reduced heat tolerance, pain related to knee osteoarthritis, or increased fatigue due to high fever (Davis, 2010). According to Stough and Mayhorn, (2013), most often people with mobility disability face several barriers that limit their mobility. Restricted mobility can be a critical obstacle to many basic rights of an individual including traveling, relaxation, and leisure (Tao et al., 2019). These barriers may include limited available transportation modes, psychological and physical constraints, and environmental obstacles (Blais& El-Geneidy, 2014).

Undoubtedly, TMD has become a significant consumer market that worldwide takes many trips and spends billions of dollars each year on traveling and tourism (Darcy, Cameron, & Pegg, 2010; Lipp & Van Horn, 2007). Studies have shown that tourists with disabilities stay longer at a destination as compared to their able-bodied counterparts and spend more money per day at a destination (Ray & Ryder, 2003). Surprisingly despite the growing market of disability in the travel and tourism industry, few companies and countries have responded to the policies of accessible tourism (Chikuta, Plessis, &Saayman, 2019; Snyman, 2004). According to UNWTO (2005), tourists with disabilities suffer limitations in their interactive abilities. Such limitations induce the existence of barriers that affect the participation, preferences, and satisfaction of tourists with disabilities in leisure activities. Crawford and Godbey (1987) for better understanding categorized these barriers into three dimensions interpersonal barriers, intrapersonal barriers, and structural barriers. Interpersonal barriers are those which prevent tourists with disabilities to interact with strangers, service providers, and even companions in travel. While, intrapersonal barriers are the attributes of tourists with disabilities such as lack of sufficient knowledge, emotional feelings, and sensory impairments. Lastly, structural barriers are related to environmental barriers such as the environment, facilities, transportation, and financial resources. Structural and interpersonal barriers to TMD in the tourism and hospitality industry have been identified as inaccessible facilities of tourism destinations (Agovino et al., 2017). Accessible barriers in tourist sites include seven main items such as staircases, sidewalks, paths, access ramps, restrooms, parking, and elevators

(Israeli, 2002). Nyman et al., (2018) in their study on wheelchair-bound children at tourism destinations reported that wheelchair-bound children along with their families, due to inaccessible modes of accommodations and transportation, found many destinations unavailable. The ICF of disability and health framework acknowledges that disability can lead from the dynamic contact of the person, technology, and environment (Masala & Petretto, 2008). When the demands of the environment surpass the mobility resources of individuals, it can restrict participation. Hence, technology can ease participation and enhance an individual's mobility directly via wearable technologies and technological implants or indirectly via assistance (Cowan et al., 2012).

Assistive or indirect technologies improve mobility by changing the impaired function or structure of the body, such as walkers or wheelchairs, as they do not modify the impairment but enhance mobility. Conversely, therapeutic or direct technologies improve mobility by overcoming body impairments or replacing the impaired or missing function or body structure through technological implants, robotic therapy devices, leg braces, baclofen pumps, and therapeutic technologies (Ahmed et al., 2018; Cowan et al., 2012; Krishnan & Pugazhenthi, 2014; Penteridis et al., 2017; Reinkensmeyer & Boninger, 2011). These technologies through specially designed devices help PWDs to overcome the obstacles and bridge the gap between the needs of the disabled people and the present resources that are offered by the existing social architecture (Hersh & Johnson, 2008). Literature on mobility disability has also suggested that advanced technology (cyborg) can improve mobility such as power wheelchairs, prosthetic limbs, walking aids, robotic therapy devices, and neuro-prosthetic functional electrical stimulation systems, etc (Boninger et al., 2012; Cowan et al., 2012; Li, Ma, Chan, & Man, 2019). Thus, the focus of this study is on the recent trends of the direct technological approaches to enhance mobility which can help TMD to make inaccessible destinations accessible while traveling.

2.3 Transhumanism

Countries around the world including Germany, the UK, the USA, and other EU countries are raising awareness of the changing relationships in the founding process of humans and technology. This changing relationship has given the term "transhumanism" with the purpose to extend the cognitive and physical abilities, and possibly spiritual limits of humans with the help of technology (Benedikter & Siepmann, 2016). It is a scientific and philosophical movement which is supporting the transformation of humans into new posthuman species by enhancing their capabilities (Bostrom, 2005; Benedikter & Siepmann, 2016; Fuller & Lipinska, 2014; Pilsch, 2017). The underlying motivation of the transhumanism movement is to increase the life span of humans, overcome human aging and disability, and ultimately achieve immortality and immunity (Bailey, 2014).

Transhumanists like Nick Bostrom to improve a range of physical, intellectual, and emotional capacities identified potential pharmacologic and/or transformative genetic enhancements that would make people more capable of independent initiatives (Bostrom, 2008; Bostrom & Roache, 2007). The movement of transhumanism seeks to progress technological advancements in a way that would modify the condition of humans to something which a normal human being cannot be capable of. Libertarian Zoltan Istvan who is the chairman of the Transhumanist party in the US has promised of becoming one's best self with the help of science, reason, and technology (Istvan, 2014). They will achieve this through the application of virtual reality, robotics, nanotechnology, artificial intelligence, genetic engineering, etc (Bostrom, 2005). However, their desire to improve mankind can lead to a division between people with "tech-rich" and "tech-poor" (Van Hilvoorde & Landeweerd, 2010).

According to Cole-Turner (2011, 63-4), Humans of tomorrow will be cyborgized, nanotechized, regeneticized, and perhaps even immortalized. Although, the positive impacts of those forms of enhancements are believable, many debates highlighting how these technologies can damage humanity when it comes to the biological definition of humans, ethical applications, procreative actions, and equality (Agar, 2007; Koch, 2010; McNamee & Edwards, 2006). Therefore, the integration, implementation, or development of these forms of technologies into the lives of human beings is a heating debate, while technologies like brain-machine interface (BMI) (Pisarchik, Maksimenko, & Hramov, 2019), cyborgs (Harbisson, 2012), under-skin chips (Alexandra, 2018), telepathic wearable (Bhat, 2020), and neurostimulation (MarketWatch, 2021) are already a reality, as shown in Figure 2.2.

The human has never been a definite being. Apart from the technological implants use to increase innate capacities, the extravagant progress in the area of assistive technologies for disabled people is also stimulating the idea of transhumanism (Geere 2016). Transhumanists see technology as an opportunity to improve the conditions of disabled people by correcting their biological bodies. Mary Pat Radabaugh who is the former director of IBM National Support Centre for PWDs quoted in 1988 that "technology makes life easier for people without disabilities, whereas, for PWDs, technology makes life possible". There are also many persuasive reasons for PWDs to be positive about living the life of cyborgs as transhumanists in the 21st century

(Goodley, Lawthom, & Cole, 2014), as their applications are notably prominent in many industries around the world for PWDs including in tourism and hospitality industry. Table 2.1 shows the summary of transhumanism technologies and their application in different industries including tourism and hospitality.

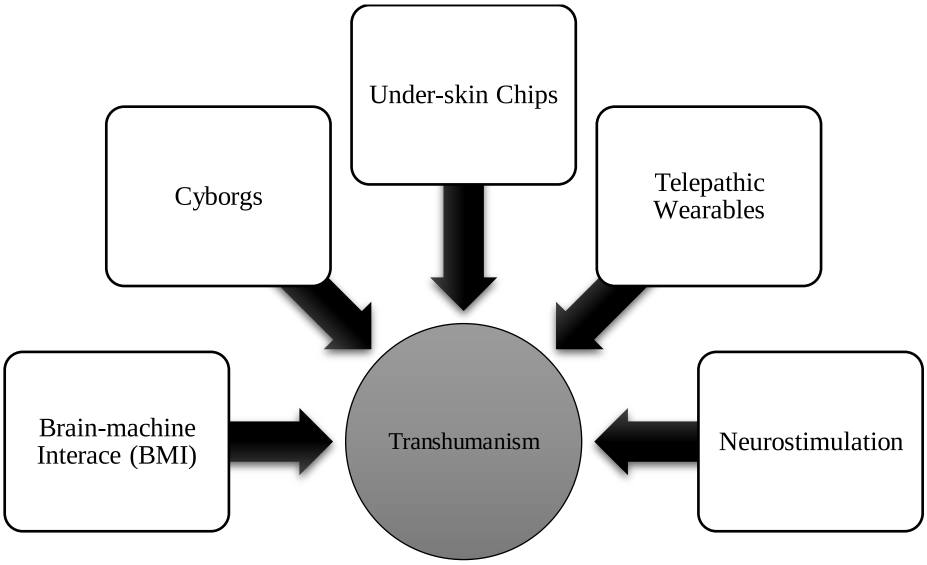

Figure 2.2: Transhumanism
Source: Study's author

Table 1: Application of Transhumanism Technologies

Transhumanism Technologies	Description	Examples	References
Brain-Machine Interface (BMI)	• Implants to control neuron group benefits people/tourists with limited physical ability.	The treatment of deep brain stimulation for tourists with mobility disability	Kringelbach et al., 2007
	• External brain stimulation helps people/tourists with mental conditions	The treatment of depression and other mental problems through Transcranial direct-current stimulation	Kalu et al., 2012
	• Shape the tourism process of tourists with disabilities.	EEG flight equipment and application allows tourists to watch beach and mountain images by wearing EEG headband by Saber lab to build a baseline brain wave. Afterward, tourist can imagine a destination e.g., beach or mountain, and search a theme flight for it.	World Travel Economy Trends (2018)
	• Accelerates the appearance of new tourism equipment and products.	The EEG technology enhances experiences of tourists and changes their behavior under common scenarios.	Barfield &Williams, 2017; Liao et al., 2012; World Travel Economy Trends (2018)
	• Helps in memory creation, retrieval, and modification.	Theodore Berger's artificial hippocampus, DARPA Restoring Active Memory program, MIT's Ramirez & Liu creating false memories in lab mice.	Berger & Glanzman, 2005; DARPA RAM, 2021; Ramirez, Ryan, & Tonegawa, 2013
	• Creates new experiences with	Uses in smart hotel applications such as controlling music	Barfield & Alexander Williams,

	tourism products and services.	systems and TV set, opening and closing doors, turning on and of television, etc.	2017; World Travel Economy Trends (2018)
Under-Skin Chips	• Help in visa and passport control • Simplified payments and simplified security • Tourists' easy identification • Removing the need for bus tickets, train tickets, and wallet • Passenger safety and access control at a destination • Unlocking rent car and hotel doors • Statistical data gathering • Tourism marketing.	RFID Chips use by airports, bus and railway stations, rent a car shops, hotels, and governments (e.g., Sweden), Tooth implanted microphone/speaker, and brain activated wireless controller	Euronews, 2020; Frucci, 2008; Ivanov & Webster, 2012; Lagrave, 2016
Cyborg	• Medical technological implants for PWDs, e.g., limb prostheses to restore mobility.	DEKA Arm's, among other, myoelectric and brain-controlled prosthesis, implanting ultrathin robotic threads in the human brain connected with Bluetooth enabled tiny chips help travelers with neurodegenerative conditions or prosthetic limbs to maintain or regain function, battelle Memorial Institute partially restores motor control in paralyzed hand via brain chip, and similar techniques can be used to control a robotic arm.	Barfield & Williams, 2017; Berger 2011; Bouton et al., 2016; Goodley et al., 2014; Kamen, 2020; NIH, 2020; World Tourism Economy Trends, 2018.

• Implanted hearing aids and embedded contact lens.	Cochlear Implants to restore hearing such as Med-Els SYNCHRONY Cochlear Implant, Retinal Prosthesis to Restore Vision such as Argus II Retinal Prosthesis System, and Implantable Miniature Telescope for treatment of AMD.	Cruzet al., 2013; FDA, 2015.
• Implants for increasing innate capacities, e.g., enhancing memory, thinking ability and physical strength.	Brain wave helmet for increasing thinking ability, experience and perception ability, and physical strength, Ocumetics Technology Corporation (OTC) developed lens to enhance vision beyond innate capabilities without causing eyestrain, Power skip aid for dramatically increasing jump height, and Hugh Herr MIT's load bearing leg exoskeleton.	Berger 2011; Herr, 2016; MIT Technology Review 2013; Powerskip; World Tourism Economy Trends, 2018; Zareva 2017.
• Cyborg tourists who have intensive technology consumption of destinations and tourism activities and self-fostering and self-integration in virtual environment.		Wiyanto et al, 2011
• Memory implants related with travel.		MIT Technology Review 2013

Telepathic Wearable	• Wristbands that will eventually make what an individual think and control things in VR and AR based on signals from the spinal cord.	Wristbands	Wearable tech in Travel and Tourism Thematic Research, 2019
	• People particularly those with physical disabilities and nervous system injuries can control with their own thoughts different smart devices and technology.	Google Glass, Steve Mann's Eyetap, wearable computer.	Google Glass; Mann, 2005
	• Tracking tourists' time spent at different areas, purchasing patterns, and locations visited. • Helps speeding up check-in processes at hotels, and touristic destinations. • Cashless transactions through digitalized boarding passes. • Protection and safety by monitoring environmental quality and air pollution.	Smart wristbands, stretchable skin-sensors and smart cloths	Wearable tech in Travel and Tourism Thematic Research, 2019
	• Unconnected computing directly integrated with prosthetic part	Jerry Jalava's USB Fingertip	Yu, 2020
Neurostimulation	Direct Nervous System Interfacing	Proof-of-concept research by Kevin	Warwick et al., 2003

		Warwick that allows to control a robot arm and to create artificial sensation.	
	Pain management treatment	Neurostimulation for Parkinson's disease and Alzheimer's disease	Capogrosso & Lempka, 2020; Edwards et al., 2017
	Helps for motor control	epidural neurostimulation of the spinal cord helps to improve the mobility in humans and animals	Angeli et al. 2018; Capogrosso et al. 2018; Gill et al. 2018.

2.4 Cyborg

“The era of the cyborg is upon us now”, were the words of Warwick in 2003 (Warwick, 2003). Clark in the same year claimed that humans with the unusual degree of intellectual cortex are naturally born cyborgs. He projected that human beings in the more reflecting sense of human-technology symbionts would soon become cyborgs (Clark, 2003). Meanwhile, then human-cyborgization has made significant growth. The term "cyborg" originated from the word cybernetic organism. It has its roots in self-regulating systems of humans and machines where technology is the way to enhance the body by allowing the brain to remain human (Hacking, 1998). Since then, the metaphor has blurred the traditional boundaries of identity (Haraway, 1985).

Scholars in literature have defined cyborgs in many ways. Some have defined a cyborg as an individual with technological implants inside her or his body (Christie & Bloustien, 2010; Oudshoorn, 2015; Schermer, 2009). Others defined cyborgs as a person who implant technological devices in the body to improve innate capabilities (Buchanan-Oliver & Cruz, 2011; Jarrett, 2013; Pelegrín-Borondo et al., 2020).

Pelegrín-Borondo et al., (2017) in their study classified cyborgs into two types: technological implants to increase the innate capacities of the human body and implants to correct physical disabilities. This study will take the second approach of Pelegrín-Borondo et al., (2017) by considering cyborgs as PWDs who decide to correct their physical disabilities by using technological implants in their body.

Gray (1995) in his book "Cyborg Handbook" suggested four kinds of human-machine cyborgs that are, normalizing, restoring, enhancing, and reconfiguring. Normalizing cyborgs involve the use of those technological products into the human body that are indistinguishable or not visible in the biological human body. An example can be a dispensation of lithium daily to keep the moods of an individual pleasant or a pacemaker implanted in someone's chest. The restorative cyborgs are comparatively the most visible kind of cyborg that involve the addition of synthetic elements to a human biological body to repair its functions or one or more of their lost body parts, such as a person with prosthetic limbs, technological implants used by PWDs, or even glasses wearing by an elderly person. Both normalizing and restorative kinds of cyborgs are used out of necessity. Enhancing cyborgs involves those products that make the biological human body smarter, stronger, faster, and longer lived. Such cyborgs usually have no abnormality or missing body parts. Some appropriate examples can be mind-controlled exoskeletons designed by military engineers, state-of-the-art shoes, glasses, poles, or suits worn by Olympic athletes, and human plus AI stock traders. Lastly, reconfiguring cyborgs, as the most powerful cyborgs, wish to overcome evolutionary and environmental barriers that are beyond human possibilities by reinventing humans as proto-biological creatures. They do not hold on to the recognized notion of humans enhance, normalize or restore. Examples can be bioengineering humans that can preserve selfhoods or can feed on an inorganic matter that is outside the limits of biological humans, as in projects of mind uploading. Both enhancing and reconfiguring cyborgs are called "by choice cyborgs" (Kath et al., 2019). By comparing cyborgs by necessity with cyborgs by choice, it can be found that cyborgs are the products and the means for both dependence and independence. However, necessity-based cyborgs are significant for the need to be normalized or restored to a specific degree of selfhood and/or autonomy.

According to the principles of disruptive justice, PWDs cannot participate in society in a way as they should (DePauw & Gavron, 2005; Vanlandewijck & Chappel, 1996). Therefore, they stress the demand that the world should be redesigned for everybody around us to make it more accessible (Van Hilvoorde & Landeweerd, 2010). This demands an answer of "what barriers should be removed to make PWDs a part of other domains of life". Making all the buildings, transportation systems, and businesses accessible or in other words redesigning an accessible world for PWDs is completely impossible. This leaves us with the only option to make PWDs accessible in all spheres of life by making them normalizing or restorative cyborgs.

However, disability scholars have been critical regarding PWDs and their use of assistive technologies as cyborgs. They argue on the main storyline of the cyborgs is "one which can be made normal or fixed through the use of technologies", which means that the concept of cyborgs frames the body of PWDs as broken (Moser, 2000; Sparkes, Brighton, & Inckle. 2018). In response to those scholars, Reeve (2012) brought up the idea of an "impaired cyborg" and discussed the ability of technology for the PWDs in renegotiating their identities in society. This idea helps to define the connection between PWDs and cyborg technology without prolonging the assumptions as "broken bodies that need to be fixed". Thus, impaired cyborgs redesign the identities of disabled people in new ways with the use of technologies (Chandra, 2018).

Recent studies on the acceptance of cyborg technology have found a few critical aspects of their adoption. Both perceived ease of use and perceived usefulness are recognized as one of significant predictors in the acceptance of body implants (Adams, 2010; Giudici et al., 2010; Pelegrín-Borondo et al., 2017). The convenience of using technologies to the acceptance of becoming a cyborg has also been shown in the literature (Heffernan et al., 2016, Heffernan et al., 2017).

Similarly, the effect of performance expectancy on the intention to use technological implants including nano implants and cochlear implants has been demonstrated in several studies (Christie &Bloustien, 2010; Reinares-Lara et al., 2016). The factors have been established to affect the acceptance of technological implants. Another factor such as social norms or social influence is a key factor for cyborg acceptance (Pelegrín-Borondo et al., 2017). Most, Wiesel and Blitzer (2007) in their study emphasized the importance of social norms to cochlear implants. The way society perceives can shape the decision of an individual to use a technological implant. The more different cultures are probable to accept innovativeness in the new technologies, the higher will be their chances of particularly accepting cyborg technologies (Murata et al., 2019). Other studies including Heffernan et al., (2016) and Heffernan et al., (2017) have also pointed innovativeness of cyborgs as a reason for implanting in their bodies such technologies. Besides, in terms of body modification, due to the possible consequences of implantable technologies, perceived risk, and fear can be other factors in the adoption or rejection of cyborg technology (Olarte-Pascual et al., 2015). Likewise, Wiegard and Breitner (2017) in their study on medical implants also showed that perceived privacy risk is a significant predictor in the acceptance of technological implants.

2.5 Implantable Technologic Implants

Medical technology within the last decades is one of the growing technology branches. Catherwood et al., (2015) defined medical implants as implants that medical practitioners prescribe to alleviate the symptoms of chronic diseases, sustain life, and/or replace missing biological body parts. The efficiency of technology facilitates new implants with an extensive application field, for instance, technological stents that can be placed precisely and deeper into the sensitive areas of the body including small blood vessels, eyes, ears, brain, and spinal cord (Schaar & Ziefle, 2011). Other than medical stents, there are other technological devices for medical purposes including implantable cardioverter defibrillators (ICD) and pacemakers for controlling and pacing the heart, a cochlear implant for partially restoring hearing, functional electrical stimulation helps to allow arms for object manipulation, and prosthetic limbs make it possible for an individual with mobility impairment to walk or travel (Reinares-Lara, et al., 2016; Ricci et al., 2010; Schaar & Ziefle, 2011; Udlis, 2013). These implantable devices act as life-saving devices for PWDs. For a few years, these technological implants are used in the medical sector and therefore are rather known to the public.

In general, medical technologies specifically implantable devices provide a variety of device types and application fields, starting from chips for storing electronic records of patients, to placing directly under the skin, up to implantable devices into the body parts. These implantable medical technologies, along with medical purposes, are also used for non-medical reasons e,g., cosmetic surgeries and enhancement of innate capabilities. For instance, many people around the world mainly adults go for cosmetic surgeries to match their bodies based on socially accepted beauty standards as well as to increase their seductive capacities (Adams, 2010; Lawton, 2004). In the US in 2007, 11.8 million cosmetic surgeries were performed, among which, breast augmentation appeared to be the most prominent one (Chauhan, Warner, & Adamson, 2010; Siclovan & Jomah, 2008). More recently, Pelegrín-Borondo et al., (2016) and Pelegrín-Borondo et al., (2017) conducted their studies on the acceptance of technological implants to increase innate capacities. The ethical consideration towards the use of technological implants for non-medical purposes has also been investigated (Reinares-Lara et al., 2018). In addition, technological implants to compensate for visual impairment, e.g., brain implants and prostheses, and hearing disabilities, e.g., peacemakers' cochlear implants are widely accepted and their application is extensive (Raatikainen et al., 2015; Schermer, 2009; Pray & Jordan, 2010). Nevertheless, recent developments in technological implants specifically for mobility impairment have given limited attention to the literature.

Currently, wheelchairs are the most common and significant technology used for mobility and are more likely to remain in the next ten years. The improvements in the design of wheelchairs, customization, increased ease of mobility, and low weight allow autonomous navigation. Herr, (2009) has found that in the next decades, wheelchairs may replace by exoskeletons. The term exoskeleton describes a device such as a brace that is external to the body. The exoskeleton systems help to augment functions but the application is not much widespread. The reasons can be mainly due to the weight and size of the systems which makes the performance difficult in the natural environment. Some of the exoskeletons such as robotic treadmills have gained acceptance. While, it is expected that the new developments in exoskeletons through sensory circuitry materials, battery powers, and hydraulic actuators will make the future of exoskeletons a Second Skin Space Suit to spin off PWDs. Boninger et al., (2012) in their study predicted that people in 2024 will bear exoskeletons while walking down homes, streets, and malls. Likewise, rehabilitative robotics can help individuals with mobility disability through devices like robotic upper limb retraining devices and robotic treadmill ambulation devices (Hesse et al., 2003). Last but not least, direct brain interfaces and virtual reality simulation can achieve mobility in different activities including driving and walking (Anitha et al., 2019; Chowdhury, Ferdous, & Quarles, 2017). The brain-computer interface implantable helps people who are paralyzed to control wheelchairs, TV, and other tools (Regalado, 2015). However, the existing degree of acceptance or rejection the advanced medical technological implants, such as power wheelchairs, robotics, prosthetic limbs, exoskeletons, and direct brain interfaces, etc., for mobility disability falls short specifically while traveling to/in the destination.

2.6 Theory of Innovation Diffusion

Robertson (1967) defined the theory of innovation diffusion as the process that involves how, why, and to what degree an innovative technology broadens across the population of users. Rogers (1983) defined the theory as a way where innovation through different channels is communicated among the social system members over time. Karahanna et al., (1999) stated that the theory also explains which innovative characteristics of a new technology result in the adoption of that particular technology. It has proven helpful to explain the tourists' behaviors toward the adoption of different technologies (Agag & El-Masry, 2016). There have been many factors found that influence the acceptance of individuals to use innovative technology. The perceived attributes of innovation and self-efficacy based on innovation diffusion theory influence the users' acceptance of new technologies (Waheed et al., 2015). For instance, the authors found that strong attachment and users' compatibility in the case of e-readers towards hardcopy books is negatively related to the acceptance of users towards e-books. Similarly, Chiang (2013) in his study found that the characteristics of particular innovations such as compatibility and benefit explain consumers' usage of information technology. Another study by Lai and Chang (2011) also found that compatibility, media richness, and perceived convenience significantly contribute to the acceptance of readers to read e-books.

The innovation diffusion theory provides a connection between dynamic and static individual innovativeness and describes accepting novel ethical tourism behavior (Ganglmair-Wooliscroft & Wooliscroft, 2016). The theory provides a constructive framework to analyze tourists' acceptance and usage of new technologies (Agag & El-Masry, 2016). It suggests that the adoption and diffusion of new technologies, such as technological implants, among disabled people are influenced by various factors including autonomy or independence of the adapter, perceived convenience and social inclusion. The diffusion of technological implants is crucial and of more interest since it targets a potential market including tourists with disabilities. According to innovation diffusion theory, the rate of adoption of technological implants among disabled people can be divided into five phases: knowledge, persuasion, decision, implementation, and confirmation. The theory states that the decision to adopt new technology is influenced by an individual's perceived characteristics of the innovation, such as relative advantage, compatibility, complexity, trialability, and observability. In the case of technological implants, disabled people who perceive them as having the relative advantage of being autonomous, easy to use, easy to observe the benefits, and compatible with their lifestyle to be socially included in society are more likely to adopt them.

Since the innovation diffusion theory seems promising in explaining TMD behavior towards technological implants, the current research extends this research stream to explore why TMD accepts technological implants during traveling. Based on the findings of qualitative study (see chapter 4), and the integration of the theory of innovation diffusion and UTAUT, this study has developed a conceptual model to predict TMD behavior toward the acceptance of technological implants. It is worth mentioning that innovation diffusion theory is one of the many theories that can be used to understand the adoption of technological implants among disabled people, and more research in this area is needed.

2.6.1 Autonomy

Autonomy is a key concept in the context of innovation diffusion theory, which is a widely used theoretical framework for understanding the process by which new ideas, products, and technologies are adopted by individuals, organizations, and societies. In this theory, autonomy refers to the degree to which individuals or groups have control over the decision to adopt or reject an innovation. Autonomy refers to an individual's ability to make independent decisions and take control of their own lives. In the context of technological implants and disabled people, autonomy refers to the ability of individuals with disabilities to make decisions about their own bodies and the technologies they use to enhance their abilities. A conceptual definition is required for the studies on autonomy specifically in the context of old and/or disabled people that are open to empirical validation. Horowitz et al. (1991) have defined autonomy in the context of the doctor-patient relationship as a practice of goal-oriented and self-determined behavior that can potentially be reserved or threatened by an array of situations; external or intrinsic, real or symbolic to a person. Autonomy is related to the ability to make decisions and self-determination (Atkinson, 1991). It involves three crucial attributes including self-direction, individuality, and voluntariness (Hertz, 1993). Based on these definitions, it can be seen that the idea of autonomy is both context-dependent and multidimensional (Collopy, 1988). It has been reported many times in the literature that autonomy is highly related to decision-making.

The term autonomy has received immense respect in the healthcare sector. It is used to make practices and policies concerning privacy, the privilege to use life-sustaining treatments, advance directives, informed choices, and so on (Ells, 2001). More often, respect for autonomy applies to settle situations when there is a conflict between moral values. PWDs to address this need are a well-suited population. The world health organization's International Classification of Impairments, Disabilities, and Handicaps proposed three dimensions of disability including activity limitation, impairments, and participation restrictions. The view of disability in addition to body functioning in a broader social context can include human limitation to participate and can affect the toe experience of disabled people. For such cases, technological implants can help to enhance the experiences of PWDs since it provides a sense of autonomy while participating in social activities. The countless connections between PWDs, technological implants or tools, machines, animals, or persons that help them are illustrated as "ways of achieving independence" (Gibson, 2006).

Autonomy is an important factor that can influence the adoption process, as individuals or groups who feel that they have greater control over the decision-making process are more likely to adopt an innovation. Past studies on autonomy in the context of technological implants and disabled people reveal that there are a variety of factors that can impact an individual's autonomy. Some studies have found that individuals with disabilities who use technological implants experience increased autonomy and independence, as well as improved self-esteem and self-efficacy. For example, a study by van der Meijden et al. (2015) found that individuals with spinal cord injuries who used exoskeletons (a type of technological implant) experienced increased autonomy in terms of mobility, and improved psychological well-being. However, other studies have found that technological implants can also have negative effects on an individual's autonomy. For example, a study by Kochel et al. (2011) found that individuals with cochlear implants experienced decreased autonomy in terms of communication, as the implant was not always able to fully restore their hearing. Additionally, some studies have found that the cost, accessibility, and availability of technological implants can also affect an individual's autonomy in terms of being able to access and use the technology. In general, the literature suggests that technological implants can have a positive impact on a PWD's autonomy, but it also highlights that this relationship is complex and should be further empirically tested.

Overall, autonomy is an important concept in innovation diffusion theory that can help researchers to understand the complex process by which innovations are adopted or rejected. By examining the role of autonomy in the adoption of technological implants, this study can gain insights into how decision-making power and control can influence the adoption process and develop strategies for promoting the adoption of technological implants among tourists with disabilities.

2.6.2 Perceived Convenience

According to innovation diffusion theory, perceived convenience is one of several key factors that can influence the rate of adoption of an innovation (Ramayah & Ignatius, 2005). Innovations that are perceived to be more convenient are more likely to be adopted quickly and by a larger number of individuals or groups. Conversely, innovations that are perceived to be inconvenient or difficult to use may experience slower adoption rates and may face greater resistance from potential adopters. In this theory, perceived convenience refers to the degree to which TMD perceives technological implants to be easy to use, understand, and integrate into existing practices.

In general, there are two types of convenience such as services and products for customers. It depends on the effort and time to determine whether a service or product is convenient (Berry, Seiders, & Grewal, 2002). When the service or product saves time for the user, it considers being convenient. Additionally, when a service or product lowers the physical, cognitive, and emotional burden for a user, it also considers being convenient. Brown (1990) introduced five dimensions including acquisition, place, time, execution, and use to examine the service or product's convenience. On the other hand, in accessing technology, convenience is certainly not related to ease of use in TAM and intention to use technology (Yoon and Kim, 2007). Thus, based on the perspective of convenience, they observed the wireless LAN with three dimensions including execution, time, and place, which were suggested by Brown (1990). Additionally, perceived convenience was defined as the degree to which one completes a task based on the level of convenience towards place, time, and execution (Yoon and Kim, 2007). They further defined perceived convenience as an intensity of convenience that people with disabilities feel towards time, place, and execution while using technological implants. Time convenience is the degree to which tourists with disabilities perceive convenience towards a time when using technological implants. This means that tourists with disabilities can use technological implants at any time during travel. Similarly, place convenience is the degree to which tourists with disabilities perceive convenience at any place when using technological implants. In other words, tourists with disabilities while using technological implants would be able to perform any task at any place. Finally, execution convenience is defined as the level of convenience that tourists with disabilities feel towards implementation while using technological implants.

In the context of technological implants and disabled people, perceived convenience in the current study can refer to how easy individuals with disabilities find it to use the implant to enhance their abilities. Past studies in the literature on perceived convenience in the context of technological implants and disabled people reveal that there is a consensus that perceived convenience is positively associated with the adoption and use of technological implants among disabled individuals. For example, a study by Ljungberg et al. (2011) found that individuals with cochlear implants perceived them as convenient and reported improved quality of life and subjective well-being. Another study by Cima et al. (2015) found that individuals with retinal implants perceived them as convenient and reported improved visual function and quality of life. Other studies also found that individuals with disabilities who use technological implants may experience increased convenience in their daily activities.

For example, a study by van der Meijden et al. (2015) found that individuals with spinal cord injuries experienced increased convenience in terms of mobility while using exoskeletons. Additionally, some studies have found that the cost, accessibility, and availability of technological implants can also affect an individual's perception of convenience.

Generally, perceived convenience is a significant concept in innovation diffusion theory that can help to understand how the ease of use and integration of innovations can influence the adoption process. The literature in general suggests that the perceived convenience of using technological implants can have a positive impact on the adoption and use of these technologies among disabled individuals. However, the relationship between perceived convenience and the use of technological implants is complex and can be influenced by a variety of factors that need to be tested in this study.

2.6.3 Social Inclusion

Over the past years, numerous definitions of social inclusion have been established where phenomenon distinct vantage points have been offered into this multidimensional construct (Huxley et al., 2012; Richardson and Le Grand, 2002; Secker et al., 2009; The Charity Commission, 2001). Social inclusion is defined as the process of ensuring that individuals and groups have equal access to the opportunities and resources necessary for full participation in society. Social inclusion from the perspective of technological implants and disabled people refers to the ability of individuals with disabilities to participate in society to the same extent as those without disabilities.

Social inclusion in the light of the innovation diffusion theory of disabled people refers to the degree to which innovations, products, and services are designed, developed, and implemented in a way that promotes equal access and participation for people with disabilities. This includes not only physical accessibility but also social and cultural inclusion, such as ensuring that disabled individuals are involved in the design and testing of new technologies and that they are represented and included in the communities and networks that promote the diffusion of these innovations. Social inclusion simply cannot be seen as non-exclusion even though the phenomenon is based on the social exclusion concept, rather it is based on freedom of choice and proactively creating opportunities (Andrade and Doolin, 2016). Given that, social inclusion connects to the health and emotional benefits engendered by access to social activity, social acceptance, social capital, and positive actions taken by tourists with disabilities to deal with social exclusion and make them able to participate fully in society (Andrade and Doolin, 2016; Secker et al., 2009).

Needless to say, social inclusion is closely related to technological inclusion with high technological inclusion being a social inclusion channel (Hill et al., 2015). There is a consensus that technological implants can have a positive impact on social inclusion among disabled individuals. Social inclusion with the propagation of technological implants has become an extensively significant issue as it explains how technological implants promote social inclusion among people with disabilities and serve tourists with disabilities. The diffusion of novel technological implants potentially can intensify social inclusion and can create different ways where social exclusion can be evident (Andrade and Doolin, 2016). Conversely, it can lead to various advantages. Social inclusion positively influences PWDs' perceived usefulness, perceived ease of use, and behavioral intentions toward using mobile technologies (Park et al., 2013). Similarly, a study by Ljungberg et al. (2011) found that individuals with cochlear implants reported improved social inclusion, as well as improved quality of life and subjective well-being. Another study by Cima et al. (2015) found that individuals with retinal implants reported improved social inclusion and improved visual function and quality of life. Additionally, other studies have found that the use of technological implants may help to reduce barriers to social inclusion for individuals with disabilities. For example, a study by van der Meijden et al. (2015) found that individuals with spinal cord injuries who used exoskeletons experienced increased social inclusion in terms of mobility. However, some studies have also found that technological implants may not always lead to increased social inclusion. For instance, Kochel et al. (2011) in their study found that individuals with cochlear implants experienced decreased social inclusion in terms of communication, as the implant was not always able to fully restore their hearing. In general, the connection between technology implants and being included in society is intricate and affected by various elements, including the implant's attributes, the person's needs and choices, and the availability of the technology.

Innovation diffusion theory suggests that the social inclusion of disabled people is an important factor in the successful diffusion and adoption of innovations. When innovations are designed and developed with the needs and perspectives of disabled individuals in mind, they are more likely to be adopted and used by a wider range of individuals and groups. Additionally, when disabled individuals are actively involved in the innovation process, they can provide valuable insights and feedback that can help to improve the design and usability of new products and services.

2.7 Subjective Well-being

Diener (1984) defined subjective well-being as experiencing positive affect, life satisfaction, and happiness. Subjective well-being refers to an individual's overall perception of their own life satisfaction and happiness. An individual with subjective well-being has more likely to have a brighter side of things, social confidants, a positive temperament, possess sufficient resources to make progress toward valued objectives, and not ponder much about bad events (Diener, 1999). According to Yoon (2014), people who have low levels of subjective well-being with the help of technology can improve their subjective well-being. For instance, people with low life satisfaction and low self-esteem can benefit from Facebook (Ellison et al., 2007). Valenzuela et al. (2009) found that the higher involvement of people in information technology has a higher level of civic engagement, political participation, social trust, and high degrees of life satisfaction and well-being.

This study in the context of technological implants and disabled people defines subjective-wellbeing as the overall satisfaction and happiness experienced by individuals with disabilities who use these technologies to enhance their abilities. Information technologies in tourism-related areas affect the subjective well-being of individuals through rational responses and affective responses (Kim et al., 2014a). For instance, using VR games enhanced cancer patients' well-being (Li et al., 2011). Ljungberg et al. (2011) found that individuals with cochlear implants reported improved subjective well-being and improved quality of life. Likewise, Singh et al., (2017) also found that the subjective well-being of people with disabilities with upper limb reaction got improved by using interactive VR games as an exercise tool. Another study by Cima et al. (2015) found that individuals with retinal implants reported improved subjective well-being and improved visual function and quality of life. Some studies have found that the use of technological implants may help to reduce barriers to subjective well-being for individuals with disabilities. For example, van der Meijden et al. (2015) found that individuals with spinal cord injuries who used exoskeletons experienced increased subjective well-being in terms of mobility. Thus, we can assume based on the previous literature that subjective well-being is an important construct towards the acceptance of technological implants among tourists with disabilities.

2.8 Cognitive Affective Normative Model

Many types of research on the acceptance of new technologies are based on variables from the previous TAM (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989), TAM2 (Venkatesh& Davis, 2000), along with their extensions via UTAUT and UTAUT2 (Venkatesh, Morris, Davis, & Davis, 2003), as mentioned above in the technology acceptance models (TAMs) section. All these technology acceptance models have been proven very influential (Hameed et al., 2012). The cognitive-affective normative (CAN) model is based on these theories (TAM, TAM2, UTAUT, UTAUT2). The model was first developed by Pelegrín-Borondo et al., (2016) for the acceptance of technological implants that are used to increase human capacities. The CAN model explains more than 73% of the intention to use technological implants (Pelegrín-Borondo et al., 2017).

In this vein, the variables of TAM such as PEOU, PU, and social norms significantly influence the intention to use new technology and constantly explain an important share of the variance in the intention to use innovative technologies (Davis, 1989; Davis et al., 1989; Venkatesh& Davis, 2000). PEOU and PU represent the cognitive part of the model, whereas social norms or social influence represent the affective factors. The purpose of adding cognitive and affective factors to the previous technology acceptance models is to well understand the assessments of subjects that are broadly acknowledged in previous studies (Levav & McGraw, 2009; Shiv & Fedorikhin, 1999; Zielke, 2011). Yet, studies have recognized the effect of normative factors on people's intentions, attitudes, and behaviors (Bagozzi, 2000; Fishbein & Ajzen,1975; Venkatesh et al., 2012) and found that normative factors play a significant role in evaluating implantation(Pelegrín-Borondo et al., 2017). Therefore, the CAN model aimed to extend previous technology acceptance models and add normative factors to the model. The CAN model specifically combines PEOU and PU as cognitive variables, social or subjective norms as normative variables, and positive emotions, anxiety, and negative emotions as the affective variables (Pelegrín-Borondo et al., 2017).

Implants for reasons other than improving health status also seem to be accepted. For instance, studies have found that many adults modified their bodies to increase their seductive capacities and meet socially-accepted standards of beauty (Adams, 2010; Lawton, 2004). Also, in the context of medical technological implants, the results of meta-analytic in the field of pediatric surgery found that cognitive, affective, and normative factors affect the consent of parents for their children to implant technological devices inside the body (Lipstein et al., 2012). Similarly, the CAN factors of implants including cochlear implants and pacemakers to compensate for physical impairments are also accepted and their application is extensive (Hill & Sawaya, 2004; Rosahl, 2004; Schermer, 2009; Pray & Jordan, 2010).

2.9 Technology Acceptance Models

The emergent development of technology and its integration into the professional and personal lives of users creates an open-ended question about its acceptance or rejection. The research community's interest in answering this question has led to several models and theories of the effective usage of technology and its acceptance in the last few decades. These theories included Roggers (1995)'s Diffusion of Innovations theory proposed in 1960, Fishbein and Ajzen's (1975)'s Theory of Reasoned Action (TRA), Goodhue and Thompson's (1995)'s Task Technology Fit (TTF) theory, Theory of Planned Behavior (TPB) and Decomposed Theory of Planned Behavior (DTPB) (Ajzen, 1985, 1991; Taylor & Todd, 1995), TAM1, TAM2, TAM3, and Unified Theory of Acceptance and Use of Technology (UTAUT) model (Davis et al., 1989; Venkatesh & Bala, 2008; Venkatesh & Davis, 1996, 2000; Venkatesh et al., 2003). However, the initial TAM became a leading model in the investigation of users' technology acceptance factors which was introduced more than a quarter century ago by Fred Davis. The TAM during this period has been tested in an extensive range of information and communication technology (ICT) applications. Hence, TAM is the leading model to predict the users' acceptance of information systems and technology and their intentions to perform a specific behavior (Nadri et al., 2018; Surendran, 2013). The model was originally derived from the TRA and TPB (Holden & Karsh, 2010), however, the constructs of these theories are not the same. The model postulates the mediating role of perceived usefulness (PU) and perceived ease of use (PEOU) in the relationship between the characteristics of the system which are shown in the model as external variables and system usage (Davis & Bagozzi, 2003). After that, numerous studies have encompassed TAM in the field of ICT and suggested the need for the addition of new constructs in the model (Lee et al., 2003; Legris et al., 2003), particularly related to the social and human change process and exploring their boundary conditions. Meanwhile, the version of TAM2 was modified by differentiating the concept of external variables into subjective norms, cognitive instrumental processes such as result demonstrability, output quality and relevance, and experience. Later, based on TAM and other prominent eight models, the UTAUT model was established. The UTAUT involves effort expectancy, performance expectancy, facilitating conditions, and social influence, with age, gender, experience, and voluntariness of use as moderators (Venkatesh et al., 2003). Venkatesh and Hillol in 2008 extended the TAM2 regarding determinants of PEOU which then led to TAM3 that involved PU, PEOU, behavioral intentions, and actual behavior.

In health services, new technologies are being constantly adopted (Blackwell, 2008; Peña-López, 2010). In general, contemporary ICT has been assumed to improve health service sectors, and hospitals specifically for improving the effectiveness and efficiency of staff, organizational expenses reduction, and enhancing patients' safety (Cooper, 2004; Rahimi et al., 2018; Scott, 2007). In the meantime, life sciences advancements have resulted in huge medical specializations across institutional borders (Nadri et al., 2017). Regardless of these needs, research methods on the development of health information systems have focused only on the system designs' technical aspects (Rahimi &Vimarlund. 2007), yet insufficient information is available on the user's acceptance of progressing medical technological advancements. Rahimi et al., (2018) in their study also stated that the effect of ICT acceptance of the non-technical factors should be established from the perspective of users.

Hu et al., (1999) for the first time used TAM in health services and analyzed the intentions of physicians in a Hong Kong hospital setting about their adoption of telemedicine technology. In 2009, the TAM was more frequently used in the context of the adoption of electronic health records with the maximum number of publications recorded in the year. Later in 2014, the application of TAM in the area of telemedicine was at its peak, followed by the analysis of health-related mobile applications in 2015 (Rahimi et al., 2018). Han et al., (2006) integrated the health services' various technology acceptance models with the original TAM and examined the physicians' acceptance of mobile systems in Finland. Lately, Schomakers, Lidynia, and Ziefle, (2019) used TAM in the context of e-health technologies and found that users' acceptance of e-health technologies highly depends on their privacy concerns when using the e-health technology as this technology often collects and processes sensitive information of the patients. Thus, all the theories and above-mentioned TAMs can explain technology adoption successfully and have been applied in almost all contexts successfully. However, regarding the success of new information systems and medical technological implant, studies focusing on user acceptance is lacking behind. Schomakers et al., (2019) stated that many significant factors are missing in the TAMs specifically in the health context. The validity of the models has been criticized regarding the usage and acceptance of other groups such as older people, and PWDs (Holden & Karsh, 2010; Schomakers et al., 2019). Thus, the acceptance of PWDs regarding progressing technological implants needs to be empirically studied.

2.10 Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT is a well-established framework that explains individuals' acceptance and usage behaviors towards technology. Developed by Venkatesh et al. (2003), UTAUT integrates and extends several prominent theories to provide a comprehensive understanding of individuals' acceptance and usage behaviors towards technology. It provides a valuable lens for understanding the factors influencing the adoption of technologies including technological implants for disabled people. The key components of UTAUT are performance expectancy, effort expectancy, social influence and facilitating conditions.

UTAUT has been utilized in the literature to investigate the acceptance and usage of assistive mobility devices among disabled tourists. Studies have explored the factors influencing the adoption of technologies such as smart prosthetics, exoskeletons, and robotic aids (e.g., Wang et al., 2018; Buhalis et al., 2019). The theory has provided valuable insights into the key determinants shaping disabled tourists' acceptance and usage behaviors regarding these assistive technologies. However, with regard to the success of new information systems and medical technological implant, studies focusing on the user acceptance is lacking behind. Schomakers et al., (2019) stated that many significant factors are missing in the TAMs specifically in the health context. The validity of the models has been criticized regarding the usage and acceptance of other groups such as older people, and PWDs (Holden & Karsh, 2010; Schomakers et al., 2019). Thus, the acceptance of PWDs regarding progressing technological implants needs to be empirically studied.

2.10.1 Performance Expectancy

Performance expectancy refers to an individual's belief in the ability of a technology or product to improve their performance or outcomes. It is defined as the degree to which a particular technology helps customers to implement definite actions (Venkatesh et al., 2003). It is the basic antecedent of the usage and adoption of innovative technologies. Most likely customers accept such technologies which help them to attain positive task completion. From the decomposed theory of planned behavior and technology acceptance model, perceived expectancy is similar to perceived usefulness. Similarly, the construct is similar to relative advantage from the innovation diffusion theory, extrinsic motivation from the theory of motivational model, and task adjustment from the model of PC utilization. In the context of this study, performance expectancy refers to the belief of a tourist with a mobility disability in the ability of a technological implant to enhance their abilities and improve their performance in daily activities during traveling.

Performance Expectancy" refers to the performance of IT and related systems for users. Research in Taiwan has explored physician acceptance of pharmacokinetics-based clinical decision support systems, with Chang et al. (2007) finding that performance expectancy had a stronger impact on usage intention than expectancy. Yi et al. (2006) found that perceived usefulness influences the intention to use PDAs by doctors in the US. Pai and Huang (2011) also reported a direct positive effect of perceived usefulness on usage intention. In the context of technological implants and disabled people, performance expectancy suggests that several factors can influence an individual's performance expectancy (Al-Mashari, Al-Mudimigh & Zairi, 2003; de Winter, Luijten, & Vollenbroek-Hutten, 2017; Kim & Kim, 2018). Few studies believe that the perceived benefits of the technology, such as improved quality of life and increased autonomy, can positively influence an individual's performance expectancy. Likewise, the perceived ease of use and compatibility with the individual's lifestyle can also positively influence an individual's performance expectancy (Nga & Nguyen, 2018). Additionally, the attitude of the individual towards the technology, and the perceived social influence, such as recommendations from friends, family, and healthcare professionals, can also play a role in the individual's performance expectancy. Lately, studies in the literature indicate that the factors that influence the performance expectancy of technological implants among disabled people are multifaceted and diverse. A study by Kim and Kim (2021) found that perceived benefits, such as improved quality of life and increased autonomy, were positively associated with the performance expectancy of assistive technology among older adults with cognitive impairments. Similarly, the study by Chen and Hsu (2019) found that ease of use and compatibility with the individual's lifestyle was positively associated with the performance expectancy of assistive technology among older adults with cognitive impairments. To summarize, the literature suggests that several factors can influence an individual's performance expectancy for technological implants that need to be investigated in this study.

2.10.2 Effort Expectancy

Effort expectancy, also known as ease of use, is a construct within the TAM that refers to the perceived ease or difficulty of using technology. It refers to an individual's belief in the ease of use and level of effort required to use technology. Venkatesh et al., (2003) defined effort expectancy as the degree to which customers perceive ease towards technology usage. Research has shown that effort expectancy is a significant predictor of user acceptance and usage of technology. A seminal article that established the relationship between effort expectancy and technology acceptance by Anderson and Dill (1997) found that effort expectancy positively influenced computer self-efficacy, which in turn positively impacted computer usage. Another study by Davis, Bagozzi, and Warshaw (1989) showed that effort expectancy was a major determinant of users' attitudes and intentions toward the use of technology. This study emphasized the importance of designing technology to be user-friendly, as a user-friendly technology would have higher effort expectancy and thus increase the likelihood of user acceptance. Thus, customers are more likely to accept and adopt the new technology when they perceive it as easier to use. The notion of effort expectancy is the same as the technology acceptance model's concept of "perceived ease of use", innovation diffusion theory's concept of "actual ease of use", and the model of PC utilization's concept of "complexity.

Studies have investigated the impact of effort expectancy on the acceptance and usage of specific technologies, such as e-learning platforms, tourism user-generated content, adverse event reporting systems, clinical decision support systems, radio frequency identification (RFID), cashless payment systems, and healthcare information systems (Assaker, 2020; Chang et al., 2007; Liao & Lin, 2011; Ozturk, 2016; Pai & Huang, 2011; Wu et al, 2008). Chang et al., (2007) found that effort expectancy positively impacted the acceptance of clinical decision support systems, while Wu et al, (2008) showed that effort expectancy was a significant predictor of the acceptance of healthcare information systems. This shows that effort expectancy is a crucial construct within the TAM and has been widely researched in the healthcare literature. Its positive impact on technology acceptance and usage has been consistently demonstrated across various technologies and contexts.

This study defines effort expectancy as the degree to which a tourist with a mobility disability feels comfortable with the use of a technological implant to enhance their abilities in performing daily activities during traveling. Most often, numerous stakeholders in the hospitality service encounters experience frustration towards the adoption of technology due to the complex nature of technology. Recent studies on effort expectancy in the context of technological implants and disabled people suggest that several factors can influence an individual's effort expectancy. For example, a study by Chen and Hsu (2019) found that ease of use and compatibility with the individual's lifestyle was positively associated with the effort expectancy of assistive technology among older adults with cognitive impairments. Another study by Nga and Nguyen (2018) found that the availability and accessibility of assistive technology were positively associated with effort expectancy among older adults with cognitive impairments. Thus, it shows that effort expectancy plays an important role in the acceptance of technological implants among disabled people.

2.10.3 Social Influence

Social influence is the effect of external factors, such as social norms, expectations, and recommendations from others, on an individual's beliefs, attitudes, and behaviors. Venkatesh et al., (2003) defined social influence as the extent or degree to which one believes that his or her friends and/or associates think that the individual should use new technology. Many scholars in the literature have found that social influence significantly affects users' intention to adopt new technology (Baptista & Oliveira, 2015; Lu, Yao & Yu, 2005). Besides, many people depend on each other in different economic and social contexts in developing countries and seldom live in joint family systems. The acceptance of technological implants among disabled people will not only be noticeable to their family members, companions, and neighbors but also their opinions can encourage tourists with disabilities to use technological implants. Thus, it is imperative to study the impact of social influence on tourists with disabilities' acceptance of to use of technological implants. The researchers in this study have defined social influence as an element that prevents or encourages tourists with disabilities to use technological implants.

Social influence in the tourism and hospitality studies can significantly influence the acceptance of customers towards web-based self-service, online booking technology, mobile-based tour guides, tablet apps, social media networks, and technological implants (Dieck et al., 2017; Kim, 2016; Lai, 2015; Lee, 2016; San Martín & Herrero, 2012). Whereas, the context of technological implants suggests that numerous factors can influence an individual's social influence such as recommendations from healthcare professionals, friends, and family can positively influence PWDs' attitudes towards the use of technological implants. The attitudes and behaviors of others in the community including the attitudes and behaviors of other people with disabilities, can also influence their behavioral intentions towards the use of technological implants. Additionally, the social norms and expectations of the community can play a role in an individual's social influence. For instance, if the community generally views the use of technological implants as positive, an individual may also be more likely to view it positively. Kim and Kim (2021) found that the recommendations from healthcare professionals and family members were positively associated with the social influence of assistive technology for older adults with cognitive impairments. Another study by Nga and Nguyen (2018) also found that the attitudes and behaviors of others in the community, such as the attitudes and behaviors of other people with disabilities, positively influenced the social influence of assistive technology among older adults with cognitive impairments. In summary, social influence in the context of technological implants is influenced by a variety of factors for PWDs, including recommendations from healthcare professionals, friends, family, community attitudes and behaviors, and social norms and expectations.

2.10.4 Facilitating Conditions

Facilitating condition is one of the other determinants of an extended technology acceptance model. This determinant was not a part of the original technology acceptance model (Mun et al., 2006). Facilitating conditions are the degree to which a person perceives that there is a technical and organizational infrastructure available in order to support the usage of a system (Venkatesh et al., 2003). Venkatesh, James, and Xu (2012) defined facilitating conditions as the availability of technical and organizational infrastructure to adopt new technology for the support of a user. Three main constructs including compatibility, behavioral control, and facilitating conditions are included in the facilitating conditions (Deborah, Christopher & Higgins, 1995). The presence of sufficient technological infrastructure is extensively required for the successful usage of technological implants.

The construct's theoretical basis derivate from compatibility (Innovation Diffusion Theory), perceived behavioral control (Theory of Planned Behavior), and facilitating conditions (Model of PC Utilization) (Venkatesh et al., 2003). Either it may obstruct or support the behaviors' performance (Ajzen, 2001). For instance, if for an individual the performance is convenient in a leisure activity then the person will be more inclined to participate in that activity. Therefore, it plays a significant role in the willingness of a person whether he or she will participate in a leisure activity or not. Studies in the literature have shown that facilitating conditions and user behavior are positively related to each other (Dwivedi et al., 2019). Therefore, in the current study, if the usage of technological implants is easy to access during traveling due to the availability of technical and physical infrastructure, the chances of tourists with disabilities who are willing to accept technological implants during traveling will increase. Similarly, if there will be lack of technical and physical infrastructure available during traveling to support technological implants, very few tourists with disabilities will be willing to accept the implants.

2.10.5 Intention to Use Implants

Intention to use refers to an individual's likelihood to adopt or use a new technology or product. This study defines intention to use as the likelihood of individuals with disabilities adopting and using these technologies to enhance their abilities. Previous studies on the intention to use technological implants among disabled people suggest that the factors that influence a PWD’s intention to use these technologies are varied and complex. Recent studies found that perceived benefits, ease of use, compatibility, attitude, and social influence can all positively influence an individual's intention to use technological implants (Nguyen & Nga, 2020). The study by Liu and Wang (2021) found that perceived benefits, such as improved quality of life and increased autonomy, were positively associated with the intention to use wearable devices among people with disabilities. Similarly, the study by Nguyen and Nga (2020) found that ease of use and compatibility with the individual's lifestyle was positively associated with the intention to use assistive technology among older adults with cognitive impairments. Additionally, studies also suggest that factors such as the cost of the technology, the availability and accessibility of the technology, and concerns about the risks and side effects of the technology can negatively influence an individual's intention to use technological implants. For instance, the study by Hwang and Park (2019) found that the cost and accessibility of assistive technology were negatively associated with the intention to use it among older adults with cognitive impairments. Thus, it has been found based on the recent studies in the literature that the intention to use technological implants among disabled people is stimulated by many factors including perceived benefits, ease of use, compatibility, attitude, and social influence (Hwang & Park, 2019; Kim & Kim, 2018; Liu & Wang, 2021; Nguyen & Nga, 2020). However, factors such as cost, availability, accessibility, and concerns about risks and side effects can also negatively influence the intention to use these technologies.

2.11 Summary

The second chapter has provided a review of the literature with a comprehensive explanation of transhumanism and cyborg studies with respect to TMD and assessable tourism. However, the search of the literature provided insufficient information and data about the factors affecting TMD acceptance to use technological implants during traveling. Thus, this existing literature review identified gaps in the literature regarding factors affecting people toward the acceptance of new technologies and led to exploring the specific antecedents of TMD acceptance towards technological implants. This has set the direction for the methodological approach of this study.

Chapter 3

METHODOLOGY

3.1 Introduction

This chapter discusses the philosophy of the methodological approach used in the methodology of this research. An exploratory sequential mixed methods design which includes an integration of qualitative and quantitative approach is employed in this study. First, an exploratory qualitative phase of the research design was undertaken consisting of semi-structured interviews in the study 1. Afterward, the study 2 of the quantitative study was conducted based on the gathered results throughout the qualitative exploratory phase and the theories in the literature. The findings of both studies (qualitative and quantitative approaches) integrated a research design that relies on the pragmatism paradigm in order to provide a better understanding of the research problem and objectives (Creswell, 2009).

First, this chapter discusses a pragmatic research philosophy and the reasons of choosing this philosophy used in the thesis is discussed within this chapter. After that, the definitions and conceptual explanation of exploratory sequential mixed methods research paradigm followed by the reasons of adopting such research paradigm are also covered. Finally, the implementations of research strategy including the data collection techniques are explained.

3.2 Pragmatism Research Philosophy

In social sciences, two main methodological paradigms are there to identify the path of research conduction that is positivism and post-positivism (Brotherton, 2008). Further, pragmatism and realism were added by Saunders et al (2009). Positivism investigates such phenomena which adopts a clear analysis of quantitative method and scientific approach that deals with the truth. Conversely, post-positivism investigates and demonstrate comprehensive phenomena from a qualitative viewpoint that focuses on the understanding of subjectivity of social phenomena (Noor, 2008). According to Marshall (1996), the selection of qualitative and/or quantitative research method should be based on the type of research questions and should not be determined by the preferences of the researchers.

This thesis follows the philosophy of pragmatism. The philosophy of pragmatism appears to be a response to unproductive and endless debate between interpretivism or constructivism and positivism or post-positivism (Felizer, 2010). Pragmatism considers being a substitutional paradigm that is based on the assumption of multiple realities that can be empirically investigated and avoids the debate on reality and truth, and focuses more in the real world on solving practical problems (Felizer, 2010). In the pragmatism paradigm, the researchers are free from the restrictions of the selected research paradigm (Creswell et al., 2007). This paradigm aims to investigate a specific phenomenon, question, or theory with the most appropriate method of research and does not believe to determine consistent causal truths and associations.

This thesis employs a pragmatic research approach since it helps to emphasize and focus on the research problem and the utilization of suitable methods of data collection in order to make the researchers fully understand it (Creswell, 2009). Furthermore, Pansiri (2006) has also stated that when mixed method researches are applied it helps the future tourism researches to get better outcomes. This paradigm can also be employed as a guide for grounded inductive researches and deductive research designs. It can manage the possibility for the social sciences to properly construct a combined methodology with respect to the values of both qualitative and quantitative approaches and the generation of knowledge with the help of such research to enhance the better understanding of social life and community (Felizer, 2010).

3.3 Aim of the Research

The main research problem was to assess the willingness and the antecedents of TMD to use technological implants during traveling. The literature review has attempted to provide a comprehensive overview of the accessible tourism, TMD, and technological implants and cyborg comprising of the relevant aspects. However, very limited studies in the literature have focused on all these aspects together in a single study and no empirical framework was tested related with the acceptance of TMD towards technological implants in order to answer the main research question. This research is going to be one of the first researches that attempts to provide a framework on the factors affecting TMD to travel as impaired cyborg tourists. Yet, some basic concepts in the literature are available and lacking empirical basis, which provides a base for mixed methods of data collection and analysis comprises of two phases to answer the main aim of this study.

The researchers of this thesis have used exploratory sequential mixed methods research approach to answer the following research questions.

RQ1. Are TMD willing to travel as impaired cyborg tourists?

RQ2. What are the antecedents of TMD' acceptance to travel as impaired cyborg tourists to/in a destination?

RQ3. What is the effect of the attributes of innovation diffusion on the subjective wellbeing of tourists with mobility disability during traveling?

RQ4. What is the effect of perceived ease of use, perceived usefulness, social influence and facilitating conditions regarding the use of technological implants on the behavioral intentions of TMD during traveling?

By utilizing an exploratory mixed method design, the qualitative investigation of this issue was carried out to obtain an initial comprehension of the aspects and procedure involved in the antecedents of impaired cyborg tourists. It is important to gain the knowledge and understanding of the problem to identify and examine all the related variables through in-depth interviews with TMD before measuring the relationship between the variables. To do so, assessing the willingness of TMD towards technological implants and the factors affecting their willingness, as the first two research questions (RQ1 and RQ2) required an in-depth look into the understanding and experiences of TMD who experience accessibility issues and barriers during traveling. Therefore, initially in-depth interviews through qualitative research phase were conducted. Once, the main factors of TMD acceptance towards technological implants were identified, a quantitative study was conducted for the empirical validation of the identified factors on a larger sample size and answer the last two research questions (RQ3 and RQ4) of the study which were based on the identified factors from RQ1 and RQ2, and related theories.

3.4 Research Design

This study involves a two-component research design comprising of a theoretical and empirical component. The theoretical component involves a comprehensive review on accessible tourism (including the barriers involved at the destinations for TMD), transhumanism, TMD, technology acceptance models and theories related with the acceptance of medical and non-medical technological implants to improve human capabilities and disabilities. Since this study is one of the first studies that have examined the acceptance of TMD towards medical technological implants while traveling, therefore the detailed literature review has combined to provide the context and acted as a base for the following empirical investigation that involved exploratory sequential mixed methods.

In order to achieve the main aim of the study, this study has used an exploratory sequential mixed method research design. Mihas and Institute (2019) have defined exploratory sequential mixed methods as a study that begins with an exploratory qualitative phase and sequentially moves to a quantitative phase. Sequential designs are mixed method researches where the general insights into the topic of interest are gained to explore the variables by first conducting a qualitative study that follows with generalizability of larger sample of quantitative study.

Firstly, in order to assess the willingness of TMD towards technological implants, conducting an exploratory qualitative research phase was the first step. A video-induced semi-structured interviews were conducted. The video was about the technological implants for people with mobility disability and how it helps during traveling. Then, the interviewees were interviewed to answer the questions related to the video. The analysis produced codes and themes which provided a foundation to develop a framework and test the hypothesis through a quantitative survey with a new data set. Creswell (2021) described the process of exploratory sequential designs in figure 3.1.

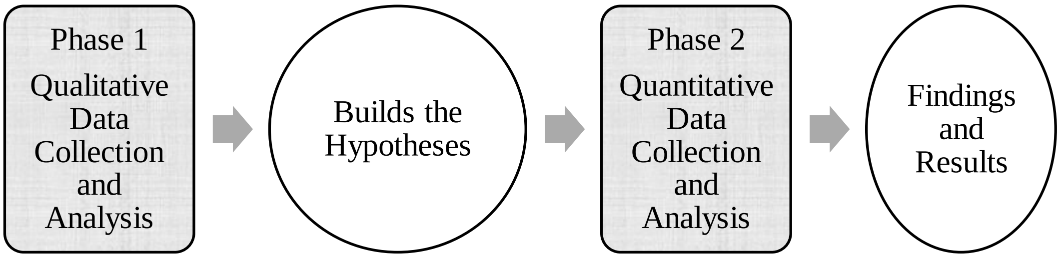

Figure 3.1: Exploratory Sequential Design (Creswell, 2021)

3.5 Mixed Methods Research

Research methodologies are usually classified as either qualitative research methods or quantitative research methods. Qualitative methods mostly comprise a bottom-up approach. Initially, descriptive rich data is collected in order to use and interpret to produce prospective theories (Creswell & Plano Clark, 2007). Therefore, qualitative methods are known for their inductive nature since they focus more on theory generation than theory testing (Bryman, 2012).

In contrast, quantitative methods as compared to qualitative methods involve a top-down approach. Firstly, it involves theory identification, followed by hypotheses development. Finally, the quantifiable data is collected to analyze and either accept or reject the hypotheses (Creswell et al., 2007). Quantitative researches are more likely deductive in nature and involves measurable and closed-ended data collection

(Bryman, 2012; Creswell et al., 2007). In contrast, qualitative research is generally related with naturalistic observation or open-ended data (Creswell et al., 2007).

The mixed methods research by combining both qualitative and quantitative approaches provide a more comprehensive and better understanding of research problem as compared to using a single research approach. The researchers by using the mixed methods approach have the prospect to think outside the box which can be ultimately beneficial in the investigation of emerging concepts (Brannen, 2008). Thus, based on the above explanation, this study has adopted this useful approach to answer the research questions. Nevertheless, mixed method approach has also received some critics in terms of its methodological rag. For example, according to Bergman (2008), quantitative research into their design must include an element of qualitative research to improve their projects' marketability. He also claims upon this point that mixed method researches are often inadequately justified. Thus, this research has provided some base in support of mixed method approach to avoid such criticism.

3.5.1 Basis for Mixed Methods Approach

Bryman (2008) has presented an analysis of 232 mixed method researches in his book on social research methods and summarized the most commonly basis that researchers adopted while using mixed method designs. The findings demonstrated that employing a mixed method approach needs sixteen possible justifications including diverse research questions, development of instrument, explanation, utility, triangulation, credibility, sampling, unexpected results, process, offset, illustration, completeness, context, enhancement, diversity of views, and confirmation and discovery (Bryman, 2008). The present study employs two of the important justifications from the above list for the implementation of mixed methods design. The first justification for employing mixed method approach is diverse research questions where the second relates to confirmation and discovery. Both the notions refer to the basis of augmenting either qualitative or quantitative findings by collecting data with quantitative or qualitative approach of research (Bryman, 2008). Using one research approach alone in this thesis does not present a comprehensive way of investigation of impaired cyborg tourists. The reason might be due to the fact that one set of symptoms cannot be simply applied to some other disorder in order to discover unique symptoms. Based on this standpoint, it would be opposing to continue with purely qualitative or quantitative study. Therefore, using a mixed method research by employing qualitative and quantitative research methods appears to be the best way to enhance the study's findings. Furthermore, this also allows a combination of both inductive and deductive reasoning.

A mixed method approach is employed as a tactical tool to provide a rich set of data utilizing semi structured in-depth interviews together with quantitative survey. An exploratory sequential mixed methods design comprises of two phases allows the mixture of qualitative and quantitative strands. The mixed set of data has the ability to provide qualitative insights in order to explain quantitative findings (KhooLattimore, Mura, & Yung, 2017). Moreover, only 6% to 12% tourism journal articles have adopted a mixed method approach regardless of its methodological benefits (Ballantyne, Packer, & Axelsen, 2009; Molina-Azorin & Font, 2016). Therefore, there has been a call for tourism journals for more mixed method researches (Changjiang Tao et al., 2019). The mixed method approach of this thesis involves multiple stages. The first stage of this study is an exploratory study where the author of this study explores the travel experiences of TMD, barriers that TMD face while traveling, and the assistive devices they use for their disability during traveling. Exploratory studies investigate those distinct phenomena that are characterized by lack of preliminary detailed researches. Yin (2003) defined exploratory study as a mean for developing consecutive studies by defining necessary questions and hypotheses. Since transhumanism and disabled tourism are new areas, not many studies have focused in the literature. Therefore, this study is an exploratory study to understand the phenomena through qualitative interviews and finalize the antecedents of TMD acceptance towards technological implants. According to Creswell (2003), qualitative research took place that allows the quantitative phase to intricate on the results from the qualitative phase. Therefore, first qualitative research took place aimed to explore the perceptions of TMD towards medical technological implants during traveling and the antecedents of TMD acceptance to travel as impaired cyborg tourists. The initial qualitative stage involved interviews and confirmation of instruments' design.

The second stage of this study is a quantitative study to test the hypotheses of the proposed model which was built based on qualitative interviews. The quantitative study was sought to empirically test the antecedents of TMD acceptance to use technological implants and travel as impaired cyborg tourists that were explored in the qualitative phase of the study. Thus, a quantitative self-administrative survey was conducted based on the qualitative findings to determine whether the results of qualitative research were generalizable (Creswell, 2013).

3.6 The Qualitative Research Phase of Study 1

The first stage of this study was an exploratory qualitative study to understand the phenomena. This study has adopted such paradigm for data collection and analysis due to the following reasons. First, the study aims to analyze the willingness of TMD to travel as impaired cyborg tourists. Since transhumanism (cyborg) from the perspective of disabled tourism is a new area, not much preliminary information is available. The qualitative exploratory studies are best suited for such exploratory rather than confirmatory investigations that lack detailed preliminary research and have the potential to shed light on the under-examined phenomena (Gibbs, 2012; Yin, 2014; Hennink, Hutter, & Bailey, 2011). Second, qualitative studies are well-positioned to explore human behavior and attitudes in difficult-to-predict, varied, and complex conditions (Tzschentke et al., 2008), such as TMD acceptance towards technological implants while traveling, and for the studies on minority groups and people with disabilities (O'Day & Killeen, 2002). Last, the qualitative studies work well for such populations that have restricted accessibility and are small in size (Silverman, 2013). As the population of people with mobility disability are hard to access and are limited, thus justifies the adoption of such research paradigm.

3.6.1 Qualitative Sampling

Personal contacts were used for the initial identification of the interviews, through social media apps (e.g., Facebook and Instagram), connecting us to the interviewees and other mediators who linked us to the additional contacts. Social media forums, where PWDs share their experiences and exchange their ideas, were also used for the interviews. Some of the famous Facebook groups for people with mobility disability are wheelchair Users Group, Spinal Cord Forums, Disabled People Movement, and "I thank God for my handicaps, for through them I have found myself". The respondents were initially recruited based on convenience sampling followed by snowball sampling.

3.6.2 Qualitative Data Collection

The research subjects were selected based on having some reduced or permanent mobility impairment, prior experience with assistive devices, and must have travelled at least once in a year. After meeting the general criteria, different perspectives including gender, age, degree of mobility, prior travel experience, and nationality have contributed to achieve sample heterogeneity.

The interview questions were based on the literature related with the barriers facing by PWDs at destinations, theory of innovation diffusion, TAMs and other theories related with the acceptance of medical and non-medical technological implants to overcome disability. The selected questions were complemented with feedback from the TMD and experienced academicians subjected to their relevance with the objectives of this study and test the face validity of the questions. The gained feedback from the comprehensive review of literature, TMD, and experienced academicians were merged to produce a more precise set of questions. As a result, a range of semi-structured questions were asked during the interviews, such as how often do they travel, what type of places do they travel and why they choose such places. They were also asked about their positive and negative travel experiences in general by considering their latest trip they remember. There were questions on the assistive devices they use for their disability and the pros and cons of using those devices.

The interviews were conducted online via zoom due to the diverse locations of the interviewees and COVID-19 pandemic. Through their experiences on assistive devices, we showed them a video on technological implants for people with mobility disability. The video was about how these implants help PWDs to walk, travel and do all the activities like non-disabled people. Followed by the video, we asked the interviewees about their views on the technological implants, whether they are interested in implanting them, and what could be the possible strength and weaknesses of using such implants while traveling. The initial set of questions and the link of the video is attached in Appendix A.

An in-depth semi-structured interviews lasting between 40 and 60 minutes were conducted. Semi-structured interviews allow high degree of the depth of collected data by providing the information on the meanings that the interviewees attribute to their practices. Semi-structured interviews also reveal the in-depth attitudes and true opinions of participants on the sensitive topics of society, for instance willingness of TMD to travel as cyborgs (Ghauri & Gronhaug, 2005). Further, it has the analytical flexibility which provides a detailed investigation of a specific area (Veal, 2011). Since this is the right tool for sharing of opinions and ideas of the interviewees. An interview guide was followed based on the literature review and objectives of the research. Pilot interviews were deployed with two travelers from India and Pakistan who were suffering from mobility disability. Following the post pilot feedback, minor changes were made in questions interview guide for better clarity and understanding.

In total, eighteen people with impaired mobility agreed to share their travel experiences and views on the technological implants while traveling. Individuals were formerly briefed on the study objectives and were assured anonymous data treatment and presentation. If they were uncomfortable in any manner about the questions or the topic as inappropriate, they were allowed freely to quit at any point of interviews. The decision of interviews discontinuation was based on saturation point (Bowen, 2008), when new interviews no longer provided new information or extended the previous codifications. Since the sample was homogeneous, following measures were taken place to avoid saturation point being reached too quickly. Firstly, the participants were selected based on their diversity in terms of their nationality, gender, age, travel patterns, and degree of mobility. Secondly, parallel networks were used with different starting points for the snowball technique.

3.6.3 Qualitative Data Quality

According to Onwuegbuzie and Johnson (2006), the qualitative researches instead of validity use the term trustworthiness. The researchers instead of using traditional reliability and validity measures seek believability through a verification process (Eisner, 1998). Several elements such as dependability, confirmability, transferability and credibility create trustworthiness (Lincoln and Guba, 1985). Therefore, the current study used four primary procedures of validation to establish trustworthiness, credibility and validate the findings of qualitative study.

- The first procedure is triangulation method which was introduced by Creswell (2009). The method involves the junction of multiple methods of data collection. This study has collected both qualitative and quantitative data using numerous approaches such as interviews, surveys, textual and numeric data.
- The second procedure is the clarification of the biasness of interviewer from the study outset. The position of the researcher with any assumptions and biases is lightened in this procedure that can affect their inquiry (Razzhavaikina, 2007; Saunders et al., 2009). The researcher to avoid such gestures took an effort that could show any bias in their thinking.

- Lincoln and Guba (1985) stated the third procedure that is to provide thick, sufficient and rich descriptions to the readers so that the accuracy of the research findings can be verified.
- Lastly, the researchers of this study addressed the following aspects. First, the researcher was well-informed about the situational context, zoom platform and topic of the research where the interview process was taking place. Second, for all the online interviews, the researcher provided a list of interview themes to the participants prior to data collection. Third, the researcher and participants could clearly hear each other during the interviews and the interviews were audio recorded upon the permission of the participants. Fourth, the researcher did not show her appearance since it could influence the interviewees' perceptions and affect the credibility of researcher in the interviewees' eyes which might result a failure in gaining their confidence. The leading bias can affect the obtained data's reliability. Fifth, all the questions were clearly phrased to make the interviewees easily understand them. Besides, the questions were asked in a neutral voice of tone to all the participants. Sixth, the researcher gained the consent from the participants in advance and explained the research nature and objectives. Seventh, the researcher paid attentive and careful attention to the participants during the data collection. Finally, the researcher has summarized the responses of the participants back to them in order to test her understanding. This helped the interviewees to correct the researcher where required and avoid short interpretations and biasness.

3.6.4 Qualitative Data Analysis

Some of the interviews were conducted in English language, while others were conducted in Urdu language with a subsequent English translation performed by a proficient language translator. The interviewees were offered no incentives. The interviews were audio recorded upon the permission of the interviewees for their subsequent transcription and analysis. While the process of transcription was very time consuming, it provides greater flexibility and interaction in conducting interviews and delivers the exact information given by the interviewees (Jennings, 2005). Data analysis of this study was based on thematic analysis. The interviews were inputted into Nvivo11 software for transcription and to run thematic analysis. According to Burnard, Gill, Stewart, Treasure, & Chadwick (2008), thematic analysis identifies emerging themes to verify, confirm, and qualify them repeating the process through searching in the data until final themes and categories are identified. Thematic analysis involves following steps including getting familiar with the data, generating initial codes, finding themes, and reviewing the identified themes to define the final theme (Braun & Clarke, 2006). The results of the thematic analysis formed a base for pattern recognition, and two main themes with multiple sub-themes were inductively derived. The results of thematic analysis were employed by the verbatim quotations to support the main points made.

The codes, themes and sub-themes of qualitative results are presented in Section 4.2 which for developing a primary research framework forms a foundation to be tested in study 2 later.

3.7 The Quantitative Research Phase of Study 2

Once the phenomenon is understood and the main concepts were identified, this study has confirmed the constructs and made the model to run quantitative analysis. First, to make the selected constructs and their items valid and practical, the initial set of constructs along with the previously validated constructs from the literature and theories (theory of innovation diffusion and TAMs) were reduced based on the content validity, pre-test and pilot study, and preliminary factor analysis. The pilot study was followed by the main survey. The data collection of the main survey was conducted online and the data was collected from the TMD using the questionnaire survey. The survey addressed the items related with the antecedents of the acceptance of TMD to travel as impaired cyborg tourists that were identified through the study 1 of the qualitative analysis and the theories in the literature.

The quantitative survey tested the generalizability of the identified antecedents that were identified in the qualitative phase of the study and addressed the research question as "antecedents of the acceptance of TMD to travel as impaired cyborg tourists?" Based on this research question, the quantitative phase of this thesis have following specific research questions:

- What is the effect of the attributes of innovation diffusion on the subjective wellbeing of tourists with mobility disability during traveling?
- What is the effect of performance expectancy, effort expectancy, social influence and facilitating conditions regarding the use of technological implants on the behavioral intentions of TMD during traveling?

The following hypotheses are derived based on the quantitative research model which was developed in the chapter 6 of this thesis:

- Attributes of innovation diffusion positively influence the subjective well-being of tourists with mobility disability during traveling.
- Subjective well-being positively influences tourists with mobility disability intention to use technological implants during traveling.

- Performance expectancy regarding the use of mobility implants to correct disability significantly influences the mobility impaired tourist' intention to use them while traveling.
- Effort expectancy regarding the use of mobility implants to correct disability significantly influences the mobility impaired tourist' intention to use them while traveling.
- Social influence regarding the use of mobility implants to correct disability significantly influences the mobility impaired tourist' intention to use them while traveling.
- Facilitating conditions regarding the use of mobility implants to correct disability significantly influences the mobility impaired tourist' intention to use them while traveling.

3.7.1 Quantitative Research Instrument

According to Sekaran (2003), questionnaires for the data collection are the instruments when the researcher knows exactly what he/she wants and how he/she needs to measure the constructs. The researcher in the current study used deductive approach to operationalize the measurement items. The main aim of the quantitative section of this study was to measure how innovative diffusion, subjective well-being, performance expectancy, effort expectancy, social influence, and facilitating conditions affect TMD intentions to use technological implants during traveling. The researcher used previously validated measures to operationalize the research constructs (Diener, 1984; Martin et al., 2021; Riffai, Grant, & Edgar, 2012; Song & Zinkhan, 2008; Sun et al., 2013; Venkatesh & Davis, 2000; Venkatesh et al. 2012; Yoon & Kim, 2007). Multiple items based on a 5-point Likert scale were used to measure all the constructs as shown in Table 3.1. The discussions of all the operational measures are detailed below in the following sub-sections.

Table 3.1: Measurement Source and Scales

Constructs	Source	Total Items	Scale Type
Autonomy	Song and Zinkhan, 2008	3	5-point Likert Scale
Perceived Convenience	Yoon and Kim, 2007	4	5-point Likert Scale
Social Inclusion	Martin et al., 2021	4	5-point Likert Scale
Subjective Wellbeing	Diener, 1984	4	5-point Likert Scale
Intention to Use Implants	Venkatesh and Davis, 2000	2	5-point Likert Scale
Performance Expectancy	Venkatesh et al. 2012	4	5-point Likert Scale
Effort Expectancy	Venkatesh et al. 2012	4	5-point Likert Scale
Social Influence	Venkatesh and Davis, 2000	2	5-point Likert Scale
Facilitating Conditions	Riffai, Grant, and Edgar, 2012; Sun et al., 2013	3	5-point Likert Scale

3.7.1.1 Autonomy

The autonomy was measured based on a three-item scale. The items used to measure the scale were adapted from the previous studies on independence and autonomy (Song and Zinkhan, 2008). Previous studies in the literature have used the same three items to measure autonomy (Lunardo and Ponsignon, 2019; 2020). To document the responses, a 5-point Likert scale was used ranging from "strongly disagree" to "strongly agree".

Table 3.2: Autonomy Scale Items

	Items
AUT1	I will be able to choose where to travel with technological implants.
AUT2	I will freely choose which areas I want to explore with technological implants.
AUT3	I will have absolute full control over where I can go with technological implants.

3.7.1.2 Perceived Convenience

A four-item scale was used to measure perceived convenience. The items were adapted from Yoon and Kim (2007). The same items were also used to measure perceived convenience in the studies on the acceptance of moodle, mobile instant messaging, wireless LAN, and video games (Bassiouni, Hackley & Meshreki, 2019; Hsu & Chang, 2013; Yoon, Jeong & Rolland, 2015; Yoon & Kim, 2007). The instrument's reliability based on the previous studies were greater than 0.8 showing that the instrument is reliable and valid since the value was greater than the recommended value of 0.7. Using a 5-point Likert scale, all the items were measured.

Table 3.3: Perceived Convenience Scale Items

	Items
PC1	I can travel at any time via the technological implants.
PC2	I can travel at any place via the technological implants.
PC3	The technological implants are convenient for me to engage in any activity during travel.

PC4	I feel that technological implants are convenient for me to learn during traveling.

3.7.1.3 Social Inclusion

Social inclusion was measured using a four-item scale adapted from Martin et al., (2021). The researchers have tested the instrument on adults with intellectual disabilities. The internal reliability of the four-item scale was greater than 0.7 showing that the value was exceeding the threshold value. A 5-point Likert scale ranging from strongly disagree to strongly agree was used to rate the items.

Table 3.4: Social Inclusion Scale Items

	Items
SINC1	The technological implants will help me to find out about/plan to be with/ stay close to family/friends/work.
SINC2	My technological implants will help me to do things with family/friends/ work.
SINC3	My technological implants will help me to make friends with new people among friends/work.
SINC4	My technological implants will help me to feel like I belong with family/friends/work.

3.7.1.4 Subjective Wellbeing

The four items to measure subjective wellbeing were adapted from Diener, (1984). As per Diener (1984), the internal consistency of subjective wellbeing was 0.87, greater than 0.70. A 5-point Likert scale ranging from 5 = *strongly agree, 4 = agree, 3 = neither agree nor disagree, 2 = disagree, and 1 = strongly disagree,* were used to rate all the responses.

Table 3.5: Subjective Wellbeing Scale Items

	Items
SW1	Using the technological implants will be part of my ideal life.
SW2	My life is excellent when I will use the technological implants.
SW3	I will be satisfied with my life when I will use the technological implants.
SW4	I will get the important things I want by using the technological implants.

3.7.1.5 Intention to Use

Intention to use was measured using a two-item scale. The scale was adapted from the previous studies on technology acceptance models in the hospitality and tourism industry (Venkatesh and Davis, 2000). Venkatesh and Davis (2000) have reported 0.93 as the reliability of the intention to use construct in their study on technology acceptance model. All the three items were measured based on a 5-point Likert scale.

Table 3.6: Intention to Use Scale Items

	Items
ITU1	I intend to use the technological implant.
ITU2	I predict that I will use the technological implant.

3.7.1.6 Performance Expectancy

Table 3.7 provides details about the performance expectancy construct and its scale items. Performance expectancy was measured based on a four-item scale adapted from Venkatesh et al. (2012). The respondents were asked to report the answers on the basis of a 5-point Likert scale. Venkatesh et al. (2012) in their study reported a good internal consistency of the construct.

Table 3.7: Performance Expectancy Scale Items

	Items
PE1	The technological implant will be useful in my daily life.
PE2	Using the technological implant will increase my chances of achieving things that are important to me.
PE3	Using the technological implant will help me accomplish things more quickly.
PE4	Using the technological implant will increase my productivity.

3.7.1.7 Effort Expectancy

Effort expectancy was adopted from Venkatesh et al. (2012) and was measured using a four-item scale. The details of the construct items are presented in Table 3.8. Just like performance expectancy, the internal consistency of effort expectancy was exceeding the threshold value of 0.70 as per Venkatesh et al. (2012). A 5-point Likert scale was used for the respondents to report all the answers.

Table 3.8: Effort Expectancy Scale Items

	Items
EE1	Learning how to use the technological implant will be easy for me.
EE2	My interaction with the technological implant will be clear and understandable.
EE3	I will find the technological implant easy to use.
EE4	It will be easy for me to become skillful at using the technological implant.

3.7.1.8 Social Influence

Social influence was measured using a two-item scale and was adapted from Venkatesh and Davis, (2000). The details of the scale items of the construct are provided in the Table 3.9. Based on the findings of the Venkatesh and Davis (2000) study, the internal reliability of social influence was 0.89. A 5-point Likert scale ranging from strongly disagree to strongly agree was used to rate the responses.

Table 3.9: Social Influence Scale Items

	Items
SI1	People who influence my behavior think that I should use technological implants during traveling.
SI2	People who are important to me think that I should use technological implants during traveling.

3.7.1.9 Facilitating Conditions

Three items were used to measure facilitating conditions. The items were adapted from the previously validated studies on technology acceptance models (Riffai, Grant, and Edgar, 2012; Sun et al., 2013). Based on the studies, the internal consistency of the construct was exceeding the recommended value of 0.70. Responses were utilized on a 5-point Likert scale ranging from 1 as “strongly disagree” to 5 as “strongly agree”. The details of the scale items are presented in Table 3.10.

Table 3.10: Facilitating Conditions Scale Items

	Items
FC1	I will be able to have all the necessary resources for using the technological implants.
FC2	I will acquire sufficient knowledge for using technological implants.

FC3	Technological implants will suite well with my health care routine

3.7.2 Quantitative Population and Sampling

The aim of this thesis was to determine the willingness of TMD to travel as impaired cyborg tourists and what are the factors affecting them. To gather data for this study, we have decided to utilize Amazon Mechanical Turk (AMT) as a platform for data collection. The website Amazon Mechanical Turk (AMT) used in this study for data collection is an effective data collection tool for recruiting hard to reach population (Guttentag, 2016; Smith, Sabat, Martinez, Weaver & Xu, 2015). Besides, the website is a recommendable and low-cost choice that results on a higher level an advanced quality of data which is considered to be better than many other common alternate ways of data collection (Goodman, Cryder & Cheema, 2013; Simons & Chabris, 2012). This platform allows researchers to reach a diverse pool of participants who can provide valuable insights into your research topic. Likewise, the researchers have used diverse strategies to promote the AMT's data quality (Chen, 2012). First, the participants were restricted to only those tourists who were suffering from mobility disability and have knowledge of English language. Second, different verifiable questions were included in the survey. Similarly, multiple sampling approaches were used to decrease the sample biasness in the data set.

a. **Target Population:** the target population for this study is the tourists with mobility disabilities. Specify the criteria for inclusion, such as individuals who have a documented mobility disability, have traveled as tourists, and can communicate in the English language.

b. **Sampling Frame:** Sampling frame is defined as the list of individuals or units that comprise the target population and are accessible for sampling. In this study, the sampling frame would be the pool of workers registered on the Amazon Mechanical Turk platform who meet the inclusion criteria mentioned above.

c. **Sample Size**: Determination of an appropriate sample size is significant in order to ensure the study's statistical validity and representativeness of the target population. The sample size can be determined based on factors such as the level of desired precision, the expected variability in responses, and the available resources for data collection. In terms of sample size, a total of 221 respondents were recruited. The minimum size of the sample for this study was derived using the criteria for SEM based on optimal sample size. The required minimum sample size per power analysis was 186.

d. **Sampling Technique:** This researchers in this study have used purposive and self-selection sampling techniques which are non-probability sampling techniques. Non-probability sampling is commonly employed when using online platforms and provides convenience and cost-effectiveness. In order to recruit an appropriate number of respondents, the current study has used multiple frame sampling approach (Kalton & Anderson, 1986). The researchers used such techniques because there were conditions related with the respondents' recruitment since the researchers purposively recruited those respondents who were suffering from mobility disability, travel at least once in a year and have knowledge of English Language.

e. Sampling Procedure: To obtain a sample from the AMT platform, this study has followed the following steps:

- Design a task on the AMT platform to attract potential participants. We have clearly outlined the purpose of the study, inclusion criteria, and the expected time commitment for participants.
- We have included the screening questions at the beginning of the task to verify if potential participants meet the inclusion criteria. Examples of screening questions includes questions about the presence of a mobility disability, previous tourist experiences, or the ability to communicate in the required language.
- We have ensured the participants provide informed consent before proceeding with the study. The researchers of this study clearly explained the purpose of the research, potential risks and benefits, and how the data will be handled.
- We have collected the basic demographic information from participants to understand the characteristics of the sample. This includes age, gender, nationality, and travel experience.
- We have used a combination of open-ended and closed-ended questions to collect relevant data on the factors affecting TMD to travel as impaired cyborg tourists. We considered the incorporating standardized scales or validated questionnaires that were appropriate for the research objectives of this study.
- The researchers have implemented quality checks to ensure the reliability and validity of the collected data. For example, we have included attention-check questions and asked participants to provide additional details about their responses.

- We have offered fair compensation of 0.50$ to participants for their time and effort. We ensured that the compensation aligns with the prevailing rates on the AMT platform.
- We have anonymized the collected data by removing any personally identifiable information to ensure participant privacy and confidentiality.
- After completing the data collection, we have proceed with data analysis to derive meaningful insights.
- Finally, we have also acknowledged the limitations associated with using non-probability sampling through Amazon Mechanical Turk. Recognize potential biases, such as self-selection bias and limited generalizability

3.7.3 Questionnaire Pretesting

The questionnaire as explained above consisted of three sections, dealing with antecedents of TMD acceptance of using technological implants during traveling, TMD intention to use technological implants, and respondents' demographic characteristics. There were in total 37 items, out of which, 30 of the items are related with the research constructs and 7 were demographic questions. Before administering to the target sample, all the survey items used in this study were cautiously and progressively developed through pre-testing. The final items during the pre-test were conceptually reviewed again to progress items' content validity (Berghman, 2006). As a result, minor changes were made as regards to the order of questions, length of questions, and questions' language.

Saunders et al (2009) defined content validity as the degree at which the surveys' measurement questions provide coverage of the questions that need to be investigated. To rephrase it, the questionnaire measurement items be supposed to signify a proper sample of the construct's theoretical content sphere (Hardesty & Bearden, 2004). Simultaneously, the questionnaire face validity was also assessed. Face validity is defined as the degree at which an item reflects what it is anticipated to measure (Hardesty & Bearden, 2004).

Initially, the survey questionnaire was distributed among 10 people in personal contacts who are suffering from mobility disability in order to establish both content and face validity of the questionnaire. The respondents were asked to determine the logical order, understandability, and clearance of the questionnaire wording (face validity). They were also asked to share their views on whether all the 30 items represent the content validity of the research constructs. Particularly, the respondents were asked about the clarity of the instructions, length of time to complete the questionnaire, level of difficulty in answering any question, wording of the questions if they are vague or unclear, questionnaire layout as attractive or clear, and their viewpoints on main subject omissions. In additions, the researchers also asked about the questions whether they are representative of the conceptual definitions of the constructs by following Saunders et al (2009) guidelines. All the respondents reported that the questionnaire items were in logical order, easy to understand, clear, and representative of the research constructs.

3.7.4 Pilot Test

The questionnaire should be pilot tested prior of using it for the data collection. The researchers of this study collected the data from 30 students of Eastern Mediterranean University and Cyprus West University who are suffering from mobility disability and travels at least once in a year. By following the Saunders et al., (2009) guidelines, the respondents were asked to fill the questionnaire as a test. The main aim of conducting the pilot test was to improve the survey questions so that the target population experiences no difficulty in answering the questions and recording the data. The researchers can also attain an evaluation of the validity and reliability of the questions from the collected data. Therefore, using the pilot test data, an initial analysis was carried out to guarantee the collected data so that the research questions can be answered.

3.7.5 Constructs' Reliability

The collected data from the pilot study were inputted into Statistical Package for Social Sciences (SPSS) software version 2.0 to test the reliability of the constructs used in the study. According to Moser and Kalton (1971), generally pilot studies are perceived as the basis for testing internal consistency (reliability) and validity of the variables. Thus, the values of Cronbach's alpha (α) were used to evaluate the measurement properties. Cronbach's alpha is defined as an index of a set of measurements' internal consistency (construct reliability) (Everitt and Skrondal, 2006). Therefore, on all the constructs of the study, a reliability analysis was performed. The results showed that the internal consistency of all the constructs were highly reliable.

The researchers with the help of pilot studies can identify and address as many problems as possible prior the execution of the final survey. The results of the pilot study showed that there were no significant problems identified.

3.7.6 Quantitative Data Collection

The quantitative phase of this study has analyzed both primary and secondary data. The primary data was collected using an online questionnaire survey while the secondary data was gathered from the journal articles, research papers, books, websites and other useful resources.

The same study inclusion criterion which was used in the qualitative study was also used for quantitative data collection. The research subjects of quantitative study were mobility impaired people, must know English language, and between the age group of 15 and above due to the excessive difficulty of sampling bound mobility impaired travelers. According to Choi, Lehto and Morrison (2007), the results are more generalizable and have low chances of bias when the data is collected from an expanded sample. Therefore, this study was not limited to any specific location or country and the data was collected online from the TMD of different locations and countries.

The survey period begins at the mid of October 2022 and ended on the end of December 2022. Questionnaire survey was used to collect data online. In order to increase the response rate, the purpose of the survey was explained to the respondents by the researcher. The questionnaire survey was conducted in English language therefore the participants were required to be able to speak and understand English. The respondents were also allowed to quit the survey during any point of the data collection. Since impaired cyborg tourist is a completely new concept and not many people know about it, therefore the concept is not briefly studied in the literature.

The quantitative study was also a video induced survey. The data for the questionnaire survey was collected through AMT. The same video along with the survey questionnaire were uploaded on the AMT platform for the respondents through a survey link via self-selection sampling technique.

To begin with, in the mid of October 2022, the questionnaire was posted on Mechanical Turk (MTurk) which is an online peer to peer platform under Amazon (an e-commerce company). MTurk is a web-based online platform through which researchers perform different tasks including data collection on a small fee from the members of Amazon Mechanical Turk (AMT), who are also general public. Researchers posts online tasks and survey links on MTurk where the workers who are the members of MTurk complete the survey and get a small amount of money in return as a token of appreciation. These tasks vary from a broad range of human intelligence jobs including taking survey from the general public, handwriting, recording, and categorizing pictures. The researcher as a requester creates an account on AMT (http://www.mturk.com) to initiate a survey. The researcher deposits funds into his/her account using the web interface of MTurk and posts a "job listing" which is known as Human Intelligence Task (HIT). The HITs complete based on the amount to be paid. AMT charges 20% fee on the amount paid to the HIT workers for completing the survey. Researchers to improve the quality of the data can also set some other requirements including country of residence, approval rates etc. Once the workers meet these eligibility requirements, they log in to their accounts on MTurk to review all the HITs that are available on their account and choose the most appropriate one to start (Buhrmester, Kwang & Gosling. 2011). MTurk is increasingly being used in social sciences studies to recruit the subjects in research (Guttentag, 2016). Berinsky, Huber and Lenz (2012) found that MTurk is the most reasonable and inexpensive data collection method as compared to other data collection pools in terms of both cost of subjects and studies' implementation time. In this thesis, the research respondents were offered $0.50 upon completion of the survey as a token of appreciation.

3.7.7 Quantitative Data Analysis

Research model and quantitative hypotheses was built based on qualitative investigation and theories in the literatire. The quantitative data was collected through a video induced questionnaire survey. The collected data is analyzed to investigate both, the descriptive characteristics (frequency and mean) of the study respondents and test the hypotheses of the study. By using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), the measurement model of the main constructs in the hypothesized model were validated (Bagozzi, 1980; Chin & Todd, 1995). SPSS was used to analyze the data related with the phenomena. SPSS was used to run the descriptive analysis and EFA of the study. Once the major concepts of the latent variables were identified, the data was inputted in WarpPLS software to deal with missing values and outliers and SmartPLS software version 3.0 to run CFA and assess the overall measurement model and test the structural model through structural equation modeling (SEM).

3.7.8 Missing Values and Outliers

The researchers have checked the data for missing values and outliers in order to examine the data accuracy. Out of the total 233 returned questionnaires, the researcher excluded 12 questionnaires with missing values. This resulted the residual data set free of missing values. On the other hand, Grubbs (1969) has defined outliers as the one that looks noticeably diverged from the sample's other members where it occurs. The researcher to manage the outliers has used the software called WarpPLS which involves the analysis of ranked data. Under the ranked data, all the data prior to the analysis of SEM is ranked automatically where the original data is preserved in unranked format (Kock, 2012). Normally, outliers are significantly reduced when the data is ranked in a way as the value distances and eliminates outliers effectively without any sample size reduction.

WarpPLS additionally allows the method for the statistical relationship evaluation which is known as the distribution-free jackknife method. Leuangthong et al., (2004) defined Jackknife method as resampling with no replacement. This exceptional PLS feature simplifies the analysis of complex models under such situations where it is hard to produce reasonable results. In data gathering, Jackknifing works well at handling outliers as compared to bootstrapping technique. Therefore, jackknifing technique was used by the researchers to deal with the outliers in the data set while obtaining reliable results and p-values without reducing the sample size. After dealing with the missing data and outlier examination, partial least square based structural equation modeling (PLS-SEM) was conducted.

3.7.9 Formative Vs Reflective Measures

In business and marketing studies, the traditional approach to measurement involves using reflective indicators, where observed indicators are expected to reflect variations in underlying or latent variables. The causal relationship in reflective indicators goes from the latent variable to the observed indicators, meaning changes in the underlying variable are expected to be reflected in all observed indicators, including multi-item scales. Conversely, formative indicator models assume the opposite direction of causality, where the indicators cause the latent variable, and the meaning of the latent variable is defined by the content of the indicators. This has implications for classical test theory, as reflective indicators must be internally consistent, while formative indicators do not have the same requirement. (Cadogan et al., 2008).

In various fields of research, many studies have inaccurately specified their indicators as reflective when they should have used a formative measurement model, either due to default or erroneous design. This misspecification can impact the study's conclusions about the theoretical relationships among latent variables. Two statistical methodologies, covariance-based SEM (CB-SEM) and partial least squares structural equation modeling (PLS-SEM), can be used to estimate SEM with constructs that include formative measurement models. This study utilizes PLS-SEM and will discuss its characteristics in the following section. Previous research has identified misspecification issues related to the adoption of reflective indicators when formative indicators are appropriate or vice versa, highlighting the importance of accurately specifying indicators to ensure valid conclusions (Ringle et al., 2009; Kline, 2011).

3.7.10 Structural Equation Modeling (SEM)

The SEM technique is regarded as one of the most significant mechanisms of applied statistical multivariate analysis that many researchers have employed in diverse fields including medicine, education, economics, biology, consumer behavior and marketing (Pugesek et al*.*, 2003). Byrne (2010) has defined SEM as a statistical tool that involves the analysis of structural theory by using confirmatory approach on a given phenomenon. Generally, the theory of SEM signifies causal procedures that produce multiple variables' observation (Lampe et al., 2003). It conveys two main ideas of the procedure. First, under the study, a group of regression and other structural equations provide the causal processes by taking in to account the measurement error (Kopp et al., 2003; Roldán & Sanchez-Franco, 2012; Wong et al., 2011). Second, the structural relationships can pictorially be modeled to facilitate theory conceptualization and study hypotheses (Roy & Mohapatra, 2003).

Comparatively, SEM is a statistically complex technique that measures associations between constructs (observed and latent variables). Observed variables represents those indicators, measures or items that are directly measured, whereas latent variables represent those conceptual terms that employs to articulate theoretical phenomena or concepts. According to Anddreev et al., (2009), latent variables can be both dependent variables (endogenous) and independent variables (exogenous). The differentiation of latent variables and observed variables has been discussed by Roldán and Sanchez-Franco (2012) in a way as graphically the latent variables are represented by circles and the observed variables are graphically symbolized by squares. Thus, the latent variable is defined as an unobserved construct or hypothetical construct which cannot be measured directly. These variables can be inferred from observed measures, items, indicators, and manifest variables (Berghman, 2006).

In general, SEM is a tie of econometrics and psychometrics perspective. Econometrics being the first perspective focuses on prediction. However, the psychometric perspective stresses on the concept modeling in a way as the unobserved or latent variables are indirectly contingent from numerous observed indicators or manifest variables. Scholars with the help of SEM are enabled to accomplish path analytic modeling of latent variables (Fornell & Larcker, 1987). The scholars have described it as second-generation multivariate technique. Besides, SEM offers greater flexibility to the researchers which can help to interplay theory and data (Chin, 1998). The two best approaches that has been acknowledged are covariance-based methodology and partial least square (PLS) methodology. The researchers select the suitable approach on the basis of the objective of study from the two approaches. Therefore, due to the various benefits offered, this study has selected PLS approach over the covariance-based approach.

The PLS-SEM approach is a beneficial and flexible tool for the statistical model building. In this thesis, the PLS approach ease the huge and complex path models in an extra exploratory way. According to Falk and Miller (1992), the PLS approach is beneficial for practical and theoretical attention and distributional attentions and measurement settings. PLS is an exploratory methodological approach that relies on the data and meets those objectives that are based on prediction, and does not require normal data distribution and large sample sizes (Chin & Newsted, 1999). In addition, PLS aims to achieve values for prediction purposes that determinate for all exogenous and endogenous variables to decrease variance. This approach creates latent variables' component scores by using weighted sum of indicators (Chin & Newsted, 1999).

In general, the aforementioned software was used to generate various statistics including means and categorical percentages (descriptive statistics) which provides the basic summary of the data, and PLS-SEM to test the hypotheses of the current study. Anderson and Gerbing (1988) stated that the two-component approach should be followed by structural equation modeling to test the hypothesized structural model of the study. Therefore, PLS-SEM was conducted to test the hypotheses of the study. Finally, the results of the tested hypotheses were discussed to provide theoretical and practical implication in the body of knowledge and to the practitioners, followed by the limitations and future suggestions of the study.

3.9 Ethical Approval for Data Collection

Fouka and Mantzorou (2011) stated that it is important for researchers when conducting any research to consider ethical considerations which entail respect for confidentiality, anonymity, beneficence and privacy in a way as the research has no harm for any subject involved in the study. Ethical considerations can appear in the undertaking and design of research, cover issues including confidentiality and privacy, honesty and openness, and informed consent, and reporting the results of the study (Veal, 2006).

The Eastern Mediterranean University prior to the data collection requires the authors to obtain an ethical approval covering the investigation period. Therefore, the researchers have applied for the ethical approval and submitted the submitted the ethics form to the graduate school. The researchers of the study ensured that the research matched all the requirements of the ethical protocol of Eastern Mediterranean University. After the ethical approval has been granted, the respondents were provided with all the detailed and required information related with the nature of the research. The data from the participants were collected only after the approval were obtained from the participants and the researcher informed them that any comments or issues will be anonymously referred in the text that can possibly harm the participants.

Chapter 4

QUALITATIVE RESULTS

4.1 Characteristics of Respondents profile of Qualitative Data

Of 18 interviewees, 14 were men, 4 were women, with an age group ranged between 20 and 60. Majority of sample were wheelchair users with few having congenital disability and the rest had acquired mobility disability. In terms of prior travel experience, there was a wide variety with some as frequent travelers to those travelled only on few occasions. The majority of the interviewees were from Pakistan, India and Turkey followed by United Kingdom, United States of America, Belgium, Namibia. The summary of the profile of interviewees can be found in table 4.1.

Table 4.1: Profile of Interviewees

Participants	**Gender**	**Nationality**	**Degree of Disability**	**Assistive Device**	**Type of Traveler**
P1	Male	Belgium	Acquired	Electronic wheelchair	Frequent traveler
P2	Male	India	Acquired	Wheelchair	Infrequent traveler
P3	Male	India	Congenital	Wheelchair	Frequent traveler
P4	Male	India	Acquired	Wheelchair	Moderate traveler
P5	Male	Nepal	Acquired	Electronic Wheelchair	Moderate traveler

P6	Female	Namibia	Acquired	Electronic Wheelchair	Frequent traveler
P7	Male	Pakistan	Acquired	None	Moderate traveler
P8	Male	Pakistan	Congenital	Wheelchair	Frequent traveler
P9	Male	Pakistan	Acquired	Wheelchair	Frequent traveler
P10	Male	Pakistan	Acquired	Wheelchair	Moderate traveler
P11	Male	Pakistan	Acquired	None	Infrequent traveler
P12	Female	Turkey	Acquired	Wheelchair	Moderate traveler
P13	Male	Turkey	Acquired	Electronic wheelchair	Frequent traveler
P14	Male	Turkey	Acquired	Prosthetics	Frequent traveler
P15	Female	United Kingdom	Acquired	Wheelchair	Moderate traveler
P16	Male	United Kingdom	Acquired	Wheelchair	Frequent traveler
P17	Male	United States	Congenital	Wheelchair	Frequent traveler
P18	Female	United States	Acquired	Electronic wheelchair	Moderate traveler

4.2 Qualitative Results

Two main themes emerged from the analysis of the interviews: the role of assistive devices during traveling and the drivers of TMD's willingness to use technological implants while traveling. The themes and sub-themes are shown in figure 4.1 and figure 4.2.

4.2.1 Assistive Devices during Traveling

The majority of the participants used wheelchairs for their assistance during traveling with some with electronic wheelchairs, while the rest used manual ones. Participants identified frequent benefits and challenges experienced during traveling when using their wheelchairs, illustrating sub-themes.

4.2.1.1 Freedom of Traveling

Almost all the participants expressed the importance of a wheelchair in terms of "freedom of traveling". The sense of traveling freedom was related to the ability to move and go out of the house. Wheelchair enabled TMD to go out of the house and travel. Their wheelchair helps them to leave the house and explore the world.

> *Wheelchairs enable us to move from one place to another (P8, male)*
>
> *I personally use electronic wheelchairs for traveling. So, it helps me to travel easily to the places where I cannot travel (P4, male)*

P18 thinks that she "can't move without wheelchair". P1 thinks that without his wheelchair, he could not "participate in traveling". This thought was reiterated by P5, who thinks that his wheelchair gives him the reason to go out of the house.

> *Without a wheelchair, I cannot move here and there, which means that wheelchair is the most essential thing for the disabled people who are suffering from the spinal cord injuries; otherwise, if we do not have a wheelchair, we stay at home, not only home but even in the bed (P5, Male)*

4.2.1.2 Physical and Attitudinal Barriers

It rapidly became evident with the wheelchair travelers in interviews that despite the frequent benefits of freedom of traveling provided by wheelchairs, TMD, throughout their journeys, still encounter a range of barriers at different stages of their traveling. These barriers are illustrated by P1 as follows;

> *I have been working more in the field of disability rights since 2010, and I have become more aware of the fact that there are many barriers to travel for people with disabilities, especially mobility barriers; there are many barriers at different points of traveling with wheelchair (P1, male)*

Interestingly, these barriers were categorized according to diverse locations and modes of travel. Most of these barriers were faced in all transportation modes (airlines, railway stations, busses, and taxis), restaurants, hotels, religious places, and historical places.

The results highlighted attitudinal barriers such as problems with airport and station employees or taxi drivers, problematic interaction with strangers, miscommunication, and exploitation. TMD always perceive staff as having negative behavior and attitude towards them. Besides, participants with both manual and power wheelchairs also discussed a variety of physical barriers that they face when using airplanes, including boarding processes, security checkpoints, transfer from departure points to airplanes, and less space in on-board restrooms.

The difference between attitudinal and physical barriers has been highly featured in interviews and, therefore, discussed further in detail. Besides, the chosen barriers here also reflect how TMD use multiple modes of transport during traveling.

> *Because the check-in desks are very high, I cannot see them for face-to-face conversation. And, the person treats me like two years old. It is annoying (P16, male)*

> *Sometimes the security officers are a bit apprehensive when they scan all over with the metal detector thing. I can guess I do not know each time how many*

people with disabilities they get, but they are always like what can they not touch or what can they touch? (P15, Male)

I am talking about airlines; being helped from the departure lounge into the plane is always a very stressful moment. It is undignified, uncomfortable, and can be dangerous because usually, for me, it is two people who lift me from the wheelchair into a small chair, and then this small chair goes onto the plane. And then they lift me from the small chair into the plane with the seat; all of this is done in front of the other passengers. So, it is an embarrassing and undignified moment. (P1, Male)

Usually, they have a hollow restroom space that is too narrow and can hurt me. And more often for me, they are very high (P5, male)

Often I have had situations where staff, while lifting me from wheelchair to aircraft seat, do not know what they are doing, and when you try to explain to them how you need to be lifted, it can create an unpleasant atmosphere because people do not like to be told what they are doing (P8, male)
I still love traveling, but I am very aware that people with disabilities are heavily discriminated in pretty much every area of the whole travel environment (P13, male)

The majority of the participants described physical barriers they suffer from their wheelchair once they reach a destination. For instance, the interior layout of most of the local buses and taxis in the majority of the countries are not accessible with broken elevators. Amusingly, the dissatisfaction is often more inclined towards stations that (they think) at least should be accessible. The interviewees were more frustrated with the state of accessibility towards the progression of making stations more accessible.

In most countries, for booking train travel, you need to tell them in advance. And then there needs to be someone coming with a ramp to allow you to go from the platform up onto the train. And sometimes, the guy with the ramp is not there, or the ramps are broken. Also, things like buses have not many places that have got the standard service buses where all of the buses are accessible (P9, male)

Interviews also discussed that even when there are accessible local transportation services, the behavior of the drivers and other people is very rude and discriminative.

We hear many stories of even where the bus is accessible, but there is often an attitude problem with drivers who are not aware that people with disabilities *need that bit of extra time and support to get on and off the bus. So, people are discriminated in this way (P2, male).*

In our country, we do not get support. If we got support, then we would have our days. I am talking about normal people; they do not support us (P2, male).

Shockingly, P3 highlighted the examples of strangers trying to exploit and harm him on the road with his wheelchair.

I feel danger or an accident will happen that someone will hit me on my wheelchair. In Delhi, you know someone is trying to snatch something. Also, some thieves were trying to put some kind of poison on my arm when I was traveling (P3, male)

Besides, P10 mentioned that service providers assume that wheelchair travelers can defame the image of your place, and thus they tend to avoid such customers.

The last time when I went to Lahore, I was living in a hotel. The hostel owner told me that if you place your wheelchair down in front of the stairs, it will give a bad impression. I was really hurt on these statements (P10, male)

In theory, most restaurants, bars, and hotels generally mention themselves as wheelchair friendly but accessible in practice.

Speaking about hotels in general, what I have learned is that when you want to book a hotel, you should never ask, is it accessible? Because they will just say yes. They do not know that the person at the other end of the line does not know what you need. So as a traveler, what you need to do is ask the hotel to describe the accessibility features of the hotel. For example, does it have rooms with level access? Are the doorways wide enough? Does it have accessible bathrooms? How high are the beds for transfers, this kind of thing? (P1, male)

There are some challenges of using wheelchairs, especially when it comes to places that are not wheelchair accessible. Um, because wheelchairs definitely need some space, but when it comes to the places like train stations, hotels, and restaurants where we cannot take our wheelchair, we face many challenges (P12, female)

Some participants found that the restrooms in hotels and restaurants are not disabled-friendly for them, and it lacks space for wheelchair users inside the cubicle. TMD cannot physically use a restroom since the restrooms do not fit their purpose. Therefore, the accommodation needs to focus on all these things and pay attention to the essential, like accessible ablutions areas.

> *The most important point to talk about accommodation is bathrooms. For anybody, not just people with disabilities, knowing that you can use a bathroom privately and without any access problems is essential. And very often, it is the case that rooms might have level access, but the bathroom is not accessible. It is too small. There is not enough space beside the toilet. The shower is not accessible, all of these things. And if you do not know that you can use the toilet or the shower, then obviously for anybody, this is a very basic thing (P15, female)*
>
> *Before I made my trip to Antalya, I had asked if the toilet was suitable for disabled people. Yes, they said it was suitable for disabled tourists. But unfortunately, when I went, I saw that it was not suitable and it was very difficult for me (P13, male)*
>
> *I live in Belgium, and the majority of restaurants are not level access. And I do not know any restaurants except for typical chains, like McDonald's, which have accessible toilets (P1, male).*

4.2.1.3 Cost

The findings indicated that accessible tourism products and services are generally more expensive, whereas affordable options are either inaccessible or less accessible. TMD have to pay extra costs for their participation. P18 said;

> *The wheelchair-accessible motels and hotels are more expensive, but the cheap accommodations and backpackers are not accessible (P18, male)*

Some transportation barriers also lead to additional costs for wheelchair users during traveling. Most of the time, the airport staff does not take care of their assistive devices with care, which leads to the breakage of their wheelchairs and adds extra cost for TMD. Often wheelchairs are expensive, and the carelessness of managing their wheelchairs was mentioned in the interviews:

> *If I travel five times with my wheelchair, I could guess that at least two times or maybe three times, the wheelchair will be broken by the airline. Damaged or seriously damaged, as it happens a lot. (P1, male)*

> *When you see the way that luggage is handled in airports, then it is easy to understand why, because generally, once the wheelchair is away from me, people do not realize that it is essential, and it gets thrown around, gets broken (P6, female)*

Some of the respondents mentioned that they spend more money during traveling as compared to able-bodied tourists because they usually need companions and assistance, which requires additional costs that able-bodied tourists do not need.

> *I use a power wheelchair, and therefore most standard cars are not possible. So, I would need to book a specific accessible taxi with ramps or lifts, and all of these things bring extra costs and extra time for me (P17, male)*

> *I have traveled to Lahore for one month on an official trip. I have hired a maid and paid extra money for the assistance and holding my wheelchair (P9, male)*

4.2.1.4 Additional Assistance and Battery Issues

For many TMD, one of the reasons for not traveling was the requirement of additional assistance in the form of their family and friends to hold their wheelchair during traveling. Relying on their travel companions resulted in many concerns and issues for wheelchair travelers, including choosing an appropriate companion, trip planning, and financial considerations. Several participants indicate avoiding traveling due to the sense of being burdened on their companions.

> *I avoid traveling because when I travel, not only I face problems but also other people face problems because I ask them to take me or hold my wheelchair (P8, male)*

> *I avoid going to places. I travel when it is very necessary. I feel that people will have a burden because they will carry me and my wheelchair. I do not want to bother people (P6, male)*

Battery issues were only faced by electronic wheelchair users. All the five users of electronic wheelchairs reported that while using electronic wheelchairs during traveling, their battery may finish. Often, they are in the middle of nowhere and have to wait for any other source to make them reach their desired destination. Such problems happen not only on long routes but sometimes on routes where finding other sources can be nearly impossible.

> *During traveling, sometimes the battery will be finished, and I will stop on the road. Sometimes the tire will be punctured. Due to such reasons, I had to stay on the road helpless. After that, I call the taxis or any other car to take me from that point to the hotel (P5, male)*

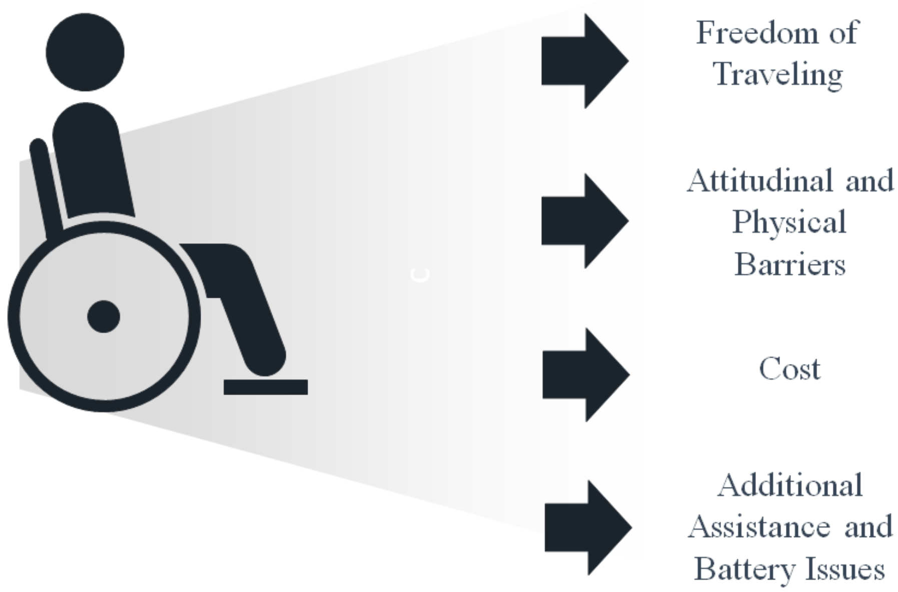

Figure 4.1: Role of Assistive devices during traveling

4.2.2 Antecedents of Impaired Cyborg Tourists

During the interview, the concept of impaired cyborg tourists was explained to the participants, followed by a video to understand better. The participants were asked about their opinions and perceptions of technological implants and their potential to travel as impaired cyborg tourists. Out of 18 participants, 16 participants were willing to travel as impaired cyborgs. Participants described independence, improved wellbeing, convenience, social inclusion, happiness, and motivation are the possible main factors for adopting technological implants during traveling.

4.2.2.1 Independence

Participants highly discussed the ways in which technological implants impact the need for independence and autonomy in traveling. TMD reported that technology adoption and traveling as impaired cyborg tourists could preserve independence and freedom in performing activities during traveling. In other words, TMD welcome technological implants if they are provided with a sense of control, personal freedom, and autonomy. The meaning of independence was expressed by TMD in a variety of ways. Some of the respondents considered technological implants as their legs.

> *It is like giving legs to the impaired person (P8, male)*
>
> *You know, if you give this device to someone who could not move or who could not even travel, who could not even explore the places or whatsoever, this person will be independent in terms of mobility and also will feel valued" (P15, female)*
>
> *I would become independent and will travel on my own. I will not ask other people to take me or help me. Even I would be able to travel any place on my own without any help. (P10, male)*

Sometimes, physical dependency also brings psychological dependency, which TMD implicit as a limitation and tries to avoid. P18 wanted to travel as an impaired cyborg tourist in order to get physical and psychological independence.

If the venues are not wheelchair accessible during the trip, I realize there are many things I cannot do. I cannot get out myself even if there is fire. I am always dependent on someone, which is gut-wrenching. These implants will not only make me physically independent, but also, I will be emotionally and psychologically independent (P18, Female)

These implants will give me a greater quality of life, mental peace, and independence (P5, male)

4.2.2.2 Improved Well-being

Travel imposes an unacceptable level of uncertainty and stress for TMD, which leads to a low level of physical and mental well-being. Various sources of uncertainty and stress include potential damage of assistive devices, feeling of discrimination, dependency on others, and lack of dignity. These uncertainties around travel affect the overall well-being of TMD. The respondents explained that the initiative for adopting and using technological implants while traveling would improve their well-being and quality of travel.

It contributes to the physical wellbeing of people with mobility disabilities. None of the nation or society cares about us. People count us as patients. People do not see our potential just by looking at our disability. So, if the person has been given this implant, the person with a disability will also be able to see potential in him or herself (P6, female)

Quality travel has to come first. The implants will enhance my well-being and will make me able to do things (P12, female)

Enabling people to do things they cannot do enhances positive mental health. P16 described that technological implants would enable TMD to socialize and perform travel activities with friends and family members, leading to positive mental health enhancement.

Life in a wheelchair is just struggling to perform things you cannot do. I am buggered, and I used to suffer depression if I thought of traveling as a struggling disabled person. These implants develop the mental health of people like me; otherwise, forget traveling (P16, male)

4.2.2.3 Convenience/ Ease of Use

The majority of the participants believed that technological implants would possibly be easy to handle and require less or no assistance. Manual wheelchairs that require additional assistance, extra cost, and the risk of battery drainage with electronic wheelchairs are therefore being discontinued and rejected by TMD. Impaired tourists prefer technological implants that are more convenient and easier to use.

> *I will use the implants for my own convenience. I love traveling, but I avoid traveling because wheelchairs have accessibility issues. If I wear a device, it will help me in traveling (P8, male)*

Participants believed that technological implants are more valuable because they can be used at crucial moments and do not require a learning curve. P9 with advanced mobility impairment specifically loved the implant due to its flexible nature.

> *I have seen them; even people who play Paralympics have also used them. They are flexible. I am very inspired by them. I will love to implant them (P9, male)*
>
> *I think it will be more efficient than wheelchairs (P4, male)*

The adoption of technological implants among some participants depended on the type of material used to make the implants. They believed that the technological implants have evolved with time for the better and now can create more convenience for TMD.

> *This technology has been used in the past with more primitive methods, usually made of wood or profile material, and its service life was short. In today's technology, it is nice for us to have comfort and long-term use due to the fact that it is now made of materials such as aluminum and titanium. This technology is successful due to being convenient and eases of use. It will become more useful technology with the development of artificial intelligence techniques (P13, male)*

4.2.2.4 Motivation

Some participants considered technological implants as a symbol of motivation to travel and perform all the tasks like able-bodied tourists. They also mentioned their family and friends' beliefs about being able to walk and travel on my own. The implants can motivate them to accomplish their dreams and their families' hopes.

> *You know the family and the friends around you. They always stay hopeful. Sometimes just walking on the street via my wheelchair, someone would stop and say that you will be able to walk one day. So that keeps you moving, that kind of motivation. And once you see such possibilities in the form of implants, then you always dream of having those (P9, male)*

Travelers with disabilities are often more motivated to travel, but they cannot perform all the activities while traveling due to their limitations. For some participants, implants were the only motivation to travel as able-bodied tourists and perform all the activities that they normally cannot perform during traveling.

> *I would be able to participate anywhere. I would travel to hilly areas. I would be able to travel like able-bodied people (P8, male)*

> *I will definitely use this device since it will be a game-changer in my life. With each passing day, I am losing my motivation. So, if there will be any device that will enable me to travel on my own, it will be a revolution in my life, and I will definitely use it (P2, male)*

4.2.2.5 Positive Emotions

In our discussion about implants, wheelchair travelers described their feelings and outlined some of their most likely positive emotions while using technological implants during traveling. Positive emotions such as comfort, happiness, and excitement were most often used in the conversations. A key reason for adopting technological implants during traveling is TMD's happiness and excitement.

> *It will make them able to walk and travel. Someone who cannot walk will be able to walk, a truly blessing. It will make them happy (P10, male)*

Other emotions being highlighted and merits are bravery or courage and confidence to adopt technological implants. Since the implants are relatively new in the market, tourists with disabilities require some confidence to discern how the implants work. Some TMD described the need for self-confidence to travel as impaired cyborg tourists more inherently than essential traveling. P18 described it vividly.

> *You must not be scared or whatever; you should be very self-confident in adopting implants, and if anything goes wrong, you should trust that implant during traveling till the end (P18, female)*

4.2.2.6 Social Inclusion

The study participants frequently reported that being socially excluded is one of the most significant barriers for TMDs. Technological implants can be a significant source of being socially included in society. The participants reiterated that the implants will allow them to participate in society.

> *Everywhere I travel, I feel I am very prominent, making me realize that I am disabled. If I implant these devices, people's opinions will not affect me. People still look at me strangely when I am on a wheelchair (P16, male)*
>
> *Society and other tourists always judge us as people with disability. They do not value us. As people, we are being discriminated. When they look at you, they think you are mentally disabled as well. If you use these implants, people will not judge you (P6, female)*

One of the participants also highlighted that implants can bridge the communication gap between disabled people and society since people normally prefer to talk with their caregivers and tends not to talk with them.

> *It will increase more chances of communication with society. You know, people tend to hesitate to interact with us directly, and they would rather talk to the person who is assisting (P5, male)*

4.2.2.7 Other Issues

As the technological implants are at their initial stage, participants have also highlighted some of their concerns about adopting them during traveling. P7 draws mixed views and highlights the issue related to implants' internet connectivity during traveling.

> *There can be issues with connectivity on the way. If those implants or aids need internet connectivity, the person will be having problems in areas where there is a less reliable internet connection or even no connection. Other than that, I think it is going to be useful in the future (P7, male)*

One participant has raised his concern with the implant in a way that as the age of the PWDs will increase, it will create health problems.

> *They can have temporary peace and drive, fulfill their duties, and finish their work. Maybe in their late 60s, they can have some problems. Since the devices are attached to their upper body, the body with age becomes weak. But in their old age, they can have problems. (P6, male)*

Two participants were found as reluctant to use implants during traveling. They were concerned more about place accessibility than individual accessibility. P1 believed that disabled people are not broken bodies that can be fixed with implants; instead, the problem is the inaccessibility of society.

> *We need to be skeptical because, very often, the problem of what these implants are doing is seeing the person with the disability as the problem and trying to fix the person, whereas the problem is society. The problem is the inaccessibility of society. (P1, male)*

Lastly, during the discussion, the participants were also asked about the affordability of implants since most of these implants are considered to be costly. The majority of the participants were willing to buy the implants and try using them during traveling.

> *It does not matter to me. Even if these devices are expensive, I would prefer to buy them and use them (P9, male)*

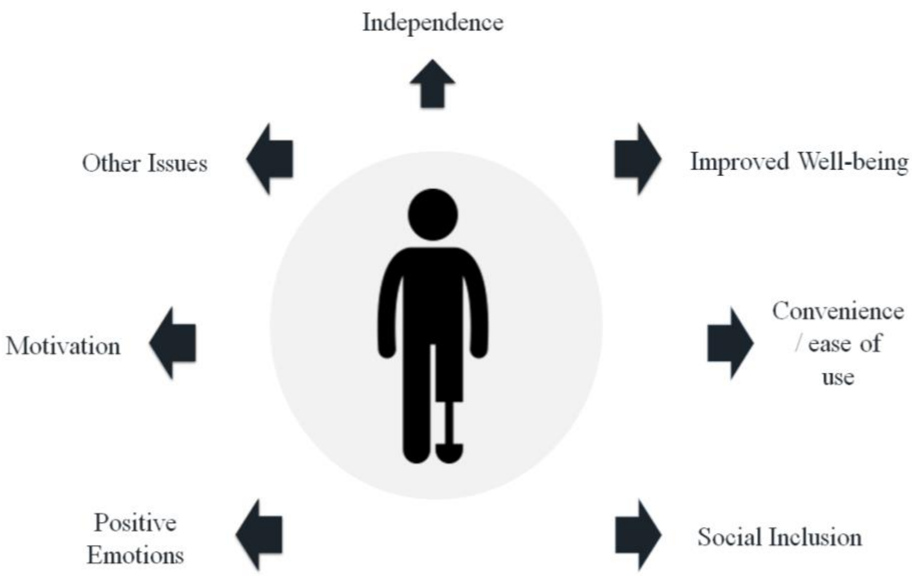

Figure 4.2: Antecedents of impaired cyborg tourists

Chapter 5

DEVELOPMENT OF CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES

5.1 Introduction

A qualitative study (study 1) was conducted in the previous chapter as the initial step of performing an exploratory sequential mixed-method research approach. Since the main aim of this study is to assess the factors affecting TMD acceptance to travel as impaired cyborg tourists, study 1 through semi-structured interviews has explored and identified the factors that affect the acceptance of TMD towards technological implants, and the variables are developed. Then, the conceptual model for model validation alongside the clear hypotheses is formulated. According to Creswell and Clark (2018), this point in the sequential mixed methods is called the "point of interface" where the qualitative and quantitative components connect. This method includes a three-phase approach starting from qualitative data collection and analysis followed by model development, and finally using a larger sample the hypotheses are tested (Creswell et al., 2007).

The second objective of this study was to determine the antecedents or factors affecting TMD to travel as impaired cyborg tourists and investigate the relationship between the key concepts by showing which is the most affecting antecedent and which is the least affecting antecedent of TMD towards technological implants on a larger sample. Thus, this chapter provides a base for study 2 of the quantitative phase (Chapter 6) to answer the third and fourth objectives of the study.

First, this chapter starts with the development of variables through the results of study 1 (qualitative analysis). After that, the relationship between the variables is defined to develop the 6 hypotheses of this study. The literature, and theories related to the key concepts, and the definitions of the variables are explained in Chapter 2.

5.2 Development of Variables

The qualitative data analysis provided two main themes with eleven sub-themes as shown in table 5.1. The themes related to the antecedents of impaired cyborg tourists are seven.

Table 5.1: Themes and sub-themes related to the Qualitative Analysis

Themes	**Sub-themes**
	Freedom of traveling
Role of assistive devices during traveling	Additional and physical barriers
	Cost
	Additional assistance and battery issues
Antecedents of impaired cyborg tourists	Independence
	Convenience/ease of use
	Social inclusion
	Improved well-being
	Motivation
	Positive emotions
	Other issues

Seven factors were identified under the antecedents of impaired cyborg tourists. The factors include independence, convenience and/or ease of use, social inclusion, improved well-being, motivation, positive emotions, and other factors. To make a conceptual model for empirical validation, the author has conducted a comprehensive literature review. After a thorough literature review, the researcher of this thesis found two theories (theory of innovation diffusion and UTAUT) that were in line with the results of the qualitative analysis specifically the "antecedents of impaired cyborg tourists". Thus, the conceptual model for the quantitative analysis was based on the integration of two theories which were theory of innovation diffusion and UTAUT and the qualitative findings of the study. The main concepts of both theories are explained in the literature review (Chapter 2). However, the development of the conceptual framework and hypotheses development are explained in the next section.

5.3 Conceptual Framework

The main aim of this study is to identify and empirically test the antecedents of TMD's acceptance to travel as impaired cyborg tourists. Therefore, a sequential mixed method study was conducted to explore the antecedents of TMD's acceptance of using technological implants through qualitative study and further empirically test the identified factors through a quantitative study. Based on the findings of our qualitative study, previous studies in the literature, the theory of innovation diffusion, and UTAUT, the research framework of the current study is developed as shown in Figure 5.1.

The three identified factors from the qualitative analysis including independence which in the literature is also known as autonomy, perceived convenience, and social inclusion are the factors of innovation diffusion theory therefore they will be tested as a second-order construct. The rest of the factors were merged with UTAUT and therefore, both theories are integrated into the model to give a better understanding of the antecedents of TMD behavioral intention to use implants during traveling. The association between the variables is explained in the next section of hypotheses development.

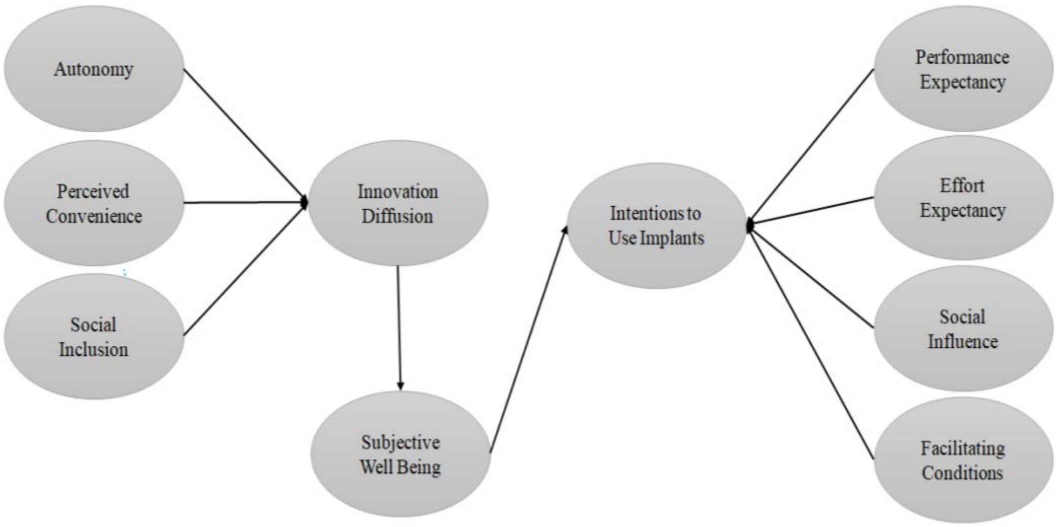

Figure 5.1: Research Framework

5.4 Hypothesis Development

5.4.1 Innovation Diffusion and Subjective Well-being

Based on the literature and our findings from the qualitative study, one of the reasons tourists with disabilities accept to use of technological implants is that they perceive their subjective well-being will improve while traveling with implants. Therefore, the current study decided to focus on the relationship between attributes of innovation diffusion (autonomy, perceived convenience, and social inclusion) and subjective well-being. The first attribute of innovation diffusion is the need for autonomy.

According to social determination theory, people perceive their dealings are volitional and self-congruent when their need for autonomy is satisfied, which results from benefits in subjective well-being (Deci & Ryan, 2000). Autonomy, being one of the attributes of innovation diffusion affects the attitudes, trust, and behaviors of tourists with disabilities among online communities (Agag & El-Masry, 2016). The need for autonomy is directly related to the inborn integrative tendency of individuals (Deci & Ryan, 2000). Thus, it is vital to the regulation and initiation of behaviors that help to realize other needs (Ryan & Deci, 2017). It is considered a true need due to its unique contribution to social determination theory (Iyengar & DeVoe, 2003), and it is found through qualitative findings that the need for autonomy is the biggest need for PWDs during performing daily tasks and traveling, Thus, understanding the relationship between autonomy and subjective well-being among the tourists with disabilities towards the acceptance of technological implants will be of higher theoretical value and will advance the field of tourists with disabilities, disabled tourism, and accessible tourism.

The second attribute of innovation diffusion is perceived convenience. Perceived convenience is one of the characteristics of an innovation that can influence the adoption of new technologies. The theory suggests that individuals are more likely to adopt new technologies that they perceive as convenient and beneficial to their needs. In the case of technological implants, individuals who perceive them as convenient may be more likely to adopt them and experience positive effects on their subjective well-being. A study by Ljungberg et al. (2011) found that individuals with cochlear implants perceived them as convenient and reported improved quality of life and subjective well-being. Similarly, Cima et al. (2015) found that individuals with retinal implants perceived them as convenient and reported improved visual function and quality of life. These studies support that perceived convenience can have a positive relationship with subjective well-being when it comes to the use of technological implants and also support the innovation diffusion theory as a framework to understand the adoption of technological implants among disabled people. Technological implants, such as cochlear implants for hearing loss or pacemakers for heart conditions, can greatly improve the quality of life for individuals who use them by enhancing their abilities and reducing the burden of their conditions. As a result, individuals who use these implants may perceive them as convenient and this perception can contribute to their overall well-being. However, it is also important to note that perceived convenience is a subjective experience and can vary from person to person. Therefore, understanding the acceptance of technological implants during traveling is vital.

The third attribute of innovation diffusion is social inclusion. Studies in the literature have proven that social inclusion generates social interactions and activities for individuals and offers and provides advantages for their social participation (Choi and Chung, 2013; Secker et al., 2009). Social inclusion has a significant positive effect on PU and PEOU among bachelor's students (Choi and Chung, 2013). Likewise, sociability and social presence ease social inclusion for users which positively correlates with performance expectancy and effort expectancy towards using electronic learning (Smith & Sivo, 2012). Besides, social inclusion beneficially impacts enhancing subjective well-being, especially PWDs through the use of technology. For example, socially excluded people rather than shopping in stores more likely to shop through their mobile phones or computers (Dennis et al., 2016). Such preferences increase the positive impact of social inclusion on people with mobility disability's well-being and happiness (Dennis et al., 2016). Thus, it can be assumed that technological implants promote traveling and participation in social activities during traveling which as a result can alter social inclusion into well-being (Andrade and Doolin, 2016).

Based on the above discussion, this study hypothesizes that;

H1. Attributes of innovation diffusion positively influence the subjective well-being of tourists with mobility disability during traveling.

5.4.2 Subjective Well-being and Intention to Use

An and Zhang (2019) defined subjective well-being as an individual experiencing a sense of subjective happiness. Such feeling of happiness is experienced and remembered differently depending on the people who accept the things during their lifetime that have happened to them (Lyubomirsky & Ross, 1997). For example, people who have a positive well-being recall their experiences in a more positive way as compared to unhappy people who are more likely to recall their experiences negatively. Therefore, it is said that optimism is highly related to happiness (Lyubomirsky, Tkach, & DiMatteo, 2006). Happy people comparatively from their life expect more positive outcomes and their expectations have a more positive effect on their lives than unhappy people. Based on the Diener (1984) study, diverse underlying mechanisms with different effects of moderation are required for the individuals' happiness and unhappiness. The researcher further reinstated the idea of happiness into subjective well-being, a new concept, and separated between its affective and cognitive components. Affective components refer to positive effects whereas cognitive components comprise the extent an individual experiences life satisfaction.

Such subjective well-being is directly connected to behavioral intentions. Studies in the literature have shown a direct relationship between subjective well-being and behavioral intentions. Chiu, Cheng, Huang, and Chen (2013) in their study found that subjective well-being achieved through the use of media platforms has a positive effect on the intention to reuse social media apps. Likewise, Norwegian international students' perceived universalism positively influenced subjective well-being which in turn had a positive effect on international students' behavioral intentions and destination loyalty (Sam, Sandal, and Adam, 2016). This showed that happy and stable international students positively respond to maintaining behavioral intentions.

In the context of technological implants, studies have also shown a positive relationship between subjective well-being and the intention to use implants. A study by Kim et al. (2019) found that individuals with higher levels of subjective well-being were more likely to express a positive attitude towards the use of a brain-computer interface technology, which allows a person to control external devices with their brain activity. Similarly, a study by Kwon et al. (2018) found that individuals with higher levels of subjective well-being were more likely to express a positive attitude toward the use of wearable technology, such as fitness trackers and smartwatches. This shows that individuals with higher levels of subjective well-being may be more open to new experiences and technologies, and may see the potential benefits of using these technologies in improving their quality of life. Additionally, individuals with higher levels of subjective well-being may have more positive perceptions of their own capabilities and self-efficacy, which may lead to a greater likelihood of using technology to enhance their well-being. Scholars have also found that individuals with higher levels of subjective well-being tend to be more proactive and have a greater sense of control over their lives, which may also increase their intention to use technological implants. A study by Koc et al. (2018) found that individuals who scored higher on measures of subjective well-being tend to be more proactive in adopting new technologies and had a greater sense of control over their lives.

Thus, based on the previous studies in the literature we hypothesize;

H2. Subjective well-being positively influences tourists with mobility disability intention to use technological implants during traveling.

5.4.3 Performance Expectancy, Effort Expectancy, and Intention to Use

According to the UTAUT, two of the key factors that influence an individual's intention to use technology are performance expectancy and effort expectancy. While regarding the influence of performance expectancy and effort expectancy on the intention to use technology, the literature has widely documented the positive effect of performance expectancy and effort expectancy on the acceptance of medical implantable devices. For instance, Venkatesh and Davis (2000) in their study on TAM2 established the influence of performance expectancy and effort expectancy on the intention to use innovative new technology and confirmed that the model explains 40% variance in the intention to use technology. The study on medical implantable showed that the performance expectancy of implantable cardioverter defibrillators (ICDs), therapy devices of cardiac resynchronization, submammary defibrillators, and pacemakers significantly affects the decisions of patients to implant in their body these devices (Giudici et al., 2010). Christie and Bloustien (2010) have also ascertained that the performance expectancy of cochlear implants significantly influences the deaf community's acceptance of such devices. Studies on the acceptance of new technologies documented that effort expectancy positively affects the intentions of people toward technologies for electronic medical recording (Handy, Hunter, & Whiddett, 2001) and therapeutic tools (Bertrand & Bouchard, 2008). Adams (2010) about medical implants recognized the significance of performance expectancy and effort expectancy as essential factors in the acceptance of individuals to undergo cosmetic surgery. Likewise, studies have also proved that performance expectancy and effort expectancy significantly affect the acceptance of new health technologies (Alaid & Zhou, 2014), nano-implants (Reinares-Lara et al., 2016), memory implants (Reinares-Lara et al., 2018), ICT (Guner&Acarturk, 2020), and virtual dental implants (Nkenke et al., 2012).

These relationships can be justified by the UTAUT's assumptions that individuals are more likely to adopt and use technology if they believe it will help them achieve their goals, are easy to use, and improve their performance. In the case of technological implants, individuals may have performance expectancy and effort expectancy that using such technology will improve their cognitive or physical abilities or help them overcome certain limitations and are easy to use without complications. Lately, many scholars provided evidence that performance expectancy has a positive impact on the intention to use technological implants, as individuals are more likely to adopt and use technology if they believe it will help them achieve their goals and improve their performance (Cai, Li & Liang, 2020; Chen & Huang, 2021; Gao et al., 2020; Wang, Li, Wang & Liu, 2021). A study by Kwon et al. (2018) found that individuals who had higher performance expectancy for wearable technology such as fitness trackers and smartwatches were more likely to use it. Similarly, Kim et al. (2019) found that individuals who had higher performance expectancy for a brain-computer interface technology were more likely to express a positive attitude towards the use of the technology and had a higher intention to use it. Research has also shown that effort expectancy is positively related to the intention to use technological implants. A study by Hwang et al. (2020) found that individuals who had lower effort expectancy for an implantable medical device such as a pacemaker had a higher intention to use it. Similarly, a study by Gao et al. (2020) found that individuals who had lower effort expectancy for virtual reality technology had a higher intention to use it.

Despite the widespread application of medical implants among PWDs due to their ability of performance expectancy and effort expectancy to recover disability and make inaccessible destinations accessible while traveling has not been tested empirically. Thus, in light of the limited literature on the acceptance of tourists with mobility disability regarding medical technological implants while traveling, the following hypotheses are proposed in the context of mobility implants:

H3. Performance expectancy regarding the use of mobility implants to correct disability significantly influences the mobility-impaired tourist' intention to use them while traveling.

H4. Effort expectancy regarding the use of mobility implants to correct disability significantly influences the mobility-impaired tourist' intention to use them while traveling.

5.4.4 Social Influence and Intention to Use

UTAUT posits that social influence is an important factor that influences an individual's intention to use technology. Social influence refers to the impact of others on an individual's attitudes and behaviors related to technology use. Ajzen (1991) defined subjective norm or social influence as perceived social pressure to perform the behavior or not perform the behavior. When emotions, opinions, and behaviors influence the people that are important such as family, relatives, and friends, then social influence occurs. Social influence is included as the subjective norm in the theory of reasoned action (Ajzen, 1991; Fishbein & Ajzen, 1975), the theory of planned behavior (Schifter & Ajzen, 1985), and TAM2 (Davis, 1989; Davis et al., 1989), and as an image in innovation diffusion theory (Moore & Benbasat, 1991). In these theories, social influence, social norms, and subjective norms, all are considered significant determinants of behavioral intentions. According to Venkatesh et al., (2012), the behavior of individuals influences by the perception of other people as to how others will view them while using technology. In the field of new technology acceptance, the effect of social influence on the intention to use new technology has been proven (Jin, 2014; Tarhini, Hone, & Liu, 2014). This shows that the decision to use a medical technological implant while traveling may affect the viewpoint of other people around them.

Several studies have demonstrated the impact of social influence on customers' intention to use health-related technology (Chen & Chen, 2014; Pan & Maryalice, 2009). Javo and Sørlie (2010) and Adams (2010) in their studies established the influence of friends and family on the decision to undergo cosmetic surgery for strictly aesthetic purposes for body modification. Gao, Li, and Luo (2015) in their study found that the factors related to social influence affect the decision of consumers to use wearable health technology. Also, social pressure has played a significant role to maintain an attractive and youthful image specifically in the context of cosmetic surgeries (Dorneles de Andrade, 2010; Von Soest, Kvalem, Skolleborg, & Roald, 2006). Likewise, studies have confirmed the role of social influence in the adoption of body implants. For instance, Most et al., (2007) recognized the significance of family environment in intention towards cochlear implants. Pelegrín-Borondo et al., (2017) confirmed the positive effect f social norms regarding the use of technological implants for increasing innate capacities. Pelegrín-Borondo et al., (2016) in the case of parents deciding on the implants for their children have also shown the greater influence of social norms. A study by Gao et al. (2020) found that individuals who had higher levels of social influence from friends and colleagues regarding the use of virtual reality technology had a higher intention to use it. Similarly, a study by Chen and Huang (2021) found that individuals who had higher levels of social influence from friends and family regarding the use of an implantable medical device such as a pacemaker had a higher intention to use it. Besides, lately, some other studies have also provided further evidence that social influence plays an important role in the intention to use technological implants (Chen & Hsu, 2021; Liao & Hsu, 2021; Wang, Chin & Jin, 2021). These studies suggest that individuals are more likely to adopt and use technology if they perceive that others who are important to them also use or approve of the technology. Additionally, these studies show that social influence can positively impact the intention to use technological implants in the healthcare field, specifically among older adults.

Thus, based on the light of the above literature, this study hypothesizes the following:
H5. Social influence regarding the use of mobility implants to correct disability significantly influences the mobility-impaired tourist' intention to use them while traveling.

5.4.5 Facilitating Conditions and Intention to Use

Facilitating conditions is one of the other determinants of UTAUT that directly affects the behavioral intentions to accept technology. It refers to the availability and accessibility of resources, support, and infrastructure that are necessary for the effective use of technology. In the original technology acceptance model, this determinant is not included (Mun et al., 2006). Venkatesh et al., (2012) defined facilitating conditions as the availability of sufficient technical and organizational infrastructure for the support of users to accept new technology. It is composed of compatibility, facilitating conditions, and behavioral control (Taylor & Todd, 1995). The availability of technological infrastructure is crucial for the success of the technological implants' usage. In addition, technological implant usage requires a constant relationship between end users, service providers, disabled people, TMD, and health professionals in different areas.

The potential of technological implants with the help of sufficient technological healthcare infrastructure to offer and monitor medical feedback is a precondition for encouraging the adoption of technological implants among disabled people including TMD. Therefore, this study broadens the original technology acceptance model for the adoption of technological implants by including facilitating conditions as an antecedent. Facilitating conditions have also been widely acknowledged in the literature with their significant effect on the usage intentions of consumers (Chiu et al., 2012; Kamal, Shafiq & Kakria, 2020; Zhou, 2012). A study by Wang et al. (2022) found that individuals who had higher levels of facilitating conditions such as technical support, training, and infrastructure for an implantable medical device such as a pacemaker had a higher intention to use it. Similarly, a study by Gao et al. (2020) found that individuals who had higher levels of facilitating conditions such as technical support and infrastructure for virtual reality technology had a higher intention to use it. Additionally, the UTAUT also suggests that facilitating conditions have a direct impact on the intention to use technology, because when users perceive that resources, support, and infrastructure are available and accessible it increases their motivation to use it.

Thus, based on the following argument, we hypothesize:

H6. Facilitating conditions regarding the use of mobility implants to correct disability significantly influences the mobility-impaired tourist' intention to use them while traveling.

5.5 Summary

This chapter was the second part of the exploratory mixed method design by including the connective point between study 1 of the qualitative phase and study 2 of the quantitative phase. This chapter based on the data analysis of qualitative study 1, innovation diffusion theory and UTAUT provided 6 hypotheses. The relationship of the concepts when input in theories (innovation diffusion and UTAUT), provided the primary conceptual framework to be tested in study 2 of the quantitative phase for the antecedent of the TMD's acceptance of traveling as impaired cyborg tourists. The next chapter with a quantitative approach tests the hypotheses by using a larger sample size by enabling the generalizability of the newly established concepts in the old theories. The empirical validation of the conceptual model is provided in the next chapter.

Chapter 6

QUANTITATIVE RESULTS

6.1 Introduction

As a connective point between qualitative and quantitative study, the previous chapter identified the related variables and put it in the theories and developed hypotheses and a conceptual framework. This chapter tests the primary conceptual framework using quantitative research approach with a larger sample size.

This section discusses the quantitative findings of the study. First, the characteristics of the respondents' profile of quantitative data is presented. Then, the descriptive statistics of the main constructs are presented followed by the data analysis techniques which involved assessment of the measurement and structural model. Finally, the results of hypotheses are presented in this chapter.

6.2 Data Screening and Preparation

A total of 270 questionnaires were completed and received from Mechanical Turk, out of which only 221 were deemed fit for the analysis. First, the researcher examined the respondents' IP addresses to check if a single respondent answered multiple times to a questionnaire. As a result, 5 of the survey questionnaires were completed from the same individual and therefore were excluded from the analysis. After the completion of this stage, the resulting questionnaires were 265.

The remaining 265 questionnaires were tested to examine inattentiveness and incompleteness since such issues can affect destructively the findings of the dataset (Curran, 2015). Incompleteness for the items collected from the survey was examined through the total number of missing values. Thus, fifteen responses were removed on the basis of missing values. On the other hand, inattentiveness was measured through the frequently used indicators such as response time and invariability (Huang et al., 2012). The extreme number of following matching responses on the autonomy items, subjective wellbeing items, and facilitating conditions items examined invariability. This technique was named as long string analysis and was proposed by Johnson (2005). Likewise, response time contained the time to complete the survey including total number of minutes taken on the demographic questions. As a result, thirteen responses were removed from the dataset due to the total time taken to complete the survey and sixteen responses were disqualified on the basis of long string analysis. In other words, the respondents did not accurately respond to the validated items. Finally, 221 responses were used for the main survey analysis.

6.3 Characteristics of Respondents Profile of Quantitative Data

Table 6.1 displays the demographic characteristics of the participants. Over half of the respondents (63.8%) were male, while the remaining respondents (36.2%) were female. The largest group of participants fell within the age range of 45-54 years old (50.6%). Additionally, the majority of participants (61.5%) were graduate students and a significant number of them (83.3%) were married. More than half of the respondents (56.5%) reported a monthly income of $2001-$4000. Regarding employment status, the majority of respondents (91.9%) were employed full-time. The largest ethnic group among the respondents were Asians (43.5%).

Table 6.1: Characteristics of Respondents profile of Quantitative Data

Characteristics	%	N
Gender		
Male	63.8	141
Female	36.2	80
Age		
18 – 24	0	0
25 – 34	5.8	13
35 – 44	20.3	45
45 – 54	50.6	112
55 – 64	18.5	41
65 or elder	4.8	10
Education		
Middle school	0	0
High school	14.5	32
Collage	7.7	17
Graduate	61.5	136
Post graduate	16.3	36
Doctorate	0	0
Marital Status		
Married	83.3	184
Living with a partner	2.3	5
Widowed	0.5	1
Divorced/separated	0	0
Never been married	14.0	31

Monthly Income		
Under $2000	30.3	67
$2001 - $4000	56.5	125
$4001 - $6000	5.8	13
Over $6000	7.4	16
Employment		
Working full time	91.9	203
Working part time	7.7	17
Unemployed and looking for work	0.5	1
A home maker or stay at home parent	0	0
Student	0	0
Retired	0	0
Other	0	0
Nationality		
Asian	43.5	96
European	31.7	70
American	7.6	17
African	10.5	23
Middle Eastern	6.7	15
Others		0

6.4 Descriptive Statistics of the Main Constructs

Table 6.2 shows the descriptive statistics calculated from the survey instruments of the main constructs. All the indicators were measured on the basis of a 5–point Likert scale with response options varying from 5 as strongly agree to 1 as strongly disagree.

Table 6.2: Descriptive Statistics of the Main Constructs

Constructs	**Mean**	**Std. Dev**	**Minimum**	**Maximum**
Autonomy	4.0611	0.62131	2.00	5.00
Perceived Convenience	4.4638	0.44828	2.00	5.00
Social Inclusion	4.4480	0.45303	2.00	5.00
Subjective Wellbeing	4.4683	0.44096	2.00	5.00
Intention to Use	4.4570	0.38342	2.50	5.00
Performance Expectancy	4.0814	0.61620	2.00	5.00
Effort Expectancy	4.0000	0.62885	2.50	5.00
Social Influence	4.4005	0.33918	2.00	5.00
Facilitating Conditions	3.9638	0.63141	1.50	5.00

6.5 Common Method Variance (CMV)

When using single-sourced data, common method variance (CMV) can be a concern. To address this issue, we followed the recommendations of Podsakoff et al. (2003) and implemented several procedural remedies. Firstly, to avoid ambiguity in the questions, the study employed existing scales and simplified expressions, which were confirmed through pilot testing and feedback from TMD. Secondly, the study emphasized the anonymity and confidentiality of the research in the questionnaire instructions to encourage truthful responses. Thirdly, the study conducted Harman's single-factor test using SPSS Statistics 24.0, and the results indicated that no single factor accounted for more than 50% of the variance. Specifically, the main factor accounted for 35.26% variance based on Harman's single-factor test, which was below the critical level of 50% (Fuller et al., 2016). Moreover, the correlations among variables were below 0.90, a commonly used threshold to assess multicollinearity (Bagozzi et al., 1991), and the variance inflation factor (VIF) values were below 3.33 based on a full collinearity test (Kock, 2017).

6.6 Data Analysis Technique

According to Christmas (2005), the structural equation modeling of the partial least square approach (PLS-SEM) for statistical model building is a useful and flexible tool. PLS measures the psychometric properties of the scales by evaluating theoretical constructs and being a latent SEM practice estimates constructs' hypothesized relationships (Barclay, Thompson & Higgins, 1995). Lately, the wide application of PLS has increased its popularity among scholars (Chin & Todd, 1995; Gefen & Straub, 1997).

The current study adopted the PLS-SEM approach by using the SmartPLS version 4.0 software for conducting the data analsysis of the study. The PLS-SEM was chosen due to the following reasons. First, PLS deals with such objectives that are exploratory in nature. Thus, this study is an exploratory study and explores the factors affecting the acceptance of TMD towards the use of technological implants during traveling. Second, PLS is a non-parametric and prediction based technique as compared to other tools such as AMOS and LISREL which are ideal for parametric analysis. Third, PLS-SEM requires the data that does not impose the assumption of data normality. Besides, both formative and reflective measures that are modeled in the latent constructs, and higher-order reflective–formative constructs can be handled through PLS (Hair et al., 2019). Finally, PLS-SEM in the marketing, management and tourism studies have become more popular due to its above mentioned capabilities and versatile nature to model latent constructs under difficult situations (Hair, Hult, Ringle & Sarstedr, 2013). Therefore, this study has used PLS-SEM to run the analysis of the study.

The constructs autonomy, perceived convenience, social inclusion, subjective well-being, performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioral intentions were treated as reflective constructs in this study, with the direction of causality flowing from the latent constructs to their indicators (items). However, following Zhang et al.'s (2012) recommendations, we used a composite measure (i.e., a formative measure) to assess “innovation diffusion”, as it comprised distinct dimensions such as autonomy, perceived convenience and social inclusion. In the case of innovation diffusion, the causality direction runs from the indicators (dimensions) to the latent construct, aligning with the requirements of a formative measurement model.

PLS-SEM is composed of measurement model and structural model (Schreiber et al., 2006). The measurement model entails the connection between the manifest indicators and the latent variables that is being measured by the manifest indicators (Yoon & Uysal, 2005). More specifically, SEM signifies the confirmatory factor analysis model. On the other hand, structural model measures among the unobserved variables the causal relationships (Abou-Shouk, 2012).

6.7 Measurement Model Assessment

The structural equation modeling pre-cursor is the measurement model. The definitions cannot validate the constructs of a measurement model; however the rationale of the measurement model is the reliability and validity confirmation of the developed scales in order to label it as valid (Abou-Shouk, 2012). The researchers with the help of measurement model can assess how the newly developed latent constructs are sufficiently connected and fit together to their indicators (MacKenzie et al., 2011). This shows that the aspects of the reliability and validity (convergent validity and discriminant validity) concerns of the latent variables are evaluated with the help of the measurement model (Krumlinde-Sundholm et al., 2007).

6.7.1 Reliability and Convergent Validity

When evaluating a reflective measurement model, it is necessary to examine its convergent validity, internal consistency reliability, and discriminant validity. Convergent validity shows that a set of items through their one-dimensionality illustrates the same underlying latent variable (Henseler et al., 2009). In other words, it shows the degree at which the indicators of a single construct are highly correlated with each other. Convergent validity in this section is assessed through factor loadings, composite reliability (CR), and average variance extracted (AVE). The CR shows the degree where the construct's indicators indicate the latent construct. Whereas, the values of AVE show the total amount of variance of the indicators elucidated by the latent constructs. Initially, PLS algorithm was run to produce loadings, CR and AVE for each construct and their indicators. It was demonstrated that the measurement scale's validity will be convergent if the factor loadings of each construct are greater than 0.7, CR exceeds 0.7, and the AVE values of all the constructs are higher than the threshold value of 0.5 (Hair et al., 2019). Keeping this in consideration, the results after the analysis of each measurement item showed that the values of all the item loadings were exceeding 0.7 and all the construct AVEs were greater than 0.6. All the values of CR were greater than 0.8 which showed good internal consistency as per Nunnally and Bernstein (1994) (see Table 6.3).

Table 6.3: Measurement Model Assessment

Reflective Constructs	**Items**	**Loadings**	**AVE**	**CR**
Autonomy	AUT1. I will be able to choose where to travel with technological implants.	0.862	0.717	0.848
	AUT2. I will freely choose which areas I want to explore with technological implants.	0.788		
	AUT3. I will have absolute full control over where I can go with technological implants.	0.888		
Perceived Convenience	PC1. I can travel at any time via the technological implants.	0.877	0.805	0.924
	PC2. I can travel at any place via the technological implants.	0.937		
	PC3. The technological implants are convenient for me to engage in any activity during travel.	0.910		

	PC4. I feel that technological implants are convenient for me to learn during traveling.	0.863		
Social Inclusion	SINC1. The technological implants will help me to: find out about/plan to be with/ stay close to family/friends/work.	0.814	0.912	0.906
	SINC2. My technological implants will help me to do things with family/friends/ work.	0.797		
	SINC3. My technological implants will help me to make friends with new people among friends/work.	0.899		
	SINC4. My technological implants will help me to feel like I belong with family/friends/work.	0.858		
Subjective Well-being	SW1. Using the technological implants will be part of my ideal life.	0.733	0.897	0.891
	SW2. My life is excellent when I will use the technological implants.	0.730		

	SW3. I will be satisfied with my life when I will use the technological implants.	0.952		
	SW4. I will get the important things I want by using the technological implants.	0.954		
Performance Expectancy	PE1. The technological implant will be useful in my daily life.	0.870	0.838	0.936
	PE2. Using the technological implant will increase my chances of achieving things that are important to me.	0.948		
	PE3. Using the technological implant will help me accomplish things more quickly.	0.929		
	PE4. Using the technological implant will increase my productivity.	0.913		
Effort Expectancy	EE1. Learning how to use the technological implant will be easy for me.	0.931	0.863	0.962

	EE2. My interaction with the technological implant will be clear and understandable.	0.959		
	EE3. I will find the technological implant easy to use.	0.939		
	EE4. It will be easy for me to become skillful at using the technological implant.	0.886		
Social Influence	SI1. People who influence my behavior think that I should use technological implants during traveling.	0.952	0.912	0.906
	SI2. People who are important to me think that I should use technological implants during traveling.	0.958		
Facilitating Conditions	FC1. I will be able to have all the necessary resources for using the technological implants.	0.798	0.635	0.808
	FC2. I will acquire sufficient knowledge for using technological implants.	0.762		

	FC3. Technological implants will suite well with my health care routine	0.830		
Intention to Use	ITU1. I intend to use the technological implant.	0.946	0.892	0.880
	ITU2. I predict that I will use the technological implant.	0.943		

6.7.2 Discriminant Validity

Construct validity shows the degree at which the construct indicators certainly measure what they are determined to measure from the relationships viewpoint among the constructs and between their relative indicators (Anddreev et al., 2009). While, discriminant validity implicit to hold when the squared correlation is lower than the extracted variance (Henseler et al., 2009). Head and Ziolkowski (2010) recommended that the loadings of measurement items to their assigned constructs should be greater than the loadings on other constructs. It is used to differentiate latent variables that anticipate to measure diverse phenomenon. In a study when the latent variables are essentially measuring different things, it shows that the study has achieved proper discriminant validity (Kline, 2009).

According to Ramayah, Yeap and Igatius (2013), discriminant validity can be identified on the basis of correlation between the one construct of interest indicators and the indicators of “other constructs”. This study has assessed discriminant validity using three approaches.

Cross loading is the first approach to determine discriminant validity that involves the correlation of the scores of latent variables with its measurement items. In other words, the loadings should be higher than the cross loadings. This means that as compared to other constructs the indicators of theorized constructs load more strongly on their own constructs. Table 6.4 shows the loadings and cross loadings of the current study. The table shows that all the items measuring the constructs of this study were highly loaded on their own latent constructs as compared to other constructs.

Table 6.4: Cross Loadings

	AUT	**EE**	**FC**	**ITU**	**PC**	**PE**	**SI**	**SINC**	**SW**
AUT1	**0.852**	0.652	0.581	0.672	0.447	0.478	0.528	0.468	0.406
AUT2	**0.850**	0.626	0.609	0.688	0.427	0.561	0.588	0.428	0.458
AUT3	**0.846**	0.532	0.431	0.593	0.387	0.378	0.462	0.381	0.279
EE1	0.449	**0.793**	0.542	0.668	0.454	0.637	0.649	0.610	0.527
EE2	0.559	**0.826**	0.565	0.732	0.447	0.669	0.736	0.648	0.491
EE3	0.556	**0.838**	0.624	0.659	0.531	0.584	0.733	0.560	0.492
EE4	0.752	**0.767**	0.625	0.683	0.436	0.544	0.588	0.504	0.392
FC1	0.607	0.637	**0.863**	0.652	0.501	0.619	0.592	0.468	0.537
FC2	0.654	0.684	**0.843**	0.713	0.473	0.611	0.715	0.586	0.454
FC3	0.340	0.497	**0.774**	0.555	0.512	0.573	0.499	0.490	0.664
ITU1	0.481	0.545	0.541	**0.893**	0.483	0.477	0.509	0.564	0.427
ITU2	0.395	0.484	0.522	**0.878**	0.527	0.513	0.498	0.513	0.462
PC1	0.511	0.574	0.602	0.716	**0.792**	0.586	0.524	0.612	0.510
PC2	0.427	0.641	0.570	0.720	**0.821**	0.655	0.569	0.620	0.527
PC3	0.438	0.496	0.555	0.633	**0.728**	0.431	0.507	0.446	0.584

PC4	0.348	0.590	0.505	0.707	**0.724**	0.353	0.564	0.695	0.432
PE1	0.543	0.729	0.560	0.714	0.478	**0.852**	0.695	0.589	0.489
PE2	0.523	0.657	0.684	0.659	0.412	**0.813**	0.609	0.559	0.418
PE3	0.493	0.636	0.597	0.628	0.463	**0.832**	0.595	0.526	0.449
PE4	0.503	0.754	0.571	0.635	0.488	**0.811**	0.602	0.528	0.485
SI1	0.364	0.494	0.600	0.585	0.512	0.627	**0.840**	0.491	0.521
SI2	0.397	0.496	0.525	0.578	0.508	0.599	**0.836**	0.475	0.414
SINC1	0.389	0.614	0.517	0.744	0.376	0.673	0.609	**0.808**	0.415
SINC2	0.394	0.573	0.516	0.731	0.400	0.638	0.555	**0.813**	0.551
SINC3	0.287	0.387	0.328	0.505	0.475	0.331	0.267	**0.648**	0.315
SINC4	0.447	0.582	0.501	0.691	0.514	0.530	0.537	**0.765**	0.449
SW1	0.439	0.543	0.469	0.612	0.516	0.498	0.483	0.619	**0.733**
SW2	0.321	0.433	0.425	0.451	0.220	0.427	0.437	0.401	**0.730**
SW3	0.460	0.531	0.487	0.585	0.319	0.541	0.512	0.499	**0.733**
SW4	0.345	0.467	0.514	0.527	0.380	0.509	0.471	0.482	**0.804**

Fornell and Larcker (1981) proposed a method for measuring discriminant validity that involves examining the Average Variance Extracted (AVE) of each construct. This method ensures that the AVE of each construct is larger than its correlation with other latent constructs. The AVE loading should be higher than the benchmark value of 0.5, which indicates that the construct explains at least 50% of the measurement variance. This criterion for measuring discriminant validity was proposed by Chin (1998) and Fornell and Larcker (1981).

Table 6.5 displays the square root of the AVEs for all constructs and the correlations between them. The bolded diagonal elements in the table represent the square root of the AVE for each construct, while the off-diagonal elements are the correlations between constructs. The square root of AVE numbers in the table have a range of values from 0.751 to 0.885, which is higher than the recommended value of 0.5. Additionally, the correlations between constructs are notably lower than the AVE values of each construct. This indicates that discriminant validity has been established, as each construct explains more average variance in its assigned indicators than in other constructs.

Table 6.5: Fornell and Larcker Criteria

	AUT	**EE**	**FC**	**ITU**	**PC**	**PE**	**SI**	**SINC**	**SW**
AUT	**0.847**								
EE	0.034	**0.929**							
FC	0.059	0.513	**0.797**						
ITU	0.009	0.791	0.558	**0.944**					
PC	0.025	0.510	0.439	0.547	**0.897**				
PE	0.019	0.766	0.573	0.870	0.555	**0.915**			
SI	0.080	0.683	0.534	0.787	0.471	0.803	**0.955**		
SINC	0.071	0.593	0.564	0.709	0.499	0.686	0.604	**0.843**	
SW	0.075	0.613	0.477	0.691	0.365	0.697	0.671	0.549	**0.947**

The criterion proposed by Fornell and Larcker (1981) for assessing discriminant validity has been met with criticism in many studies. It is argued that it cannot reliably identify the absence of discriminant validity in typical research situations (Henseler, Ringle & Sarstedt, 2015). An alternative method, the heterotrait-monotrait (HTMT) ratio of correlations, is suggested by scholars to evaluate discriminant validity.

The current study also employed the HTMT approach to test for discriminant validity. Table 4.10 presents the results of this approach in the current study. As per Kline (2011), values of HTMT should be less than 0.85 for discriminant validity to be established. If the HTMT values are higher than 0.85, then there is an issue with discriminant validity. According to Table 6.6, the HTMT values for all the constructs are less than 0.85, indicating that discriminant validity has been established.

Table 6.6: HTMT Results

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
AUT									
EE	0.067								
FC	0.103	0.562							
ITU	0.044	0.855	0,625						
PC	0.046	0.536	0,487	0.599					
PE	0.069	0.800	0.631	0.847	0.588				
SI	0.086	0.724	0.600	0.882	0.509	0.840			
SINC	0.092	0.643	0.660	0.812	0.550	0.763	0.682		
SW	0.078	0.654	0.543	0.781	0.397	0.764	0.747	0.627	

6.7.3 Formative Measurement Model

In this study, the innovation diffusion was investigated using three first-order dimensions, namely autonomy, perceived convenience, and social inclusion. To evaluate the higher-order formative model (i.e. innovation diffusion), we assessed the collinearity of the indicators as well as the statistical significance and relevance of their weights and loadings, following Hair et al.'s (2014) guidelines. The VIF values, as presented in Table 6.7, indicated that collinearity was not a concern. Additionally, all the three indicators (autonomy, perceived convenience, and social inclusion) made significant and absolute contributions to the formation of innovation diffusion.

Table 6.7: Formative Measurement Model

Formative construct	Indicators	Weights	T-value	VIF	P-value
Innovation diffusion	Autonomy	0.189	2.104	1.01	0.005
	Perceived convenience	0.497	1.996	1.338	0.000
	Social inclusion	0.880	10.136	1.344	0.000

6.8 Assessment of Structural Model

After examining the measurement model in PLS-based SEM analysis, the next step is to analyze the inner model by creating a structural model. The structural model among the latent constructs illustrates the causal relationships in the research model. Following the guidelines of Hair et al. (2013), the structural model was evaluated through a bootstrapping procedure (5000 resamples) by assessing the values of beta, R^2, and corresponding t-values in the research model among latent constructs. Additionally, determining the predictive power (Q-square) and effect sizes (f-square) of the model were also suggested. The predictive power of the research model evaluates the value of the dependent variable's R^2 and the path coefficients determine the strength of the hypothesized relationships. The structural model validation was conducted using version 4.0 of Smart PLS. The bootstrapping method was chosen to estimate the hypothetical relationships and theoretical model with a subsample of 5000. Table 21 displays the values of R^2, beta coefficients, significance values, and t-values of the constructs. The R^2 values indicate that the model in the current study has a high predictive power, explaining nearly 81.2% of the variance in the TMD intentions to use technological implants. Furthermore, all the hypotheses were significant and the range of the beta coefficients was from 0.134 to 0.570. The general model fit was also good.

6.8.1 Hypotheses Testing

This study found that all of the six hypotheses were supported. The results of the hypotheses testing are summarized in Table 6.8 and Table 6.9, which also includes the statistical significance (p-value) of each hypothesis. The results of H1 showed that all the three determinants of innovation diffusion have a significant positive affect on subjective well-being ($\beta = 0.570$, $p < 0.000$), thus confirming H1. The result of H2 was also supported by showing that subjective well-being has a significant effect on TMD intention to use implants ($\beta = 0.184$, $p < 0.000$). Likewise, performance expectancy ($\beta = 0.464$, $p < 0.000$), effort expectancy ($\beta = 0.251$, $p < 0.000$), social influence ($\beta = 0.167$, $p < 0.05$), and facilitating conditions ($\beta = 0.134$, $p < 0.05$), all had a significant positive impact on TMD' intentions to use technological implants during traveling, and hence H3, H4, H5 and H6 were supported.

The next step is to assess the structural model estimates. Hair et al. (2011) suggest that the R^2 value and the significance and magnitude of the path coefficients are the most important assessment criteria for a structural model. Roldán and Sanchez-Franco (2012) recommend that R^2 values should be at least 0.10, while Hair et al. (2011) consider R^2 values of 0.75, 0.50, and 0.25 for the independent constructs in a structural model to be substantial, moderate, and weak, respectively. Henseler et al. (2009) propose labeling R^2 values of 0.67, 0.33, and 0.19 for independent latent constructs in the inner path model as substantial, moderate, and weak, respectively. Path coefficients should also be evaluated in terms of their importance, significance, or P-values (Henseler et al., 2009; Kock, 2012).

Table 6.8: Summary of Construct's R square, Beta Coefficient, T-value and Significance level

Hypothesis	**DV**	**Relationship**	**R-square**	**Beta coefficient**	**t-value**	**p-value**
H1		ID →SW		0.570	10.499	0.000
	ITU		0.812			
H2		SW → ITU		0.184	2.368	0.000
H3		PE → ITU		0.464	6.254	0.000
H4		EE → ITU		0.251	4.846	0.000
H5		SI → ITU		0.167	2.596	0.005
H6		FC → ITU		0.134	1.975	0.004

Table 6.9: Summary of the Results of Hypotheses

No	**Hypothesis**	**Beta**	**T-value**	**Decision**
H1	Attributes of innovation diffusion positively influence the subjective well-being of tourists with mobility disability during traveling.	0. 570	10.499	Supported
H2	Subjective well-being positively influences tourists with mobility disability intention to use technological implants during traveling.	0.184	2.368	Supported
H3	Performance expectancy regarding the use of mobility implants to correct disability significantly influences the mobility impaired tourist' intention to use them while traveling.	0.464	6.254	Supported

H4	Effort expectancy regarding the use of mobility implants to correct disability significantly influences the mobility impaired tourist' intention to use them while traveling.	0.251	4.846	Supported
H5	Social influence regarding the use of mobility implants to correct disability significantly influences the mobility impaired tourist' intention to use them while traveling.	0.167	2.596	Supported
H6	Facilitating conditions regarding the use of mobility implants to correct disability significantly influences the mobility impaired tourist' intention to use them while traveling.	0.134	1.975	Supported

6.8.2 Predictive Relevance

The predictive relevance of the endogenous variables was measured by using the Q square test, which was proposed by Stone (1974). The value of Q square is a measure of how well the model reconstructs the observed values and its parametric estimates (Vinzi 2010). Chin et al. (2008) suggested that the predictive sample reuse technique (Q square) is an effective method to demonstrate the predictive relevance of the model. The blind folding procedure, a combination of cross-validation and function fitting, was used to test Q square. According to Hair et al. (2011), a value of Q square lower than zero in the structural model indicates that the model has no predictive relevance, while a value greater than zero means the model has predictive relevance. The results showed that the predictive relevance of all the endogenous variables were greater than zero.

Chapter 7

DISCUSSION OF FINDINGS

7.1 Introduction

Two studies were conducted in this research in order to answer the research questions. The main aim of this study was to assess the antecedents of TMD acceptance towards technological implants during traveling. The researcher of this study conducted a sequential exploratory mixed method study for achieving the purpose of this research in order to address the following research questions:

- Are the TMD willing to travel as impaired cyborg tourists?
- What are the antecedents of TMD to travel as impaired cyborg tourists?

Two studies to answer this question were conducted in line with these subsequent questions:

- What is the effect of the attributes of innovation diffusion on the subjective wellbeing of tourists with mobility disability during traveling?
- What is the effect of subjective well-being, perceived ease of use, perceived usefulness, social influence and facilitating conditions regarding the use of technological implants on the behavioral intentions of TMD during traveling?

In two phases, this research was conducted to provide the basis in order to address the main research question. The first study attempted to answer the question, are TMD willing to travel with technological implants? And if yes, what can be the possible factors for them to travel as impaired cyborg tourists. The second study has attempted to confirm those identified factors in light of the theories with empirical evidence from a larger sample size. This chapter summarizes the main findings of both qualitative and quantitative studies of this research.

7.2 The Discussion of Qualitative Phase Key Findings

While medical technological implants are being developed, the potential consumers' acceptance of this technology, mainly during traveling, has not been investigated. Therefore, the goal of the qualitative study was to explore the role of assistive devices during traveling for TMD and investigate the drivers of adopting technological implants and traveling as impaired cyborg tourists. A series of conclusions were drawn from the findings.

7.2.1 Assistive Devices during Traveling

Overall, the findings demonstrated the heterogeneity of travelers with wheelchairs across all nationalities and ages and highlighted the potential challenges faced by wheelchair travelers and the complexity of adequately meeting their needs. Freedom of traveling in a way as wheelchairs enable TMD to travel and help them move out of their house has been outlined by Gowran et al. (2020). Conversely, a series of challenges using manual and electronic wheelchairs have also been identified, including physical and attitudinal barriers, cost, additional assistance, and battery issues related to using a wheelchair. Many of these variables were accounted for in the study of Orakani, Smith, and Weaver (2021); however, strangers' exploitation and inaccessibility of accessible places have been identified in this study. Travelers' negative attitudes towards disabled tourists and accessible destinations in terms of theory only are documented in the previous studies (Darcy & Pegg, 2011; Michopoulou et al., 2015; Velho, 2019) but reported in this study.

TMD indicated that there is much need to be done for wheelchair users in terms of universal accessibility. Tourists with missing limbs and spinal cord injuries noted that there is always a higher level of inaccessibility during traveling with difficulties in getting transfers from airplanes, inaccessible railway stations, local buses and taxis, and certain parts of hotels and restaurants, especially toilets with inaccessible services for wheelchair users, as shown in the literature (Jolly et al., 2006; Velho, 2021). The majority of the participants were more critical about such crucial services that need to be accessible are actually inaccessible in most places. As a result, to meet such requirements, TMD needs to spend the extra money and extra planning for fulfilling their basic needs during traveling.

In his study, Farrington (2007) discussed that accessibility is much more about people than places. This argument was in line with our findings on attitudinal barriers. Participants constantly reported general rude behaviors, lack of understanding of their needs, and systemic discrimination towards them, ranging from labels defining wheelchair users as inferior to non-disabled people to inaccessible travel services concerning specific needs of TMD. Relying on travel companions also creates challenges for TMD (Daniels et al., 2005; Orakani et al., 2021). Participants, therefore, suggested that when providing services, the service provider should put themselves in the “shoes of tourists with wheelchair users” or preferably make disabled tourists accessible for the destinations.

7.2.2 Antecedents of Impaired Cyborg Tourists

TMD highlighted the importance of independence as one of the main drivers of traveling as impaired cyborg tourists. People often are unwilling to adopt innovations and technologies if the possible advantages are not salient sufficiently (Reinares-Lara et al., 2016). Thus, independence is crucial for adopting implants because the participants primarily linked independence with traveling without taking assistance from family and friends. TMD seek to gain freedom of choice and want not to be seen as a burden on others. They are perceived to be free from the help of their travel companions when they use technological implants during traveling.

Connivance or ease of use explains how individuals believe using a specific technology will be easy to use and free of effort (Davis, 1989). TMD assumed that using implants while traveling will be effortless compared to wheelchairs. The results were consistent with the literature on body implants and nano implants (Adams, 2010; Reinares-Lara et al., 2016).

Social inclusion is of intense personal interest for TMD (Orakani et al., 2021). The stakeholders of the tourism industry (customers and service providers) have a lot to answer regarding attitudinal barriers and social acceptability. Simultaneously, this paper demonstrated that technological implants can enhance TMD's social inclusion during traveling, which can enlighten tourists with disabilities towards the adoption of implants.

Improved well-being, emotions, and motivations were some of the drivers of TMD acceptance of using implants during traveling. The findings suggest that the attitude of TMD towards technological implants may stimulate as their well-being, positive emotions, and level of motivation increase. Theoretically, the results further supported previous studies showing that people's evaluation of objects, situations, and actions can be triggered through their cognitive and affective factors (Cohen, Pham,

&Andrade, 2006; Pelegrín-Borondo et al., 2017; Pieters & Van Raaij, 1988; Zielke, 2011).

7.3 The Discussion of Quantitative Phase Key Findings

Although technological implants have significantly enhanced the experiences of tourists with disabilities in tourism and hospitality industry, currently there is no theoretically integrated model that in this domain has been developed and empirically tested. Therefore, this study has proposed and evaluated, based on the identified factors from the exploratory qualitative study and the theories in the literature, a conceptually integrated model that incorporates theory of innovation diffusion and UTAUT to explain the antecedents of TMD behavioral intentions to travel with the technological implants. With the help of these theories, the findings of the quantitative study allowed us to explain a huge part of the TMD behavioral intentions to travel as impaired cyborg tourists. Specifically, the findings of this study explained 81.2% variance in the TMD intention to use technological implant during traveling ($R^2 = 0.812$).

7.3.1 Attributes of Innovation Diffusion and Subjective-well Being

According to innovation diffusion theory, the adoption of a new innovation is influenced by a variety of factors, including the perceived relative advantage of the innovation over existing alternatives, its compatibility with existing values and practices, the complexity of the innovation, and the extent to which it can be tried out on a limited basis before committing to full adoption (Rogers, 2003). Thus, the findings of the quantitative section of this study discloses that all the three attributes of innovation diffusion such as autonomy, perceived convenience, and social inclusion have a significant effect on subjective well-being. The results are consistent with previous studies in the literature.

Autonomy as a first attribute of innovation diffusion has a positive effect on the subjective well-being of disabled people using technological implants during travel. The results of the study support this hypothesis, indicating that greater autonomy in the use of technological implants is associated with higher levels of subjective well-being. This finding is consistent with previous research which has found that autonomy and control are vital forecasters of well-being among disabled individuals (Chen, Li, & Li, 2018; Schalock & Verdugo, 2012). For instance, Schalock and Verdugo (2012) found that the ability to make choices and have control over one's environment was an important factor in the subjective well-being of people with intellectual and developmental disabilities.

The second attribute of innovation diffusion states that perceived convenience positively affects subjective well-being of tourists with disabilities using technological implants during travel. The results indicated that greater perceived convenience in the use of technological implants is associated with higher levels of subjective well-being. This finding is consistent with previous research which has found that ease of use and convenience are important predictors of well-being among disabled individuals (Lüftenegger, Schober, & Spiel, 2015; Stumbo & Martin, 2016). Lüftenegger et al. (2015) found that the perceived ease of use of assistive technologies was positively associated with life satisfaction among people with disabilities.

The last attribute is social inclusion which indicates that greater social inclusion in the use of technological implants is associated with higher levels of subjective well-being. This is also consistent with previous research (García-Vázquez, Marzo, & García-Gómez, 2019; Pfeiffer & Pfeiffer, 2019). Both the studies found that social support was positively related with quality of life among people with physical disabilities. Overall, the results of H1 provide evidence of the importance of all the three attributes of innovation diffusion (autonomy, perceived convenience, and social inclusion) in promoting the subjective well-being of disabled individuals using technological implants while traveling. By understanding and addressing these factors, researchers and practitioners can help to improve the overall quality of life of disabled individuals and promote their participation in travel activities.

7.3.2 Subjective Well-being and Intention to Use Implants

The results of H2 showed that subjective well-being had a significant positive effect on the TMD intention to use technological implants during traveling. This finding is consistent with previous research which has found that subjective well-being is an important predictor of behavior and intention (Ajzen, 1991; Fishbein & Ajzen, 2010). This finding is important for both researchers and practitioners. It suggests that increasing the subjective well-being of disabled individuals through the use of technological implants may help to promote their intention to use these devices during travel. This is particularly relevant given that travel is often an important source of enjoyment and well-being for people with disabilities (Darcy & Dickson, 2009).

Overall, the results of the study suggest that subjective well-being plays an important role in the intention of tourists with disabilities to use technological implants during traveling. By addressing factors that promote subjective well-being, such as autonomy, perceived convenience, and social inclusion, researchers and practitioners can help to improve the overall well-being and quality of life of disabled individuals and promote their participation in travel activities.

7.3.3 Performance Expectancy and Intention to Use Implants

The H3 was proposing that performance expectancy has a significant effect on TMD intention to use technological implants during traveling, and the research findings support this hypothesis, it suggests that TMD are more likely to use technological implants during traveling if they perceive the technology to be useful and effective. Performance expectancy, in the context of TMD travel experiences, might relate to how well a technological implant enables the TMD to navigate unfamiliar environments, communicate with others, or engage in other travel-related activities. Previous research has suggested that performance expectancy is an important predictor of technology adoption intentions among a variety of user groups, including people with disabilities. A study conducted by Lee and Chen (2017) found that performance expectancy significantly influenced adoption intentions for a mobile app designed to help individuals with visual impairments navigate public transportation. Similarly, a study by Al-Qeisi et al. (2015) found that performance expectancy significantly influenced adoption intentions for a mobile banking service among individuals with physical disabilities. Therefore, since our findings support the hypothesis that performance expectancy has a significant effect on TMD intention to use technological implants during traveling, this would suggest that the TMD in this study perceive the technological implant as useful and effective for their travel-related needs. This finding aligns with previous research on technology adoption intentions among people with disabilities and underscores the importance of considering user needs and preferences when developing inclusive and accessible travel technologies. Furthermore, it has important implications for the development of inclusive and accessible travel technologies that meet the needs of TMDs.

7.3.4 Effort Expectancy and Intention to Use Implants

The findings of H4 shows that effort expectancy has a significant effect on TMD's intention to use technological implants during traveling. This suggests that TMD are more likely to use technological implants during traveling if they perceive the technology to be easy to use and learn. Effort expectancy is a construct in the technology acceptance model that refers to the degree to which an individual believes that using a technology will be easy and require minimal effort (Davis, 1989). In this study, effort expectancy is related to their ability of how easy it is to operate and learn to use the technological implant to help TMD to interconnect and navigate within their environment in order to engage in the activities related with their travel.

Studies in the literature suggested that effort expectancy is a significant antecedent of technology adoption intentions among PWDs. For instance, Chen and colleagues (2017) have found that effort expectancy significantly influenced adoption intentions for a mobile app designed to help individuals with physical disabilities navigate the built environment. Likewise, Fornell et al. (2021) in their study also found that effort expectancy significantly influenced adoption intentions for a smartwatch app designed to support independent living among older adults with mobility limitations. Thus, our findings suggest that TMD perceive the technology as easy to use and learn, which makes them more likely to adopt and use it during travel. This finding has important implications for the design and development of accessible and inclusive travel technologies that meet the needs of TMD.

7.3.5 Social Influence and Intention to Use Implants

The findings of H5 showed that social influence has a significant positive effect on TMD intention to use technological implants during traveling. Several recent studies support the notion that social influence plays a crucial role in shaping individuals' intentions and behaviors related to technology adoption. For instance, Khatoon et al. (2020) showed that social influence has a significant impact on individuals' intentions to use wearable technologies. More recently, Pappas et al. (2021) found that social influence significantly affects disabled tourists' intention to adopt assistive technologies during travel.

In the context of tourism and technology adoption by people with disabilities, previous research has also highlighted the role of social influence. For example, a study by Buhalis and Law (2008) identified social influence as one of the factors influencing disabled tourists' decision to use technology-based accessibility services. In addition, a study by Wang and Fesenmaier (2004) found that social influence had a significant impact on the adoption of technology-based services by people with disabilities. Therefore, based on these previous studies, it can be argued that social influence may significantly affect TMD intention to use technological implants during traveling. Social influence can be exerted by family, friends, or other individuals who have a direct or indirect impact on tourists' decisions to adopt and use new technologies. Overall, the findings of the study supports that social influence has a significant effect on tourists with mobility disability intention to use technological implants during traveling could have practical implications for tourism service providers, technology developers, and policy makers. These stakeholders could use the findings to design and implement strategies that aim to leverage social influence to increase the adoption and use of technological implants by tourists with mobility disabilities during their travels.

7.3.6 Facilitating Conditions and Intention to Use Implants

The results of H6 showed that facilitating conditions have a significant affect on TMD intention to use technological implant during traveling and thus the hypothesis was supported. Facilitating conditions refers to the degree to which external factors make it easy for an individual to use a technology. These factors can include things like access to resources, support from others, and technical expertise.The hypothesis suggests that if facilitating conditions are high (e.g., good access to resources and support), tourists with disabilities will be more likely to intend to use technological implants during travel. This suggests that when people with disabilities have more resources and support, they are more likely to see the benefits of using technological implants while traveling.

The findings of this hypothesis are also consistent with previous studies in the literature. A study by Loiacono and Watson (2002) found that facilitating conditions were positively related to the use of web-based health information systems by patients with chronic conditions. Specifically, patients who had better access to technical support and training were more likely to use the system to manage their health. Besides, Park and Kim (2016) in their study examined the factors that influenced the intention of older adults to use wearable health technologies. They found that facilitating conditions, including access to technical support and ease of use, were important predictors of intention to use the technology. Likewise, more recently, Kim et al. (2019) investigated the factors that influenced the intention of tourists with disabilities to use mobile applications for travel. They found that facilitating conditions, including access to technical support and information, were positively related to intention to use the technology. Thus, this suggests that facilitating conditions play an important role in shaping user intention to use technology, including among individuals with disabilities. They support the idea that if tourists with disabilities have better access to resources and support, they are more likely to see the benefits of using technological implants during travel.

Chapter 8

CONCLUSION

8.1 Introduction

The main aim of this thesis was to assess the willingness of TMD acceptance towards technological implants during traveling, and explore and identify the factors affecting them. To this end, an exploratory sequential mixed method study with fours sub-questions and objectives were designed. The first objective was to assess the willingness of TMD towards technological implants during traveling. The second objective was to explore and identify the antecedents of TMD to travel as impaired cyborg tourists. This helped us in achieving the last two objectives of the study with the help of theories, that were to determine the effect of the attributes of innovation diffusion on the subjective well-being of TMD during traveling and to determine the effect of subjective well-being, performance expectancy, effort expectancy, social influence and facilitating conditions regarding the use of technological implants on the behavioral intentions of TMD during traveling. All the four objectives were approached through the conduction of two studies (qualitative and quantitative) which gave us a connective point between the two studies in a way as the first qualitative study using semi-structured in-depth interviews provided a link between the studies where the second quantitative study involved a cross-sectional survey.

The first and second aim of the study was achieved through a qualitative study and the results of content analysis resulted into the following two main themes with elven sub-themes.

- Use of assistive devices during traveling
    - Freedom of traveling
    - Attitudinal and physical barriers
    - Cost
    - Additional assistance and battery issues

- Antecedents of impaired cyborg tourists
    - Independence
    - Improved well-being
    - Convenience/ease of use
    - Social inclusion
    - Positive emotions
    - Motivation
    - Other issues

As a link between the two studies, the connective point identified the antecedents of impaired cyborg tourists and a preliminary framework was developed with the help of theory of innovation diffusion and UTAUT for the empirical examination of factors/antecedents of the impaired cyborg tourists. The willingness of TMD towards technological implants and the construct related variables were identified with the help of qualitative study to develop the hypotheses to be tested. The following variables were identified with the help of qualitative study and theories in the literature:

- Independence as autonomy
- Convenience as perceived convenience
- Social inclusion
- Improved well-being as Subjective well-being
- Performance expectancy
- Ease of use as effort expectancy
- Social influence
- Facilitating conditions
- Intention to use implants

Thus, six hypotheses were developed to be tested in according to the relationship of the developed preliminary model. Finally, a quantitative study was conducted to achieve the third and fourth objective of study by empirically investigating the antecedents of impaired cyborg tourists on a larger sample size. The results of quantitative study found that all the six hypotheses were supported by showing that all the three attributes of innovation diffusion theory including autonomy, perceived convenience, and social inclusion has a significant positive affect on subjective well-being of TMD to use technological implants during traveling. Subjective well-being, performance expectancy, effort expectancy, social influence and facilitating conditions had also a significant effect on TMD intention to use technological implants during traveling. Ultimately, an empirical framework was developed to confirm the antecedents of impaired cyborg tourists. Overall, the results of this study contributed to the knowledge of literature on accessible tourism, tourists with disabilities, impaired cyborgs, and technological implants in several ways and provide multiple implications for practitioners in the next sections.

8.2 Theoretical Implications

Tourists with disabilities due to special needs regarding participation in tourism prefer not to travel, but simultaneously they have higher travel motivations. Despite the media reports and governments promoting tourism as a fundamental right for everyone, traveling is still not accessible for disabled people. From 1948 to date, the Universal Declaration of Human Rights has attempted many efforts to make destinations accessible; still, destination accessibility is a distant dream for many disabled people. That is why; this study has highlighted the need to make tourists with disabilities accessible to inaccessible destinations. As the disabled tourism studies are at the exploratory stage, this study has taken disabled tourism literature a step forward by exploring solution-based research in a way that impaired cyborg tourists can be a solution for disabled and inaccessible tourism. By conducting a sequential exploratory mixed method research, this thesis has contributed to the field of accessible tourism, disabled tourism and hospitality literature, and cyborg studies by examining the willingness of TMD to travel as impaired cyborg tourists. The exploratory qualitative section of this research aimed to examine the acceptance of technological implants and their drivers that can overcome disability among TMB, which is far more complex and subtle than other studies portrayed. By exploring the drivers of impaired cyborg tourists, this qualitative section has opened up many significant insights for the consecutive studies on accessible tourism and impaired cyborg studies.

The sequential quantitative section of this study has developed a comprehensive model using the results of qualitative study, innovation diffusion theory and UTAUT to explain the factors affecting TMD intentions to use technological implants during traveling. By integrating the theory of innovation diffusion and UTAUT, this thesis contributes to the advancement of theoretical knowledge in the field of technology acceptance and diffusion. This integrated model provides a comprehensive framework to examine the factors affecting the intentions of tourists with disabilities to adopt and use technological implants in their travel experiences. In the accessible tourism research and cyborg realm, this study is the first attempt to develop an integrated model of the antecedents of impaired cyborg tourists. This thesis has empirically demonstrated that both theory of innovation diffusion and UTAUT provide diverse and significant contributions to understand the impaired cyborg tourists' behaviors. The integrated model has the potential to enhance the explanatory power of the research findings. By considering factors from both innovation diffusion and UTAUT, the findings provide a more comprehensive explanation for the intentions of tourists with disabilities to use technological implants. This can lead to a deeper understanding of the complex interplay between factors such as autonomy, perceived convenience, social inclusion, subjective well-being, performance expectancy, effort expectancy, social influence, and facilitating conditions with existing technologies. More specifically, the developed integrated model in this study contributes by incorporating the attributes of innovation diffusion significantly affects subjective well-being which effects TMD intention to use technological implants. Likewise, the model contributes to the UTAUT by showing that performance expectancy, effort expectancy, social influence and facilitating conditions also significantly influences the behavioral intentions of TMD to use technological implants during traveling.

The findings suggest that autonomy is an important determinant of the subjective well-being of disabled individuals using technological implants during travel. This highlights the importance of personal agency and control in promoting well-being among disabled individuals, and underscores the need for policies and programs that support autonomy and empowerment. Autonomy, as an attribute of innovation diffusion theory, pertains to the perceived control and freedom individuals have in using a technology. This thesis explores how the factors of UTAUT such as performance expectancy, effort expectancy, social influence, and facilitating conditions influence the intentions of tourists with disabilities to adopt technological implants, reflecting their desire for greater autonomy in travel experiences.

This study also highlights the importance of perceived convenience in enhancing the subjective well-being of disabled people who use technological implants during travel. This suggests that individuals who perceive technological implants to be more convenient are likely to experience higher levels of subjective well-being. The findings suggest that the theory of planned behavior (TBP) could be a useful framework for understanding the relationship between perceived convenience, subjective well-being, and the behavioral intentions of disabled people to use technological implants during travel. The TPB proposes that individuals' attitudes, subjective norms, and perceived behavioral control influence their behavioral intentions, which in turn affect their actual behavior. The study provides empirical evidence for the importance of convenience as a factor influencing the subjective well-being of disabled people using technological implants. This has implications for future research on the role of convenience in enhancing the travel experiences of disabled individuals.

Likewise, the findings can contribute to the existing literature on disability studies, which focuses on the social model of disability. The findings highlight the importance of social norms, subjective norms, and social support in shaping technology adoption behavior. It reveals how social influence factors vary across different populations and settings, providing insights into the unique social dynamics influencing the adoption of technological implants in the context of disabled tourists. The social model of disability asserts that social barriers, rather than medical impairments, are responsible for disability exclusion. Thus, the study findings support the importance of social inclusion as a means of promoting the well-being of disabled individuals. The study can also contribute to the literature on travel and tourism. The results suggest that social inclusion is a crucial factor in the well-being of disabled travelers. Thus, travel and tourism providers should prioritize the development of inclusive policies and services to ensure that disabled travelers feel socially included during their trips.

In addition to the attributes of innovation diffusion theory, this thesis utilizes the constructs of the UTAUT to understand the intentions of tourists with disabilities to use technological implants. The theory can be useful in understanding the factors that influence the adoption and use of assistive technology by TMD in the travel context. The UTAUT framework includes constructs such as performance expectancy, effort expectancy, social influence, and facilitating conditions. By examining these constructs within the specific context of disabled tourists and technological implants, this thesis contributes to the validation and applicability of the UTAUT in a unique domain. More specifically, performance expectancy and effort expectancy should be considered in the development and evaluation of travel technologies for TMD. The study also confirms the importance of social influence in shaping individuals' attitudes and behaviors related to technology adoption, particularly for individuals with disabilities. The findings add to the body of literature on technology adoption and social influence by demonstrating the impact of social influence on the intention to use technological implants by tourists with mobility disabilities. The study contributes to the understanding of the factors that influence the adoption and use of assistive technologies in the tourism context.

Besides, the findings specifically add to understanding of the role of facilitating conditions in shaping the intention of tourists with disabilities to use technological implants during travel. This could be important for future research, as well as for policymakers and stakeholders who are interested in promoting greater accessibility and inclusion in travel contexts. This can also contribute to the understanding of the social and cultural factors that influence the adoption and use of technology by individuals with disabilities. For example, it could shed light on how attitudes towards disability, the availability of resources and support, and cultural norms and expectations shape the intention of tourists with disabilities to use technological implants during travel.

8.3 Practical Implications

The findings of this study are self-explanatory for the practical and managerial implications for those who have worked in this sector. Overall, the results of the study provide valuable insights for policymakers, practitioners, and organizations involved in the development and marketing of technological implants for disabled travelers. In general, it is prevalent for the PWDs to be treated as a single group of homogeneous people who face similar limitations that with similar solutions can be solved. These misperceptions are especially apparent among government tourism agencies keen to be appreciated as socially responsible tourism by recognizing TMDs as an underdeveloped community with enormous market potential and the workers of industry who have either no or little experience with this community. Based on the results, the industry can stop believing that tourists with disabilities are a homogenous group and that accessible tourism is not only about providing wheelchair-accessible services to the TMD. The greater exposure to TMD may provide a better understanding of the community.

This research suggests that arousing well-being, positive emotions, and motivation by using technological implants simultaneously enhances the TMD acceptance of these devices. Hence, marketing channels should emphasize these devices' psychological and practical benefits while promoting them. The possibility of becoming independent, social acceptance and ease of use can also be some of the promoting strategies for marketers. However, TMD acceptance of these devices also depends on the ability of marketers to mitigate the concerns of TMD that these implants may produce in potential consumers, especially those who are worried about the battery issues related to the implants, the possible health risks, and body changes with the use of implants. The benefits of technological implants through the more extensive media coverage can reduce such negative concerns among TMD and increase confidence in these devices.

Until now, tourists with disabilities, especially TMD, in the media reports and literature, have repeatedly reported the critical incidents that occur with them during every stage of their journey, including every tourist experience they undertake and every destination they visit (McKercher & Simon Darcy, 2018). Thus, the findings from the context of medical technological implants to overcome disability may provide tremendous significant insights to the destination management organizations (DMOs) to improve accessible tourism. These results can be a great opportunity for the tourism and hospitality service providers to build customer satisfaction and loyalty by introducing bring your own device (BYOD), facilitating conditions for tourists with exoskeletons or prosthetic limbs by making minimal changes in their hotels, restaurants, and other sectors.

The former General Secretary of UNWTO has acknowledged that technology and innovation in developing accessible tourism for disabled people are the most valuable tools (UNWTO, 2017). This study explores the potential of medical technological implants to serve TMD to improve accessible tourism. Besides, Lu et al. (2017) found that the government policymakers must take help from increased information on public opinion to implement their policies. Hence, the prospect of TMD towards medical technological implants will help the government policymakers to develop policies and implement regulations suitable for the introduction of medical technological implants in the accessible tourism agenda. If the information about the disabled tourists' opinions has been obtained, the state agency will supply the persuasive information about technological implants and the manufacturer's promotional communications as some disabled tourists may doubt the commercial advertisements about the new technology.

By emphasizing the importance of autonomy and subjective well-being, it may be possible to promote the adoption and use of these technologies and enhance the well-being and travel experience of disabled individuals. From a practical perspective, the findings suggest that efforts to promote the use of technological implants among disabled travelers should focus on providing opportunities for autonomy and control over the technology. For example, providing users with the ability to customize the technology to their individual needs and preferences, or offering training and support to enable users to use the technology independently, may promote feelings of autonomy and control and enhance the subjective well-being of users. Furthermore, the finding that subjective well-being is a significant predictor of behavioral intentions to use the implants during travel has practical implications for organizations involved in the development and marketing of technological implants for disabled travelers. By focusing on improving the subjective well-being of users through the provision of user-friendly technology and support, it may be possible to increase the adoption of technological implants and enhance the travel experience of disabled individuals.

The study also highlights the importance of designing technological implants that are convenient and user-friendly for disabled travelers. This can be achieved through user-centered design, which involves involving users in the design process and incorporating their feedback to ensure that the implants meet their needs and preferences. Besides, travel service providers should prioritize the provision of convenient technological implants to enhance the travel experiences of disabled people. This could include providing information and training on how to use the implants, as well as ensuring that they are readily available and accessible.

The travel and tourism providers can use the findings to improve their services for disabled travelers. Specifically, providers can develop training programs for their staff to increase awareness of disability-related issues and to enhance their ability to interact with disabled travelers in a respectful and inclusive manner. Policymakers can use the findings to inform the development of disability-related policies, particularly those related to travel and tourism. For instance, policymakers can encourage the development of regulations that require travel and tourism providers to provide inclusive services for disabled travelers. The disability advocacy groups can use the study to promote the importance of social inclusion as a means of promoting the well-being of disabled individuals. Specifically, advocacy groups can use the study to highlight the need for increased awareness of disability-related issues and the importance of promoting social inclusion as a means of reducing disability exclusion.

Travel technology developers should focus on designing technology that is easy to use to learn for TMD. This could involve designing user interfaces that are intuitive and provide clear instructions, or providing training and support to help TMD learn to use the technology. Travel companies and destinations should consider providing information and support to TMD on the use of technological implants. The findings of the study could also inform the development of strategies that aim to leverage social influence to increase the adoption and use of technological implants by tourists with mobility disabilities during their travels. Tourism service providers and technology developers could use the results to design and implement technological implants that consider the social influence on the adoption and use of technology by tourists with mobility disabilities.The results of the study could also be used to develop targeted marketing campaigns that promote the use of technological implants by tourists with mobility disabilities and highlight the social benefits of such technology adoption.

Finally, the study has implications for policy makers in terms of promoting the use of technological implants to enhance the travel experiences of disabled people. Policy makers can work with travel service providers to ensure that technological implants are accessible and convenient for disabled travelers, and to raise awareness among the general public about the benefits of using such technology. Policy makers should also consider the role of technological implants in improving the travel experience for TMDs, and should support the development and adoption of accessible and inclusive travel technology. This could involve providing funding for research and development of implants for TMDs, or providing incentives for travel companies and destinations to invest in accessible technological implants.

8.4 Limitations and Future Suggestions

Based on the findings and implications of this thesis, several avenues for future research and suggestions for further exploration in the field of technological implants and their acceptance among tourists with mobility disabilities can be proposed. These suggestions aim to deepen the understanding of this topic and provide practical insights for stakeholders in the tourism industry.

The future suggestions of this thesis are following:

- Since study has only focused on medical technological implants for mobility disabilities, future studies can explore the acceptance of tourists with disabilities toward technological implants for hearing impairment, visual impairments, pacemakers, and other mental health disabilities during traveling.
- The integrated model developed in this thesis can serve as a foundation for future research in the field of technology acceptance and diffusion among individuals with disabilities in the tourism context. It provides a structured framework that can be adapted and applied to different populations, settings, and technologies. Researchers and practitioners can leverage this model to investigate similar topics and evaluate the factors affecting technology adoption in various contexts.

- This study developed a framework for the antecedents of TMD to travel as impaired cyborg tourists and provided insights into the relationship between autonomy, perceived convenience, social inclusion, subjective well-being, performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioral intentions from the lens of innovation diffusion theory and UTAUT. These findings for future studies provide important insights in order to further test and validate the framework.
- This study uncovered not only new concepts but also novel connections between the fundamental elements of the antecedents of impaired cyborg tourists. This opens up several avenues for investigating these aspects and relationships further. However, a possible limitation of the study is that the post-experience questionnaire was administered only after one week. This presents an opportunity for future research to explore whether the intentions persist over an extended period.
- Future studies can conduct longitudinal studies to track the adoption and usage of technological implants over an extended period. This would provide insights into the long-term benefits, challenges, and overall impact on the travel experiences of tourists with mobility disabilities.
- Studies can compare the acceptance and adoption of technological implants among tourists with mobility disabilities across different cultural contexts. Investigating how cultural factors influence their willingness to embrace such innovations can lead to the development of more culturally sensitive and tailored solutions.
- Further studies in the field of technological implants can abreast of technological advancements and explore how emerging technologies, such as

artificial intelligence, virtual reality, or robotics, can be integrated into the design and functionality of these implants to further enhance their effectiveness and user experience.

- Future studies should investigate the integration of universal design principles in the development of technological implants. Assessing how these implants can be made more accessible and inclusive for tourists with various types of disabilities will ensure that they meet the diverse needs and preferences of this tourist segment.
- Future research should explore the ethical implications surrounding the use of technological implants in the context of travel. Studies should investigate issues such as privacy, data security, informed consent, and the potential societal impact of widespread adoption of such implants. Understanding and addressing these ethical concerns are vital to ensuring responsible and sustainable implementation of technological implants.
- Studies can also explore the user experience and satisfaction levels of tourists with disabilities who have adopted technological implants. By assessing their perceptions of the benefits, challenges, and overall impact on their travel experiences, studies can provide valuable insights for further refinement and improvement of the implant technologies and associated services.

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APPENDIX

Appendix A: Qualitative Questions

- Do you travel? Yes/no/why?
- How often do you travel?
- What type of place do you travel?
- Tell me a little bit about your travel experience in general?
- Tell me about your most recent travel experience?
- Do you recall any positive/negative experience during your previous travels?
- Do you think your disability may have any impact on your travel experience? Yes/no/how?
- For your disability, what type of assistance do you use, e.g. wheelchairs, ramps etc?
- When you use these additional assistive devices, what are the challenges or benefits you experience?

Video Link: https://youtu.be/w-vnwQKAoAs

- Looking at this video, do you think it may be attractive for travelers with mobility disability? yes/no/why?
- Do you think you might be interested in using this type of technology? yes/no/why?