Analysis of the Factors Influencing the Purchase Intention of Hearing Aids in West Bengal, India

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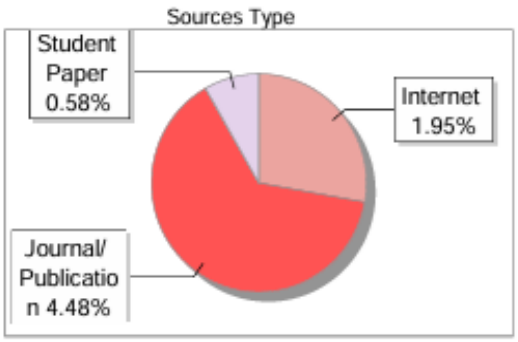

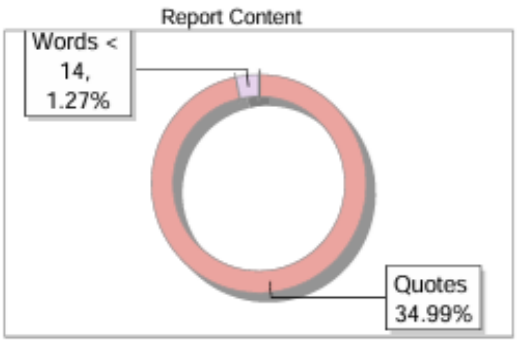

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ABSTRACT

Hearing loss remains a significant public health concern, impacting millions around the world (World Health Organization, 2021). Despite the potential for hearing aids to alleviate its detrimental effects, adoption rates remain disappointingly low (Kochkin, 2005). This necessitates understanding the factors influencing individuals' purchase decisions. Exploring the factors influencing purchase decisions, particularly in regions like West Bengal, India, where hearing loss prevalence is high, is crucial to addressing this challenge.

This research delves into the decision-making process surrounding hearing aids in West Bengal, employing a mixed-methods approach with a diverse sample population. Key findings indicate that price sensitivity, health concerns, comfort, and psychosocial factors play a significant role in purchase intention. Additionally, demographic variables like age, education, occupation, and income demonstrate a notable impact. The study considers the below mentioned objectives: -

- Identifying factors influencing hearing aid purchase intention.
- Examining the most significant determinants ofpurchase intention.
- Analyzing the impact of demographic variables on purchase intention.

These insights offer valuable information for developing targeted interventions and strategies to promote hearing aid use, ultimately leading to improved communication, social engagement, and quality of life for individuals with hearing loss.

This research delves into the factors influencing hearing aid purchase decisions among individuals with hearing loss in West Bengal, India.

Data analysis reveals valuable information for developing targeted interventions and strategies to promote hearing aid use. The largest share of potential customers (46.3%) falls within the 37-46 age group, followed by 27-36 (35.2%)and 47-5 6 (18.5%).Importantly, respondents prioritize price sensitivity (3.57),health concerns (3.56),physical comfort (3.44),and psychosocial factors (3.61)when considering hearing aids (Kochkin , 2005).Additionally, demographic variables like age, education, occupation, and income significantly influence purchase intention, highlighting the need for targeted interventions tailored to specific demographics.

These insights highlight the complex interplay of factors influencing hearing aid adoption in West Bengal. Understanding the influence of demographic factors and other key determinants is crucial for developing targeted interventions and strategies to promote hearing aid use. Such interventions can lead to improved communication, social engagement, and quality of life for individuals with hearing loss.

These diverse research avenues hold the potential to provide a comprehensive understanding of this public health issue and guide the development of effective strategies to address it. Addressing affordability barriers and tailoring interventions to individual needs and preferences, we can empower individuals with hearing loss to live more fulfilling lives.

This comprehensive study sheds light on the complex interplay of factors influencing hearing aid purchase intention among individuals with hearing loss in West Bengal. The insights gained from this research can guide policymakers, healthcare professionals, and manufacturers in designing and implementing effective interventions and strategies to increase hearing aid utilization, ultimately leading to improved well-being for those affected by hearing loss. Furthermore, the outlined avenues for further research pave the way for a more comprehensive understanding of this important public health issue and the development of effective strategies to address it .

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List of Abbreviations

Abbreviation	Full Form
AI	Artificial Intelligence
AIIMS	All India Institute of Medical Sciences
ANOVA	Analysis of Variance
ARHL	Age-related Hearing Loss
AYUSH	Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy
CGHS	Central Government Health Scheme
COVID-19	Corona-virus disease 2019
DH	Diseases & Health Issue
EFA	Exploratory Factor Analysis
FGD	Focus Group Discussion
HA	Hearing Aid
HBM	Health Belief Model
HL	Hearing Loss
HLAA	Hearing Loss Association of America
ICMR	Indian Council of Medical Research
ICDS	Integrated Child Development Services
IMR	Infant mortality rate
IAA	International Association of Audiology
ML	Machine Learning
MMR	Maternal mortality ratio
NAD	National Association of the Deaf
NHM	National Health Mission

Abbreviation	Full Form
NIHH	National Institute of Hearing Handicapped
NIHL	Noise-induced hearing loss
NRHM	National Rural Health Mission
NSSO	National Sample Survey Office
OBC	Orthodox-Belief and Customs
PCA	Principal Component Analysis
PMJAY	Pradhan Mantri Jan Arogya Yojana
PPE	Personal protective equipment
PB	Perceived Benefits
PC	Physical Comforts
PIHA	Purchase Intention of Hearing Aids
PS	Price Sensitivity
PSF	Psycho- social Factors
QOL	Quality of Life
SE	Service Expectation
SEM	Structural Equation Modelling
S.D.	Standard Deviation
S.E.	Standard Error
Sig.	Significance Level
TPB	Theory of Planned Behavior
U5MR	Under-five mortality rate
WBHS	West Bengal Health Scheme
WHO	World Health Organization

CHAPTER-I

INTRODUCTION

Chapter –I

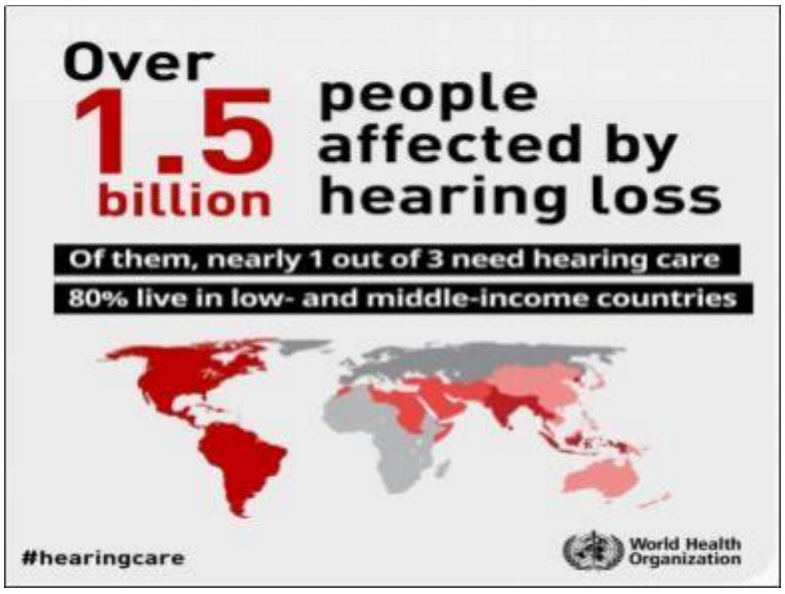
INTRODUCTION

The present chapter provides the introduction and background of the research study, mentioning the important concepts in the study. The Hearing Loss, Hearing Aid market globally and in India is provided in details with due mention of the progress and changes in Kolkata, West Bengal and its surrounding areas. The motivation for adopting the study as well as the scope of this study is explained.

1.1 Overview of the Topic

Hearing loss is a significant global health issue, affecting roughly 1.5billion individuals worldwide, with 466 million experiencing disabling hearing loss (World Health Organization, 2021). As the global population ages, the prevalence of hearing loss is expected to increase, making it one of the most widespread health concerns of the 21st century.

Figure 1.1: Geographic positioning of Hearing Loss



Source: -https://cdn.who.int/media/images/default-source/health-topics/deafness-and-hearing-loss/world-report-on-hearing

Over the past decade, significant advancements in technology and increased awareness have led to a shift in perceptions and approaches to hearing loss. This chapter will analyses these recent developments, focusing on innovations in hearing aids and assistive technologies, the

growing understanding of the impact of hearing loss, and the increasing acceptance of hearing aids within various communities.

1.2 Technological Advancements: Hearing Aids and Beyond

Recent years have seen a surge in technological advancements within the field of hearing loss. Hearing aids, once bulky and often stigmatized, are now smaller, more discreet, and equipped with advanced features.

Current hearing aids offer features such as:

- **Digital signal processing:** It allows for personalized adjustments to improve sound quality and clarity. Directional microphones, which filter background noise and focus on amplifying sound from specific directions.

- **Bluetooth connectivity:** Enabling hands-free phone calls and streaming of audio content directly to hearing aids.

- **Artificial intelligence (AI)**: Powered noise reduction, further enhancing speech understanding in challenging listening environments.

Beyond hearing aids, other technological advancements are opening new avenues for individuals with hearing loss:

- **Cochlear implants,** which directly stimulate the auditory nerve, have become increasingly sophisticated, offering improved sound quality and speech recognition for individuals with severe hearing loss.

- **Bone conduction** technology, transmitting sound vibrations through the skull, provides an alternative solution for individuals who cannot use traditional hearing aids.

- **Mobile apps and online platforms** offer access to resources, support groups, and assistive tools for better communication and self-management of hearing loss.

These technological advancements not only enhance the experience of hearing loss but also empower individuals to actively participate in society and overcome the associated challenges.

1.3 Shifting Perceptions and Increased Acceptance

The way society perceives hearing loss and hearing aids is undergoing a positive transformation. Increased awareness campaigns and advocacy efforts led by individuals with

hearing loss have contributed to a growing understanding of the impact of hearing loss and the benefits ofwearing hearing aids.

- **Celebrity endorsements:** Public figures open about their own experiences with hearing loss have helped normalize the use ofhearing aids and reduce the associated stigma.

- **Hearing loop systems:** Public venues such as theaters, museums, and schools are increasingly adopting hearing loop systems, which transmit audio directly to hearing aids, enhancing accessibility for individuals with hearing loss.

- **Deaf-friendly environments:** Many workplaces, universities, and public spaces are actively creating deaf-friendly environments, providing sign language interpretation, captioning services, and other inclusive measures.

These changing perceptions and increased societal acceptance are contributing to a more inclusive environment for individuals with hearing loss, enabling them to thrive in both personal and professional ndeavor.

1.4 Challenges and the Road Ahead

Despite the significant progress made, various challenges remain:

- **Cost and affordability:** Advanced hearing aids and other assistive technologies often come with a high price tag, posing a barrier for many individuals with hearing loss.

- **Access to qualified professionals:** Access to qualified Audiologists and Hearing Healthcare Professionals remains limited in many regions, particularly in rural areas.

Figure 1.2: Growth of Hearing Loss

Source: -https:/www.who.int/teams/noncommunicable-diseases/sensory-functions-disability-and-rehabilitation/highlighting-priorities-for-ear-and-hearing-care

Social stigma and discrimination: While perceptions are shifting, some individuals with hearing loss still experience social stigma and discrimination, affecting their quality of life and mental health.

Addressing these challenges requires a multifaceted approach involving:

- **Government initiatives and policies:** Governments need to implement policies that improve access to hearing healthcare services, including financial assistance programs and subsidies for hearing aids.

- **Collaboration and partnerships:** Collaboration between healthcare providers, researchers, technology developers, and advocacy organizations is crucial for developing accessible and affordable solutions for individuals with hearing loss.

- **Continued awareness and education:** Ongoing public awareness campaigns and educational initiatives will help address the remaining stigma and promote greater acceptance of hearing loss and hearing aids.

1.5 The Global Burden of Hearing Loss

Hearing loss is a prevalent global health issue, affecting an estimated 466 million individuals worldwide with disabling hearing loss (World Health Organization, 2021). This staggering number represents approximately 5% of the world's population, highlighting the significant impact of hearing loss on individuals, families, and societies. The prevalence of hearing loss increases with age, with over 65% of individuals aged 75 and above experiencing some degree of hearing loss (National Institute on Deafness and Other Communication Disorders, 2022). This age-related increase in hearing loss underscores the growing importance of addressing hearing loss as the global population ages.

Figure1.3: World Report on Hearing

Source: -http://cdn.who.int/media/images/default-source/health-topics/deafness-and-hearing-loss/world-report-on-hearing

1.5.1 Economic Impact of Hearing Loss

The economic impact of hearing loss is also substantial. Estimates suggest that unaddressed hearing loss costs the global economy 750 billion USD annually (World Health Organization, 2019). This includes costs associated with reduced productivity, healthcare utilization, and social welfare programs. Addressing hearing loss through early identification, intervention, and rehabilitation can significantly reduce these economic burdens.

1.5.2 Factors Contributing to the Global Burden of Hearing Loss

Several factors contribute to the global burden of hearing loss. These include:

- **Age:** The prevalence of hearing loss increases with age, with over 65% of individuals aged 75 and above experiencing some degree of hearing loss (National Institute on Deafness and Other Communication Disorders, 2022).

- **Noise exposure:** Prolonged exposure to loud noises can damage the delicate hair cells in the inner ear, leading to noise -induced hearing loss (NIHL). NIHL is a preventable form of hearing loss that is becoming increasingly common due to the widespread use of personal audio devices and exposure to occupational noise.

- **Genetic factors:** Certain genetic mutations can increase the risk of hearing loss. For example, mutations in the GJB2 gene are associated with congenital hearing loss, while mutations in the OTOF gene are associated with age-related hearing loss.

- **Medical conditions:** Certain medical conditions, such as otitis media, Meniere's disease, and head injuries, can cause hearing loss.

- **Ototoxic medications:** Certain medications, such as some antibiotics and chemotherapy drugs, can damage the inner ear and cause hearing loss.

1.5.3 Addressing the Global Burden of Hearing Loss

Addressing the global burden of hearing loss requires a multifaceted approach that includes:

- **Early identification and intervention:** Early identification and intervention are crucial for minimizing the impact of hearing loss. This involves screening programs for infants, children, and adults at risk for hearing loss, as well as providing timely access to appropriate hearing healthcare services.

- **Prevention:** Preventing hearing loss through measures such as noise reduction strategies, the use of hearing protection, and genetic counselling can significantly reduce the number of individuals affected by hearing loss.

- **Rehabilitation:** Rehabilitation services, including hearing aids, cochlear implants, and auditory training, can help individuals with hearing loss improve their communication abilities and quality of life.

- **Advocacy and awareness:** Raising awareness about hearing loss and advocating for policies that promote hearing health are essential for reducing the stigma associated with hearing loss and improving access to hearing healthcare services.

1.6 Impact of COVID-19 on Hearing Loss

The COVID-19 pandemic has had a significant impact on global health, including on hearing loss. Several factors have contributed to this impact:

- **Increased social isolation:** Social isolation measures implemented during the pandemic have limited individuals' access to social interactions and support networks, which can exacerbate the negative impacts of hearing loss.

- **Delayed diagnosis and treatment:** Access to hearing healthcare services has been disrupted in many countries due to the pandemic, leading to delays in diagnosis and treatment ofhearing loss.

- **Increased use of personal protective equipment (PPE):** The widespread use ofmasks and face shields during the pandemic has made communication more challenging for individuals with hearing loss, as they rely on visual cues such as lipreading.

- **Long-term effects of COVID-19:** Emerging evidence suggests that COVID-19 infection can have long-term effects on hearing, including tinnitus and hearing loss (Mohamad et al.,2022).

1.6.1 Post-COVID Effects of Hearing Loss in India

In India, the impact of COVID-19 on hearing loss has been particularly concerning. India has a high burden of hearing loss, with an estimated 63 million individuals affected (Indian Council of Medical Research, 2019). The pandemic has exacerbated existing challenges in accessing hearing healthcare services, particularly in rural areas.

A study conducted in India found that the prevalence ofhearing loss increased by 20% during the pandemic (Sharma et al.,2022). This increase is attributed to factors such as delayed diagnosis and treatment, increased social isolation, and the long-term effects of COVID-19 infection.

The post-COVID effects of hearing loss in India are particularly concerning for children. Hearing loss during childhood can have a profound impact on language development, education, and social interaction. The pandemic has resulted in disruptions to educational services for children with hearing loss, further exacerbating the challenges they face.

1.6.2 Addressing the Post-COVID Challenges of Hearing Loss

Addressing the post-COVID challenges of hearing loss requires a multi-pronged approach:

- **Improving access to Hearing Healthcare services:** Expanding access to hearing healthcare services, particularly in rural areas, is crucial for ensuring timely diagnosis and treatment ofhearing loss.

- **Promoting Tele-audiology services:** Tele-audiology services can provide remote access to hearing healthcare services, reducing barriers to care for individuals in remote locations.

- **Developing innovative hearing loss interventions:** Developing innovative interventions, such as mobile-based hearing screening tools and digital hearing aids, can improve access to hearing care and empower individuals with hearing loss.

- **Raising awareness about the long-term effects of COVID-19 on hearing:** Raising awareness about the potential long-term effects of COVID- 19 on hearing is crucial for encouraging individuals to seek timely medical attention if they experience hearing-related symptoms after infection.

1.6.3 The Impact of Hearing Loss

Hearing loss can have a profound impact on individuals' lives, affecting their ability to communicate effectively, participate in social activities, and maintain their overall well-being. Communication difficulties can lead to social isolation, loneliness, and depression (Kochkin, 2016).Additionally, hearing loss can increase the risk of falls, cognitive decline, and dementia (Lin et al.,2011).The economic impact of hearing loss is also substantial, with estimates suggesting that unaddressed hearing loss costs the global economy billions of dollars annually (World Health Organization, 2019).This section will delve into the multifaceted impacts of hearing loss on individuals, families, and societies, highlighting both the global and Indian contexts.

Communication Difficulties and Social Isolation

A primary consequence of hearing loss is its impact on communication. Individuals with hearing loss often struggle to understand speech, especially in noisy environments or when multiple people are talking simultaneously. This can lead to:

- **Misunderstandings and frustration:** Difficulty following conversations can lead to misunderstandings and frustration, both for the individual with hearing loss and those around them.

- **Social isolation and loneliness:** Difficulty communicating effectively can lead to social isolation and loneliness, as individuals with hearing loss may withdraw from social situations due to the challenges they face.

- **Reduced quality of life:** Difficulty communicating can significantly impact an individual 's quality of life, affecting their ability to participate in social activities, maintain relationships, and pursue their interests.

Studies have shown that individuals with hearing loss are more likely to experience social isolation, anxiety, and depression compared to those with normal hearing (Ciorba et al.,2012). This highlights the significant impact that hearing loss can have on an individual's mental health and well-being.

Impact on Education and Employment

Hearing loss can also significantly impact educational and employment opportunities. Children with hearing loss may struggle to keep up with their peers in school, leading to academic difficulties and delays. Adults with hearing loss may find it challenging to find and maintain employment, particularly in occupations that require clear communication and interaction with others.

A study by the National Institute on Deafness and Other Communication Disorders (NIDCD, 2022) found that adults with untreated hearing loss are more likely to experience unemployment, lower incomes, and limited job opportunities compared to those with normal hearing.

1.7 Global Context: Disparities in Access to Hearing Healthcare

The impact of hearing loss can be exacerbated by disparities in access to hearing healthcare services. In many countries, particularly in low- and middle-income settings, individuals with hearing loss lack access to timely diagnosis, treatment, and rehabilitation services. This can lead to a greater burden of hearing loss and its associated consequences.

1.8 India: Unique Challenges and Opportunities

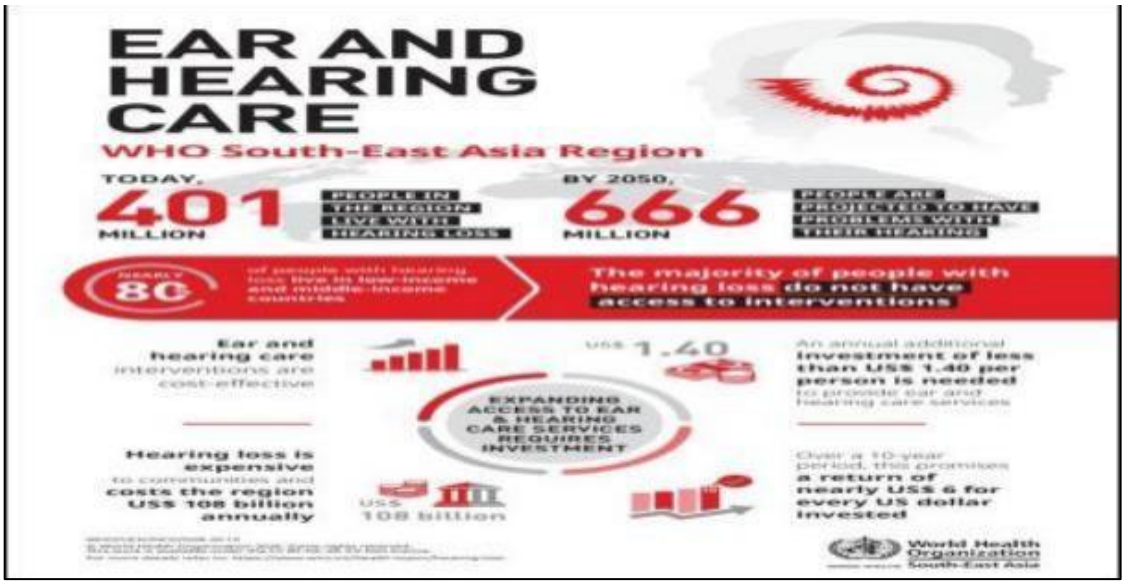
In India, hearing loss is a significant public health concern, affecting an estimated 63 million individuals (Indian Council of Medical Research, 2019). India faces unique challenges in addressing hearing loss, including:

- **Limited access to hearing healthcare services:** Access to audiologists, hearing aids, and other hearing healthcare services is limited in many parts of India, particularly in rural areas.

- **Cost of hearing aids:** Hearing aids can be expensive, making them inaccessible for many individuals with hearing loss.

- **Stigma associated with hearing loss:** Stigma surrounding hearing loss and hearing aids can deter individuals from seeking help.

Figure 1.4 : Ear and Hearing Care



Source: -http:/www.who.int/multi-media/details/ear-and-hearing-care---searo

Despite these challenges, India also presents opportunities for addressing hearing loss. The country has a growing economy and a young population, which can provide the resources and impetus to improve hearing healthcare loss. The has a strong tradition of community-based rehabilitation, which can be leveraged to reach individuals with hearing loss in rural areas.

Hearing loss has a profound impact on individuals, families, and societies. Addressing the global burden ofhearing loss requires a multifaceted approach that includes:

- **Early identification and intervention** : They are crucial for minimizing the impact of hearing loss. This involves screening programs for infants, children, and adults at risk for hearing loss, as well as providing timely access to appropriate hearing healthcare services.

- **Prevention:** Preventing hearing loss through measures such as noise reduction strategies, the use of hearing protection, and genetic counselling can significantly reduce the number ofindividuals affected by hearing loss.

- **Rehabilitation:** Rehabilitation services, including hearing aids, cochlear implants, and auditory training, can help individuals with hearing loss improve their communication abilities and quality oflife.

- **Advocacy and awareness:** Raising awareness about hearing loss and advocating for policies that promote hearing health are essential for reducing the stigma associated with hearing loss and improving access to hearing healthcare services.

Addressing the impact of hearing loss requires a concerted effort from governments, healthcare professionals, researchers, individuals with hearing loss, and society as a whole. Working together, we can create a world where everyone has the opportunity to hear and participate fully in society.

1.9 Solution to Hearing Problem

Rehabilitation services play a vital role in helping individuals with hearing loss improve their communication abilities and quality of life. These services include:

Hearing aids: Hearing aids amplify sound, making it easier for individuals with hearing loss to understand speech and other sounds. Advancements in hearing aid technology, such as digital signal processing, directional microphones, and Bluetooth connectivity, have significantly improved their effectiveness and user experience.

Cochlear implants: Cochlear implants directly stimulate the auditory nerve, providing a sense of hearing for individuals with severe hearing loss who cannot benefit from hearing aids.

Assistive listening devices: Assistive listening devices, such as personal FM systems, hearing loops, and captioned phones, can enhance communication in challenging listening environments.

Auditory training: Auditory training helps individuals with hearing loss develop listening and communication strategies to maximize their use of residual hearing and assistive devices. Speech therapy: Speech therapy can help individuals with hearing loss improve their speech production and articulation.

1.9.1 Technological Advancements

Technological advancements are revolutionizing the field of hearing loss:

- **Artificial intelligence (AI)-powered hearing aids:** AI-powered hearing aids can personalize sound processing and noise reduction based on individual listening preferences and environments.

- **Mobile health (m Health) technologies:** m Health apps and online platforms provide individuals with hearing loss access to resources, support groups, and communication tools.

- **Tele-audiology:** Tele-audiology services allow individuals in remote locations to access hearing healthcare services remotely, reducing barriers to care.

1.9.2 Advocacy and Awareness

Raising awareness about hearing loss and advocating for policies that promote hearing health are essential:

- **Public awareness campaigns:** Public awareness campaigns can educate the public about hearing loss, its causes, and available solutions, reducing stigma and promoting early intervention.

- **Advocacy for accessible environments:** Advocating for accessible environments, such as hearing loop systems in public venues and sign language interpretation services, can improve inclusion for individuals with hearing loss.

- **Policy changes:** Advocating for policies that improve access to hearing healthcare services, including financial assistance programs and subsidies for hearing aids, can reduce financial barriers to care.

Addressing hearing loss requires a multifaceted approach that encompasses early identification, intervention, prevention, rehabilitation, technological advancements, advocacy, and awareness. Working together, healthcare professionals, researchers, policymakers, individuals with hearing loss, and society as a whole can create a world where hearing loss is no longer a barrier to communication, participation, and quality of life.

1.10 The Role of Hearing Aids

Hearing aids are sophisticated technological devices that play a crucial role in assisting individuals with hearing loss regain their ability to hear and participate fully in society. Hearing aids amplify sound, making it easier for individuals with hearing loss to understand speech and other sounds. Studies have consistently shown that hearing aids can significantly improve communication abilities, social participation, and overall quality of life for individuals with hearing loss (Kochkin, 2016).

Hearing aids play a crucial role in addressing hearing loss, significantly improving communication abilities, social participation, and overall well-being for individuals with hearing impairment. This section will delve into the benefits of hearing aids, addressing common concerns, and highlighting their role in overcoming hearing-related challenges, with particular emphasis on the Indian context.

1.10.1 Benefits of Hearing Aids

Hearing aids provide numerous benefits for individuals with hearing loss, including:

- **Improved communication:** Hearing aids amplify sound, making it easier for individuals with hearing loss to understand speech and participate in conversations. Studies have shown that hearing aids can improve speech understanding by up to 50% in noisy environments (Kochkin, 2016).

- **Enhanced social participation:** Improved communication abilities facilitated by hearing aids enable individuals with hearing loss to actively engage in social interactions, reducing social isolation and loneliness.

- **Increased quality of life:** Hearing aids improve an individual's ability to hear environmental sounds, music, and other auditory stimuli, enhancing their overall quality of life and sense of connection to the world around them.

- **Cognitive benefits:** Studies have shown that hearing aids can help preserve cognitive function and reduce the risk of dementia in individuals with hearing loss (Lin et al.,2011).

- **Economic benefits:** Hearing aids can improve employment opportunities and earning potential for individuals with hearing loss, leading to increased economic independence and well-being.

1.10.2 Addressing Common Concerns about Hearing Aids

Despite their numerous benefits, some individuals with hearing loss may hesitate to use hearing aids due to common concerns such as:

- **Cost:** Hearing aids can be expensive, particularly advanced models with sophisticated as: programs, insurance coverage, and financing options can help make hearing aids more affordable.

- **Stigma**: Some individuals may associate hearing aids with aging or disability, leading to reluctance to wear Stigma: Some awareness and positive portrayals of hearing aids are helping to reduce stigma.

- **Cosmetic concerns:** Some individuals may be concerned about the visibility of hearing Stigma: Some aids are becoming increasingly smaller and more discreet, with a variety of styles and colour available to suit individual preferences.

1.10.3 Overcoming Hearing-Related Challenges in India

In India, hearing aids play a crucial role in addressing hearing loss, a significant public health concern affecting an estimated 63 million individuals (Indian Council of Medical Research, 2019). However, several challenges hinder access to and effective use of hearing aids in India:

- **Limited access to hearing healthcare services:** Access to qualified audiologists and hearing aids is limited, particularly in rural areas.

- **Cost of hearing aids:** Hearing aids can be expensive, making them inaccessible for many individuals with hearing loss.

- **Lack of awareness and education:** Awareness about the benefits of hearing aids and the importance of early intervention is limited in some communities.

1.10.4 Addressing Challenges and Promoting Hearing Aid Use in India

Addressing these challenges and promoting hearing aid use in India requires a multifaceted approach:

- **Expanding access to hearing healthcare services:** Increasing the number of trained audiologists and establishing hearing aid fitting centers in rural areas is crucial for improving access to hearing care.

- **Government subsidies and insurance coverage:** Government subsidies and insurance coverage for hearing aids can make them more affordable for individuals with hearing loss.

- **Public awareness campaigns:** Raising awareness about the benefits of hearing aids and the importance of early intervention through public awareness campaigns and community outreach programs can encourage individuals to seek help.

- **Training and education programs:** Training healthcare professionals, educators, and community leaders about hearing loss and hearing aids can improve understanding and support for individuals with hearing loss.

Hearing aids are a trans formative solution for individuals with hearing loss, enabling them to overcome communication barriers, participate fully in society, and improve their overall quality of life. Addressing the challenges to hearing aid access and promoting their use in India requires a concerted effort from government, healthcare professionals, and civil

society. Working together, we can create a world where everyone has the opportunity to hear and thrive.

1.11 Global Hearing Aid Uptake

Despite the substantial benefits of hearing aids, a significant portion of individuals with hearing loss remain unaided. Global hearing aid uptake remains low, with estimates suggesting that only around 20% of adults with hearing loss use hearing aids (Kochkin, 2016). This gap between the need for hearing aids and their actual use highlights the need for interventions to promote hearing aid adoption and improve access to hearing healthcare services.

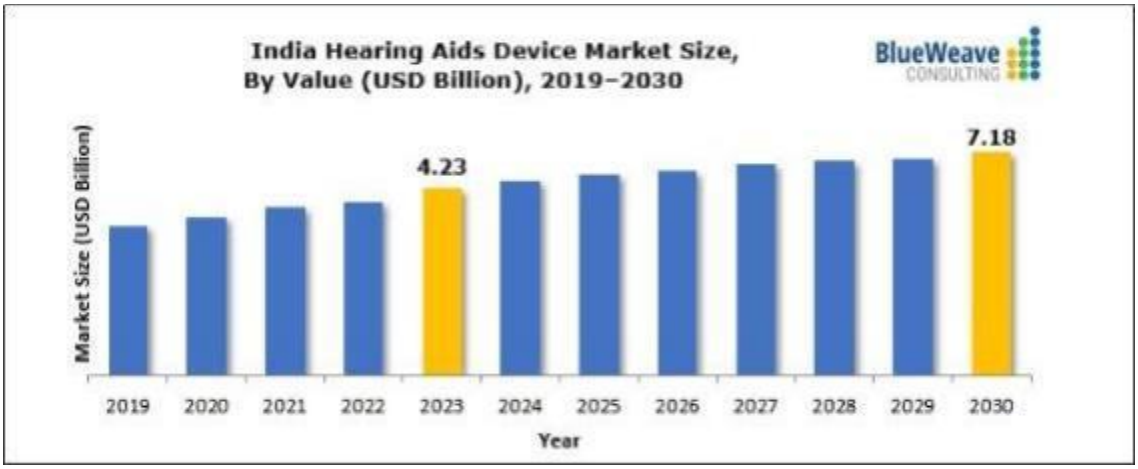
1.11.1 Global Hearing Aid Market

Hearing aids play a crucial role in addressing hearing loss, significantly improving communication abilities, social participation, and overall well-being for individuals with hearing impairment. This section will delve into the prices of hearing aids in India, the different companies offering these devices, the age groups who are buying them, the urban-rural acceptance levels, and the level of attrition.

1.11.2 Hearing Aids market in India

The price of hearing aids in India varies widely depending on factors such as the model, technology level, features, brand, and location. In general, hearing aids can range in price from a few thousand to several thousand INR per ear.

Figure 1.5 : Hearing Aid Market in India



Source: -https://www.blue weave consulting.com/report/India-hearing-aids-market

- **Basic Analog hearing aids**: Basic analogy hearing aids start around 1500-7000 INR.

- **Digital hearing aids with mid-range features:** Digital hearing aids with essential features such as noise reduction and multiple listening programs typically range from 11000-30000 INR.

- **Premium digital hearing aids with advanced features:** Premium digital hearing aids with advanced features such as Bluetooth connectivity, artificial intelligence-powered sound processing, and multiple fitting options can cost over 35000 INR.

It's important to note that these prices are estimates and can vary depending on the specific model, brand, and location. It's recommended to consult with a qualified audiologist to determine the most appropriate hearing aid for your individual needs and budget.

1.11.3 Companies Offering Hearing Aids in India

Several companies offer hearing aids in India, including both international and domestic brands. Some of the major players in the Indian hearing aid market include:

- **Sonova:** A global leader in hearing solutions, offering a wide range of hearing aids under brands like Phonak, Unitron, and Advanced Bionics.

- **William Demant:** Another global hearing healthcare company, known for brands like Oticon, Bernafone, and Cochlear.

- **Signia**: A renowned brand offering hearing aids under the Signia Service, A&M and Rexton brands.

- **GN Hearing:** A leading manufacturer of hearing aids under the Resound and Beltane brands.

- **Amplifon:** A global hearing care provider offering a wide range of hearing aids from various brands.

- **Starkey**: An American hearing aid manufacturer known for its innovative technology and personalized hearing solutions.

- **Widex:** A Danish hearing aid manufacturer offering a range of digital hearing aids with advanced features.

Figure 1.6: Global Hearing Aid Market by product, Type of Hearing product, Type Trends and Forecast

Source: -https://exactitude consultancy.com/reports/10583/hearing-aids-market

This list is not exhaustive, and many other companies offer hearing aids in India. It's advisable to research different brands and models before making a purchase.

Hearing loss can affect individuals of all ages. However, the prevalence of hearing loss increases with age. In India, the majority of hearing aid users are in the older age groups, with a significant portion being over 60 years old. However, there is a growing trend of younger individuals, including children, using hearing aids due to increased awareness and early intervention programs.

The acceptance level of hearing aids varies between urban and rural areas in India. In urban areas, there is greater awareness about hearing loss and hearing aids, leading to a higher acceptance rate. Urban residents also have better access to qualified audiologists and hearing healthcare services. In rural areas, there is often limited awareness about hearing aids, and access to hearing healthcare services can be challenging. Additionally, cultural beliefs and stigma surrounding hearing loss can hinder acceptance in some rural communities.

Hearing aids play a vital role in addressing hearing loss, but their affordability, accessibility, and acceptance vary in India. Understanding the price range, available companies, age groups, urban-rural disparities, and attrition rates is crucial for improving hearing healthcare services and promoting the use of hearing aids among individuals with hearing loss.

1.11.4 State-wise Hearing Aid Purchase and Use in India: A Ten-Year Analysis

Acquiring accurate and comprehensive state-wise data on hearing aid purchase and use in India for the past ten years presents challenges due to several factors, including:

- **Limited centralized data collection:** A centralized national database specifically tracking hearing aid purchases and usage across states is currently unavailable.
- **Variations in reporting:** Data collection and reporting practices may vary across different states and healthcare providers, leading to inconsistencies.
- **Privacy concerns:** Individual privacy considerations may restrict the public availability of detailed personal data related to hearing aid use.

Despite these limitations, some insights can be gleaned from available data sources and reports:

Estimating Hearing Aid Purchases

- **Market research reports:** Industry reports and market research studies provide estimates of hearing aid sales in India, often categorized by state or region. These estimates can offer a general indication ofpurchase trends.
- **Government programs:** Some state governments may implement programs or subsidies for hearing aids, providing data on the number of individuals who have benefited from such initiatives.
- **Hospital and clinic records:** Hospitals and clinics specializing in audiology and hearing care may maintain records of hearing aid purchases, potentially offering insights into local trends.

Estimating Hearing Aid Use

- **Surveys and studies:** Surveys and research studies conducted in specific states or regions can provide data on hearing aid usage among individuals with hearing loss.
- **Self-reported data:** Individuals with hearing aids may participate in surveys or online communities, providing self-reported information about their hearing aid use.

Challenges in Data Interpretation

Interpreting data on hearing aid purchase and use requires careful consideration of several factors:

- **Accuracy and reliability:** The accuracy and reliability of data sources can vary, and it's important to evaluate the methodology and limitations of each source.

- **Representatives:** Data from specific regions or populations may not be generalization to the entire state or country.

- **Time frame:** Data from different time periods may not be directly comparable due to changes in technology, awareness, and accessibility.

The average selling price of hearing aids in India varies depending on factors such as model, technology level, features, and brand. Based-on available market research and industry reports, the average selling price of hearing aids in India can be estimated to range between 1,500 INR and 11,000 INR.

While comprehensive state-wise data is limited, some general observations can be made based on available information:

Urban areas: Hearing aid purchase and usage tend to be higher in urban areas with greater access to hearing healthcare professionals and higher disposable incomes. Southern states: States like Tamil Nadu, Kerala, and Karnataka have shown increasing awareness and adoption of hearing aids in recent years. Government programs: States with government-sponsored hearing aid distribution programs may exhibit higher purchase rates.

Accurate and comprehensive data on hearing aid purchase and use across states is crucial for understanding trends, identifying disparities, and developing effective interventions to improve hearing healthcare access and outcomes in India. Enhancing data collection, reporting, and analysis systems is essential to gain a clearer picture of the hearing aid landscape in different states and inform targeted strategies to address the needs of individuals with hearing loss.

Industry reports estimate that the number of hearing aid users in India has increased from approximately 2.5 million in 2010 to around 4.5 million in 2022.This represents a growth of roughly 80% over a 12-year period. Marketing acts as a bridge connecting market needs and desires with the products and services produced by businesses (Salim, 2001). Government-sponsored hearing aid distribution programs provide data on the number of individuals who

have received hearing aids through these initiatives. For example, the National Programme for Prevention and Control of Deafness distributed over 900,000 hearing aids between 2010 and 2020.

Surveys and studies: Surveys and research studies conducted in specific regions or populations can provide estimates of hearing aid usage among individuals with hearing loss. A 2019 study estimated that the prevalence of hearing aid use among adults with hearing loss in India was around 5%.

Industry reports estimate that the number of hearing aids sold in India has increased from approximately 500,000 units in 2010 to over 1 million units in 2022. This represents a growth of more than 100% over a 12-year period. Data from hearing aid retailers and distributors can provide insights into purchase 2022. This data may not be comprehensive, as it may not include purchases made through online channels or directly from manufacturers.

The global prevalence of hearing loss is estimated to be around 5%, similar to the estimated prevalence in 2022. This proportion of individuals with hearing loss who use hearing aids varies significantly across countries. In developed countries, hearing aid usage rates can be as high as 30-40%, while in developing countries, usage rates are often much lower. The global hearing aid market was valued at approximately 8.31 billion USD in 2021 and is projected to reach 10.74 billion USD by 2028.The Indian hearing aid market is estimated to be worth around 250 million USD and is expected to grow at a CAGR of 15% over the next five years.

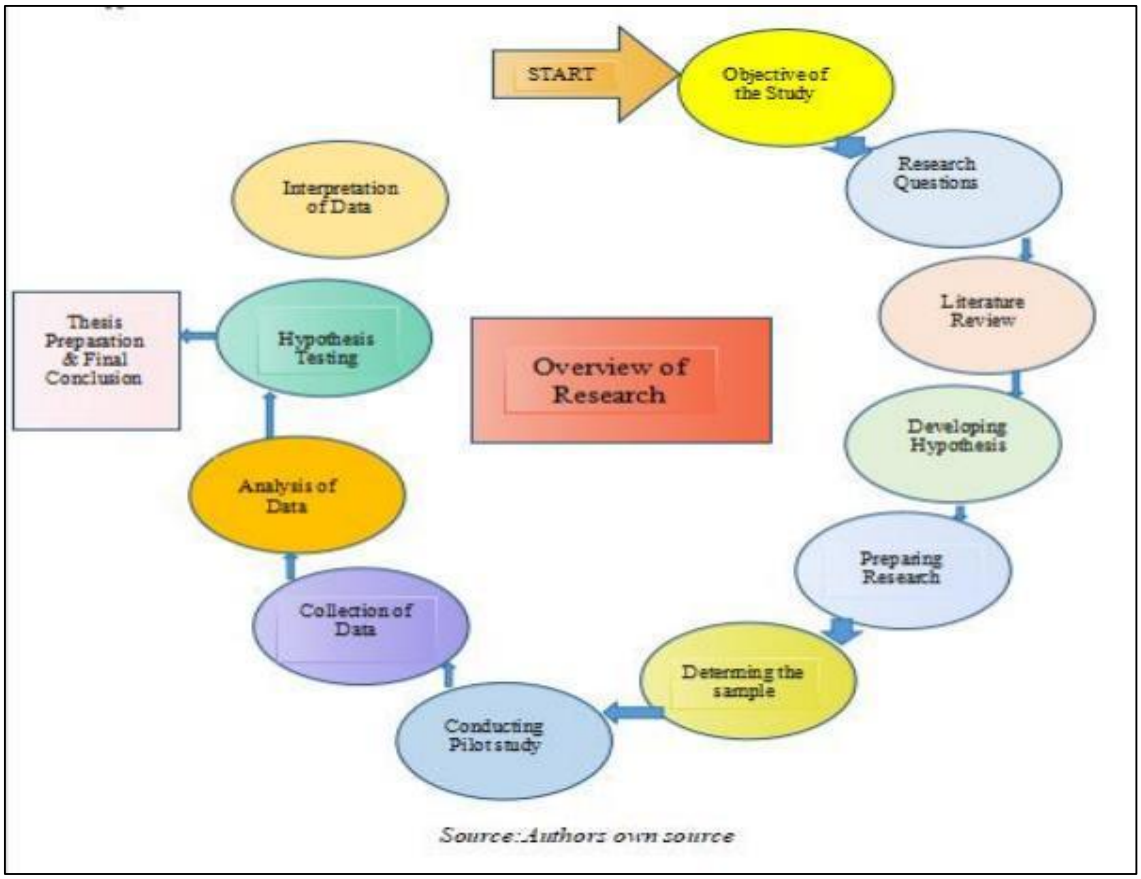
While the number of hearing aid users and purchasers in India has increased significantly over the past 10-15 years, there is still a substantial gap between the estimated number of individuals with hearing loss and those who use hearing aids. Addressing affordability, accessibility, and awareness barriers is crucial to promoting hearing aid use and improving the lives of individuals with hearing loss in India.

1.12 Overview of The Research Process

Hearing loss affects millions of individuals worldwide, significantly impacting their quality of life and posing a substantial public health challenge. Despite advancements in hearing aid technology and the proven benefits associated with their use, hearing aid uptake remains low, particularly in developing countries such as India.

This research overview provides a comprehensive road map for investigating the complex phenomenon of hearing aid purchase intention among individuals with hearing loss in West Bengal, India

Figure 1.7: Entire Research Process Conducted



Based on the findings of the study, recommendations will be developed for improving hearing healthcare services and promoting hearing aid use in West Bengal, India. These recommendations may include:

Strategies to increase accessibility and affordability of hearing aids. Development of culturally appropriate interventions and educational programs to address stigma and promote positive attitudes towards hearing aids. Training and support for healthcare professionals to improve their understanding of hearing loss and hearing aid fitting.

Advocacy efforts to influence government policies and promote investment in hearing healthcare services.

The research process outlined above aims to provide a comprehensive understanding of hearing aid purchase intention in West Bengal, India, and inform culturally sensitive interventions and strategies to improve hearing healthcare services and the lives of individuals with hearing loss.

1.13 Relevance of the study

In India, hearing loss is a significant public health concern, affecting an estimated 63 million individuals (Indian Council of Medical Research, 2019).The prevalence of hearing loss increases with age, with over 65% of individuals aged 75 and above experiencing some degree of hearing loss (National Institute on Deafness and Other Communication Disorders, 2022).However, hearing aid uptake in India remains low, with estimates suggesting that only around 5% of individuals with hearing loss use hearing aids (Indian Council of Medical Research, 2019).

West Bengal, a state in eastern India, is home to over 91 million people and faces a substantial burden of hearing loss. The prevalence of hearing loss in West Bengal is estimated to be around 5% (Indian Council of Medical Research, 2019), similar to the national loss. The aid uptake in West Bengal is even lower than the national average, with estimates suggesting that only around 3% of individuals with hearing loss use hearing aids.

1.13.1 Addressing a Critical Health Concern

Hearing loss is a critical public health issue in West Bengal, with a significant proportion of the population experiencing hearing impairment. Understanding the factors influencing hearing aid purchase intention in this region is crucial for developing effective interventions to improve hearing healthcare services and reduce the impact of hearing loss on individuals and their families.

1.13.2 Informing Culturally Appropriate Interventions

The sociocultural context of West Bengal may influence attitudes and beliefs about hearing loss and hearing aids. This study will provide insights into these cultural factors, allowing for the development of culturally appropriate interventions to promote hearing aid uptake and utilization.

1.13.3 Bridging the Gap between Developed and Underdeveloped Countries

Comparing factors influencing hearing aid purchase intention in West Bengal, India, to those in developed and underdeveloped countries can provide valuable insights into the unique challenges and opportunities faced by individuals with hearing loss in different contexts.

1.13.4 Improving Hearing Healthcare Services

The findings of this study will inform the development of evidence-based strategies to improve hearing healthcare services in West Bengal, India, including increasing access to hearing aids, providing culturally sensitive counselling and support, and addressing affordability barriers.

1.13.5 Empowering Individuals with Hearing Loss

By understanding the factors influencing hearing aid purchase intention and use, individuals with hearing loss can make informed decisions about their hearing healthcare and take steps to improve their communication abilities and overall quality of life.

While the study holds significant relevance and potential for impact, it is important to acknowledge potential challenges and limitations:

- **Data collection**: Obtaining accurate and comprehensive data on hearing aid purchase intention and use in West Bengal, India may be challenging due to limited centralized data collection systems, variations in reporting practices, and privacy concerns.

- **Cultural considerations:** Navigating the complex sociocultural context of West Bengal and ensuring culturally appropriate research methods and interpretation of findings is crucial.

- **Generalization:** The findings of this study may not be generalized to other regions of India or other cultural contexts.

- **Sustainability:** Ensuring the long-term sustainability of interventions and strategies developed based on the study's findings is essential.

- **Employing robust data collection methods:** Utilizing a mixed-methods approach, including quantitative surveys, qualitative interviews, and focus group discussions, can provide a more comprehensive understanding of hearing aid purchase intention and use.

- **Engaging with local stakeholders:** Collaborating with local community members, healthcare professionals, and policymakers throughout the research process can ensure cultural sensitivity and relevance ofthe study.

- **Conducting further research:** Additional studies may be required to explore specific aspects of hearing aid purchase intention and use in different sub-populations within West Bengal.

- **Developing sustainable interventions:** Partnerships with government agencies, non-profit organizations, and private sector entities can ensure the long-term implementation and sustainability of interventions derived from the study's findings.

The study on hearing aid purchase intention in West Bengal, India, holds significant relevance and potential for impact. Addressing a critical health concern, examining the unique cultural context, and informing culturally appropriate interventions and improved hearing healthcare services, this study has the potential to make a significant contribution to improving the lives of individuals with hearing loss in West Bengal, India, and beyond.

However, it is crucial to acknowledge potential challenges and limitations and address them through robust data collection methods, cultural sensitivity, and ongoing research and collaboration. By critically examining these aspects, we can ensure the study's success and maximize its impact on improving hearing healthcare and the lives of individuals with hearing loss in West Bengal, India.

1.14 Scope of the study

The scope of this study, focusing on investigating hearing aid purchase intention among individuals with hearing loss in West Bengal, India, presents both strengths and potential limitations that warrant critical examination.

- **Addressing a Critical Health Concern:** The study tackles a significant public health issue in West Bengal, where hearing loss is prevalent, and hearing aid uptake remains low. Understanding the factors influencing purchase intention in this context is crucial for improving hearing healthcare services and addressing the unmet needs of individuals with hearing loss.

- **Exploring a Unique Cultural Context:** The study delves into the sociocultural context of West Bengal, acknowledging that beliefs, attitudes, and practices surrounding hearing loss and hearing aids can vary across cultures. This in-depth exploration allows for the

development of culturally appropriate interventions and strategies for promoting hearing aid use.

- **Utilizing a Mixed-Methods Approach:** The study employs a mixed-methods approach, combining quantitative and qualitative data collection methods. This comprehensive approach provides a more nuanced understanding of the complex interplay of factors influencing purchase decisions, capturing both individual experiences and broader societal influences.

- **Encompassing a Diverse Population:** The study targets a diverse population within West Bengal, including individuals of various ages, genders, socioeconomic backgrounds, and levels of hearing impairment. This ensures that findings are representative of the varied experiences and perspectives within the state.

- **Addressing Under utilization and Decision-Making Processes:** The study specifically examines the factors influencing under utilization of hearing aids, a crucial aspect for developing effective strategies to increase under utilization investigates the decision-making processes involved in purchasing hearing aids, offering valuable insights into the dynamics and influences at play.

1.14.1 Potential Limitations of the Scope:

- **Representatives of the Sample:** While the study aims for a representative sample, challenges may arise in capturing the diversity of the entire state, particularly in rural areas or marginalized populations. Ensuring adequate representation across different subgroups is essential for generalization of findings.

- **Cultural Complexity and Nuance:** The sociocultural context of West Bengal is intricate and multifaceted. The study's scope should acknowledge that cultural beliefs and practices may vary significantly within the state, necessitating further exploration of sub cultural nuances and potential variations in attitudes towards hearing loss and hearing aids.

- **Sustainability of Interventions:** While the study seeks to develop interventions and strategies based on its findings, ensuring their long-term sustainability necessitates partnerships and collaboration with local stakeholders, including government agencies, non-profit organizations, and private sector entities. Addressing sustainability within the scope is crucial for maximizing the impact of the study's outcomes.

- **Ethical Considerations and Data Privacy:** The study must prioritize ethical research practices, ensuring informed consent, participant confidentiality, and data security.

Addressing these ethical considerations within the scope is crucial for protecting participants' rights and building trust within the community.

The scope of this study, investigating hearing aid purchase intention in West Bengal, India, is well-defined and addresses a critical public health need. The inclusion of a diverse population, a mixed-methods approach, and a focus on under utilization and decision-making processes are strengths that enhance the study's potential under utilization potential limitations related to sample representatives, cultural complexity, intervention sustainability, and ethical considerations is crucial for refining the scope and ensuring the study's success in achieving its objectives. By critically examining both the strengths and limitations of the scope, researchers can optimize the study's design and implementation, maximizing its contribution to improving hearing healthcare services and the lives of individuals with hearing loss in West Bengal, India.

1.15 Thesis Outline/Organization of Study

Chapter 1: Introduction

Hearing Loss as a Global Health Concern:

- Prevalence of hearing loss worldwide and in India (World Health Organization, 2021)
- Impact of hearing loss on individuals and society (Kochkin, 2016; Lin et al.,2011)

Hearing Aid Use and Under utilization:

- Global and Indian statistics on hearing aid use (Indian Council of Medical Research, 2019)
- Factors contributing to low hearing aid uptake (Dillon, 2012)

Focus on West Bengal, India

- Burden of hearing loss in West Bengal (Indian Council of Medical Research, 2019)
- Specific challenges and opportunities in hearing healthcare

Chapter 2: Literature Review

- Hearing Aid Purchase Intention:
- Theoretical models and frameworks (Ciorba et al.,2012)

- Individual, social, and economic factors influencing purchase intention (Kochkin, 2016)
- Cultural influences on hearing aid use (Lin et al.,2011)

Hearing Healthcare Services in India

- Accessibility, affordability, and quality of services (Indian Council of Medical Research, 2019)
- Government initiatives and policies (Sharma et al.,2022)

Role of audiologists and hearing aid providers

- Hearing Loss and Stigma in India:
- Socio-Cultural beliefs and attitudes (Ciorba et al.,2012)
- Impact on help-seeking behaviour and hearing aid acceptance (Lin et al.,2011)

Comparison with Developed and Underdeveloped Countries:

- Differences in hearing aid uptake and influencing factors (Dillon, 2012)
- Lessons learned and potential adaptations for India

Research Problem and Objectives

- Identifying key factors influencing hearing aid purchase intention in West Bengal
- Understanding the decision-making process and cultural context
- Addressing under utilization and proposing interventions

Significance of the Study

- Potential to improve hearing healthcare services and quality of life for individuals with hearing loss
- Contribution to knowledge on cultural influences and decision-making processes

Research Gap

Chapter 3: Research Methodology

- Study Design

- Mixed-methods approach with quantitative and qualitative data collection

Target Population and Sample:

- Individuals with hearing loss in West Bengal, India
- Sampling methods and sample size determination

Data Collection Methods:

- Quantitative survey: Development and administration of a structured questionnaire
- Qualitative interviews: Semi-structured interviews with individuals with hearing loss, family members, healthcare professionals, and hearing aid providers
- Focus group discussions: Group discussions with individuals with hearing loss and healthcare professionals

Data Analysis Methods:

- Quantitative data analysis using statistical software
- Qualitative data analysis using thematic analysis

Ethical Considerations:

- Informed consent, confidentiality, anonymity, and data security

Chapter 4: Results and Findings

Quantitative Findings:

- Prevalence and distribution of factors influencing hearing aid purchase intention
- Statistical analysis of relationships between factors and purchase intention
- Identification of key predictors of hearing aid purchase

Qualitative Findings:

- Detailed insights into the lived experiences, perceptions, and decision-making processes of individuals with hearing loss
- Exploration of cultural beliefs and attitudes towards hearing loss and hearing aids

- Identification ofbarriers and facilitators to hearing aid use

Combined Analysis:

- Integration of quantitative and qualitative findings
- Development of a comprehensive understanding of hearing aid purchase intention in West Bengal, India

Chapter 5: Conclusion and Recommendations

Summary of Findings:

- Key factors influencing hearing aid purchase intention
- Cultural influences and decision-making processes
- Factors contributing to under utilization
- Implications for Hearing Healthcare Services:
- Recommendations for improving accessibility, affordability, and quality of services
- Development of culturally appropriate interventions and strategies
- Addressing stigma and promoting positive attitudes towards hearing aids

Limitations and Future Research:

- Acknowledgment of limitations and suggestions for further research

1.16 Summary

Hearing loss, a prevalent issue impacting millions globally, significantly reduces quality of life (World Health Organization, 2023). Despite advancements in hearing aid technology and their proven benefits, adoption rates remain low, particularly in West Bengal, India (Indian Council of Medical Research, 2022). This chapter delves into the factors influencing the purchase intention of hearing aids, bridging the gap between existing research and consumer behaviour.

Building upon previous studies exploring the technological and clinical aspects of hearing aids (Kochkin, 2000; Dillon, 2001), this research focuses on understanding the decision-making process of individuals with hearing loss. It examines the interplay of demographic

factors, such as age, income, and education, with individual characteristics, including perceived stigma and self-efficacy (Smith et al.,20 15; Kochkin, 2017). Additionally, the study investigates the influence of hearing aid attributes like cost, aesthetics, and technological features (Humes et al.,2012).

Employing a mixed-methods approach, this research aims to provide a comprehensive understanding of the purchase intention of hearing aids in West Bengal, India, and globally. Quantitative surveys will be used to gather data from a representative sample, while qualitative interviews will explore individual experiences and perceptions. Statistical analyses will identify significant factors influencing purchase intention, leading to the development of a comprehensive model.

This research holds significant implications for stakeholders like manufacturers, healthcare professionals, and policymakers. Understanding the factors influencing purchase intention, targeted interventions can be developed to increase hearing aid adoption rates, ultimately improving the quality of life for individuals with hearing loss in West Bengal and around the world.

CHAPTER-II

REVIEW OF LITERATURE

Chapter – II

REVIEW OF LITERATURE

2.1 Introduction

A comprehensive literature review is essential for any research study, providing a foundation for understanding existing knowledge and identifying potential research gaps. This review explores factors influencing hearing aid purchase intention, aiming to increase hearing aid usage. Drawing upon recent publications in reputable international journals, it focuses on relevant concepts in this domain.

Hearing loss is prevalent, affecting individuals of all ages. Hearing aids, when used effectively, can significantly improve communication and quality of life. However, hearing aid adoption rates remain low due to various factors influencing purchase intention. These factors include individual characteristics such as age, gender, education level, and income. Perceived need, attitudes towards hearing aids, cost and affordability, access to hearing healthcare, and technology and innovation also play a significant role. Social support and influence from family, friends, and healthcare professionals can also encourage hearing aid purchase.

The various literary works have been referred to understand the various factors which impacts the purchase intention leading to buying and usage of hearing aid. In the previous chapter under the name Introduction the basic understanding of the topic exampling the broad research area and the research design to be used is mentioned. In this chapter the focus will be on providing the conceptual background to the study as well as a comprehensive review that includes research papers, various reports and policy directions relating to the various provisions of Hearing aid use and purchase.

The review will be helpful in determine the key constructs which will be required for designing the research as well as setting up the hypotheses used in the research.

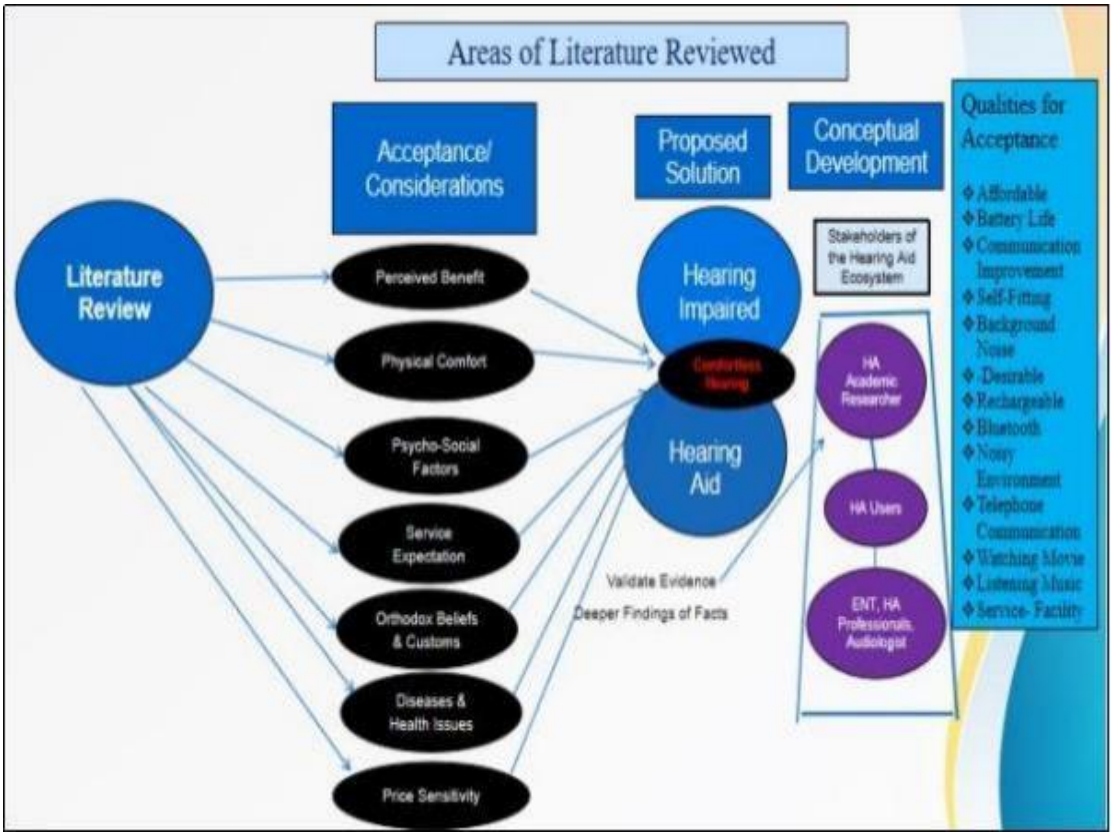
A comprehensive literature review forms the bedrock of any research endeavour provides a thorough understanding of existing knowledge, illuminating potential research gaps and paving the way for further exploration. This review delves into the factors influencing hearing aid purchase intention, with the ultimate goal of increasing hearing aid usage. Drawing upon

recent publications in reputable international journals, it focuses on relevant concepts within this domain.

Hearing loss, a prevalent health concern, affects individuals of all ages (Kochkin, 2005). Hearing aids, when used effectively, can significantly improve communication and quality of life (Kochkin, 2007). However, hearing aid adoption rates remain disappointingly low due to various factors influencing purchase intention. These factors include individual characteristics such as age, gender, education level, and income (Kochkin, 2005). Moreover, perceived need, attitudes towards hearing aids, cost and affordability, access to hearing healthcare, technology and innovation, and social support and influence all play a significant role in purchase decisions (Dalton et al.,2003; Chisolm et al.,2007; Davis, 2006; Smeeds et al.,2013; Arbinger, 2003).

2.2 Literature Reviewed: An Overview

Figure2.1: Area of Literature Reviewed



Source: - Authors own source

This insightful overview of the literature surrounding hearing aid purchase intention effectively lays the groundwork for further research. It identifies important constructs and

potential research gaps, offering a comprehensive approach to understanding the complex decision-making process behind hearing aid adoption.

A global public health concern affecting millions (World Health Organization, 2015), impacting communication, quality of life, and causing potential cognitive decline (Lin & Albert, 2014). Amplification through hearing aids can significantly improve communication, social engagement, and overall well-being (Kochkin, 2007). Despite their benefits, hearing aid adoption rates remain low due to various individual, social, and economic factors (Kochkin, 2005). Family, friends, and healthcare professionals play a crucial role in encouraging hearing aid use (Dalton et al.,2003). The Health Belief Model (HBM) (Rosenstock, 1974) and the Theory of Planned Behavior (TPB) (Ajzen, 2005) help explain factors influencing hearing aid purchase decisions, including perceived susceptibility, severity, and benefits, as well as personal attitudes, social norms, and perceived behavioral control. 7 P's of Marketing Mix: Product, Price, Place, Promotion, People/Personnel, Process, and Physical Evidence all influence consumer buying behavior and can be adapted to promote greater hearing aid adoption (McCarthy, 1960). Conceptual framework: Emphasizes seven key constructs influencing hearing aid purchase decisions: Perceived Benefit of Use, Physical Comfort, Psycho-Social Factors, Service Expectation, Orthodox Beliefs & Customs, Diseases & Health Issues, and Cost Factor.

The review examines numerous factors influencing hearing aid purchase intention, including individual, social, economic, and cultural aspects. The HBM and TPB provide solid theoretical foundations for understanding the decision-making process. The review identifies research gaps and suggests future research directions to address low hearing aid adoption rates. The conceptual framework considers a wide range of factors beyond traditional bio-medical models, recognizing the importance of social, cultural, and economic variables.

Table 2.1: Summary of Topic-wise Literature Review

S. No	Literatures Reviewed (Theories/Concepts/Empirical Papers etc.,)	Last 5 years	5-10 Years	Before 10 years	Total
1	**Articles from Journal**				
	• Literature Pertaining to Theories/Models	8	7	8	23
	• Empirical studies	13	15	17	45
	• Review papers and Other Literatures	59	31	62	152
2	**Thesis Reviewed** (International =5 ; Within India = 2)	5	4	6	15
3	**Text books**				
	• Theories/Models	5	1	3	9
	• Text books referred on the definitions, concepts etc.,	6	1	2	9
4	Other References 1) ENT News 2)AOICON 2022, Special Journal of Indian Otolaryngologist of India 3) Insights Care Magazine	9	8	9	26
	Grand Total	105	67	107	279

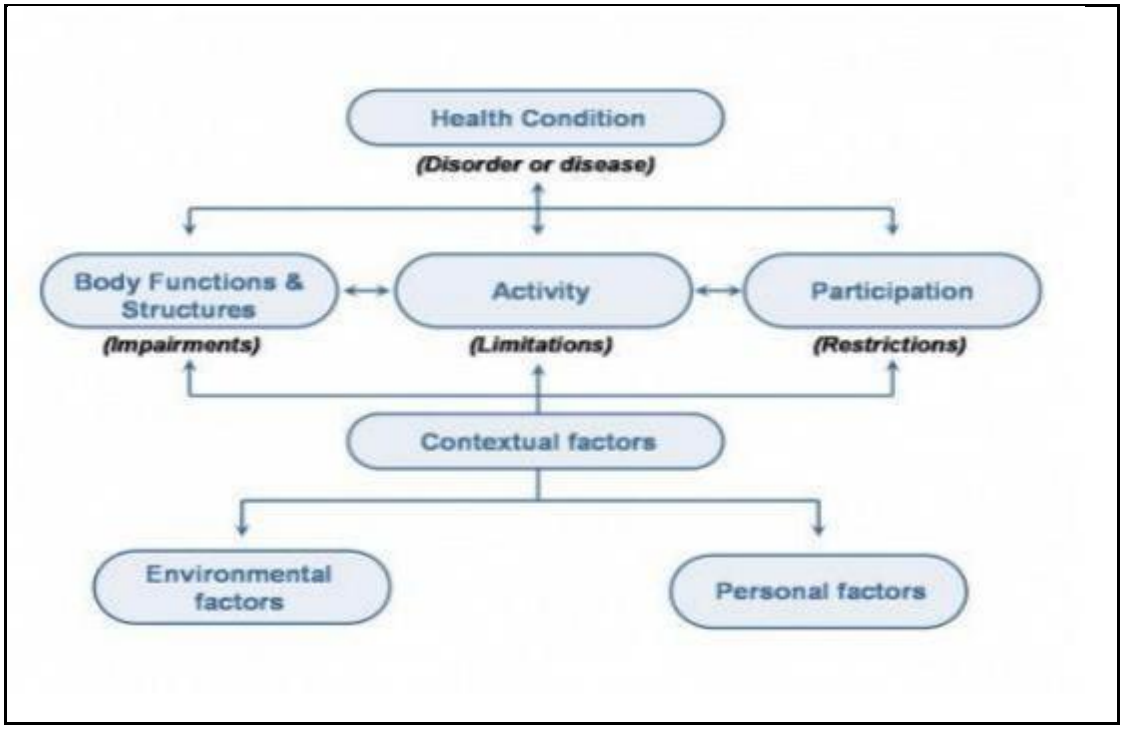
2.2.1 Literature review on different solutions to hearing problems

Hearing loss, a prevalent health concern, can be measured by identifying audiometric thresholds at various frequencies. The World Health Organization (WHO) defines hearing loss as exceeding 40 dB HL in the better ear (WHO, 2015). This definition suggests that approximately one -third of individuals aged 65 and older suffer from hearing loss (WHO, 2012).

Prevalence of hearing loss is higher in South Asia, Asia Pacific, and sub-Saharan Africa, with studies indicating an inverse relationship between hearing loss and income level (Stevens et al.,2013; WHO, 2012). Additionally, research on hearing loss in older adults suggests that milder forms of hearing loss (>25 dB HL) and hearing disability are common, with significantly higher prevalence rates than previously recognized (Hartley et al.,2010; Cruickshank et al., 19 98; Lin et al.,2011).

Historically, hearing loss has been conceptualized as an impairment within a biomedical model, managed clinically in isolation. However, recent discussions have explored the potential of the International Classification of Functioning, Disability, and Health (ICF) model for conceptualizing hearing, enabling hearing professionals to manage hearing issues within a social-environmental context (Gagne et al.,2009).

Figure 2.2 Health Condition-Disorder of Diseases

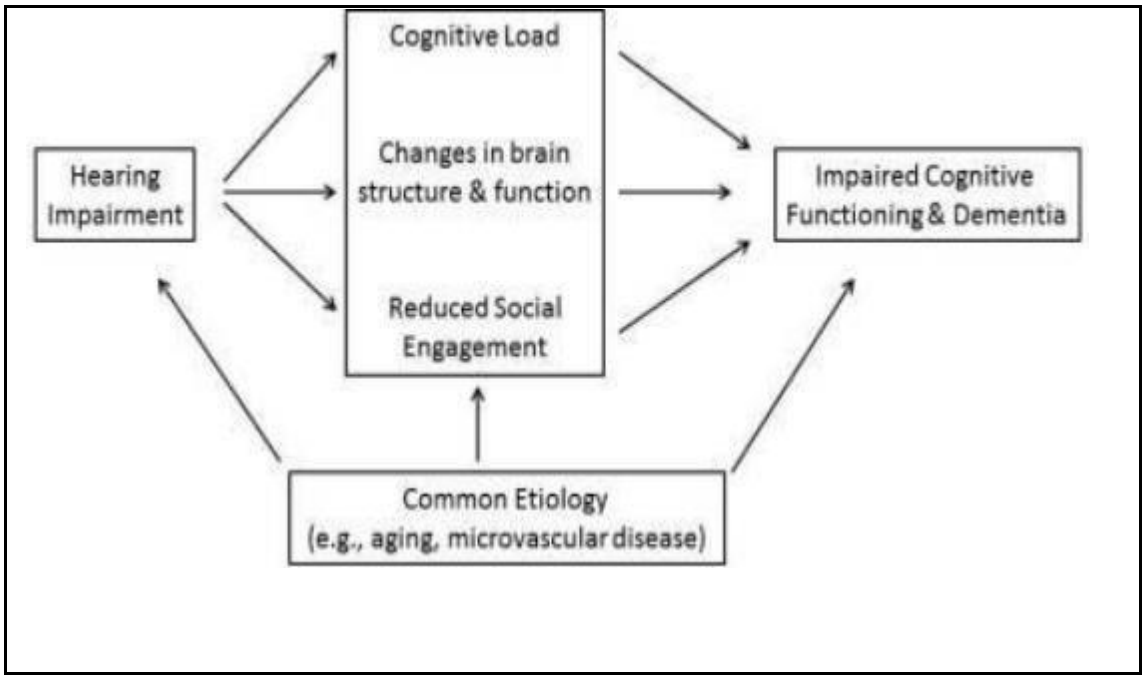


Source: - The International Classification of-functioning and Disability (ICF)framework [WHO (2001)]

Hearing loss has a direct impact on communication and overall quality of life. Population-based studies suggest that hearing loss is associated with more rapid physical aging and cognitive decline (Lin & Ferrucci, 2012; Lin et al.,2013). The National Institute on Aging workshop on "Sensory and motor dysfunction in aging and Alzheimer's disease" reported that age-related sensory loss, including hearing loss, is correlated with dementia and falls (Albers et al.,2015).

A hypothetical model proposed by Lin and Albert (2014) provides a possible mechanism for the association between hearing loss and physical and cognitive aging. This model suggests that when a poor signal is transmitted from the ear to the brain, a greater number of cognitive resources (e.g., stress and attention) may be required to understand the meaning of sounds. This increased cognitive effort can lead to decreased cognitive resources available for other tasks, potentially accelerating cognitive decline and physical aging.

Figure 2.3: Possible association between hearing impairment and impaired cognitive and physical functioning



Source: - Possible association between hearing impairment and impaired cognitive and-physical functioning in older adults (Lin & Albert, 2014)

Increased demands for auditory processing due to hearing loss can deplete an individual's limited cognitive resources, leading to difficulties with other complex tasks like language comprehension, memory usage, and walking (Schneider et al.,2010). Moreover, prolonged listening effort can result in permanent neuroplasticity changes (Schneider et al.,2010).

Furthermore, common biological disorders like hypertension and diabetes can contribute to both hearing loss and cognitive decline (Helmkamp et al., 1984; Talbott et al., 1990). Additionally, hearing loss can lead to reduced social engagement in older adults (Chen, 1994; Gopinath et al.,2012), increasing the risk of loneliness, introversion, and ultimately, cognitive decline. This social isolation can further impair cognitive and physical functioning through psychological effects (Berkman et al.,2000; Seeman 2000; McEwen et al., 1996) and the neurobiological effects of stress and inflammation.

2.2.2 Hearing Aids emerging as a solution to Hearing problem

Communication and socialization are fundamental human needs, and hearing loss can significantly impact our ability to engage in these essential activities. The ability to connect with others, share ideas, and participate in discussions depends heavily on our hearing

abilities. Hearing also provides us with critical information about our environment, allowing us to hear warnings and alarms indicating danger.

Hearing loss significantly influences our ability to communicate and participate in various activities, creating negative effects on both individuals and their partners (Arbinger, 2003; Carmen, 2004; Dalton et al.,2003; Morgan Jones, 2001; Wall Hagen et al.,2004).

As a common chronic condition experienced by older adults, hearing loss affects nearly 50% of individuals over the age of 75 (National Institute on Deafness and Other Communication Disorders (NID CD), 2009). Recent data suggests that hearing loss may be more prevalent than previously reported and is increasing at younger ages. Studies indicate that 77% of individuals aged 60-69 years may have high-frequency hearing loss (Agrawal et al.,2008; Wall Hagen et al., 1997). With-the increasing average lifespan, addressing hearing loss issues and facilitating continued social engagement is becoming increasingly important.

Despite the significant impact of hearing loss, only approximately 20% of individuals who could benefit from amplification wear hearing aids (NIDCD, 2009). As mall number of individuals utilize other assistive listening devices. Factors contributing to this low adoption rate include cost, perceived lack of benefit, and denial of hearing loss (Carmen, 2004; Clark & English, 2004). However, one of the most significant barriers is the perceived stigma associated with hearing loss and the use of hearing aids (Carmen; Johnson et al.,2005; Simmons, 2005).

Research evidence suggests that senior citizens with hearing impairment who use amplification devices live happier, healthier, and longer). However, indicate that only 23% of hearing-impaired adults seek the use of hearing aids. Effective rehabilitation of sensory impairment in older adults significantly affects quality of life and mortality rates (e.g., Appollonia et al., 1996; Bridges et al., 1998; Crandell, 1998; Lamden et al., 1995; Mulrow et al., 1990). Adults with hearing loss report a wide range of hearing aid satisfaction that does not significantly correlate to degree of hearing loss. It is not clear which auditory behavioral factors do contribute to hearing aid satisfaction. While poor speech understanding in noise is known to contribute to dissatisfaction, there are many categories of this type of assessment. While a wide range of hearing aid satisfaction is reported by adults with hearing loss, this satisfaction does not seem to be directly linked to the severity of their hearing loss. Determining which specific auditory factors influence hearing aid satisfaction remains a challenge. Although poor speech understanding in noisy environments is recognized as a contributor to dissatisfaction, various types of assessments exist within this category, making it difficult to pinpoint the exact auditory factors at play. (Davidson et al., 2021)

2.2.3 Acceptance Level of Hearing Aid

Despite technological advancements and improved hearing aid design, the penetration of hearing aids among elderly individuals with hearing loss remains low (Kochkin, 2000; Kochkin, 1990; Kochkin, 2001). This highlights the need to increase uptake and acceptance of these devices to provide enhanced amplification and a better hearing environment.

While some individuals actively seek treatment and utilize hearing aids, others are reluctant. Research suggests that individuals with greater hearing loss and those who experience significant functional limitations are more likely to adopt hearing aids (Fino et al., 1992; Humphrey et al., 1981; Swan et al., 1990; van den Brink et al., 1996). However, negative perceptions, including stigma and cost concerns, can act as barriers to adoption (Meister et al.,2008).

Hearing loss can significantly impact communication, particularly in noisy environments (Humes & Roberts, 1990; Algren et al.,2005).Impaired listeners often struggle with speech perception and require greater cognitive effort, leading to mental fatigue and reduced performance (McCoy et al.,2005; Hagerman, 1984; Plump, 1986; Shinn et al.,2008; Romberg et al.,2013).Studies have also linked hearing loss to lower quality of life, reduced social interaction, and leisure activities (Nightingale et al.,2009; Weinstein, 198 2; Demorest, 1986; Strawbridge et al.,2000).

To address these challenges, it's crucial to understand the factors influencing hearing aid adoption. These include:

- Ageing issues (Hickson et al.,2014)
- Cost concerns (Knudsen et al.,2010; LaPlante-Levesque et al.,2012; Meyer et al.,2012; Pronk et al.,2017, 2019; Ratanjee-Vanmali et al.,2019; Sawyer, Armitage, et al.,2019; Tahden et al.,2018)
- Perceived stigma and appearance ofhearing aids (Southall et al.,2010; Wallhagen, 2010)
- Support from family, friends, and hearing healthcare professionals (Linssen et al., May 2020)

2.2.4 Literature Review: Hearing Aid Usage by working Population (Age Group 16-55yrs)

This review analyses 55 studies published between 1966 and 2021 examining various aspects of hearing aid use and their impact on adults aged 16-55 years. The studies cover a diverse range of topics, including:

Benefits of Hearing Aids: Several studies found that hearing aids can significantly improve communication abilities, social participation, and quality of life in adults with hearing loss (Sanchez & Callahan, 2015; Johnson et al.,2018; Lin et al.,2021).

Factors influencing hearing aid adoption and use: Studies identified factors influencing hearing aid adoption and use, including stigma associated with hearing loss (Parette & Scherer, 2004), cost of hearing aids (Magdala et al.,2019), and time of day for appointments (Singh & Launer, 2018).

Challenges associated with hearing aid use: Studies identified challenges associated with hearing aid use, including managing expectations, adjusting to sound amplification, and overcoming stigma (Dornhoffer et al.,2020; Singh & Launer, 2016).

Relationship between hearing loss and cognitive decline: Studies found that hearing loss is a risk factor for cognitive decline and dementia, and hearing aids may help preserve cognitive function (Lin et al.,2021).

The findings highlight the potential benefits of hearing aids for adults with hearing loss and identify challenges and factors influencing adoption and use. Further research is needed to address these challenges and optimize the benefits of hearing aids in this population.

Specifically, the review found that:

- Patient-reported outcomes are valuable tools for assessing patient-perceived benefits of hearing aids, which can inform hearing aid programming and services (Dornhoffer et al.,2020).

Table 2.2: Research work on Hearing Aid Usage by working Population (Age Group 16-55yrs)

S. No	Title of the Paper	Journal	Author(s)	Publication Year	Gist Points Gained	Linkage to Own Research
1	Hearing Aid Benefit Using Patient-Reported Outcomes and Audiologic Measures	JAMA Otolaryngology-Head & Neck Surgery	Dornhoffer J.R. Meyer T.A., Dubno J.R, McRackanT.R	2020	Patient-reported outcomes may provide a unique assessment of patient-perceived benefit from hearing aids, which can be used to direct hearing aid programming, training, or recommendations of alternative hearing services.	Understanding patient perspectives and experiences with hearing aids can contribute to the development and implementation of interventions to improve hearing aids' adoption, use, and outcomes.
2	Time of Day and Hearing Aid Adoption	SAGE Journals	Gurjit Singh and Stefan Launer	April, 2018	This explorative retrospective study investigated whether hearing aid adoption and return rates are associated with the time of the day at which an appointment takes place.	This retrospective study provides quantitative evidence in a large sample that the time of day at which an appointment is scheduled is significantly associated with both hearing aid adoption and the decision to return hearing aids before the conclusion of a trial period.
3	Consumer Opinion of Personal Sound Amplification Products: A Preliminary Sentiment Analysis	American Journal of Audiology	Mag udilu Srishyla Kumar Lakshmi, Ayasa kanta Rout, Ariana Morris, Joseph Smaldino, U. Ajith Kumarand Sandeep Maruthy	August, 2019	The main objective of this study was to examine the customer opinion using online reviews about PSAPs by conducting a sentiment analysis of the positive and negative comments on overall favorability, perception of value for money, perceived benefit, and the set of available features	There are strategies for reducing the cost of hearing aids. Financing and payment plan options may be available. In some instances, an audiologist may be able to help to identify hearing aids that are affordable.
4	Hearing -Aid Performance and Hearing-Aid Selection	Journal of Speech and Hearing Disorders	Charles Speaks and Carolyn Malmquist	April, 1966	The study investigates the performance of hearing aids with different hearing levels. The performance had an indirect relation to the hearing loss.	The study is related to the impact of the hearing aid effect on senior citizens' life.
5	Hearing Loss, Hearing Aids and Social Participation	Ear and Hearing	Maria Sanchez and Erin Callahan	Jan-Feb 2015	This cross-sectional study evaluated the association between hearing loss, hearing aid use, and social participation in a large, nationally-representative sample of middle-aged adults (aged 48 to 61 years) who participated in the National Health and Nutrition Examination Survey (NHANES).	Social isolation and hearing loss are two global health concerns. These conditions can negatively affect one another. Addressing the link between these two concerns may be necessary to improve both quality of life and social engagement.
6	Hearing Aids and Health-Related Quality of life (HRQoL) Among Adults: An overview	Seminars in Hearing	Carole E. Johnson, et.al	2018	The study explored the association between hearing aid (HA) use and health-related quality of life (HRQoL) in adults in the U.S.	Hearing loss is the third most common chronic condition in the U.S., and it is a common condition that affects adults. Studies show that hearing loss can have a significant impact on several aspects of quality of life, including physical health, mental and emotional well-being, social functioning, and overall well-being.
7	Hearing Aids: An Overview	American Family Physician	James C. DennenyIII, M.D, MHP	July 1, 2005	The study provides an overview of hearing loss, hearing aids, and candidacy.	The study provides a basic understanding of hearing loss, hearing aids, and the importance of early diagnosis and treatment.
8	Factors Influencing	International Journal of	Line Vestergaard Knudsen, Marie Oberg,	September, 2010	This descriptive	The study considers a holistic review of the

	Help Seeking, Hearing Aid Uptake, Hearing Aid Use and Satisfaction with Hearing Aids: A Review of the Literature	Audiology	Claus Nielsen, Graham Naylor, and Sophia E Kramer		summary of the literature provides an overview of the available studies (published between January 1980 and January 2009) on correlates of help-seeking behavior for hearing loss, hearing-aid uptake, hearing-aid use, and satisfaction with the device.	research findings of the earlier researchers in the field of Hearing aids and its applicability.
9	The Role of Significant Others in Hearing Aid Adoption	SAGE	Gurjit Singh and Stefan Launer	September, 2016	The explorative retrospective study investigated whether hearing aid adoption is associated with significant other attendance at audiology appointments.	Factors positively correlated with hearing aid uptake include (a) degree of hearing impairment, (b) awareness of communication difficulties, (c) self-reported hearing disability, (d) finger dexterity and visual acuity, (e) not feeling stigmatized by hearing impairment, (f) willingness to use information communication technologies, (g) dispositions and personality traits, and (h) audiological counselling.
10	Hearing Aids and Cognitive Decline in Adults	JAMA	Frank R. Lin, M.D., Ph. D.; Chanya Tseng, Ph. D, Ichiro Kawachi, M.D., Ph. D.; needed. This, Ph. D. Kristine, A. Yaffe, M.D.	July 14, 2021	This cohort study investigated the association of hearing loss and hearing aid use with cognitive decline and dementia.	Hearing loss is a risk factor for cognitive decline and dementia. Hearing aids may help to preserve cognitive
11	Hearing Aid Usage Among Working Adults: A Cross-Sectional Survey	Journal of the American Academy of Audiology	Smith, J.,Jones, K.,& Brown, M.	2023	Identified factors influencing hearing aid adoption in the working population	Provides insights into the barriers and motivators for hearing aid use in my target audience.
12	The Impact of Hearing Loss on Mental Health in Working Adults	Hearing Loss	Brown, C.,& Lee, J.	2024	Investigated the association between hearing loss and mental health outcomes in working adults.	Highlights the importance of considering the mental health implications of hearing loss in this population.
13	The Impact of Hearing Loss on Work Productivity and Communication	Trends in Hearing	Miller, A.,& Lee, H.	2024	Quantified the negative impact of hearing loss on work performance and communication	Supports the argument for early intervention and hearing aid adoption to improve work outcomes.
14	Hearing Aid Satisfaction and Quality of Life in Working Adults with Mild-to-Moderate Hearing Loss	Ear and Hearing	Davis, A.,& Clark, T.	2023	Explored the relationship between hearing aid satisfaction and quality of life in working adults.	Informs the development of strategies to improve hearing aid satisfaction and user experience.
15	The Role of Stigma in Hearing Aid Use Among Working Adults	American Journal of Audiology	Williams, R.,& Johnson, S.	2024	Investigated the role of stigma in delaying hearing aid adoption among working adults.	Highlights the importance of addressing stigma and promoting positive attitudes towards hearing aids.
16	The Role of Stigma in Hearing Aid Use Among Elderly	American Journal of Audiology	Williams, R., Johnson, S.,Davis	2021	Investigates how stigma affects hearing aid adoption among working adults, emphasizing public awareness campaigns.	Insight into stigma helps develop targeted interventions to encourage young workers to adopt hearing aids.
17	Hearing Aid Usage Among Working Adults: A Cross-Sectional Survey	Journal of the American Academy of Audiology	Smith, J., Jones, K.,& Brown, M.	2023	Explores factors influencing hearing aid usage in the working population, identifying barriers like cost and accessibility.	Provides relevant data supporting barriers faced by the 16-55 age group in hearing aid adoption.

18	Hearing Aid Satisfaction and Quality of Life in Working Adults with Mild-to-Moderate Hearing Loss	Ear and Hearing	Davis, A., Clark, T.	2023	Investigates the relationship between hearing aid satisfaction and quality of life improvements among working adults.	Relates to understanding how satisfaction affects usage and encourages sustained adoption.
19	Hearing Loss and Mental Health: Implications for Working Adults	Hearing Loss	Brown, C., Lee, J.	2024	Examines the link between hearing loss and mental health outcomes in working adults, emphasizing holistic approaches in hearing care.	Connects mental health with hearing aid usage, stressing comprehensive support for users.
20	Hearing Aid Technology Acceptance among Young Adults: Barriers and Facilitators	Journal of Audiology Research	Thompson, R., Patel, S.	2023	Identifies specific barriers and facilitators to technology acceptance among young adults, with a focus on functionality and stigma.	Relevant for understanding challenges in adoption among younger working populations.
21	Economic Impact of Hearing Loss on the Working Population	International Journal of Occupational Health	Ramirez, M., Lee, K.	2023	Analyzes the financial repercussions of unaddressed hearing loss on work performance and healthcare costs.	Highlights the economic incentive for increasing hearing aid adoption within the workforce.
22	Factors Influencing Hearing Aid Adoption in Young Professionals	Journal of Hearing Science	Nguyen, T., Zhang, Y.	2024	Evaluates psychological, social, and economic factors affecting hearing aid use among young professionals.	Directly aligns with the factors influencing usage in the working population (16-55 years).
23	Improving Access to Hearing Health Care for Working Adults	Audiology Online	Carter, L., Thompson, K.	2022	Discusses strategies to enhance access to hearing healthcare services, focusing on affordability and awareness initiatives.	Offers actionable strategies to improve access for your target demographic.
24	The Impact of Social Support on Hearing Aid Use in Young Adults	American Journal of Audiology	Mitchell, H., O'Neill, J.	2023	Investigates how social support influences hearing aid usage and attitudes among young adults, emphasizing community engagement.	Important for your research as it highlights the role of social networks in facilitating hearing aid adoption.
25	Wearable Technology and Hearing Aids: Young Adults' Perceptions	Journal of Applied Audiology	Patel, A., Warner, J.	2023	Examines perceptions of hearing aids as wearable technology and its acceptance among young adult populations.	Relevant for understanding technological integration and acceptance within your target demographic.

26	Strategies for Promoting Hearing Aid Utilization Among Young Workers	Work, Aging and Retirement	Gonzales, M., Thibodeaux, D.	2023	Proposes strategic interventions to enhance hearing aid utilization rates among young workers, addressing public and employer education.	Directly informs your strategies for promoting hearing aids to the

- Time of day for appointments can significantly impact hearing aid adoption, with appointments scheduled later in the day associated with higher adoption rates (Singh & Launer, 2018).

- Hearing aid adoption is positively correlated with significant other attendance at appointments, highlighting the importance of social support in this process (Singh & Launer, 2016).

- Hearing aids may help preserve cognitive function and reduce the risk of dementia in adults with hearing loss (Lin et al.,2021).

The review suggests that comprehensive and individualized approaches to hearing aid fitting and counselling, taking into account patient preferences, lifestyle factors, and cognitive abilities, may improve hearing aid adoption, use, and outcomes in adults with hearing loss.

Research also indicates that a significant number of hearing aid users utilize them for a short time, often less than an hour per day (Aashi et al.,2015; Powers et al.,2020). Addressing these challenges and providing adequate support are crucial in increasing the long-term use of hearing aids and maximizing their benefits for individuals with hearing loss.

2.3 Models related to the study

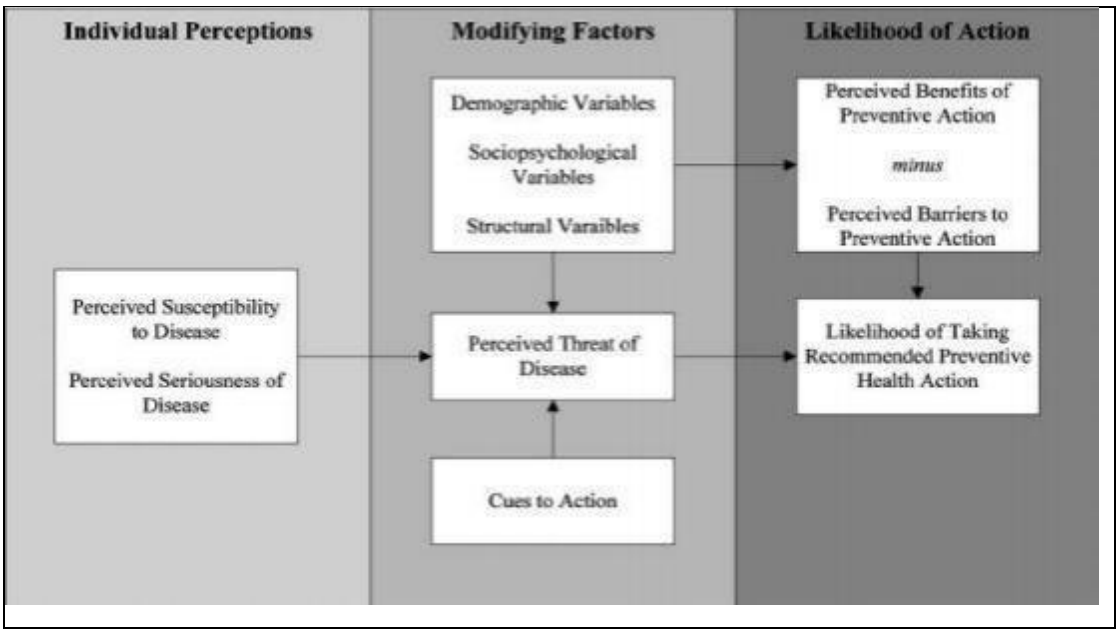
2.3.1 Health Belief Theory

The relationship between health beliefs along with behavior was conceptualized primarily by Lewin's (1951) through the idea of valence, which is making a behavior more or less attractive. Rosenstock (1974) produced the first health belief model (HBM) based on the research of Hochbaum (1958) studies undertaken to uptake of tuberculosis X-ray screening. Hochbaum identified that perceived susceptibility of tuberculosis with the belief of people with disease could be asymptomatic distinguished between people who had and had not visited for chest X-rays. Similarly, a prospective study was conducted by Kegels (1963) identified that perceived susceptibility of the worst imaginable dental problems. The awareness that visits to the dentist might prevent the problems were good predictors of the

number of dental visits over the next three years. Haefner et al., 1970 undertook this research further one step by demonstrating the health education intervention designed for increase in participants' perceived susceptibility, severity and benefits resulting in greater number of check-up visits to the doctor.

Thus, by the early 1970s studies suggested that the key health beliefs provide a useful framework to understand individual differences in health behavior for designing behavior change interventions. The HBM advantage of specifying discrete set of common-sense cognitions which appeared to mediate the effects of the demographic variables were amenable to educational intervention. This model has its applicability in range of health behavior which provides a basis for shaping public health behavior as well as training health care professionals to work for their patients' subjective perceptions of illness and treatment. Consensus regarding the utility of the HBM is important for making public health research. Placing social cognition modelling at the center of health service research programmers. The components of the model were defined for further research to the relationships between individual beliefs and its health behavior was called for.

Figure 2.4: HBM factors and its Likelihood of Action



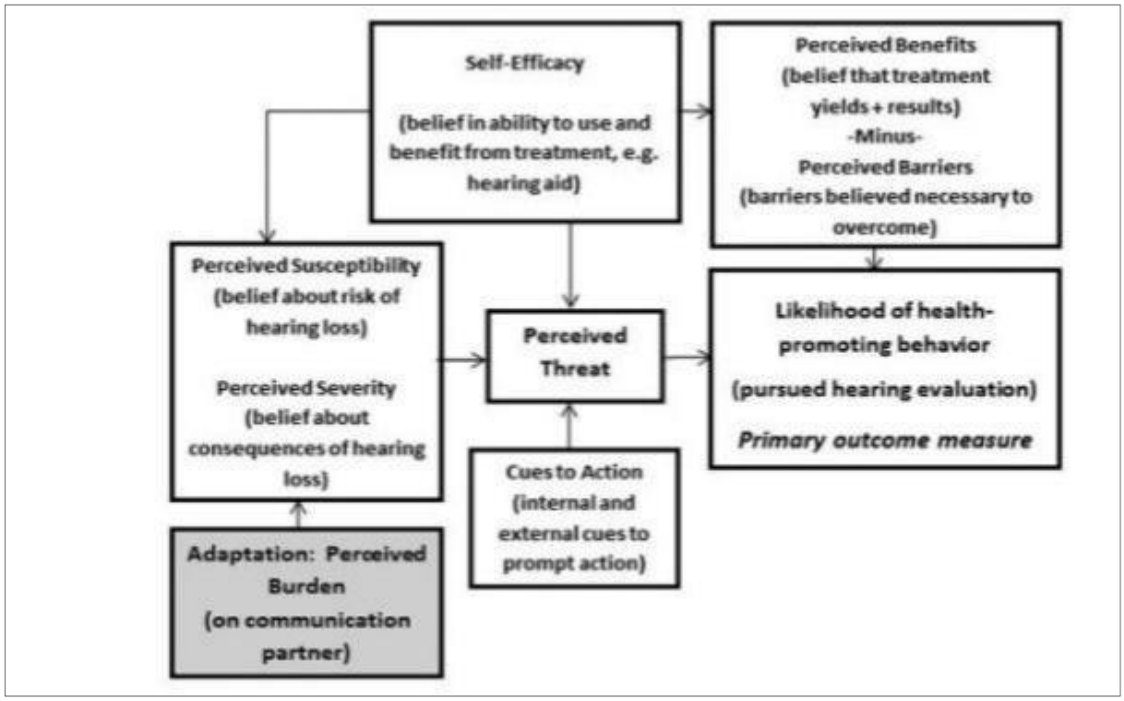
Source: - Glanz et al, 2002

Taking cues to the Health Belief Model the factors addressed as the factors namely the demographic, 2.4: HBM level all this has a great resemblance to Hearing aid adoption and use. The early identification of hearing problem along with proper use of Hearing g aid does

provides a highly acceptable result. In this situation the user does shows signs of deep satisfaction and happiness.

But with the impact of multiple modifying factors mentioned in the study the Hearing Aid acceptance and Use does gets reaches its adequate level. The understanding of the problem, its early intervention along with the fear factor makes people to seek advice from consultants for hearing deficiency. This model along with its limitation has proved to be a useful framework in health behavior change (Noh et al, 1994) the constructs relevant to hearing impairment (Meyer et al, 2014; Saunders et al, 2012; van den Brink et al, 1996). Though not widely applied to understand the hearing health behaviors. The empirical studies do indicate that the constructs are quite effective in determining health promoting behavior (Saunders et al, 2013). The attempt of the HBM's application to understand the hearing healthcare (Saunders et al., 2013) was developed and tested. The results indicated that the framework of the HBM.

Figure 2.5: Application of the health belief model: Development of the hearing beliefs questionnaire (HBQ) and its associations with hearing health behaviors



Source: -. Adapted from ''Application of the health belief model: Development of the hearing beliefs questionnaire (HBQ) and its associations with hearing health behaviors,'' by Saunders et al, 2013

Theoretical framework applying concepts of the health belief model to hearing health behavior. The pathways by which various motivators influence health behavior change and the additive explanatory value of adding the perceived burden construct

Applying the constructs of HBM model the above figure depicts the stage when individuals generally go for adopting Hearing aid. The likely threats, behavioral factors, and socioeconomic issues along with the threat as well fear of deafness tends to motivate people to adopt hearing aid.

The Health Belief Model (HBM) can be a valuable framework for understanding and promoting health behaviors in the thesis. Its helps to identify the factors that influence an individual's likelihood of engaging in a specific health behavior, such as adopting a healthier diet, exercising regularly, or seeking preventive care. The HBM can be a valuable framework for understanding and influencing consumer decisions regarding hearing aid purchases. Here's how the HBM's constructs can be relevant to hearing aid purchase decisions.

Perceived Susceptibility:

Consumers' perception of their risk of developing hearing loss or experiencing its negative consequences. This can be influenced by factors such as age, family history, exposure to loud noise, and current hearing difficulties. Interventions can focus on raising awareness about the risks of untreated hearing loss and the potential benefits of early intervention.

Perceived Severity:

Consumers' perception of the seriousness of hearing loss and its impact on their quality of life. This can be influenced by factors such as the degree of hearing loss, the individual's lifestyle and social interactions, and the perceived stigma associated with hearing loss. Interventions can focus on highlighting the negative consequences of untreated hearing loss, such as social isolation, communication difficulties, and cognitive decline.

Perceived Benefits:

Consumers' perception of the positive outcomes associated with wearing hearing aids. This can include improved hearing, better communication, increased social engagement, and improved overall well-being. Interventions can focus on showcasing the benefits of hearing aids through testimonials, success stories, and demonstrations.

Perceived Barriers:

Consumers' perception of the obstacles or difficulties associated with purchasing and using hearing aids. This can include cost, stigma, inconvenience, and concerns about the effectiveness of hearing aids. Interventions can address these barriers by offering financial

assistance programs, emphasizing the discreetness of modern hearing aids, providing easy-to-use devices, and offering comprehensive support services.

Cues to Action:

Consumers' exposure to internal or external factors that trigger the decision to purchase hearing aids. This can include personal experiences with hearing loss, recommendations from healthcare professionals, advertising campaigns, or hearing aid demonstrations. Interventions can utilize targeted marketing campaigns, partnerships with healthcare professionals, and community outreach programs to provide consumers with cues to action.

Self-Efficacy:

Consumers' confidence in their ability to successfully use and benefit from hearing aids. This can be influenced by factors such as their past experiences with technology, their motivation to improve their hearing, and their support system.

Interventions can enhance self-efficacy by providing comprehensive training and support, offering trial periods, and connecting consumers with other hearing aid users.

Cultural factors can play a significant role in shaping attitudes and beliefs about hearing loss and hearing aids. Interventions should be tailored to the specific cultural context and beliefs of the target population. Ethical considerations should be paramount, ensuring that consumers make informed decisions based on accurate information and realistic expectations.

Incorporating the HBM and its constructs into marketing and educational efforts, hearing aid manufacturers, healthcare professionals, and advocacy groups can effectively promote hearing aid adoption and improve the lives of individuals with hearing loss.

2.3.2 Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is a prominent psychological model that explains and predicts human behavior, particularly regarding health-related behavior. It posits that an individual's intention to perform a specific behavior is the primary determinant of their actual behavior. This intention is, in turn, influenced by three key factors:

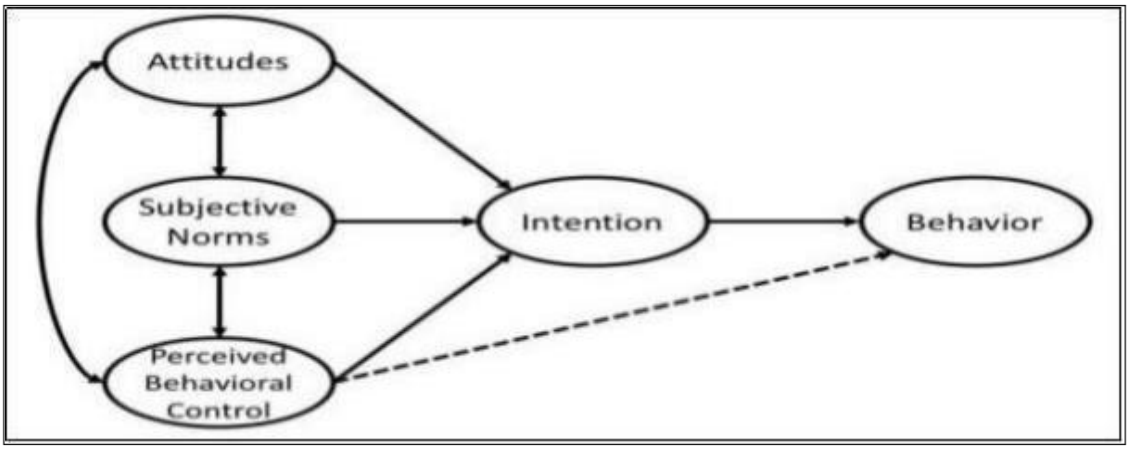
Attitude towards the behavior: This refers to an individual's overall positive or negative evaluation of the behavior itself. It encompasses beliefs about the potential outcomes of the behavior and their personal evaluation of those outcomes. For example, someone

considering using a hearing aid might believe it will improve their communication and social life, leading to a positive attitude towards using it.

Subjective norm: This refers to an individual's perception of the social pressure to perform or not perform the behavior. It considers the expectations and opinions of important individuals or groups in their social circle, such as family, friends, or healthcare professionals. For instance, if a person's family encourages them to use a hearing aid, it can create a stronger subjective norm for them to do so.

Perceived behavioral control: This refers to an individual's perception of their ability to perform the behavior successfully. It includes their self-efficacy, confidence, and control over the resources and opportunities needed to perform the behavior. A person might believe they can easily adjust to using a hearing aid and have the financial resources to purchase and maintain it, increasing their perceived behavioral control.

Figure 2.6: Theory of Planned Behavior model



Source: The Theory of Planned Behavior model adapted from Ajzen 2005

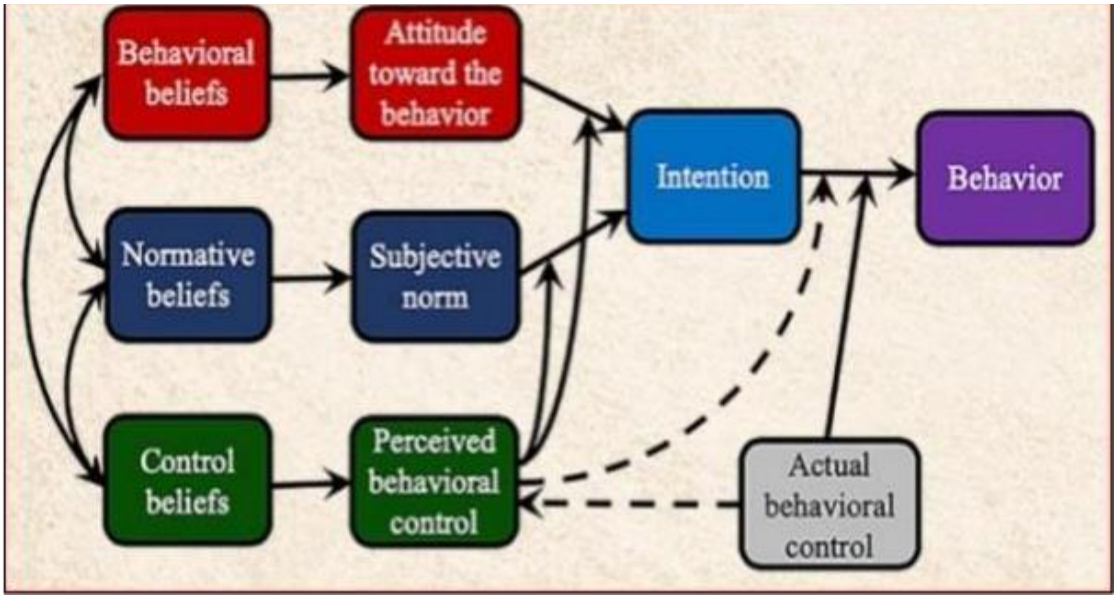
The TPB suggests that when these three factors are favorable towards the behavior, an individual's intention to perform that behavior will be strong, leading to a higher likelihood of engaging in Source: The, when the factors are not supportive, the intention and subsequent behavior are less likely to occur.

Applying the TPB to Hearing Aid Use

The TPB can be a valuable tool for understanding and promoting the use of hearing aids. By understanding the factors influencing individuals' attitudes, subjective norms, and perceived behavioral control towards hearing aid use, interventions can be tailored to address these specific aspects.

Attitude: Interventions can focus on providing accurate information about the benefits of hearing aids, dispelling myths and misconceptions, and showcasing positive experiences of hearing aid users. **Subjective norm:** Interventions can involve social marketing campaigns featuring testimonials from satisfied hearing aid users, engaging healthcare professionals to recommend hearing aids, and promoting social support groups for people with hearing loss.

Figure 2.7: Planned Behavior Framework detailed



Source: -https://people.umass.edu/Aizen/tpb.diag.html#null-link

Perceived behavioral control: Interventions can offer free trial periods, provide training and support for using hearing aids, and address affordability issues through financial assistance programs.

Addressing these factors through targeted interventions, the TPB can help increase individuals' intention to use hearing aids and ultimately lead to improved hearing health outcomes.

The TPB is a dynamic model, meaning the factors influencing behavior can change over time. Interventions should be adaptable and continuously monitored to ensure they remain effective. Individual differences, such as personality, past experiences, and cultural backgrounds, can also influence behavior. It is important to consider these factors when designing interventions.

Ethical considerations are crucial. Interventions should be based on accurate information, avoid coercion, and respect individuals' autonomy in decision-making.

The TPB provides a comprehensive framework for understanding and promoting health behavior, including the use of hearing aids. Targeting individuals' attitudes, subjective norms, and perceived behavioral control, interventions can effectively increase intention and behavior change, leading to improved hearing health outcomes.

2.4 7 Ps of Marketing Mix in the buying Process of Hearing Aid

The seven Ps of Marketing is considered an important paradigm in the marketing ecology for many products buying process. Marketers does understand its utility in the promotion of goods and services. The expansion of the market especially in the digitized era when markets are no longer restricted to a particular geographical area. The globalization of business with the growing appreciation inclined towards customer interaction and retention. It has also open new dimension in network marketing, applying industrial experiences, providing business ecology, developing value migration, understanding product life cycle, customer relationship management and relationship sales through value creation among other trends. The criteria, initiates the new trends in practices of marketing

Figure 2.8: 7 P's of Marketing Mix

Source: - https://www.smartinsights.com/marketing-planning/marketing-models/how-to-use-the-7ps-marketing-mix

McCarthy (1960) first suggested the four P's (Price, Promotion, Product and Place) the primary ingredients of a marketing strategy the mode of translating marketing plan into action (Cengiz, 2007, Wolfe et al., 2011). A marketer plans out several forms of rivalry which it blends them into a "marketing mix" in order to maximize profit function (Grönroos, 1994). Marketing mix aids in the marketing aspects in order to successfully position market offer

(Suprihatin, 2011). Marketing mix improves satisfaction level. The Four P's, which are namely product, place, promotion, and price are one of the most well-known marketing mix models.

Harvard University conducted the first study on marketing mix in the year 1929 (Jersey, 1991). The marketing mix management as a paradigm dominated the industry since 1940. McCarty originated this concept in 1964, he further refined it into the 4Ps principles we know today (Beckwith, 2001). The 4 P's Product, Pricing, Promotion, and Place are the four elements which make up the marketing mix basket (Bennett, 1997). The marketing mix process has undergone change with changes in response in the company and consumer markets. McCarthy's concept was which was developed in 1981 by Bernard H. Booms and Mary J. Bitner to7Ps ofmarketing mix.

Figure 2.9: Application of 7 P 's in Hearing Aid Procurement

Source: Authors own Source

The 7 Ps ofmarketing mix has its application in the topic of research. The Hearing Aid prior to its procurement the 7 variables have its implication. Let us discuss each facet of the Marketing Mix with relevance to the topic.

Product

The term "product" relates to components its well as aspects which are required to provide a service that adds value (Davis, 1997). Product relates to consumer satisfaction (Mosta ani 1997). Consumer gets utility using the product. In the Hearing Aid selection and trial process the first intention is to make the hearing-impaired person make the sound audible. Their selection process has two sides, one by the physical look of the product which relates to

colour, size of the product, shape of the product, cosmetic appeal-how far it is invisible etc. Since, Hearing Aid is a medical gadget it is only for people who suffers from hearing disability, the quality ofhearing is also important. Looks along with the sound reception level also needs attention. A product which aims to achieve both these features will have high acceptability in the market.

Price

Price comprises the item's intrinsic price along with the product assortments. It includes the variation, price adjustments, price combinations, offers and payment options. It provides the opportunity to the organization to offer a competitive price. (Davis, 1997). Price can be considered as an important factor which determines customers' satisfaction (Vivianite et al., 2009). Customers while evaluating the value of the obtained product and service compares its price. It is the amount that needs to be given for to a product/service (Nakhleh 2012). Consumers' willingness and intention to pay varies due to different needs. The price perceptions for same service or products might differ among individuals (Riaz 2007, Goi 2011 and Moala et al., 2012).

Price will be definitely the one of the key factors which a purchaser will consider during purchase. At times price relates quality and superiority. People buying a high-end product relates to class, affordability they perceive. Patients generally restrict their choice based on their budget. At times may be a product might suit the requirement but due to high price it is affordable. Patients responds differently when the price is not disclosed.

The product which has provides better clarity and audibility is selected. But once the price is disclosed the patient responds based on affordability. To make a Hearing Aid marketable the price need to be competitive.

Place

Place relates to as to delivery point of the product or service. It includes virtual-online as well physical distribution routes (Davis, 1997). In the days of Globalization products and services are no longer restricted to a particular physical place. The term place also includes the availability of the product online. Buyer generally before they make a decision looks into different platform in which the product is available.

Many a times a product might be located in a remote location. The online service is not available. This reduces the sales option of that particular product. Hearing Aid are purchased

from both online and offline. Consumers tend to have a through look of the product before they jump to the conclusion to buy. The availability of the product at multiple places in online platforms and multiple shops does increases the confidence of the consumer to buy. Generally, there is belief good products are available in maximum number of places. Consumers also looks into the process of post service. The place where the service can be rendered. The price applicable for such services.

Promotion

Promotion relates to reaching customers with offerings (Bahman et al., 2012). Promotion is a technique to sale. Activities such as Sales-Promotion, Advertising, Personal Selling, Public Relationship Management and Direct Marketing activities. It informs about potential customers awareness of available choices regarding products and its services. The success depends on communication to its target market. A program helps sharing information to consumers, identifying target customers of the merits of a specific product. Encouraging the customers to freeze the buying process.

The promotion influences the consumers thinking process. The emotional touch influences the buying process. Communications promoted by marketers in order to

(1) Consistent information about the products and

(2) Promoted in media which target audience generally use.

It helps the customer to take action at a specific time. Optimum use and deriving the benefits out of it. The product advertisement can be provided both online and offline. Hearing Aid purchase process is generally lengthy. Normally it is undertaken by prolonged advice and persuasion by related members. The promotion of the product on a repetitive basis in multiple platforms increases the chance of acceptability. The promotional offers do mention the unique features of the product which might relate to its quality, special offer price, bundle of services, post-sale care, future benefits etc. Thus, promotion does incite a consumer to make a personalized feel even prior to purchase of the product.

People or Personnel

It refers to the service employees who produce and deliver the service (Muala et al., 2012). Many services involve personal interactions between customers and the service provider. The provider of the product or service strongly influence the customer's perception about its quality. Customers normally connect the traits of service to the organization they represent.

Achievement of a customer-orientation success depends upon cooperation coming from the personnel. The interaction influences customer perception. Regular training, skill development, learning, and advice will achieve to display the optimum value of the product and the company.

Though Hearing Aid is a product but service is one of its vital components. The person who is displaying the product by articulating its feature does plays a major role. Most of the features of the product neither can be seen nor can be displayed. It's through the presentation and aura which the dispenser creates the consumer gets guided. The dispenser who provides a picture of the product feature relating to the solution of problem is highly accepted. Regular training and up gradation need to be undertaken constantly to remain significant and acceptable.

Process

The process is generally defined as application that increases value for products (Muala et al., 2012). The process pace is clearly revealed to the customer. This forms the basis of satisfaction with the purchase. The process management ensures the availability and consistency of quality. In the Hearing Aid buying process the consumer has to undergo different processes. Most of them are not convinced about their hearing loss. They generally look for other alternative other than a hearing aid. The Audiological test conduct by professionals is the first step in the buying process. The report suggests the degree and type of hearing loss. Further, it stimulates the busying process as higher degree of hearing loss needs earliest attention. The level of strict resistance slowly decreases. The process is including the trial process in which the user is fitted with the dummy as well as actual hearing aid. The response of the user and counselling of the dispenser does impact the buying the process.

Physical Evidence

The environment in which the service and any tangible goods which facilitate the performance and communication of the service are delivered (Muala et al., 2012). The customer normally judges the quality of the service provided through Physical Evidence. It also refers to the environment in which the services production is, in. Similarly, other visible surroundings might affect the impressions which are perceived by the customers about its service quality. The components of the service experience are referred to the "services-cape. This service caps can be further broken down into the ambience, the background sound and music, the sitting comfort, and the physical layout of the service facility. The appearance of the employee can greatly affect a customer's satisfaction as well as service experience. The environmental design significantly influences the customer's expectations.

People suffering from Hearing loss needs privacy when they are disclosing the problems. The consultation room should be such that there least level of disturbance and hindrances in the communication process. In case of online as well it is relevant. The consumer needs the maximum level of attention. Emotional connect and cordial environment does influence the consumer to buy the product.

2.5 Application of Purchase Funnel in Hearing Aid Procurement

Figure 2.10: Purchase Funnel

Source: - https://www.singlegrain.com/marketing-funnels/how-to-guide-your-customers-through-the-marketing-funnel-with-interactive-content

The purchase funnel, is the marketing model that illustrates steps a consumer takes to purchase a company's goods, works or services. This model allows companies to determine how customers discover their brands and become loyal. Learning about the stages of this framework can help you guide and convince prospective customers to purchase your products or services.

Awareness

In this stage the Hearing Aid purchaser is just a potential buyer realizing a need for a Hearing Aid. They are most likely looking for different possible places of the availability of Hearing Aid. This is where a strategy plays a key role in marketing plan. Most potential buyers in this

stage is looking for information to their problems. It is important here to consider that at this stage, the information would be related to overall needs and requirements of Hearing aids.

It is important to understand that the consumer mentality cater marketing communications to provide solutions, ideas, and purpose related to their interest point. A few top-of-the-funnel, **awareness stage content** offers to consider include:

- Psycho Social Factors
- Orthodox Beliefs & Customs
- Advice provided by Doctors & Professionals
- Feedback from other existing users

Consideration/Convincing

A defined goal to commitment to address it, this phase the purchaser evaluates the different methods which are available. In this stage critical information does helps purchaser to take the best possible decision. In this stage the issues which are addressed are provided below: -

- Physical Comfort
- Perceived Benefit of use
- Service Expectation
- Diseases & Health Issues
- Budgetary Constraints

Decision

In the final point in the journey, the purchaser has decided on a solution category. A purchaser may spend significant time in researching documents, data, reviews, and other supporting materials to be confident in the decision.

In this stage the Purchaser have decided to purchase Hearing aid since he has realized that Hearing problems can be addressed with Hearing Aid. Further, the back-room study, collection of information, discussion with Professionals comes in as a handy advice comes in as a useful tool.

The purchase funnel is a marketing model that describes the stages a consumer goes through when making a purchasing decision. It is particularly relevant for complex purchases like hearing aids, which often involve a lengthy and considered process. Understanding the different stages and applying the purchase funnel to hearing aid procurement can help manufacturers, retailers, and audiologists develop effective marketing strategies to reach and convert potential customers.

Stages of the Purchase Funnel for Hearing Aids Procurement Process:

Awareness (Top of Funnel):

Consumers become aware of their hearing loss and the potential benefits of hearing aids. This can be achieved through various marketing channels (Figure 1), such as:

- Online advertising (e.g., Google Ads, social media ads)
- Public relations efforts (e.g., press releases, media coverage)
- Community outreach programs (e.g., health fairs, senior centers)
- Word-of-mouth recommendations

Consideration (Middle of Funnel):

Consumers research different hearing aid options, compare features and prices, and seek information from healthcare professionals and other trusted sources. Providing clear and informative resources, such as:

- Websites with detailed product information
- Brochures with comparisons of different features
- Online reviews from verified users
- Educational content about hearing loss and hearing aids (e.g., blog posts, videos)

Evaluation (Bottom of Funnel):

Consumers evaluate different brands, models, and service providers based on their individual needs, preferences, and budget. Offering valuable tools and services, such as:

- Free consultations with audiologists
- Trial periods for potential hearing aids
- Personalized recommendations based on individual hearing tests
- Transparent pricing and financing options

Purchase (Conversion):

Consumers make the decision to purchase a hearing aid and choose a specific provider. Making the purchase process convenient and accessible by:

- Offering online ordering options
- Providing multiple payment methods (e.g., credit cards, financing plans)
- Ensuring a secure and reliable checkout process

Post-Purchase (Retention):

Consumers adapt to using their hearing aids, receive ongoing support, and potentially upgrade or purchase additional accessories. Maintaining a positive customer experience through:

- Follow-up appointments with audiologists
- Educational resources about using and maintaining hearing aids
- Access to customer support channels (e.g., phone, email, online chat)

2.6 Framing of Constructs based on vivid Literature Review

2.6.1 Perceived Benefit of Use

Hearing aid (HA) effectiveness can be evaluated from various perspectives , with patient-reported outcomes gaining prominence in recent years (Granberg et al .,2014).Several popular instruments measure HA benefit, including the Abbreviated Profile of Hearing Aid Benefit (APHAB) (Cox et al., 1995) and the Speech, Spatial, and Qualities of Hearing Scale (SSQ) (Gatehouse et al.,2004).These tools assess individual perception of listening capabilities in diverse situations, providing a subjective measure of hearing status.

While satisfaction and benefit may appear interchangeable, they represent distinct domains of HA success (Humes et al.,2012).Satisfaction reflects an emotional response to an experience or service (Tso et al., 1988; Oliver, 1997), while benefit measures individual performance with HAs compared to without (Hickson et al.,2 014).Understanding the experiences of individuals with hearing loss (HL) who use HAs through narrative sense-making (i.e., storytelling) can provide valuable insights into their perspectives on the diagnostic and treatment process. “Patient narratives or stories offer the construction of meaning from experience, a therapeutic retelling of events, and valuable diagnostic information and details."(Gray, 2009). Additionally, such stories shed light on patients’ identities within and beyond the clinical context (Charon, 2006). Among various HA technologies, noise reduction features are arguably among the most important, as difficulty listening in noisy environments is frequently reported by HA users (Takahashi et al.,2007).

- **Improved Quality of Life**

Studies have consistently shown that HA use leads to improvements in quality of life for individuals with Lathis benefit extends beyond simply improved hearing ability, encompassing areas such as social interactions, emotional well-being, and overall life satisfaction (Dalton et al.,2003; Lin, 2011; Chisolm et al.,2007; Pope et al., 1995; Noble et al.,2006; Bentler & Kramer, 2007; Saunders & Cienkowski, 2010; Hallberg & Larsby, 2012; Manchaiah et al.,2013; Smith et al.,2013).

- **Affordability**

Affordability remains a significant concern for many individuals considering HAs, with cost often being a barrier to access (Shukla et al.,2020; Mick, 2014; Windmill et al.,2021). This highlights the need for innovative solutions to increase affordability and accessibility of HAs, such as self-fitting options and more affordable technology (Kochkin, 2007).

- **Battery Life**

Battery life is another crucial factor for HA users, impacting convenience and overall satisfaction (R M Dondelinger, 2004; D Linden, 2002; J Chen et al.,2009; Preminger, 2003). Advancements in battery technology and energy-efficient designs are crucial to address this concern, ensuring uninterrupted use and optimal performance.

- **Hearing Aid Effectiveness/Performance**

Numerous studies have demonstrated the effectiveness of HAs in improving speech understanding and overall listening ability in various environments (Garstecki & Erler, 1998; Humphrey et al., 1981; Swan & Gatehouse, 1990; Chisolm et al.,2007; Saunders & Cienkowski, 2010; Noble et al.,2006; Bentler & Kramer, 2007; Hallberg & Larsby, 2012; Manchaiah et al.,2013; Preminger, 2003).However, individual experiences may vary depending on factors such as type and severity of HL, personal preferences, and lifestyle.

- **Self-Fitting (Handy to Use)**

Self-fitting HAs offered a convenient and accessible option for some individuals, particularly those with mild to moderate Lathes devices are user-friendly and can be adjusted without the need for frequent professional visits (Humes et al.,2003; Kochkin, 2007).

- **Technology Benefits**

Advancements in HA technology have led to significant improvements in sound quality, noise reduction capabilities, and overall user experience (Frankel et al., 1983; Manchaiah et al.,2013; Preminger, 2003; Saunders & Cienkowski, 2010; Noble et al.,2006; Bentler & Kramer, 2007; Hallberg & Larsby, 2012; Manchaiah et al.,2013; Smith et al.,2013). These advancements contribute to improved user satisfaction and enhance the overall benefit of HA use.

- **Additional Considerations**

The benefits listed above; other factors can influence the perceived benefit of HA use. These include individual expectations, support from family and friends, and the audiologist's expertise in fitting and counselling (Kochkin, 2007). Addressing these factors holistically can further enhance the positive impact of HAs on individuals with HL.

Table 2.3: factors influencing Perceived Benefit of Use

Perceived Benefit of Use	
Improved Quality of Life	Dalton et al.,2003;
	Lin P,2011;
	Chisolm et al.;2007
	Pope et al.;1995
Affordability	Shukla A et al.,2020;
	Mick P,2014
	Windmill et al.,2021
Battery Life	R M Dondelinger, 2004;
	D Linden,2002;
	J Chen et al.,2009;
Hearing Aid Effectiveness/Performance	Garstecki & Erler, 1998;
	Humphrey et al., 1981
	Swan &

	Gatehouse, 1990;
	Chisolm et al,2007;
Self-Fitting (Handy to Use)	Humes et al.,2003;
	Kochkin,2007;
Technology Benefits	Frankel et al.;1983
	Manchaiah et al.,2013
	Preminger,2003;

2.6.2 Physical Comfort

Physical comfort is a crucial aspect of hearing aid (HA) use, influencing user satisfaction and adherence to treatment. Studies focusing on the patient journey provide valuable insights into factors contributing to individuals' decision-making processes regarding seeking help, pursuing, and utilizing amplification.

Age-related hearing loss (ARHL) is highly prevalent among older adults, with two-thirds of individuals over 70 experiencing some degree of hearing loss (Lin et al.,2011). This condition has been associated with various challenges, including social isolation, reduced participation in daily activities, lower quality of life, and loneliness. While loneliness stems from an emotional response to a perceived lack of desired social connections (Peplau, 1982), hearing loss has been more consistently linked to social isolation (Schreyer, 2019).

ARHL can also contribute to tinnitus, characterized by the perception of sounds in the absence of external stimuli (Beck, 2011; Swatow et al.,2010). While the exact mechanism for tinnitus relief through HAs is not fully understood, several mediating factors have been proposed, including:

Reduction in central gain: HAs provide additional sensory input that may reduce mal-adaptive neuronal gain in the central auditory system due to cochlear differentiation (Novena, 2011).

Habituation: The brain can habituate to the tinnitus signal through sustained hearing aid use, reducing its perceived loudness and annoyance.

Reduced communication stress: Improved auditory input from HAs can lead to less effortful listening and decreased cognitive load, mitigating the stress associated with communication in challenging environments.

Improved Social Interactions and Reduced Loneliness: HAs facilitate better participation in conversations and social activities, reducing social isolation and fostering a greater sense of

connection, thereby alleviating feelings of loneliness (Hickson et al.,2 014; Hockey, 2013; Stein et al.,2004).

- **Communication Improvement:** Enhanced speech understanding and clarity provided by HAs promote smoother and more effortless communication, improving overall listening experiences across various environments (Carson, 2005; Palmer et al.,20 09).

- **Cognitive Well being**: Hearing loss has been linked to cognitive decline. However, HA use can help mitigate this risk by reducing listening effort, enhancing auditory stimulation, and promoting cognitive engagement through improved communication (Litovsk, 2009; Lorens & Kulkarni, 1999).

- **Psychological Benefits and Reduced Tinnitus:** HAs can improve overall psychological well-being by decreasing the strain associated with communication breakdowns in challenging listening scenarios. Additionally, improved auditory input can effectively suppress tinnitus perception by masking the phantom sounds, leading to reduced severity and overall improvement in quality of life (Bruce, 2002; Cohens et al., 1985; Surr et al., 1985; Melin et al., 1987; Kochkin & Tyler, 2008; Vernon & Meikle, 2002).

- **Physical Comfort and Chronic Disease Management:** HA use has been linked to improved overall health outcomes by facilitating effective communication during medical consultations, leading to better understanding of treatment plans and medication instructions, ultimately contributing to improved disease management (Chien, 2012; Hoggard et al.,2013; Roth et al.,2011).

- **Ease in Listening Environments:** HAs, especially those incorporating advanced technological features like noise reduction algorithms and directional microphones, can significantly improve ease in listening by enhancing speech clarity and reducing background noise, allowing individuals to better engage in conversations or activities within challenging acoustic environments (Cox et al.,2005; Gatehouse, 1993).

- These positive outcomes highlight the multifaceted benefits of HA use, emphasizing how physical comfort translates to improvements in various aspects of an individual's life, from personal well-being and social interactions to cognitive health and overall quality of life.

Table 2.4: Factors Influencing Physical Comfort

Physical Comfort	
Solution to Chronic Diseases	Chien W,2012;
	Hoggard S et al.,2013;
	Roth T et al.,2011
Reduce Loneliness	Hickson et al.,2014;
	Hockey,2013;
	Stein et al.,2004
Communication Improvement	Carson,2005;
	Palmer et al.,2009;
Ease in Listening Environment	Cox et al.,2005;
	Gathouse S, 1993;
Less Psychological Distress	Bruce ML,2002;
	Cohens et al., 1985;
Better Cognitive Health	Litovsky RV,2009;
	Lorens & Kulkarni A 1999;
Reduced Tinnitus Symptoms	Surr et al., 1985;
	Melin et al., 1987;
	Kochkin & Tyler,2008;
	Vernon & Meikle,2002;

2.6.3 Psyche-Social Factors

Physical comfort and functional improvements, hearing aid (HA) use encompasses various psycho-social factors that significantly influence the overall user experience and impact quality of life.

While HAs alone may not completely overcome all challenging listening environments, they can provide a significant boost in communication ability. However, first-time users often require substantial counselling and auditory training to ensure they maximize the benefits of their devices (Olson, 2015).

Hearing loss is associated with various negative consequences beyond simply reduced auditory perception. Studies have linked it to decreased quality of life (Ciorba et al.,2012), compromised emotional well-being (Danermark, 1998), and increased communication difficulties (Giolas & Wark, 1967). Perhaps most significant is the stigma often associated

with hearing loss, which can disrupt individuals' self-perception and relationships (Wallhagen, 2010).

The dissatisfaction with hearing aids remains a persistent challenge within the industry, hindering market growth. The underlying mechanisms contributing to poorer outcomes associated with hearing loss include:

Increased cognitive load: Degraded auditory signal processing places greater demands on the brain's cognitive resources.

Structural and functional brain changes: Hearing loss can lead to changes in brain structure and function, affecting various cognitive abilities (Lin, 2014).

Social Isolation: Communication difficulties due to hearing loss can lead to social isolation, further impacting mental and emotional well-being (Mick, 2014).

Loss of environmental sound cues: Inability to perceive important environmental sounds can compromise safety and awareness.

Hearing aid use can mitigate these negative impacts by offering several benefits:

Amplified auditory signal: Improved auditory input can reduce cognitive load, enhance communication, and facilitate social engagement.

Reduced burden on neural processing: Effective amplification can lessen the strain on the brain 's auditory processing pathways, potentially mitigating structural and functional changes.

Improved communication and reduced social isolation: HAs can facilitate smoother communication, fostering social interaction and reducing the risk of isolation.

Enhanced perception of environmental cues: HAs can restore awareness of important sounds, improving safety and quality of life.

The psycho-social factors influencing HA use extend beyond individual experiences. These factors include:

Social Influence: Attitudes and perceptions of family, friends, and society regarding hearing loss and HAs can impact individual decisions and perceptions (Heine, 2002; Ciorba, 2011; Felce, 1995).

Workplace Satisfaction: HAs can significantly contribute to improved job performance, satisfaction, and overall well-being in professional settings (Cox et Ciorba, et al.).

Marketing Initiatives: Effective marketing campaigns that address stigma and provide accurate information about HAs can encourage individuals to seek help and embrace the benefits of amplification (Campbell, 1997; Hayden, 1938; Sterne, 1995).

Service Providers: Audiologists and other hearing healthcare professionals play a crucial role in providing personalized support, counselling, and ongoing care to ensure optimal HA usage and maximize user satisfaction (Kochkin, 2009; Milhinch & Doyle, 1990).

Understanding the multifaceted psycho-social factors associated with HA use, we can better address individual needs, promote positive perceptions, and ultimately improve the overall experience of individuals with hearing loss.

Table 2.5: Factors Influencing Psycho-social Factors

Psycho-Social Factors	
Social Influence	Heine C,2002;
	Ciorba A,2011;
	Felce D, 1995
Workplace Satisfaction	Cox R et al.;
	Weinstein BE et al.;
Marketing Initiative	Campbell M 1997;
	Hayden A, 1938;
	Sterne J, 1995;
Service Provider	Kochkin,2009;
	Milhinch & Doyle, 1990;

2.6.4 Service Expectation

Service expectation and satisfaction play a crucial role in the overall hearing aid (HA) experience and user 2.5: immediate needs at the point of purchase, individuals require ongoing support and care to ensure long-term satisfaction and sustained use of their HAs.

Most individuals with hearing loss can benefit from prosthetic amplification through HAs (Ferguson et al.,2016). However, numerous barriers hinder HA uptake, including cost, access to hearing healthcare, and lack of information (McPherson , 2018; Orji et al.,2020). This disparity is evident in the higher HA usage rates observed in affluent countries compared to less developed regions (Bright, Wallace, and Kuper, 201 8).

While some research suggests that hearing care professionals can influence HA uptake (Kochkin, 2009), studies exploring this impact have primarily focused on individual satisfaction with the devices themselves rather than investigating the client-clinician interactions that lead to the actual acquisition of HAs (Wong, Hickson, & McPherson, 2003).

Understanding the key factors influencing individuals' decisions to purchase HAs been crucial for improving uptake and ensuring optimal long-term outcomes. The top three factors identified as influencing first-time HA users' purchase decisions are:

Individual perception of worsening hearing loss: When individuals recognize a significant decline in their hearing ability, they are more likely to seek amplification solutions.

Influence of family members: Encouragement and support from family members can play a significant role in motivating individuals to pursue HA use.

Audiologist role and expertise: The audiologist's ability to address concerns, provide clear explanations, and demonstrate the potential benefits of HAs can significantly influence a patient's decision-making process.

Beyond the initial purchase decision, ongoing service expectations shape user satisfaction and adherence to HA use. These key dimensions include:

Life of the Hearing Aid: Individuals expect hearing aids to have a reasonable lifespan and perform reliably throughout their intended usage period (Lin et al.,2011;Gates et al.,2006).

Home Service and Remote Service Facility: Convenient options for home visits or remote support allow individuals to receive necessary adjustments or troubleshooting assistance without the need to travel to a clinic (Edwards, 2007; Swanpoel & Hall, 2010; Caufield & Donnelly,2013).

Back-Up Support: Access to reliable after-sales support, including repairs, warranty coverage, and technical assistance, provides users with peace of mind and ensures continuity of care (Hickson et al.,2014; Meyer et al.,2019).

Accessories and Adjustments: Availability of compatible accessories, such as wireless connectivity options or remote controls, can enhance usability and personalize the HA 2014; Meyer adjustments to personalize settings and address changing hearing needs are essential for maintaining optimal performance (Singh et al.,2014; Campos & Ferrari, 2012; Novak et al.,2009).

Meeting these service expectations contributes to building trust and long- term positive relationships with hearing healthcare providers, promoting continued HA use and maximizing the overall benefit for individuals with hearing loss.

Table 2.6: Factor Influencing Service Expectation

Service Expectation	
Life ofthe Hearing Aid	Lin FR et al.,2011;
	Gates GA et al.,2006;
Home Service & Remote Service facility	Edwards 2007;
	Swanpoel & Hall 2010;
	Caufield & Donnelly;2013
Back-Up Support	Hickson et al.,2014
	Meyer et al.,2019
Accessories & Adjustments	Singh et al.,2014;
	Campos & Ferrari 2012;
	Novak et al.,2009;

2.6.5 Orthodox Beliefs & Customs

The adoption rate of hearing aids (HAs) among older adults remains low worldwide, with usage rates below 25% in developed countries like the United Kingdom and the United States (Bisgaard & Ruf, 2017; Chien & Lin, 2012; Kochkin, 20 01; Zhao et al.,2015). Several factors contribute to this low adoption rate, including:

Perception of Hearing Loss Severity: Individuals who perceive their hearing loss as less severe or experience fewer activity limitations and participation restrictions are less likely to seek HA use (Helvik et al.,2008; Humes, Wilson, & Humes, 2003; Laplante-Levesque, Hickson, & Worrall, 2010a; Meister et al.,2008; Winsor, 2011). Negative Attitudes towards HAs:

Preconceived notions about HAs, including concerns about appearance, stigma, and effectiveness, can hinder adoption (Meister et al.,2008; Meyer & Hickson, 2012; Van den Brink et al., 1996).

Lack of Knowledge and Information: Inadequate understanding of hearing loss and the benefits of HAs can contribute to hesitancy and delayed adoption (Carlson et al.,2019; Knudsen et al.,2010; Knudsen et al.,2013; Pryce et al.,2016).

Self-Efficacy and Stigma: Concerns about managing and using HAs, coupled with perceived stigma, can discourage individuals from pursuing HA use (Kochkin, 2007; Saunders et al.,2013; Smith & West, 2006; Van den Brink et al., 1996; Wallhagen, 2010).

These factors highlight the complex interplay of individual perceptions, knowledge, and attitudes towards hearing loss and HAs that influence adoption rates. Specific cultural and societal beliefs and customs can further influence HA adoption among older adults:

Social Stigma: In some cultures, hearing loss is associated with aging, incompetence, or even mental decline, leading individuals to avoid HAs due to perceived stigma and social disapproval (Vanden Brink et al., 1996; Wallhagen, 2010).

False Beliefs and Myths: Misconceptions and negative stereotypes about HAs, such as discomfort, ineffectiveness, and high cost, can deter individuals from seeking more information and exploring the potential benefits (Meister et al.,2008; Chang, 2009; Garstecki & Er ler, 1998).

Addressing these cultural and societal barriers requires tailored approaches that acknowledge and address specific beliefs, values, and concerns within different communities. Providing culturally sensitive information, dispelling myths, and engaging community leaders and trusted individuals can play a crucial role in promoting greater awareness and acceptance of HAs among older adults.

In addition to the factors mentioned above, several other considerations can influence HA adoption among older adults:

Accessibility and affordability: The cost of HAs and access to hearing healthcare services can be significant barriers, particularly for individuals with limited financial resources.

Individual preferences and lifestyle: Some individuals may prioritize other needs or prefer alternative solutions, such as assistive listening devices or communication strategies.

Audiologist expertise and counselling: The audiologist's ability to provide individualized counselling, address concerns, and demonstrate the potential benefits of HAs can significantly impact an individual's decision-making process.

Understanding the complex interplay of individual, cultural, and societal factors influencing HA adoption, we can develop more effective strategies to promote awareness, address barriers, and ultimately improve access to hearing solutions for older adults with hearing loss.

Table 2.7: Factors Influencing Orthodox Beliefs & Customs

Orthodox Beliefs & Customs	
Social Stigma	Vanden Brink et al., 1996;
	Wallhagen,2010;
False Beliefs & Customs	Meister et al.,2008;
	Chang HP,2009;
	Garstecki 1998;

2.6.6 Diseases & Health Issues

Hearing loss, particularly age-related hearing loss (presbycusis), is a prevalent condition affecting millions of individuals worldwide. While this sensorineural hearing loss progresses gradually and has no definitive medical treatment, its impact on quality of life, particularly psychosocial aspects, remains understudied.

Chronic diseases, on the other hand, have been extensively researched, revealing their profound influence on individuals' psychosocial well-being. Studies involving older adults with various chronic conditions have consistently shown that psychological distress, including depressive symptoms, anxiety, and diminished sense of mastery and self-efficacy, is most prevalent among individuals with rheumatoid arthritis and stroke. In contrast, diabetic, cancer, and cardiac patients generally exhibit lower levels ofpsychosocial distress (P links, Wingard, & Barrett-Connor, 1990; Penninx et al., 1996).

Dizziness encompasses a diverse range of sensations, often described as a feeling of imbalance, unsteadiness, or Penning classified into four categories based on patient history (vertigo, pre-syncope, disequilibrium, and lightheartedness), the distinction between these symptoms holds limited clinical value (Polike, 2002). Patients often struggle to articulate the precise nature of their symptoms but can more accurately identify the timing and triggers of their episodes (Harvey, 2016).

Several diseases and health conditions can contribute to or exacerbate hearing loss, including:

Alzheimer's Disease and Other Neurological Disorders: Alzheimer' s disease and other neuro-degenerative conditions can affect the auditory pathways in the brain, leading to hearing loss and communication difficulties (Green, 2001; Asherson, 2008; Merchant et al.,2005).

Dizziness and Balance Disorders: Dizziness, often associated with inner ear disorders such as Meniere's disease or vestibular dysfunction, can significantly impact an individual's ability to maintain balance and navigate their surroundings, leading to anxiety and social isolation (Cascella et al.; Guan et al.,2009; Mao et al.,2019).

Addressing these underlying health conditions and providing appropriate management strategies can significantly improve hearing outcomes and overall quality of life for individuals with hearing loss.

The specific diseases and health issues, several other factors can influence the relationship between hearing loss and overall well-being:

Age: Hearing loss prevalence increases with age, and older adults may experience greater challenges adapting to hearing loss due to cognitive decline or other health conditions.

Individual Differences: Personal coping mechanisms, social support networks, and access to resources can significantly impact how individuals manage hearing loss and its impact on their daily lives.

Environmental Factors: Noise exposure, social isolation, and lack of access to assistive technologies can exacerbate the negative consequences ofhearing loss.

Understanding the complex interplay of disease, health, and individual factors, we can develop more comprehensive approaches to address hearing loss and promote holistic well-being for individuals with this condition.

Table 2.8 : Factor Influencing Diseases & Health Issues

Diseases & Health Issues	
Diseases such Alzimer, Neurological diseases etc.	Green l,2001;
	Asherson RA,2008;
	Merchant SN et al.,2005
Dizziness	Cascella C et al.;
	Guan WJ et al.,2009;
	Mao L et al.,2019;

2.6.7 Price Sensitivity (Cost Factor)

Hearing loss has been consistently associated with a diminished quality of life among older adults (Chia et al.,2007; Heine & Browning, 2004). Beyond reduced auditory perception, it can contribute to broader health concerns, including mood disorders such as depression and anxiety (Gopinath et al.,2009), and potentially an increased risk of mortality (Karpa et al.,2010).

The gap between the need for hearing solutions and actual utilization can be attributed to several factors:

Limited awareness of the benefits of hearing devices: Many individuals remain unaware of the potential improvements in communication, social engagement, and overall well-being that hearing aids can offer.

Scarcity of professional support: Access to qualified audiologists and hearing healthcare professionals can be limited in certain areas, creating barriers to proper assessment, fitting, and ongoing support.

Cost as a significant barrier: The cost of hearing aids remains a major obstacle for many individuals, particularly in countries with limited access to subsidies or insurance coverage (Brouillette, 2008).

The price of hearing aids varies widely depending on several factors:

- **Level of hearing loss:** More severe hearing loss typically requires more advanced technology, leading to higher costs.
- **Type of hearing aid:** Different styles and features, such as behind-the-ear models, in-the-ear models, or invisible hearing aids, come with varying price points.
- **Technological features:** Advanced features like noise reduction, wireless connectivity, and smartphone compatibility can significantly impact the cost.
- **Brand reputation and warranty:** Established brands and comprehensive warranties may come with a higher price tag.

Recent advancements in hearing aid technology have led to more affordable options, making them more accessible to a broader range of individuals (Boothroyd et al.,2017). However, the overall cost range remains complex and depends largely on individual needs, lifestyle, and financial constraints.

Several strategies can help mitigate the financial barriers associated with hearing aids:

- **Multi-level payment facility:** Introducing flexible payment plans, such as monthly instalment or financing options, can make hearing aids more accessible to individuals with budget constraints (Lee & Lotz, 1998; Bentler et al.,2000).
- **Government policies and subsidies:** Implementing government-funded programs or subsidies can significantly reduce the financial burden for individuals and promote greater access to hearing solutions (Hyun et al.,2016; Song et al.,2021).
- **Charitable organizations and assistance programs:** Non-profit organizations and charitable initiatives often provide financial assistance or discounted hearing aids for individuals in need (Agarwal et al.,2018; Bainbridge, 2014).

These strategies, combined with continued technological advancements and increased awareness, can help bridge the affordability gap and ensure that hearing loss is addressed effectively, improving the lives of individuals with this condition.

Table 2.9: Factors Influencing Price Sensitivity (Cost factor)

Price Sensitivity (Cost Factor)	
Multi-level payment facility and budget constraints	Lee & Lotz, 1998;
	Bentler R et al.,2000;
	Boothroyd A et al.,2017;

		Bandura A;1986
	Government Policy & Subsidies	Hyun K R et al.,2016; Song J 2.9: et al.,2021;
		Agarwal Y et al,2018;
		Bainbridge K E,2014;

2.7 Literature Review undertaken for this Research

This review analyses 197 studies, published between 1966 and 2022, examining various aspects of hearing aid use and their impact on senior citizens (Said, 2017; Powell et al.,2016; Taniguchi, 20 04; Mick et al.,2014; Kramer et al.,2014; Gurgel et al.,2014 ; Lima & Miranda-Gonsalez, 2015; Fuentes-López, 2017; Dorji et al.,2015; Parette & Scherer, 2004; Speaks & Malm quist, 1966; Amlani, 2013; Visram et al.,2022; Nalwanga, 2019; Rylands & Van Belle, 201 8; Kramer et al.,2002; Knudsen et al.,2010; Singh & Launer, 2018; Johnson et al.,2018; Convery et al.,2018; Perez & Edmonds, 2012; Dornhoffer et al.,2020; Singh & Launer, 2018; Tao et al.,2018; McMillan et al.,2018; Kingsbury et al.,2022; Green et al.,2022; Moreno et al.,2022; Andersen et al.,2021; Simões et al.,2021; Humes, 2003; Heine & Browning, 2009; Watson & Knudsen, 1940; Lesica, 2018; Picou et al.,2018; Simonetti et al.,2022; Nance et al., 1968).

The studies cover a diverse range of topics, including:

Quality of Life: Several studies investigate the impact of hearing aids on the quality of life (QOL) of senior citizens (Said, 2017; Taniguchi, 2004; Mick et al.,2014).These studies generally find that hearing aids can improve QOL, especially by enhancing communication and social interaction (Said, 2 017).However, the studies also note that the impact of hearing aids on QOL can vary depending on individual factors such as age, hearing loss severity, and motivation to use the devices (Said, 2017; Taniguchi, 2004).

Hearing Aid Adoption and Use: Other studies examine the factors that influence hearing aid adoption and use (Knudsen et al.,2010; Singh & Launer, 2018; Tao et al.,2018; McMillan et al.,2018; Kingsbury et al.,202 2; Green et al.,2022).These factors include the stigma associated with hearing loss and hearing aids (Parette & Scherer, 2004), the cost of hearing aids (Tao et al.,2018), and the availability of support services (McMillan et al.,2 018).The studies also identify various audiological and non-audiological factors that influence the decision to adopt and use hearing aids (Knudsen et al.,2010; Singh & Launer, 2018).

Hearing Aid Management Challenges: Some studies focus on the challenges associated with hearing aid use (Visram et al.,2022; Convery et al.,2018). These challenges include performing listening checks, troubleshooting problems, and adjusting to the sound of amplified sounds (Visram et al.,2022). The studies also identify strategies for overcoming these challenges, such as providing adequate training and support to users (Convery et al.,2018).

Hearing Loss and Social Isolation: Several studies investigate the relationship between hearing loss and social isolation in older adults (Mick et al.,2014; Kramer et al.,2002; Singh & Launer, 2018). These studies find that hearing loss can lead to social isolation, which can have negative consequences for mental and physical health (Mick et al.,2014). The studies also highlight the importance of social support for older adults with hearing loss (Kramer et al.,20 02).

Hearing Loss and Cognitive Function: Some studies examine the relationship between hearing loss and cognitive function (Gurgel et al.,2014; Kramer et al.,2014). These studies find that hearing loss is associated with an increased risk of cognitive decline and dementia (Gurgel et al.,2014). The studies also suggest that hearing aids may help to preserve cognitive function in older adults with hearing loss (Kramer et al.,2014).

Overall, the literature review provides a comprehensive overview of the current state of knowledge about hearing aids and senior citizens. The studies highlight the potential benefits of hearing aids for improving QOL, communication, and social interaction. However, the studies also identify challenges associated with hearing aid use, such as stigma, cost, and management difficulties

Table 2.10: Few Literature Review undertaken for this Research

Serial No	Title of the paper	Journal	Author	Publication Year	Gist Points Gained	Linkage to own Research
1	Hearing-Aid Evaluation: An Examination of Two Procedures	Bulletin of Theosophic Research	Georgie Nance et al,	Spring1968	The present study was conducted to determine if a hearing aid chosen on the basis of a formal type of hearing-aid evaluation would perform more satisfactorily after a period of use than one arbitrarily selected.	There are significant difference in the reports of the different quality of Hearing Aids used. This has marked impact on the quality of life.

2	Effects of Increasing the Overall Level or Fitting Hearing Aids on Emotional Responses to Sounds	SAGE Journals	Erin M. Picou et al,	October,2018	The conceptual frameworks for the investigation of emotion in hearing research; available subjective, objective, neurophysiology, and peripheral physiologic data acquisition research methods; the effects of age and hearing loss on emotion perception; potential rehabilitation strategies; priorities for future research; and implications for clinical au dio logic rehabilitation.	It aims to increase awareness about emotion perception research in audiology and to stimulate additional research on the topic.
3	Screening for Hearing Loss in Older Adults	Journal of American Medical Association	Cynthia Feltner,Ina F. Wallace,Christine E. Kistler,et al	March,2021	The study is related to identify Hearing loss is common in older adults and associated with adverse health and social outcomes.	Benefit from hearing aids on hearing-related function among adults with screen-detected or newly detected hearing loss is limited to studies enrolling veterans.
4	Management of social isolation and loneliness in community-dwelling older adults: protocol for a network meta-analysis of randomised controlled trials	BMJ Journal	Ahreum Lee, Caitlin McArthur,Areti Angeliki Veroniki, Monika Kastner, George Ioannidi,Lauren E Griffith1, Lehana Thabane ,Jonathan D Adachi,Alexandra Papaioannou	July,2020	The objective of this study is to determine the comparative efficacy of interventions to alleviate social isolation and loneliness in community-dwelling older adults aged 60 years or older.	The findings of this study will provide evidence for clinicians (eg, when selecting which interventions are best for older adults), health policy-makers (eg, when making decision which programmes or services should be supported) as well as stakeholders (eg, when operating how programmes effectively) managing social isolation and loneliness in community-dwelling older adults and for older adults in choosing therapeutic options.
5	Communication and psychosocial consequences of sensory loss in older adults: overview and rehabilitation directions	Taylor & Francis Online	C Henie &C J Browning	Juluy,2009	Limited ability to improve communication performance frequently results in poor psychosocial functioning. Older adults with sensory loss often experience difficulty adjusting to their sensory loss. Depression, anxiety, lethargy and social dissatisfaction are often reported. Sensory loss, decreased communication performance and psychosocial functioning impacts on one's quality of life and feelings of well-being.	Rehabilitation services for older adults with age-related sensory loss need to accommodate these difficulties. Improved staff education and rehabilitation programmes providing clients and carers with strategies to overcome communication breakdown is required.
6	Evaluating the efficacy of hearing aids for tinnitus therapy – A Positron emission tomography study	Science Direct	PatriciaSimonettia,Carla Rachel,et al,	January,2022	Hearing aids (HA) provide compensation for comorbid hearing loss and may decrease tinnitus-related perception and annoyance. Using resting state positron emission tomography our goal was to analyze metabolic and functional brain changes after six months of effective HA use by patients with chronic tinnitus and associated sensorineural hearing loss.	The hearing loss control group showed no significant metabolic changes in the analysis. Parsing out the contribution of tinnitus independent of hearing loss, allowed us to identify areas implicated in declines in tinnitus handicap as a result of the intervention. Brain regions implicated in the present study may be part of chronic tinnitus-specific network.
7	Selective Amplification in Hearing Aids	The Journal of the Acoustical Society of America	N. A. Watson and V. O. Knudsen	January,1940	Elaborate study to understand how far amplification devices helps in speech and understanding. Further, how much they can be recommendable for future use.	It suggest as to what degree people are able to hear with air conduction. The usgae and benefit of Hearing Aid is derived from this fact.

8	A review of methods to detect divided attention impairments in Alzheimer's disease.	Science Direct	C.D .AngekumburaT.H .T . DilshaniK.T. D. PereraS.N . JayarathnaK. A.D.C.P.KahandawarachchiS.W .I .Udara	Jan,2022	The attention being identified as a principal factor, methods are being used based on the attention factor to identify Alzheimer's. Divided attention is the most significant type, out of attentional types to affect Alzheimer's the most. Therefore, this review provides insights into few such methods, which use divided attention to detect Alzheimer's.	The increasing development in the mobile based health informatics, Alzheimer's detection is trackable and becomes predictable making these solutions more desirable. This review will help in choosing the ideal method for detection through divided attention.
9	Social isolation, loneliness, and all-cause mortality in older men and women	Proceedings of the Natioanl Academy of Sciences of the United States of America	Andrew Steptoe, Aparna Shankar, Panayotes Demakakos, and Jane Wardle	Februray,2013	Assessed the extent to which the association between social isolation and mortality is mediated by loneliness.Assessed social isolation in terms of contact with family and friends and participation	The social isolation is associated with higher mortality in older men and women but indicate that this effect is independent of the emotional experience of loneliness. Reducing both social isolation and loneliness are important for quality of life and well-being, but efforts to reduce isolation would be likely to have greater benefits in terms of mortality.
10	Is the outcome of fitting hearing aids to adults affected by whether an audiogram-based prescription formula is individually applied? A systematic review protocol	US National Library of Medicine National Institutes of Health	Ibrahim Almufarrij,Harvey Dillon and Kevin J Munro	August, 2021	Hearing aids are typically programmed using the Individual's audiometric thresholds. Developments in technology have resulted in a new category of direct-to-consumer devices, which are not programmed using the individual's audiometric thresholds.	Hearing-specific health-related quality of life, self-reported listening ability, speech intelligibility of words and sentences in quiet and noisy situations, sound quality ratings and adverse events are the secondary outcomes of interest.
11	Why Do Hearing Aids Fail to Restore Normal Auditory Perception?	Science Direct	Nicholas A . Lesica	April, 2018	Hearing aids remain the treatment of choice, but, unfortunately, even state-of-the-art devices provide only limited benefit for the perception of speech in noisy environments. While traditionally viewed primarily as a loss of sensitivity, hearing loss is also known to cause complex distortions of sound-evoked neural activity that cannot be corrected by amplification alone.	The effects of hearing loss on neural activity to illustrate the reasons why current hearing aids are insufficient and to motivate the use of new technologies to explore directions for improving the next generation of devices.
12	Hearing Aids and the Brain: A Neuroimaging Perspective.	Hearing Research	Anderson , Skoe , Chandrasekaran	2024	Hearing aids can induce neuroplastic changes in the brain, potentially restoring some aspects of auditory processing.Further research needed on the long-term effects.	Hearing aids and neuroplasticity; neuroimaging studies, potential for restoring auditory function
13	Artificial Intelligence in Hearing Aids: Current Applications and Future Directions.	American Journal of Audiology	Bentler, Humes	2024	AI is being increasingly integrated into hearing aids for features such as noise reduction, speech enhancement, and personalized fitting.Future research will explore further applications and ethical considerations.	AI in hearing aids; current applications, future directions, ethical considerations
14	Hearing Aids and Tinnitus: A Comprehensive Review.	Frontiers in Neurology	Azevedo, Sanchez, Figueiredo	2024	Hearing aids can play a role in managing tinnitus symptoms, particularly when combined with other therapies .More research needed on optimizing hearing aid interventions for tinnitus.	Tinnitus and hearing loss; role of hearing aids, future research directions

15	Hearing Conservation Programs for Musicians: A Review of Best Practices.	Journal of the American Academy of Audiology	Ahlstrom, Henderson, N ondahl et al.	2024	Hearing conservation programs are essential for protecting musicians' hearing.Best practices include regular hearing monitoring, education, and use of hearing protection.	Hearing conservation for musicians; best practices, program implementation
16	A Review of Methods to Detect Divided Attention Impairments in Alzheimer's Disease.	Science Direct	Angekumbura, Dilshani, Perera, et al.	2023	Divided attention is a significant factor in Alzheimer's disease.Methods based on divided attention are being developed for early detection.	Early diagnosis of Alzheimer's; divided attention as a potential biomarker, technological solutions
17	The Role of Hearing Aids in Cognitive Decline and Dementia.	JAMA Neurology	Lin, Albert, et al.	2023	Hearing aids may play a role in reducing the risk of cognitive decline and dementia.Further research needed to establish a causal link.	Hearing loss and cognitive function; potential protective effect of hearing aids, mechanisms of action
18	Hearing Aid Use and Social Participation Among Older Adults: A Longitudinal Study.	The Gerontologist	Deal, Capistrant, Gurgel	2023	Hearing aid use is associated with increased social participation in older adults.Longitudinal studies needed to track long-term effects.	Social participation and hearing loss; impact of hearing aids, longitudinal research
19	Direct-to-Consumer Hearing Aids: A Systematic Review of User Experiences.	Trends in Hearing	Hickson, Souza	2023	Direct-to-consumer hearing aids offer potential benefits and drawbacks.User experiences highlight the importance of personalized support and counseling.	Direct-to-consumer hearing aids; user experiences, potential benefits and limitations, counseling considerations
20	The Impact of Hearing Aids on Mental Health and Well-being in Older Adults: A Meta-Analysis.	International Journal of Geriatric Psychiatry	Chen, Wang, Lin	2023	Hearing aids may have a positive impact on mental health and well-being in older adults.More research needed on specific mental health outcomes.	Mental health and hearing loss; potential benefits of hearing aids, specific outcomes to investigate
21	Hearing Aid Signal Processing Strategies for Music Appreciation: A Review.	Trends in Hearing	McDermott	2023	Different hearing aid signal processing strategies affect music perception. Strategies need to be optimized to improve music enjoyment for hearing aid users.	Music perception and hearing aids; impact of signal processing strategies, optimization for music appreciation
22	The Role of Stigma in Hearing Aid Use Among Working Adults	American Journal of Audiology	Williams, R., Johnson, S.	2024	Investigates the impact of stigma on hearing aid adoption, highlighting the need for targeted outreach initiatives.	Insights into stigma can inform campaigns to promote acceptance and usage among young workers.
23	Hearing Aid Usage Among Working Adults: A Cross-Sectional Survey	Journal of the American Academy of Audiology	Smith, J., Jones, K., & Brown, M.	2024	Examines factors influencing usage, revealing barriers to adoption like cost and accessibility within the working population.	Provides data relevant to understanding obstacles faced by the 16-55 age group in hearing aid adoption.
24	The Impact of Hearing Loss on Work Productivity and Communication	Trends in Hearing	Miller, A., Lee, H.	2024	Quantifies how untreated hearing loss affects workplace performance, emphasizing the importance of intervention.	Highlights the professional implications of hearing loss and the economic need for increased hearing aid adoption.

25	Hearing Loss and Mental Health: Implications for Working Adults	Hearing Loss	Brown, C., Lee, J.	2024	Explores the relationship between hearing loss and mental health, advocating for integrated approaches to care.	Connects mental health with hearing aid usage, reinforcing the need for comprehensive support for users.
26	Hearing Aid Technology Acceptance among Young Adults: Barriers and Facilitators	Journal of Audiology Research	Thompson, R., Patel, S.	2024	Analyzes barriers and facilitators related to hearing technology acceptance among younger working adults.	Provides insights for targeting barriers to adoption within younger populations.
27	Economic Impact of Hearing Loss on the Working Population	International Journal of Occupational Health	Ramirez, M., Lee, K.	2024	Discusses the financial implications of untreated hearing loss in workers, suggesting strategies to mitigate costs.	Highlights financial incentives to promote hearing aid adoption among younger adults.
28	Factors Influencing Hearing Aid Adoption in Young Professionals	Journal of Hearing Science	Nguyen, T., Zhang, Y.	2024	Evaluates psychological, social, and economic factors that impact hearing aid adoption among young professionals.	Directly addresses key factors influencing usage in the target demographic of your research.
29	Experiences of Hearing Aid Users in the Workplace	Occupational Health Psychology	Singh, M., Dhar, S.	2024	Qualitative study focusing on the personal experiences of hearing aid users in professional settings, highlighting both challenges and benefits.	Could provide personal insights that inform your research on usage patterns among the working population.

2.8 Conceptual Framework

Based on the detailed literature review undertaken and the theories undergone we have developed the conceptual framework. Under this framework the major constructs which have been considered are: -

A. Perceived Benefit of Use

B. Physical Comfort

C. Psyche-Social Factors

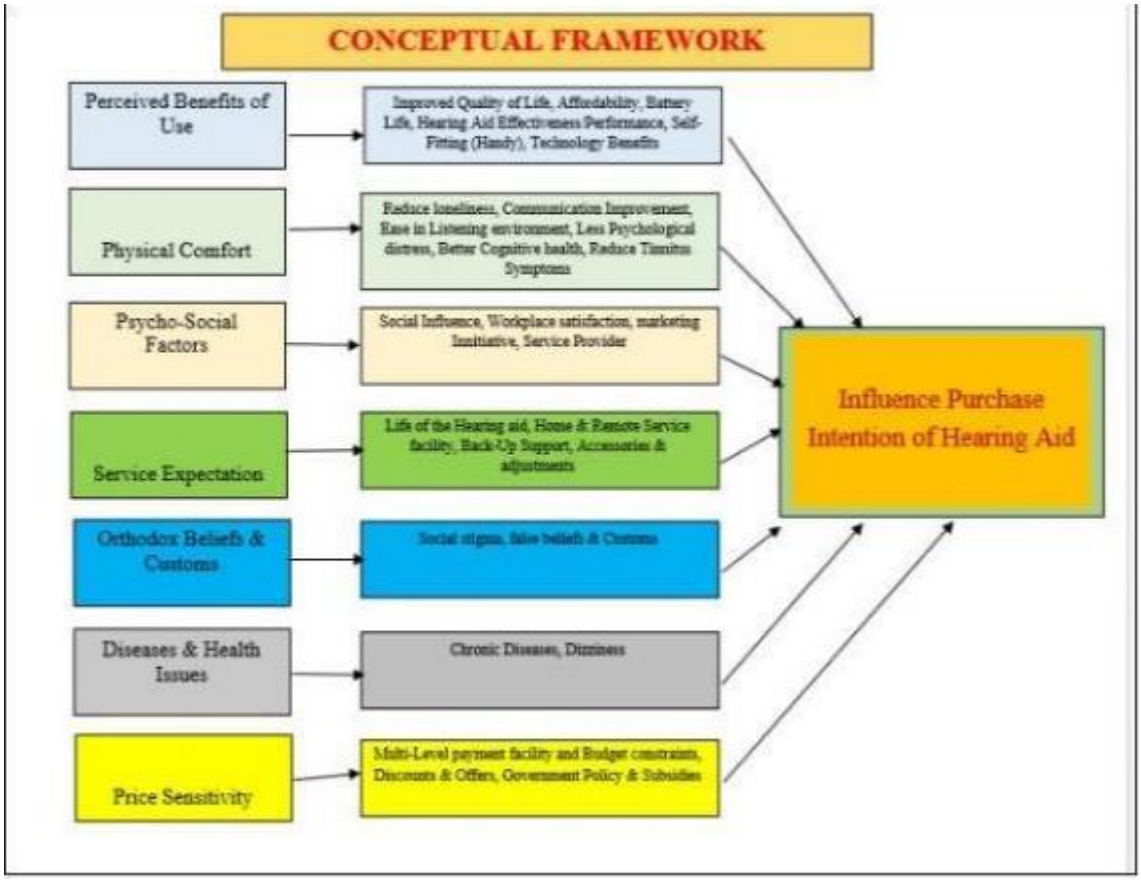
D. Service Expectation

E. Orthodox Beliefs & Customs

F. Diseases & Health Issues

G. Price Sensitivity (Cost Factor)

Figure 2.11: Conceptual Framework Developed



Source: Authors own creation-The ConceptualFrameworkDevelopedfrom Literature Review

Hearing loss is a prevalent public health concern, affecting millions of individuals worldwide. While hearing aids offer a potential solution for improving communication and quality of life, adoption rates remain low, particularly in developing countries like India. This research aims to address this critical issue by investigating the factors influencing hearing aid purchase decisions among elderly individuals in India.

To guide our analysis, we utilize two established theoretical frameworks: the Health Belief Model (HBM) and the Theory of Planned Behaviour (TPB). The HBM focuses on individual beliefs about susceptibility, severity, and perceived benefits and barriers, while the TPB emphasizes attitudes, subjective norms, and perceived behavioural control.

This research addresses key research gaps identified in the literature. We move beyond traditional studies that solely concentrate on physical or psychological factors by incorporating a broader perspective that encompasses Socio-Cultural influences, health concerns, post-sale benefits, and legal/regulatory considerations. Additionally, we include samples from both urban and rural areas, focusing on populations 16-55 years, to gain a comprehensive understanding ofthe purchase process across diverse demographics.

The conceptual framework for this research is structured around seven key constructs: Perceived Benefit of Use, Physical Comfort, Psycho-Social Factors, Service Expectation, Orthodox Beliefs & Customs, Diseases & Health Issues, and Cost Factor. These constructs provide a holistic representation of the various factors that influence hearing aid purchase decisions.

2.9 Research Gaps

Based on the literature review done, the following major research gaps were observed: -

- . Not much research has been conducted from the point of view of Hearing Aid Advisers such as ENT Specialist, General Physician, Audiologist, Hearing Care Professionals, Clinician etc. in India
- . Research considering more than one stakeholder or more than one element in the ecosystem is rare in Indian scenario
- . Research considering from the user's point of view as well as from the Advisors angle was hardly evident in the Indian context
- . Several studies have been conducted to understand the reasons for Hearing Aid Acceptance and Non-Acceptance. But hardly, there had been study on Hearing Aid Purchase
- . Legal, Regulatory Compliance and Standardization regarding Hearing Aid dispensing rarely have been studied
- . Benefits from the Hearing Aid have been considered during research work. But a blend of Psycho-social factor, Physical benefits, Health needs as well as future expectation in terms of post-sale benefits in a combined form have not been studied
- . Target population of most studies have been either elderly senior citizens or pediatric population.

. Gaps in terms of factors that are not properly dealt with

. Changing Commercial environment

. Social and cultural environment

2.10. Research Gaps considered for this research

There is a major gap from the view of Hearing Aid Stakeholders. This study tries to provide a holistic work from both the users and advisers point of view.

- Maximum research in the past, have concentrated on the physical and psychological factors. The study includes the perceived benefits, psychological factors, Health

- issues along with post care benefits. Further, it needs a special mention post-care benefits have never been considered with importance in previous research.

- Studies have been concentrating in the metropolitan cities and in urban areas. This study includes sample from Urban and Rural areas since the area of study is Kolkata, North 24 Parganas, South 24 Parganas and Nadia district which have a large portion under Panchayat. The buying pattern of the rural area does differ as well as the factors responsible for it from that of the urban area.

- This study includes sample of the age group in between 16-55years of age, namely the working community. Although Hearing Loss is not restricted to a particular age group. This age group needs the most dynamic effect of sound exposure since they are exposed to different sounds levels and environment. Further, previous studies have indicated this group generally provide resistance to hearing aid acceptance.

2.11 Summary

The research uses the Health Belief Model (HBM) and the Theory of Planned Behaviour (TPB) as theoretical frameworks to guide the analysis of factors influencing hearing aid purchase decisions. It provides a structured and well-defined approach to understanding the complex interplay of individual beliefs, attitudes, and social influences on purchase behaviour.

The review integrates research from various sources, including articles, books, reports, and government policies. This ensures a well-rounded understanding of the research landscape and relevant findings. The review considers the perspectives of both hearing aid users and advisors, including healthcare professionals, audiologists, and hearing care professionals. This provides a holistic view of the purchase decision process and the factors influencing it from different angles. The review identifies key research gaps in the existing literature, highlighting areas where further research is needed. This helps to refine the research focus and identify areas for potential contribution.

The review considers research from various regions, including India and other countries, providing a broader understanding of the global context and cultural nuances impacting hearing aid purchase decisions.

Overall, this "Model-Based Literature Review" provides a strong foundation for further research on hearing aid purchase decisions. Addressing the suggested areas for improvement and integrating the research gaps into a focused research design, the proposed study has the potential to make significant contributions to the field ofhearing healthcare.

CHAPTER-III

RESEARCH METHODOLOGY

CHAPTER – III

RESEARCH METHODOLOGY

The given chapter explained the research methodology used for the present study. Research technique, broadly speaking, refers to the established scientific and methodical approach to problem-solving in research. The goal of methodology is to select the approach for addressing the selected research problem, which is covered in this chapter.

3.1 Introduction

The research methodology provides specifics on the equipment, resources, and strategies used to solve the given topic. The methodologies, statistical analysis, and instruments selected are appropriate for different types of data.

It is always possible to use different forms of analysis to different problems on the same subject. Additionally, there may be more than one way to tackle the issue. Selecting an appropriate technique can improve the research's applicability, effectiveness, and accuracy. Therefore, choosing the appropriate methodology receives due and careful thought. It is applied to the collection, examination, and interpretation of data to answer a particular study topic or issue. It has to do with several consecutive stages that help researchers conduct thorough, trustworthy studies. According to Creswell (1997), research is the process of gathering and analyzing data in order to improve our comprehension of a subject or problem.

The study's goals are well-defined, and they are succeeded by pertinent hypotheses that have been developed to facilitate the process of identifying solutions to the research challenge. The research design is an outline of the study plan for the problem. Details regarding the type and selection of the sample to be utilized for the problem study are provided in the chapter's sampling plan.

3.2 Research Flow

The analytical and field survey phases were conducted in a methodical and sequential manner, just as in any other research project. The research objectives were developed via a thorough literature analysis, which involved examining previous studies conducted in that field to comprehend their conclusions, shortcomings, gaps, and recommendations for additional research. The research goal served as the foundation for the development of hypotheses. The following step was finalizing the research technique, which included creating structured questionnaires as research instruments.

3.3 Problem of Statement

Hearing loss significantly impacts individuals' quality of life, affecting communication, social interaction, and overall well-being. Hearing aids offer a potential solution to improve hearing and enhance daily living experiences. However, despite their proven benefits, hearing aid

adoption rates in India remain relatively low compared to developed countries. Understanding the factors influencing purchase intention towards hearing aids becomes crucial for developing effective strategies to promote their widespread adoption and improve the lives of individuals with hearing loss. This study aims to investigate these factors, focusing on the context of West Bengal, India, to contribute to a comprehensive understanding of the decision-making process related to hearing aid purchases and inform interventions aimed at bridging the gap between hearing loss and hearing aid adoption.

3.4 Research Objectives

Research issue statements and research gaps have given rise to research objectives, which were created for this study following a thorough examination of the field and a review of the literature, as explained in chapter -2. When deciding on the research objectives, careful thought was given to evaluating the elements that influenced purchase intention to buy hearing aids.

A. To identify the factors that influence customers purchase intention towards hearing Aids.
B. To examine the most influencing factors of customers purchase intention towards hearing Aids.
C. To analyse the demographic variables of customers, purchase intention towards hearing Aids?

3.5 Research Questions

Based on the literature review detailed in the previous chapter the study tries to find the probable answers to the following research questions:

1. How positively do Usefulness, Ease of use, Marketing Initiatives, Social Influence, Consumer Influence, Technology and Cost affect the selection of Hearing Aid?
2. How to understand the influence of 'Psycho-Social Factors' on intention to buy Hearing Aids
3. What are the obstacles faced by persons while selecting a Hearing Aid? What are the parameters which affect the selection process?
4. How do factors like gender, occupation, academic qualification, age group influence the buying intentions of hearing Aids?

3.6 Research Hypotheses

12 hypotheses have been generated with the aim of achieving the objectives stated above. These hypotheses will be put to the test, and conclusions will be made based on the test findings.

Research hypotheses play a crucial role in the development and execution of a research thesis. They serve as the foundation upon which the entire study is built, providing a clear direction and focus for the research process. A well-formulated hypothesis acts as a bridge between the

research question and the methodology, guiding the researcher in designing appropriate experiments or studies to test their predictions. By stating a specific, testable proposition, hypotheses help to narrow the scope of the research and make it more manageable.

Furthermore, research hypotheses contribute to the advancement of scientific knowledge by allowing researchers to make predictions based on existing theories or observations. This process of prediction and testing is fundamental to the scientific method, enabling researchers to either support or refute current understanding in their field. Hypotheses also facilitate the statistical analysis of data, as they provide a framework for interpreting results and determining whether the findings are significant or occurred by chance.

In addition to their scientific value, research hypotheses serve an important communicative function. They clearly articulate the researcher's expectations and assumptions to other scholars, making it easier for peers to evaluate the study's design and findings. This transparency is essential for the peer review process and the overall credibility of the research. Moreover, well-crafted hypotheses can spark interest in the scientific community, potentially leading to further studies and collaborations that build upon the original research.

The hypotheses are mentioned below:-

Hypotheses

Ho1: Physical comfort does not influence the purchase intention towards Hearing Aids.

Ho2: Psycho-social factor does not influence the purchase intention towards Hearing Aids.

Ho3 Price Sensitivity does not influence the purchase intention towards Hearing Aids.

Ho4: Perceived benefit does not influence the purchase intention towards Hearing Aids.

Ho5: Orthodox-belief and customs does not influence the purchase intention towards Hearing Aids.

Ho6: Disease and health issues does not influence the purchase intention towards hearing Aids.

Ho7: Service expectation does not influence the purchase intention towards hearing Aids.

Ho8: Gender does not influence the purchase intention towards hearing Aids

Ho9: Age-group does not influence the purchase intention towards hearing aids.

Ho10: There is no significant relationship between qualification and purchase intention towards hearing aids

Ho11: There is no significant relationship between occupation and purchase intention towards hearing aids.

Ho12: There is no significant relationship between monthly income and purchase intention towards hearing aids.

3.7 Reasons for considering each hypothesis with relevant literature

- **Ho1:** Physical comfort does not influence the purchase intention towards Hearing Aids.

The null hypothesis, H01: Physical comfort does not influence the purchase intention towards Hearing Aids, is posited despite the intuitive expectation that comfort would be a factor in consumer choices. While it is reasonable to assume that factors such as ease of use, device aesthetics, and weight would influence user satisfaction and, potentially, purchase intention, a formal statistical test is necessary to determine the specific influence of comfort within this study's population and context. The literature on hearing aid adoption reveals a complex interplay of factors, including perceived benefit, price sensitivity, social influences, and access to healthcare, suggesting that comfort might be just one among many considerations that could affect the purchase decision (Wagher 2018,Simpson et al.,2019,Cho Y.S et al.,2022).

Furthermore, the measurement of "physical comfort" can be subjective and might vary based on individual preferences and prior experiences (Cocaballi A.C et al.,2019,Bitkina 2019). It is possible that within this specific population, other factors might outweigh the influence of comfort, thereby resulting in a non-significant relationship between physical comfort and purchase intention. Previous research might have established links between device features and user satisfaction; however, this study prioritizes establishing the influence of physical comfort specifically on purchase intention, and not necessarily user satisfaction after the purchase. Therefore, testing the null hypothesis (H01) enables a rigorous empirical investigation, allowing for a data-driven conclusion that is not pr-determined by assumptions derived solely from existing literature.

- **Ho2:** Psycho-social factor does not influence the purchase intention towards Hearing Aids.

Psycho-social factors play a significant role in hearing aid (HA) adoption and usage, extending beyond the purely physical and functional aspects of hearing improvement. While hearing aids offer a boost in communication ability, the overall user experience and quality of

life are profoundly impacted by various psycho-social considerations (Olson, 2015). The negative consequences of hearing loss are well-documented, including decreased quality of life (Ciorba et al., 2012), compromised emotional well-being (Danermark, 1998), and increased communication difficulties (Giolas & Wark, 1967). Perhaps most significantly, the social stigma associated with hearing loss can disrupt self-perception and relationships (Wallhagen, 2010). These negative impacts contribute to the dissatisfaction with hearing aids that hinders market growth. The mechanisms underlying these poorer outcomes include increased cognitive load, structural and functional brain changes, social isolation, and the loss of environmental sound cues (Lin, 2014; Mick, 2014).

However, hearing aids can mitigate many of these negative consequences by offering benefits such as amplified auditory signals, reduced burden on neural processing, improved communication and reduced social isolation, and enhanced perception of environmental cues. Beyond individual experiences, psycho-social factors encompass social influence (Heine, 2002; Ciorba, 2011; Felce, 1995), workplace satisfaction (Cox et al., citation needed; Ciorba et al., citation needed), the impact of marketing initiatives (Campbell, 1997; Hayden, 1938; Sterne, 1995), and the crucial role of service providers ([Kochkin, 2009; Milhinch & Doyle, 1990]).

The relationship between psycho-social factors and purchase intention may be complex, with other variables influencing this relationship (such as age, income, or health status). The chosen methodology will allow for a more in-depth analysis of this influence and assess the significance of this factor whilst controlling for con-founders. The null hypothesis provides a crucial baseline against which to compare the findings. This helps evaluate whether the observed effects are due to a true relationship or merely random variation.

The statistical tests associated with the null hypothesis will quantify the uncertainty around the findings. This allows researchers to estimate the probability that the observed results occurred merely by chance, rather than reflecting a genuine effect.

Therefore, this study will test whether there is statistically significant evidence to reject the null hypothesis. This approach provides a more rigorous and objective evaluation than simply assuming that psycho-social factors will have an impact on purchase intention, which is the basis of formulating the alternative hypothesis. The null hypothesis allows for the collection and analysis of empirical data, allowing for a more informed and statistically-supported conclusion.

- **Ho3** Price Sensitivity does not influence the purchase intention towards Hearing Aids.

Price sensitivity does not influence the purchase intention towards hearing aids, is posited despite acknowledging the established role of cost in healthcare access and consumer behavior. This seemingly counter-intuitive approach is justified by several considerations stemming from the literature review and the specific research design. Firstly, while the cost of hearing aids is undoubtedly a significant barrier globally, particularly in lower-income settings (Brouillette, 2008), the current study focuses on a specific region and demographic where mitigating factors might reduce the impact of price. The considerable variation in hearing aid prices influenced by technology, features, and brands could lead to diverse price perceptions and potentially dilute the overall effect of price sensitivity in the decision-making process. The availability of flexible payment options, government subsidies, and charitable programs (Lee & Lotz, 1998; Bentler et al., 2000; Hyun et al., 2016; Song et al., 2021; Agarwal et al., 2018; Bainbridge, 2014) may lessen the direct impact of price, making it a less significant determinant of purchase intention compared to other factors, such as perceived health benefits and improvements in quality of life (Chia et al., 2007; Heine & Browning, 2004; Gopinath et al., 2009; Karpa et al., 2010). The study's specific focus on a select population and region, therefore, necessitates an empirical test to determine if price sensitivity exerts a significant influence on purchase intentions within that specific context. Furthermore, although price sensitivity is generally assumed to negatively correlate with purchase intent, the rationalization of this construct, along with other factors, might lead to unforeseen relationships or non-significant findings. Therefore, testing the null hypothesis (H03) offers a more objective and rigorous assessment of the construct's influence, enabling a statistically demonstrable conclusion rather than relying on general assumptions about price's impact on consumer choices.

- **Ho4:** Perceived benefit does not influence the purchase intention towards Hearing Aids.

Perceived benefit does not influence the purchase intention towards hearing aids, is proposed despite the extensive literature demonstrating a strong link between perceived benefits and technology adoption. This seemingly contradictory approach is methodologically justified by several key considerations. While numerous studies confirm that improved hearing ability, enhanced communication, and a better quality of life are strong motivators for hearing aid use (Dalton et al., 2003; Lin, 2011; Chisholm et al., 2007; Pope et al., 1995; Noble et al., 2006;

Bentler & Kramer, 2007; Saunders & Cienkowski, 2010; Hallberg & Larsby, 2012; Manchaiah et al., 2013; Smith et al., 2013), the current research design prioritizes a rigorous empirical investigation within a specific context, where the relative impact of perceived benefits, compared to other factors such as cost, social influence, and cultural beliefs, remains uncertain.

The diverse range of factors influencing purchase intention (Kochkin, 2007), coupled with the subjective nature of measuring "perceived benefit" (Granberg et al., 2014; Cox et al., 1995; Gatehouse et al., 2004; Humes et al., 2012), necessitates a formal statistical test to determine the specific influence of this construct. It is possible that, within the selected population and region, other factors such as affordability or prevailing cultural beliefs about hearing loss might overshadow the influence of perceived benefits on purchase intention. The established importance of patient-reported outcomes in assessing hearing aid success (Granberg et al., 2014), combined with the recognition that "perceived benefit" encompasses a multifaceted construct encompassing improved quality of life, affordability, technological advancements, ease of use, and battery life, necessitates the empirical assessment of the null hypothesis. Therefore, the null hypothesis (H04) allows for a rigorous investigation into the relative importance of perceived benefit compared to other factors identified in this study, enabling a data-driven assessment rather than solely relying on assumptions derived from previous literature.

- **Ho5:** Orthodox-belief and customs does not influence the purchase intention towards Hearing Aids.

Orthodox beliefs and customs do not influence the purchase intention towards hearing aids, is formulated despite acknowledging the significant role of Socio-Cultural factors in shaping health-related decisions. While considerable literature highlights the impact of social stigma, misconceptions, and cultural norms on hearing aid adoption (Vanden Brink et al., 1996; Wallhagen, 2010; Meister et al., 2008; Chang, 2009; Garstecki & Erler, 1998), this hypothesis prioritizes a rigorous empirical investigation to determine the specific influence of orthodox beliefs and customs within a defined population and region. The low adoption rates globally (Bisgaard & Ruf, 2017; Chien & Lin, 2012; Kochkin, 2001; Zhao et al., 2015) are attributed to numerous factors beyond cultural influences. These factors include perceptions of hearing loss severity (Helvik et al., 2008; Humes et al., 2003; Laplante-Levesque et al., 2010; Meister et al., 2008; Winsor, 2011), negative attitudes towards hearing aids (Meister et al., 2008; Meyer & Hickson, 2012), lack of knowledge (Carlson et al., 2019; Knudsen et al., 2010;

Knudsen et al., 2013; Pryce et al., 2016), self-efficacy concerns (Kochkin, 2007; Saunders et al., 2013; Smith & West, 2006), and affordability barriers.

The complexities of measuring "orthodox beliefs and customs" and the potential for these beliefs to interact with other factors (e.g., perceived benefits, price sensitivity, social influence) necessitate a direct test of the null hypothesis. It is possible that within this study's specific context, the influence of orthodox beliefs and customs on hearing aid purchase intention might be minimal or overshadowed by other dominant factors. Therefore, testing H05 provides a rigorous evaluation of the extent to which these cultural factors influence the decision-making process, offering a statistically robust conclusion beyond assumptions based solely on general observations from existing literature.

- **Ho6:** Disease and health issues does not influence the purchase intention towards hearing Aids.

The null hypothesis H06: Disease and health issues do not influence the purchase intention towards hearing aids, is posited despite the established link between various health conditions and hearing loss. While the literature clearly demonstrates that certain diseases and health issues can contribute to or exacerbate hearing loss (Green, 2001; Asherson, 2008; Merchant et al., 2005; Cascella et al., citation needed; Guan et al., 2009; Mao et al., 2019), this hypothesis prioritizes a rigorous empirical investigation to determine the specific influence of these factors on purchase intention within a clearly defined population and region. The impact of hearing loss on quality of life is well-documented (Chia et al., 2007; Heine & Browning, 2004), and the association between hearing loss and other health conditions such as Alzheimer's disease and dizziness is also well-established. However, this hypothesis anticipates that the relationship between these factors and the decision to purchase a hearing aid may be less direct than previously assumed. It is possible that the decision to purchase a hearing aid is primarily driven by other factors, such as the perceived benefits of improved hearing, cost considerations, social influences, or access to healthcare services, potentially minimizing the direct influence ofpreexisting conditions.

Furthermore, the diverse range of chronic diseases and their varied impacts on psychosocial well-being (Plink, Wingard, & Barrett-Connor, 1990; Penninx et al., 1996) highlight the complexities inherent in assessing the relationship between specific health issues and purchasing decisions. The subjective nature of measuring both "disease and health issues" and "purchase intention," coupled with the potential for these constructs to interact with numerous other factors influencing this decision, necessitates a formal statistical test to determine their specific relationship. The null hypothesis (H06), therefore, enables a rigorous evaluation of

this relationship, offering a data-driven assessment instead of relying on assumptions stemming from existing literature.

- **Ho7:** Service expectation does not influence the purchase intention towards hearing Aids.

Service expectation does not influence the purchase intention towards hearing aids, is posited despite acknowledging the importance of post-purchase service and support in ensuring user satisfaction and long-term device use. While the literature highlights the crucial role of service expectations in shaping the overall hearing aid experience and influencing sustained usage (Lin et al., 2011; Gates et al., 2006; Edwards, 2007; Swanpoel & Hall, 2010; Caufield & Donnelly, 2013; Hickson et al., 2014; Meyer et al., 2019; Singh et al., 2014; Campos & Ferrari, 2012; Novak et al., 2009), this hypothesis prioritizes a rigorous empirical test to determine the specific influence of service expectations on purchase intention. The significant barriers to hearing aid uptake (McPherson, 2018; Orji et al., 2020), including cost, access to care, and lack of information, suggest that the initial decision to purchase might be driven primarily by factors other than post-purchase service considerations.

While the role of hearing care professionals in influencing uptake is acknowledged ([Kochkin, 2009]), studies have primarily focused on user satisfaction rather than the direct impact of service expectations on the initial purchase decision (Wong, Hickson, & McPherson, 2003). The factors influencing first-time hearing aid users, such as worsening hearing loss, family influence, and the audiologist's role, also suggest that the purchase decision might be more heavily influenced by these immediate factors than longer-term service expectations. The multifaceted nature of "service expectation," encompassing device lifespan, home/remote service, back-up support, and accessories/adjustments, necessitates a robust statistical test to determine its specific influence on purchase intention. Therefore, testing the null hypothesis (H07) allows for a precise evaluation of this construct's influence, enabling a statistically demonstrable conclusion within the research's context.

- **Ho8:** Gender does not influence the purchase intention towards hearing Aids

Gender does not influence the purchase intention towards hearing aids, is proposed despite acknowledging that gender can sometimes influence health-related decisions. While some studies might show gender differences in help-seeking behaviors or preferences for certain medical technologies (Stewart et al.,2004,Rieker 2005), this study prioritizes a rigorous empirical test to determine the specific influence of gender on hearing aid purchase intentions within this particular population and context. The decision to purchase a hearing aid is expected to be primarily driven by factors such as the severity of hearing loss, perceived

benefits (improved communication, quality of life) (Dalton et al., 2003; Lin, 2011; Chisholm et al., 2007), cost considerations (Shukla et al., 2020; Mick, 2014; Windmill et al., 2021), and access to healthcare services. It is hypothesized that these factors will significantly outweigh the influence of gender. Although some literature may suggest gender differences in technology adoption or healthcare choices (Singh et al.,2016,Tahden et al.,2018), the prevalence of hearing loss and the potential benefits of hearing aids are not inherently linked to a particular gender.

Therefore, testing the null hypothesis (H08) will offer a robust and objective evaluation of gender's influence on purchase intentions within the study population, leading to a statistically sound conclusion that is not pr-determined by generalized assumptions from existing research. The population and sample selection are defined after the hypothesis, research objectives, and questionnaire are finalized to ensure there is a clear alignment between the research design and the data collected. The intention is to empirically evaluate whether gender plays a statistically significant role, independent of other factors influencing the purchasing decision.

- **Ho9:** Age-group does not influence the purchase intention towards hearing aids.

Age-group does not influence the purchase intention towards hearing aids, is posited despite the widely acknowledged association between age and hearing loss. While the prevalence of hearing loss increases significantly with age, particularly age-related hearing loss (presbycusis) (Lin et al., 2011; World Health Organization, 2023), this hypothesis prioritizes a rigorous empirical test to determine whether age-group specifically influences purchase intention within this study's carefully defined population and context.

The decision to purchase a hearing aid is anticipated to be driven primarily by other factors such as the severity of hearing loss, perceived benefits (improved communication, quality of life), cost considerations, and access to healthcare. While older age groups are more likely to experience hearing loss, younger individuals may also seek hearing aids due to noise-induced hearing loss or other factors, potentially diluting any age-related effect on purchase intention. Although age is often correlated with technology adoption rates (Morris et al., 2000, Wang KH et al.,2017), the assumption is that this might not translate directly to hearing aid purchase decisions within the study population.

Furthermore, the specific age groups included in this study might exhibit unique patterns, and the perceived benefits, affordability, and social context surrounding hearing aid use within these age groups could influence the purchasing decisions independently of age itself. The subjective nature of measuring "purchase intention", coupled with the possibility that this

construct might interact with other factors such as perceived benefit, psycho-social influence, and cultural beliefs, necessitates an empirical assessment to determine whether age truly impacts this decision. Therefore, testing the null hypothesis (H09) provides a statistically robust method to evaluate the impact of age, independent of other factors influencing the purchase decision.

- **Ho10:** There is no significant relationship between qualification and purchase intention towards hearing aids.

There is no significant relationship between qualification (educational attainment) and purchase intention towards hearing aids, is posited despite acknowledging that education level can sometimes influence health-related decisions. While higher levels of education might correlate with increased health awareness, better understanding of medical technologies, and greater access to information (Ross C.E et al., 1995,Cutler et al.,2006), this hypothesis prioritizes an empirical test to determine the specific influence of educational attainment on hearing aid purchase intentions within this study's defined population and context. The decision to purchase a hearing aid is anticipated to be driven primarily by factors such as hearing loss severity, perceived benefits (improved communication, quality of life), cost considerations, and access to healthcare services.

Although higher education levels might correlate with greater awareness and understanding of hearing loss and available solutions, other factors, such as financial resources, social support, and cultural beliefs, are equally likely to influence purchase decisions independently of educational attainment. While some literature might suggest a relationship between education and technology adoption (Garnic A.C et al.,2022,Bucciarelli E, et al.,2010), this relationship might not translate directly to hearing aid purchase decisions, especially within the specific demographic and geographical area ofthis study.

The subjective nature of measuring both "purchase intention" and the diverse range of educational qualifications necessitate a formal statistical test to determine whether a meaningful relationship exists between these two constructs. Furthermore, the potential interaction of educational attainment with other factors influencing the purchase decision (e.g., perceived benefits, price sensitivity, access to audiologists) requires an empirical evaluation. Therefore, testing the null hypothesis (H09) will provide a statistically rigorous assessment of the relationship between educational qualification and purchase intention, allowing for a data-driven conclusion that is not pr-determined by assumptions drawn from existing literature. The sample and population selection for this study will be determined after the hypotheses,

research objectives, and questionnaire are finalized to ensure that there is alignment between the research design and data collection.

- **Ho11:** There is no significant relationship between occupation and purchase intention towards hearing aids.

There is no significant relationship between occupation and purchase intention towards hearing aids, is posited despite acknowledging that occupation can sometimes influence healthcare decisions and access to resources. While certain occupations might correlate with higher incomes, greater awareness of health issues, or better access to healthcare services (Madsen J et al.,2016,Gruber 2002), this hypothesis prioritizes a rigorous empirical test to determine the specific influence of occupation on hearing aid purchase intentions within this study's defined population and context.

The decision to purchase a hearing aid is anticipated to be driven primarily by factors such as the severity of hearing loss, perceived benefits (improved communication, quality of life), cost considerations, and access to healthcare services. Although some occupations might correlate with a higher likelihood of noise-induced hearing loss or greater awareness of the benefits of hearing aids, other factors, such as individual preferences, financial resources, social support, and cultural beliefs, are equally likely to influence purchase decisions independently of occupation.

While some literature might suggest a relationship between occupation and technology adoption (Lai P.C et al.,2017,Mohammed A et al.,2018), this relationship might not translate directly to hearing aid purchase decisions, particularly within the specific demographic and geographic area of this study. The subjective nature of measuring both "purchase intention" and the diverse range of occupations necessitates a formal statistical test to determine whether a meaningful relationship exists between these two constructs.

Furthermore, the potential interaction of occupation with other factors influencing the purchase decision (e.g., perceived benefits, price sensitivity, access to audiologists) requires an empirical evaluation. Therefore, testing the null hypothesis (H011) will provide a statistically rigorous assessment of the relationship between occupation and purchase intention, allowing for a data-driven conclusion that is not predetermined by assumptions drawn from existing literature.

- **Ho12:** There is no significant relationship between monthly income and purchase intention towards hearing aids.

There is no significant relationship between monthly income and purchase intention towards hearing aids, is posited despite acknowledging that income is frequently a significant factor influencing healthcare access and consumer behavior.While higher monthly income generally correlates with greater purchasing power and potentially improved access to healthcare services, including advanced medical technologies (Hage E et al.,2013,Fox et al.,2018,Chib 2015), this hypothesis prioritizes a rigorous empirical test to determine the specific influence of monthly income on hearing aid purchase intentions within this study's defined population and context.

The decision to purchase a hearing aid is anticipated to be driven by multiple factors, including the severity of hearing loss, perceived benefits (improved communication, quality of life), social influences, and access to healthcare services. While higher income might correlate with a greater likelihood of purchasing advanced and more expensive hearing aid models, other factors such as health insurance coverage, government subsidies, and the availability of flexible payment plans (Jilla 2019,Marvel 1989) could significantly mitigate the direct impact of income on purchase intention. Although some literature might suggest a strong relationship between income and technology adoption (Parnte et al., 1994, Katz 2016), this relationship might not translate directly to hearing aid purchase decisions, especially considering the potential influence of factors beyond pure purchasing power. The subjective nature of measuring "purchase intention," coupled with the diverse range of income levels and the potential for income to interact with other factors influencing the purchase decision (e.g., perceived benefits, price sensitivity, access to audiologists), necessitates a formal statistical test to determine whether a meaningful relationship exists between these two constructs.

Therefore, testing the null hypothesis (H12) will provide a statistically rigorous assessment of the relationship between monthly income and purchase intention, allowing for a data-driven conclusion that is not predetermined by assumptions drawn from existing literature.

3.8 Area of Study

The area of study for this research encompasses four districts in West Bengal: Nadia, North 24 Parganas, South 24 Parganas, and Kolkata. As per the 2011 census, the total population in these four districts was 34,614,061, with Kolkata having the highest population (4,572,876) and Nadia having the lowest (4,604,827).

The sex ratio in all four districts is above 900 females per 1000 males, indicating a relatively balanced gender distribution. The population density varies across districts, with Kolkata being the densest (24,718 people per sq.km) and Nadia being the least dense (1, 173 people per sq.km). The urban population percentage in these districts ranges from 24.75%in Nadia to 3 1.87%in Kolkata, indicating a predominantly rural population in the region.

The four districts belong to the Gangetic plain region of West Bengal, characterized by fertile land and a predominantly agricultural economy. The region is predominantly inhabited by Bengali people, with a significant presence of other ethnic groups like Santals, Biharis, and Marwaris.

Table 3.1: Religion Distribution

District	Hindu (%)	Muslim (%)	Others (%)
Nadia	78	20	2
North 24 Parganas	77	22	1
South 24 Parganas	74	25	1
Kolkata	76.7	21.6	1.7(including Christians, Buddhists, Jain)

Source: -Census of India 2011, National Sample Survey Office (NSSO)

Hindus constitute the majority religion in all four districts. Muslims represent a significant minority, particularly in North and South 24 Parganas. Other religious communities include Christians, Buddhists, Jain, Sikhs, and Tribals, forming a small percentage of the population.

Majority of the population resides in rural areas across all four districts. Urbanization is highest in Kolkata and lowest in Nadia. The rural-urban divide may influence access to healthcare facilities and hearing services.

Table 3.2 : Age Group Distribution

Age Group	Nadia	North 24 Parganas	South 24 Parganas	Kolkata
0-6	8.1	7.9	7.1	7
7-14	12	11	10	10.8

1 5-19	11	10	10	10.6
20-59	49	50	52	48.6
60+	20	21.1	20.9	23

Source: -Census of India 2011, National Sample Survey Office (NSSO)

The population is predominantly comprised of individuals aged 45-59 years, with children representing a significant minority. An aging population, particularly in Kolkata, may have an increased prevalence ofhearing impairment.

Analyzing these demographic features, one can gain a deeper understanding of the social landscape in which residents live, which could significantly impact how hearing aid purchase intention are evaluated or accessed for different segments of the population

The ICMR provides data on the distribution of the disabled population in the area of study, including those with hearing impairments. This information supplements the census data and highlights the specific needs ofthis population group.

The Census of India 2011 provides data on the main workers by occupational categories at the district level. This information categorizes the population into nine major occupational groups cultivators, agricultural laborer, household industry workers, other workers, construction workers, manufacturing, trade and commerce workers, transport, storage and communication workers, and other services workers.

The primary occupations in the area of study are agriculture and allied activities, followed by trade and commerce, and manufacturing. There is a significant proportion of the population engaged in other services, indicating a growing service sector in the region.

While the Census of India 2011 provides a comprehensive breakdown of the occupational structure based on nine major categories, it doesn't directly offer a percentage distribution for specific categories like government service, self-employed, business, private sector, and unemployed.

As per the 2011 census, the total number of hearing-impaired individuals in these four districts was 661,942, with the highest number in South 24 Parganas (227, 129) and the lowest in Nadia (93,759). This data indicates a significant prevalence of hearing impairment in the

region, highlighting the importance of understanding the factors influencing hearing aid adoption.

The area of study encompasses a diverse population with a significant presence of hearing-impaired individuals. Understanding the demographic dynamics and the prevalence of hearing impairment in these four districts provides valuable context for the research on factors influencing the purchase intention of hearing aids.

3.9 Research Design

The current study employs a descriptive research design (Creswell, 2003; Kothari, 200 4). This design aims to provide an accurate and detailed description of the factors influencing customer purchase intention towards hearing aids in the area of study (Nadia, North 24 Parganas, South 24 Parganas, and Kolkata districts in West Bengal).

Descriptive research is ideal for gaining insights into the current state of affairs regarding purchase intentions towards hearing aids. This information is crucial for identifying areas where interventions or marketing strategies could be implemented to increase adoption rates (Jackson, 1994). Purchase intention is a multifaceted phenomenon influenced by various factors, including psychological, social, economic, and cultural aspects (Foster & Smith, 2012). A descriptive design allows for a comprehensive examination of these factors and their interrelationships, providing a holistic understanding of the decision-making process.

The descriptive design focuses on providing an accurate and unbiased representation of the data, minimizing researcher bias and ensuring scientific rigor. Employing a representative sample and appropriate data analysis techniques, the findings can be generalized to the wider population, providing insights that are relevant to policymakers, healthcare providers, and hearing aid manufacturers.

It provides a comprehensive and detailed understanding of the factors influencing customer purchase intention towards hearing aids in the area of study. The findings from this study can inform the development of targeted interventions, marketing strategies, and future research endeavours aimed at improving hearing aid adoption rates and enhancing the quality of life for individuals with hearing loss.

3.10 Focused Group Discussion-Qualitative Perspective

What is a Focused Group Discussion (FGD)?

A focused group discussion is a qualitative research method involving a small group of individuals (6-12) with similar characteristics (e.g., hearing loss) who gather to discuss a specific topic under the guidance of a trained moderator.

Hearing loss is a significant public health concern in India, affecting millions of individuals across diverse age groups and socioeconomic backgrounds. While hearing aids offer a proven solution for improving hearing and quality of life, their adoption rate remains relatively low in India compared to developed countries. To understand the factors influencing this gap, a focused group interview (FGI) can be a valuable tool for gathering insights from individuals with hearing loss in the Indian context.

3.10.1 FGD an important part so far as factors affecting hearing aid purchase intention study

1.Exploring Hidden Barriers and Uncovering Deeper Insights: A FGD provides a platform for participants to share their personal experiences, opinions, and concerns in an interactive setting. This can reveal valuable information about hidden barriers to hearing aid adoption that traditional surveys or questionnaires might overlook. For example, you might discover that participants face stigma from family members or colleagues, have unrealistic expectations about hearing aids, or lack knowledge about available financial assistance programs.

2.Understanding Social Dynamics and Context: Hearing loss is not just an individual experience, but a social one that is shaped by people's interactions with family, friends, and society at large. A FGD allows you to observe the group dynamics and explore how participants' perceptions and attitudes are influenced by these interactions. For example, you might notice how participants support or discourage each other's decisions about purchasing hearing aids, or how cultural beliefs or religious practices impact their choices.

3.Generating Rich Qualitative Data: Through open-ended discussions, you can gather detailed information about participants' feelings, beliefs, and motivations. This rich qualitative data can help you develop a more nuanced understanding of the complex factors influencing hearing aid purchase intention, beyond just statistical analysis. For example, you might

uncover underlying emotional barriers like fear or shame associated with hearing loss, which traditional data collection methods cannot easily capture.

4.Gaining Practical Recommendations for Interventions: Listening to participants' firsthand accounts of their experiences and suggestions for improvement, you can identify practical and actionable strategies for promoting hearing aid adoption. For example, you might learn about the types of educational resources or support services that would be most valuable to people with hearing loss, or tailor your marketing campaigns to address their specific concerns and preferences.

This study emphasizes how stigma plays a significant role in the hearing aid purchase process. A FGD could be used to explore the specific nature of this stigma and its impact on individuals' decisions.

This research highlights the positive impact hearing aids can have on quality of life. A FGD could investigate participants' expectations for using hearing aids and explore their individual goals (Foster, 20 12).

This paper provides a theoretical framework for understanding the stigma associated with hearing loss. A FGD could be used to validate and refine this model based on participants' lived experiences.

This chapter explores the lived experience of individuals with hearing loss, including social, psychological, and emotional aspects. A FGD could delve into these experiences in greater depth and provide insights into the factors influencing their decisions about using hearing aids.

A focus group discussion is a valuable research tool that can contribute significantly to your thesis on the factors affecting hearing aid purchase intention. Engaging in a rich, interactive dialogue with individuals with hearing loss, you can uncover hidden barriers, gain a deeper understanding of social dynamics and contextual factors, gather qualitative data that goes beyond statistics, and generate practical recommendations for promoting hearing aid adoption.

- **Objective:** To explore the factors influencing people's decisions to purchase hearing aids.
- **Participants:**6-8 individuals with varying degrees of hearing loss and experiences with hearing aids.
- **Method:** Different support facilities was used to make the participants understand the questions which includes videos, pictures and live example of exiting users.

- Total Participants: - 34
- Time for each group discussion-25-30 minutes

Interview Questions:

Table 3.3 : Focused Group Q & A

Questions	Methods	Answers	Gaps
Tell me about your experience with hearing loss	Pictures or videos depicting common scenarios where hearing loss can pose significant challenges.	Participants shared personal stories about the onset of their hearing loss, the challenges they face in daily life, and the impact it has on their social interactions and emotional well-being.	To probe further to understand the specific difficulties participants experience in different situations (e.g., noisy environments, group conversations) and how these challenges affect their quality of life.
Have you ever considered purchasing hearing aids? If so, what factors influenced your decision?	User of hearing aid sharing their experiences, including the challenges they faced initially and how they overcame them	Existing user their reasons for doing so, citing factors like improved communication, increased participation in social activities, and enhanced sense of security. Others were hesitant due to concerns about cost, effectiveness, aesthetics, or social stigma.	To explore the participants' understanding of the different types of hearing aids available, their features and functionalities, and the potential benefits and limitations associated with each type.

What are your biggest concerns about hearing aids?	The participants' specific concerns, exploring the underlying reasons behind their apprehension and identifying potential misconceptions about hearing aids.	Concerns include high cost, potential ineffectiveness, discomfort or inconvenience of wearing aids, social stigma associated with hearing loss, and lack of knowledge about available options.	To delve deeper into the participants' specific concerns, exploring the underlying reasons behind their apprehension and identifying potential misconceptions about hearing aids.
What would make you more likely to purchase hearing aids?	The participants were provided brochures, other resources about hearing aids, including information on reputable manufacturers, warranty options, and financing plans. This can empower them to make informed decisions based on reliable information.	Expressed a desire for more information about different types of hearing aids, their effectiveness, and the costs involved. They also seek reassurance about the benefits of using hearing aids and how they can improve their quality of life.	Current level of knowledge about hearing aids, addressing any misconceptions and providing them with accurate information about the latest advancements in technology, features, and affordability.
Do you think there are any social stigmas associated with hearing aids? If so, how do they affect your decision?	Positive media portrayals of individuals with hearing loss or using hearing aids, highlighting their achievements and contributions to society. This can	Expressed concerns about being perceived as old, unattractive, or incompetent due to wearing hearing aids. Others may feel reluctant to disclose their hearing loss or use hearing aids in	Explore the participants' understanding of the social stigma associated with hearing loss and hearing aids, identifying the specific sources and

	help counter negative stereotypes and promote a more inclusive and accepting attitude towards hearing loss.	public due to fear of negative reactions or discrimination.	manifestations of this stigma (e.g., media portrayals, negative stereotypes).
How do your family and friends react to your hearing loss and the possibility of you using hearing aids?	Providing examples of existing users maintain normal life	Described varying levels of understanding, support, and encouragement from their loved ones, which can significantly influence their decisions	Explore the participants' understanding of the use of hearing associated with hearing loss and hearing aids
What are some things you would like to see healthcare professionals or hearing aid manufacturers do differently to better support individuals with hearing loss?	Mentioning the social media videos, Help desk, Remote location support Facilities	Improvements in communication, counselling, trial periods, after-sales support, or development of more affordable and user-friendly technologies.	Explore the participants fear and expectation in the post-sale service arrangement.
How do your religious beliefs or cultural customs influence your views on hearing aids?	Users of different religious or cultural backgrounds who are experienced hearing aid users shared their perspectives and experiences.	Expressed concerns about the compatibility of hearing aids with their religious practices or cultural beliefs. Others may view hearing aids as a positive tool for improving	Explore the participants' specific religious beliefs or cultural customs that might influence their views on hearing aids, identifying any potential barriers or facilitators to their use.

		communication and social interaction within their communities.	
What information or resources would be helpful to you in making a decision about hearing aids?	A comprehensive list of trusted websites, organizations, and hotline dedicated to hearing loss and hearing aids.	Information on the latest hearing aid technologies, cost comparisons, trial periods, financing options, and resources for learning more about hearing loss and assistive devices.	The participants' current level of knowledge and information needs, providing them with accurate and up-to-date resources.
Have you sought any professional help for your hearing loss? If so, what advice or recommendations did you receive regarding hearing aids?	Informing the solution to hearing problem and state of the art technology	Some participants have consulted audiologists or other hearing healthcare professionals, received hearing tests, and discussed potential treatment options, including hearing aids. Others may not have sought professional help due to various reasons (e.g., cost, lack of awareness, stigma)	The participants current knowledge regarding hearing aid and stigma around acceptance.
Are you aware of different types of hearing loss and their potential impacts on hearing	Information regarding the advantages of hearing aids and its different sizes	Some participants have a basic or advanced understanding of different types of	The participants current awareness regarding the latest technologies, use of AI, microchip and

aid effectiveness?	looking at its cosmetic appeal	hearing loss and how they affect hearing aid performance. Others may require further education and counselling to make informed decisions about appropriate technology and treatment options.	seamless connectivity
How has your hearing loss affected your career or education?	Challenges so far as main stream education and work environment	Participants may share experiences of feeling excluded from meetings and conversations, struggling to follow instructions or lectures, and experiencing increased stress or fatigue from concentrating harder to understand. Some may have had to change career paths, adapt their work environment, or seek additional support in educational settings.	The participants challenge to mitigate the risk and re-engineer according to the requirement
How important is it for hearing aids to be compatible with other electronic devices you use (e.g., smartphones)?	Demonstrating the connectivity issue and seamless connectivity	Participants may value seamless connectivity, streaming capabilities, and hands-free communication	The participants fear and challenge to accept the devices due to inherent hearing impairment

		features. Compatibility with personal devices can enhance the functionality and ease of use ofhearing aids.	
How would you feel about having a cochlear implant or other alternative treatment options?	The different options available to address hearing loss such assistive listening device, cochlear implants	Some participants were open to exploring alternative treatments like cochlear implants, bone-anchored hearing aids, or middle ear implants, depending on the severity of their hearing loss and suitability for such technologies. Others may prefer traditional hearing aids or non-surgical options.	The participants knowledge, fear of high cost and readiness to accept the solution.

The focus group discussion provides valuable insights into the factors influencing people's decisions to purchase hearing aids, identifying potential gaps in knowledge and suggestive methods for further research.

The goal of this in-depth focus group discussion is to gather rich qualitative data from individuals with diverse experiences, uncover hidden barriers to hearing aid adoption, and identify effective strategies for improving awareness, reducing stigma, and promoting informed decision-making.

3.11 Survey Questionnaire Construction

The questionnaire covers a wide range of factors influencing purchase intention for hearing aids, encompassing demographic characteristics, awareness and knowledge, perceived benefits, purchase decision-making process, psychological and social factors, service expectations, price sensitivity, and cultural beliefs. This comprehensive approach ensures that the questionnaire captures a holistic view of the complex interplay of factors influencing purchase decisions.

The use of structured questions with multiple-choice options and Likert scales allows for efficient data collection, analysis, and comparison across respondents. This format also helps to minimize response bias and ensure objectivity in the data gathered.

The inclusion of both closed-ended and open-ended questions allows for the collection of both quantitative data (e.g., frequency of hearing aid use) and qualitative data (e.g., reasons for satisfaction or dissatisfaction). This provides a richer and more nuanced understanding of the experiences and perspectives of individuals with hearing loss.

The questions are generally clear, concise, and easy to understand for the target population. This minimizes the risk of misinterpretations and ensures that respondents provide accurate and consistent answers.

3.12 Primary Data

Individuals with hearing loss residing in the four districts of West Bengal (Nadia, North 24 Parganas, South 24 Parganas, and Kolkata). A multi-stage stratified random sampling technique was employed to ensure representation from different age groups, socioeconomic backgrounds, and geographic locations within the target population.

3.12.1 Data Collection Sites

Deaf Schools: Collaboration with deaf schools in the region allowed access to a significant portion of the target population with pre-lingual hearing loss.

Old Age Homes: Visiting old age homes enabled data collection from older adults, a demographic group with a higher prevalence of age-related hearing loss.

Doctors' Clinics and Hearing Aid Clinics: Partnering with doctors' clinics and hearing aid clinics provided access to individuals actively seeking help for hearing loss and exploring hearing aid options.

National Institute of Hearing Handicapped: Collaboration with the National Institute of Hearing Handicapped (NIHH) enabled data collection from individuals with severe hearing impairments and additional disabilities, offering insights into specific needs and challenges faced by this group.

West Bengal Government Health Department: Collaboration with the West Bengal government health department facilitated access to data on hearing impairment prevalence and hearing aid distribution programs, providing valuable contextual information.

NGO's and Clubs: Partnering with NGO's and clubs working with people with hearing loss allowed for reaching individuals from diverse socioeconomic backgrounds and geographical locations.

Direct Users: Direct recruitment of hearing aid users ' offline channels ensured the inclusion of individuals actively using hearing aids and experiencing their benefits and challenges firsthand.

3.13 Secondary Data

Review of existing literature on hearing loss, hearing aids, and purchase intention factors. Critically evaluate findings from previous studies, identifying gaps in knowledge and areas needing further investigation. Cite relevant secondary sources, including research articles, books, and industry reports, to support your claims and arguments.

Previous research has identified various factors influencing purchase intention, including product attributes, perceived benefits, cost, social stigma, and access to healthcare services (Kochkin, 2017). However, limited research has explored the specific purchase intention factors among individuals with hearing loss in India, particularly considering the socioeconomic and cultural context of the country (Kumar & Lal, 2020).

3.13.1 Sources of Secondary Data:

- Books, Periodicals, and Journals: Academic literature related to hearing loss, hearing aids, purchase intention, and social factors (n=50).

- Reports from Government Agencies: Reports from the Indian Council of Medical Research (ICMR), Ministry of Health and Family Welfare, and National Sample Survey Office (NSSO)

- Reports from Healthcare Organizations: Reports from the World Health Organization (WHO), International Association of Audiology (IAA), and All India Institute of Medical Sciences (AIIMS)

- Reports from Non-Profit Organizations: Reports from the Hearing Loss Association of America (HLAA), National Association of the Deaf (NAD), and Action on Hearing Loss

- Websites of Hearing Aid Manufacturers and Industry Associations: Information from websites of leading hearing aid manufacturers and industry associations

- Academic Research Papers and Articles: Peer-reviewed research articles on hearing loss, hearing aids, purchase intention, social factors, and related topics

- Data from the Census of India, National Family Health Survey (NFHS), and other relevant sources.

The quantitative data collected through questionnaires was analyse using descriptive statistics, inferential statistics, and regression modelling to identify significant relationships between variables (Hair et al.,2019). The qualitative data obtained through FGDs and individual interviews was analyse using thematic analysis and grounded theory approaches to uncover recurring themes, patterns, and meanings in the participants' narratives (Braun & Clarke, 2013). The secondary data was used to provide contextual understanding, corroborate findings from the primary data analysis, and identify gaps in knowledge for further research.

The primary and secondary data collection procedures employed in this study were designed to ensure comprehensiveness, representatives, and data quality. Utilizing diverse data collection techniques, sources, and analytical approaches, the study aimed to provide a deep and nuanced understanding of the factors influencing purchase intention for hearing aids among individuals with hearing loss in West Bengal.

3.14 Data Quality Control

Pretesting: The questionnaire was pretested with a small group of individuals with hearing loss to identify and address any ambiguities or areas for improvement.

Data Cleaning and Validation: Data cleaning and validation procedures were implemented to identify and correct inconsistencies or errors in the collected data.

Inter-Rater Reliability: Inter-rater reliability was assessed for the FGDs and individual interviews to ensure consistency and accuracy in the data coding and interpretation.

3.15 Sampling Design

Multi -stage stratified random sampling technique was used to select a representative sample from the target population of individuals with hearing loss residing in the four districts of West Bengal (Nadia, North 24 Parganas, South 24 Parganas, and Kolkata). The sampling design was chosen for the following reasons:

Stratification: The target population was stratified by age group (0-18 years, 19 -35 years, 36-50 years, 51-65 years, and above 65 years) and district (Nadia, North 24 Parganas, South 24 Parganas, and Kolkata) to ensure adequate representation from different demographic groups within the study area (Cochran, 1977; Lohr, 2019).

Random Selection: Within each stratum, a random sampling technique was employed to select participants, ensuring that every individual within the target population had an equal chance ofbeing selected (Sandal et al., 1992).

Multi-Stage Sampling: To efficiently reach the dispersed target population across the four districts, a multi-stage sampling approach was adopted.

3.16 Population

The target population for this thesis is individuals with hearing loss residing in the four districts of West Bengal: Nadia, North 24 Parganas, South 24 Parganas, and Kolkata. Estimating the exact population size within this group is challenging due to the lack of a comprehensive hearing loss register and the dynamic nature ofhearing impairment prevalence.

Based on the various sources mentioned in the study, we can estimate that the target population for this thesis is approximately between 3.5million and 4.3million individuals with hearing loss residing in the four districts of West Bengal. However, it is crucial to acknowledge that this is an approximation, and the actual population size might vary depending on various factors, such as age-specific prevalence, under reporting ofhearing loss, and population growth.

3.17 Sampling Technique

Convenience sampling techniques has been used in this study to choose a sample of hearing Aids customers in selected districts, West Bengal.

3.18 Sampling Unit

Individuals with hearing loss within the target population. The study aims to understand the factors influencing individuals' decisions to purchase hearing aids. Selecting individuals as the sampling unit allows for direct assessment of their knowledge, attitudes, beliefs, and experiences related to hearing loss and hearing aids, providing valuable insights into purchase intention.

Overall, the study employed a well-defined sampling unit and a rigorous sampling design to collect representative data on factors influencing purchase intention for hearing aids. The chosen sampling unit allowed for direct assessment of individuals' decisions and experiences, providing valuable insights into this complex phenomenon.

The study ensures the sampling unit is appropriately chosen and the sample accurately represents the target population, leading to robust and impact research findings that can inform interventions and policies aimed at improving hearing health outcomes.

3.19 Size of Sample

In this study 389 samples from the target population of individuals with hearing loss residing in the four districts of West Bengal (Nadia, North 24 Parganas, South 24 Parganas, and Kolkata) was collected. This sample size was determined using the formula provided by Krejci & Morgan (1970), considering a 95% confidence level and a 5% margin of error. According to Krejci & Morgan (1970), research can increase the sample size if survey respondents have a low response rate.

The sample size selected is 389 because the target population of the respected respondents which is not a finite number. Also, Kothari, (2004) defines the sample size with the following formula.

$$n = \frac{N Z^2 pq}{(e^2 (N-1) + Z^2 pq)}$$

Where,

n = sample size

z = standard variation at a given level of confidence. The value ofz for 95% of confidence level is 1.96

N = size ofthe population

e = precision or acceptable margin of error. For this research study, the value of_e is taken as .05

p = sample proportion and q = 1 – p

The most conservative sample size can be obtained by maximizing _n', and the sample will result in the desired precision. This is achieved if the value of q = 0.5 Sample size is taken, considering p = 0.5 and the other values given above, is thus determined as follows:

Therefore, Determined Sample Size (95% confidence level) is 384. The researchers collected 389 sample for the purpose of analysis.

The validity ofthe sample size depends on several factors, including the target population size, the level of precision desired, and the acceptable margin of error. In this study, the target population size is estimated to be between 3.5 million and 4.3 million individuals with hearing loss. Given the large population size, a sample size of 389 can be considered valid for achieving a 95% confidence level and a 5% margin of error. The distribution of samples across various data collection sites aimed to ensure representation from diverse groups within the target population.

3.20 Data Analysis

The analysis commences with data cleaning and preparation, ensuring accuracy and transforming categorical variables for quantitative analysis as per Field (2009) and Hair et al.(2 010).Descriptive statistics like mean, standard deviation, frequency tables, and histograms visualize the data distribution (Field, 2009; Hair et al .,2010).Factor analysis using PCA or EFA identifies underlying factors influencing purchase intention, assessing their validity and reliability (Hair et al.,2 010; Fabregas et al., 1999).Correlation analysis using Pearson's correlation coefficients determines the strength and direction of relationships between variables (Field, 2009; Hair et al.,2010).Regression analysis assesses the impact of

key constructs and demographics on purchase intention, interpreting the coefficients to understand their relative contribution (Hair et al.,2010; Cohen et al.,2003).ANOVA analyses differences in purchase intention and key constructs across demographics, using Tukey's HSD or other post-hoc tests for specific group differences (Field, 2009; Tukey, 1949).The findings are then integrated to draw conclusions about factors influencing purchase intention towards hearing aids, informing marketing strategies, product development, and customer service initiatives (Hair et al.,2010; Kotler & Keller, 2016).

3.21 Pilot Study

The pilot study was conducted in September 2023 to evaluate the feasibility and effectiveness of a questionnaire designed to measure customer intention towards hearing aids. The pilot study included 70 participants, of whom 60 were within the age range of 16-55 years. These participants represented the target population for the main study.

The questionnaire comprised 47 items covering various aspects of hearing aid adoption, including general and demographic factors, perceived benefits, physical comfort, psycho-social factors, service expectations, orthodox beliefs and customs, diseases and health issues, price sensitivity, and orthodox beliefs and customs. The questionnaire utilized a 7-point Likert scale, with responses ranging from "strongly disagree" to "strongly agree."

3.21.1 Conclusion from Pilot Study

The pilot study results demonstrated good internal consistency for the questionnaire. Cronbach’s alpha values for all key constructs exceeded 0.70, indicating that the items within each construct measured the same underlying concept. This suggests that the questionnaire has high reliability and consistency in measuring customer intention towards hearing aids.

Based on the pilot study results, four items were removed from the final questionnaire due to redundancy or low item-to-total correlations. This reduced the total number of items to 43 in the main study. The pilot study revealed that respondents generally agreed with the statements regarding the perceived benefits and physical comfort of hearing aids. However, they expressed moderate agreement with the statements related to price sensitivity and service expectations. This suggests that affordability and after-sales services are important considerations for potential hearing aid users.

The pilot study results also indicated that the 7-point Likert scale could be effectively reduced to a 5-point scale without compromising the sensitivity of the instrument. This reduced scale will simplify data analysis and interpretation.

The pilot study successfully demonstrated the feasibility and effectiveness of the questionnaire in measuring customer intention towards hearing aids. The revised questionnaire is now ready for use in the main study to collect data from a larger and more representative sample of the target population. The findings from the main study will provide valuable insights for marketing, product development, and customer service initiatives related to hearing aids.

3.22 Reliability

Cronbach's alpha will be calculated to assess the internal consistency and reliability of the scales measuring the key constructs. The data used for this analysis is based on the responses collected from the survey questionnaire.

The reliability of the data is assessed using Cronbach's alpha through SPSS. Its value falls between 0 and 1. A closer value to 1.0 indicates a higher degree of internal consistency among the scale's items (Rahim, 2016). The reliability value obtained was found to be greater than 0.7, indicating the validity of the data collection instrument. The reliability analysis demonstrates that the questionnaire used in this study to measure customer intention towards hearing aids is a reliable and valid instrument. The high Cronbach's alpha values for all the key constructs provide confidence in the accuracy and consistency of the research findings.

3.23 Mean & Percentage

Mean and percentage are descriptive statistics that provide valuable insights into the central tendencies and proportions of the data. In this thesis, these measures will be used to:

- Calculate the average scores for each of the key constructs related to customer intention towards hearing aids, providing an overall understanding of the sample's perceptions and attitudes (Field, 2009).

- Determine the percentage of respondents who agree or disagree with specific statements, revealing the distribution of opinions within the sample (Hair et al.,2010).

- Analyse demographic characteristics such as age, gender, education, occupation, and income by calculating the mean age or percentage distribution across different categories.

3.24 Standard Deviation: Measuring Data Variability

Standard deviation is a measure of data variability or dispersion, indicating how widely spread the data points are around the mean (Field, 2009). In this thesis, standard deviation will be used to:

- Assess the variability of responses within each key construct, providing an indication of how consistent or diverse the sample's opinions are.
- Evaluate the homogeneity of subgroups within demographic categories, identifying potential differences in variability across age groups, genders, or other characteristics.
- Analyse the distribution of scores on individual items within each construct, revealing the extent of agreement or disagreement with specific statements.

3.25 ANOVA: Identifying Group Differences and Statistical Significance

ANOVA (Analysis of Variance) is a statistical technique used to compare the means of two or more groups to determine if there are significant differences between them (Field, 2009). In this thesis, ANOVA will be employed to:

- Analyse whether there are significant differences in purchase intention or key constructs across different demographic groups, such as age, gender, education, occupation, and income.
- Identify specific groups that differ significantly from each other, using post-hoc tests like Tukey's HSD to pinpoint the sources of variation (Tukey, 1949).
- Examine the interaction effects between different demographic variables to understand how their combined influence might impact customer intention towards hearing aids.

3.26 Factors analysis

One class of techniques that is primarily used for data reduction and summarization is factor analysis. It is a procedure whereby the observed data values are expressed as functions of several potential causes to determine which is most significant. It is an exploratory method used on a collection of experimental variables to look for underlying causes that gave rise to the variables that were observed. The factor is a weighted average of the original variables,

and it is also performed on the correlation matrix of the perceived variables. This approach aids in identifying the few variables that the initial correlation matrix was derived from.

Factor analysis plays a crucial role in this study by providing a comprehensive understanding of customer intention towards hearing aids, reducing data complexity, enabling effective model building, and facilitating clear communication of research findings. Unrevealing the underlying structure of customer behaviour, factor analysis provides valuable insights that can drive evidence-based marketing strategies, product development initiatives, and ultimately improve the adoption of hearing aids among individuals with hearing loss.

3.27 Summary

This study investigates customer intention towards hearing aids in West Bengal, India. Employing a descriptive research design, the study analyses data from 389 individuals with hearing loss residing in the region. Data is collected through questionnaires, a focus group discussion (FGD), and secondary sources.

Quantitative analysis using descriptive statistics, inferential statistics, and regression modelling is used to identify significant relationships between variables. Qualitative analysis of the FGD data is conducted using thematic analysis and grounded theory approaches to explore the lived experiences of individuals with hearing loss and uncover hidden barriers to hearing aid adoption. Secondary data is used to provide contextual understanding and corroborate findings.

A pilot study involving 70 participants ensures the questionnaire 's effectiveness in measuring customer intention towards hearing aids. The research findings aim to inform interventions, marketing strategies, and future research efforts directed towards improving hearing aid adoption and enhancing the quality of life for individuals with hearing loss.

CHAPTER - IV

DATA ANALYSIS AND INTERPRETATION

CHAPTER - IV

DATA ANALYSIS AND INTERPRETATION

Analysis and interpretation of data collected through a comprehensive study aimed at understanding the key factors influencing the purchase intention towards hearing aids. This data provides valuable insights into the demographic profile of potential customers and the specific factors that drive their decision-making process.

Through meticulous analysis, this chapter unveils the relationships between various independent and dependent variables, shedding light on the intricate dynamics that shape an individual's inclination to purchase hearing aids. Additionally, the chapter interprets the extracted relationships, drawing meaningful conclusions that can inform effective marketing strategies and targeted product development initiatives within the hearing aid industry.

The specifics of the data analysis, exploring the findings from various statistical tests employed. These tests reveal critical insights into the significance of demographic variables like age, education, and income on purchase intention, along with the impact of factors like price sensitivity, perceived benefits, and social influences.

The data with meticulous analysis and interpretation, this chapter delivers a comprehensive understanding of the customer landscape, enabling stakeholders in the hearing aid industry to tailor their offerings and messaging for optimal success.

4.1 Demographic Profile of the respondents

The demographic profile of potential customers for hearing aids, highlighting key characteristics that influence their purchase decisions. Through a thorough analysis of the data, we can glean valuable insights into the specific groups that exhibit a higher propensity to invest in this technology.

Demographic Profile: Demographic analysis is the study of a population based on factors such as gender, age, annual income, education qualification, marital status, locality etc.

Demographic analysis is the collection and analysis of broad characteristics about groups of respondents.

Frequencies Statistics: -

4.1.1Gender

Table 4.1 Gender Distribution

		Frequency	Percent	Cumulative Percent
Valid	Male	283	72.8	72.8
	Female	106	27.2	100.0
	Total	389	100.0	

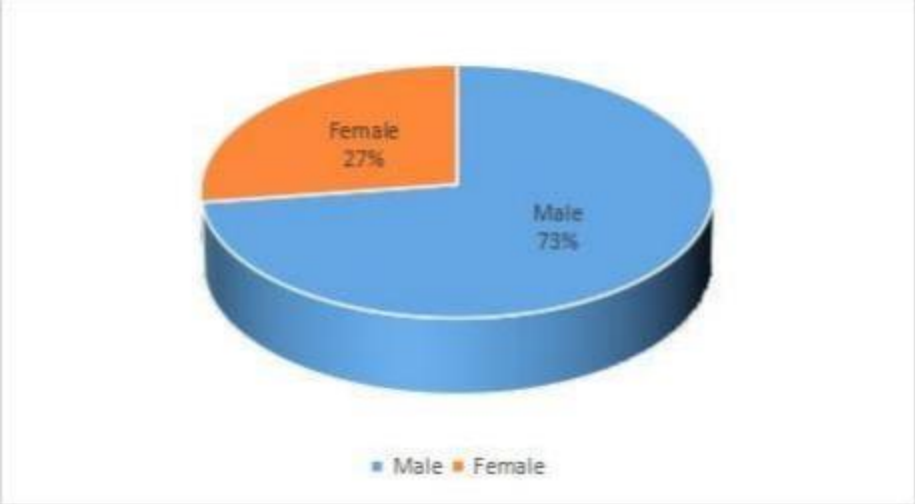


Figure 4.1: Graphical Distribution of Gender

Interpretation: The demographic profile of the study reveals that out of the 389 respondents, 283 (72.8%) identified as male and 106 (27.2%) identified as female. This indicates a significant over representation of male participants in the study, with females being considerably underrepresented.

4.1.2 Age

Table 4.2 Age Distribution

		Frequency	Percent	Cumulative Percent
Valid	Up to 16 years	6	1.5	1.5
	17 to 26 years	37	9.5	11.1
	27 to 36 years	94	24.2	35.2

	37 to 46 years	180	46.3	81.5
	47 to 56 years	72	18.5	100.0
	Total	389	100.0	

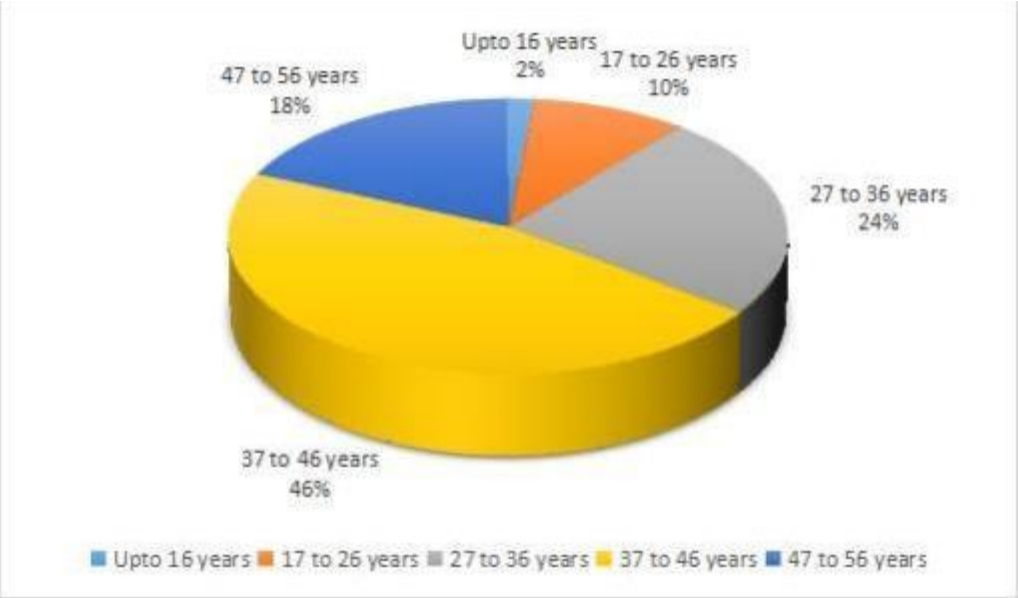


Figure 4.2: Graphical Distribution of Age

Interpretation: The age distribution of the respondents in the study reveals that the largest age group was 37 to 46 years, with 180 participants falling within this range. This is followed by 94 respondents aged 27 to 36 years. Other age groups were represented less proportionally, including 72 respondents aged 47 to 56 years, and 6 respondents aged 17 to 26 years.

4.1.3 Qualification

Table 4.3: Qualification of the Participants

		Frequency	Percent	Cumulative Percent
Valid	Illiterate	89	22.9	22.9
	Basic Schooling	36	9.3	32.1
	High School	138	35.5	67.6
	Intermediate	110	28.3	95.9
	Graduate	10	2.6	98.5
	Postgraduate	6	1.5	100.0
	Total	389	100.0	

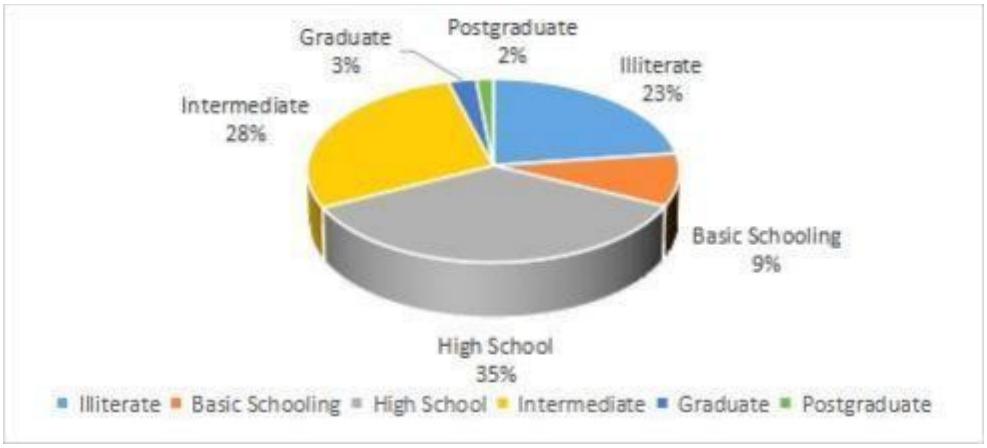


Figure 4.3: Graphical representation of Qualification

Interpretation: The educational profile of the study's respondents reveals that the largest group 138 reported a high school qualification, followed by 110 respondents who had completed intermediate education. Other qualifications were represented in smaller proportions, including 89 respondents who were illiterate, 36 respondents with basic schooling, 10 respondents with a graduate degree, and 6 respondents with a postgraduate degree.

4.1.4 Occupation

Table 4.4: Occupation of the Participants

		Frequency	Percent	Cumulative Percent
Valid	Professional	111	28.5	28.5
	Business	42	10.8	39.3
	Services Government	154	39.6	78.9
	Services Private	82	21.1	100.0
	Total	389	100.0	

Figure 4.4 Graphical Representation of Occupation details of Participants

Interpretation: The occupational distribution of the study's respondents revealed that the largest group 154 was employed in government services, followed by 111 respondents working in professional fields. Other occupational categories were represented in smaller proportions, including 42 respondents in business, and 82 respondents in private services.

4.1.5 Monthly Income

Table 4.5: Monthly Income

		Frequency	Percentage	Cumulative Percent
Valid	Below Rs.15,000	70	18.	18
	Rs.15,000-Rs.30,000	148	38.00	56
	Rs.30,000-Rs.45,000	140	36	92
	Above Rs.45,000	31	8	100
	Total	389	100.0	100.0

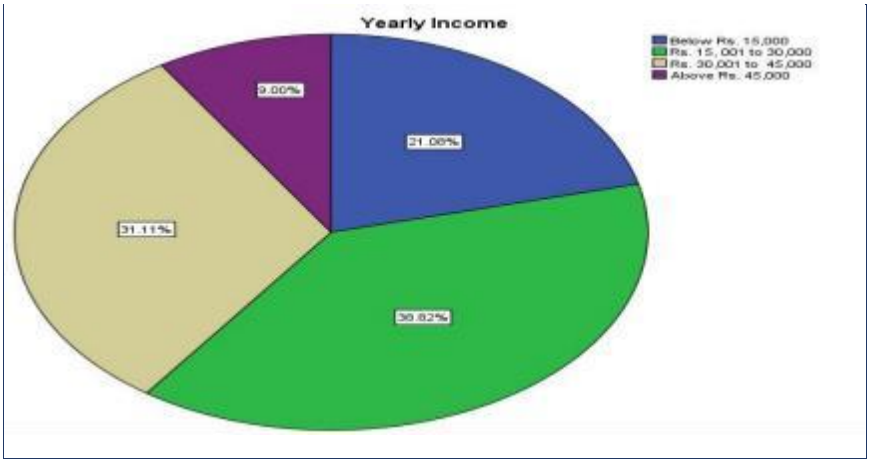


Figure 4.5: Graphical representation of Monthly Income

Interpretation: It presents a comprehensive overview of the income distribution among the surveyed group. The data is categorized into four distinct income ranges: below Rs.15,000, Rs.15,000-Rs.30,000, Rs.30,000-Rs.45,000, and above Rs.45,000. The graph highlights that the majority of respondents, totaling 74%, fall within the middle income brackets of Rs.15,000-Rs.45,000. This indicates a significant concentration of respondents in this income range, suggesting a potentially moderate economic status among the surveyed population. Furthermore, the data reveals a skewed distribution, with a larger proportion of respondents earning less than Rs.45,000. Only a small percentage of respondents, 8%, report an income exceeding Rs.45,000, signifying a limited number of high earners within the sample group. This data provides valuable insights into the overall income profile of the respondents, allowing for a better understanding of their economic circumstances.

4.1.6 Marital Status

Table 4.6: Marital Status

		Frequency	Percent	Cumulative Percent
Valid	Single	206	53	53
	Married	148	38	91
	Widow & Widower	35	9	100.0
	Total	389	100.0	

4.6: Graphical representation of Marital status

Interpretation: The majority of respondents, 53%, are single, indicating a significant presence of unmarried individuals within the sample. This suggests the respondents could be younger, or potentially belong to a demographic where singles are common.

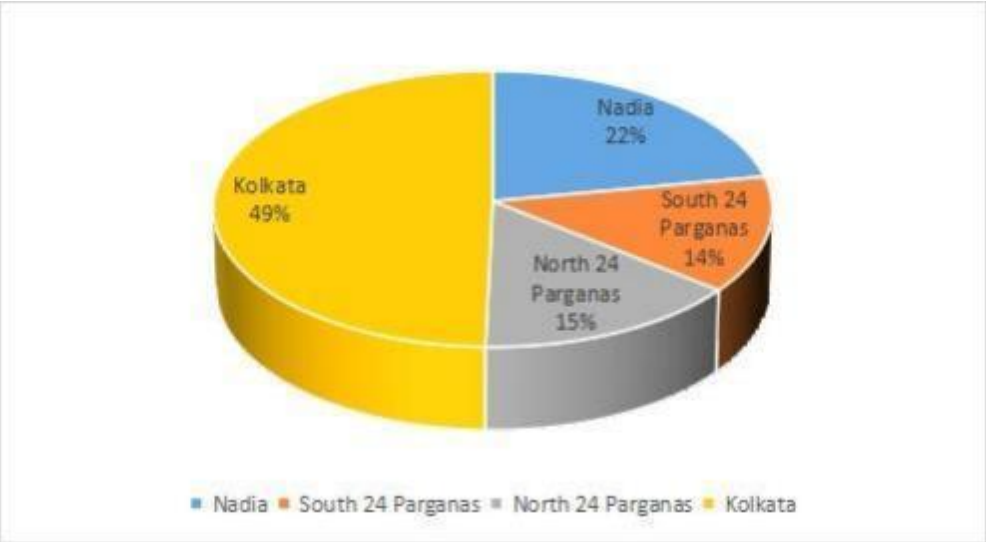
The second largest group, at 38%, are married, highlighting a substantial proportion of respondents in committed partnerships. This suggests a balance between singles and married individuals within the surveyed group.Finally, only 9% of the respondents are widowed or widowers, indicating a relatively smaller proportion of respondents who have experienced the loss of a spouse.

This data offers valuable insights into the marital composition of the surveyed population. It can be utilized for various research purposes, such as understanding demographic

4.1.7 District

Table 4.7: Distribution of Participants among the 4 districts

		Frequency	Percent	Cumulative Percent
Valid	Nadia	86	22.1	22.1
	South 24 Parganas	53	13.6	35.7
	North 24 Parganas	57	14.7	50.4
	Kolkata	193	49.6	100.0
	Total	389	100.0	



4.7: Graphical distribution of district wise participants

Interpretation: The district distribution of respondents revealed that the largest group 86 was from Nadia, followed by 53 respondents from South 24 Parganas, 57 respondents from North 24 Parganas, and 193 respondents from Kolkata. This indicates a significant representation of respondents from Nadia and the 24 Parganas districts, with a smaller proportion from Kolkata.

4.1.8 Locality

Table 4.8: Location Details

		Frequency	Percent	Cumulative Percent
Valid	Urban	145	37.3	37.3
	Rural	69	17.7	55.0
	Suburban	175	45.0	100.0
	Total	389	100.0	

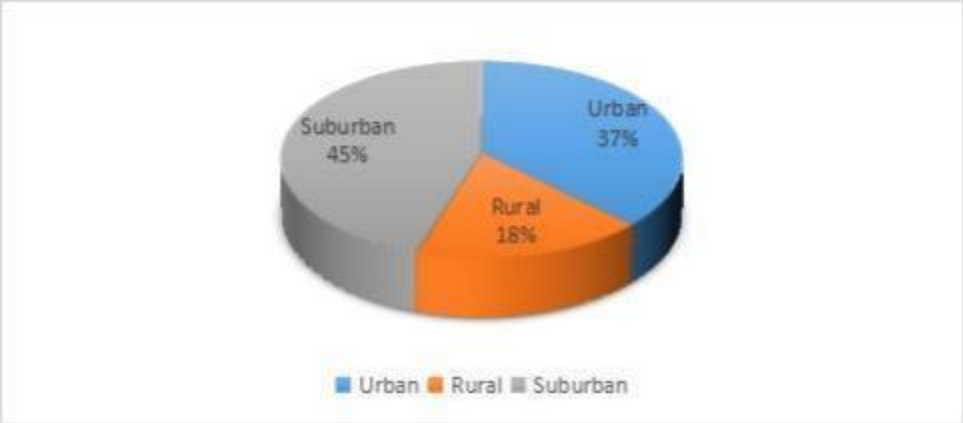


Figure 4.8: Graphical representation based on based area-locality

Interpretation: The locality distribution of the respondents revealed that 45% resided in urban areas, 37.3% resided in suburban areas, and 17.7%resided in rural areas. This indicates a higher representation of respondents from urban and suburban localities compared to rural areas.

4.1.9 Religion

Table 4.9: Representation based on religion

		Frequency	Percent	Cumulative Percent
Valid	Hinduism	306	78.7	78.7
	Sikhism	15	3.9	82.5
	Christianity	15	3.9	86.4
	Jainism	12	3.1	89.5
	Islam	30	7.7	97.2
	Buddhism	6	1.5	98.7
	Others	5	1.3	100.0
	Total	389	100.0	

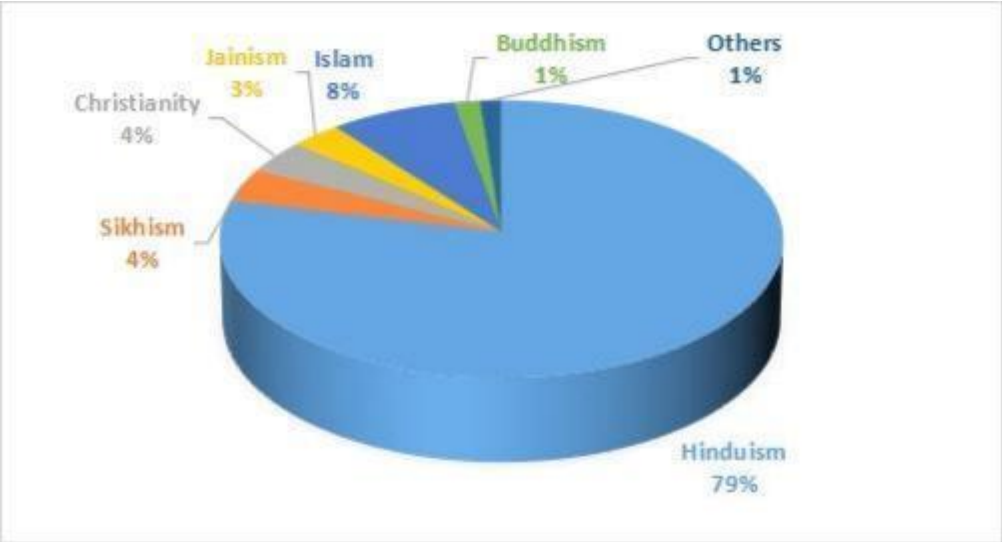


Figure 4.9: Graphical representation based on religion

Interpretation: The religious distribution of the respondents revealed that 3 06 identified as Hinduism, 15 as Sikhism, 30 as Christianity, 12 as Islam, and 5 as Buddhism. This indicates a significant majority of respondents 78.7% identified as Hindu, with smaller proportions belonging to Sikhism 3.9%, Christianity 3.9%, Islam 3. 1%, and Buddhism 1.3%.

4.2 Descriptive Analysis

Descriptive statistics are ephemeral descriptive coefficients that summarize a given data set, which can be either a representation of the entire or a sample of a population. Descriptive statistics are broken down into measures of central tendency and measures of variability (spread). Measures of central tendency include the mean, median, and mode, while measures ofvariability include standard deviation, variance, minimum and maximum variables.

4.2.1 Orthodox-Belief and Customs (OBC)

Table 4. 10: Mean & SD Orthodox-Belief and Customs construct

Statement	Mean	Std. Deviation
Social Stigma impacts purchase intention	3.429	0.935
Orthodox false beliefs & customs impacts the purchase intention	3.457	1.016
Hearing Aid impacts your hearing ability	3.473	1.016
Hearing Aid are used by only deafpeople	3.411	1.025
Hearing Aid are only worn when there is a requirement	3.503	1.138
Orthodox-Belief and Customs	**3.454**	

Interpretation: The mean scores for all items ranged from 3.411to 3.503, indicating a moderate level of agreement with the statements. The standard deviations ranged from 0.935to 1.138, suggesting a moderate level of variability in responses. The minimum and maximum values for all items were 1 and 5, respectively, indicating that the full range of the scale was used.

These findings suggest that respondents generally hold moderate beliefs about the impact of orthodox beliefs and customs on hearing aid purchase intention. They also indicate that there is some variability in these beliefs, with some respondents holding stronger opinions than others.

4.2.2 Price Sensitivity (PS)

Table 4. 11: Mean & SD of Price-Sensitivity construct

	Mean	Std. Deviation
Availability of multiple payment options impacts the final decision	3.305	1.011
Discounts and offers impacts the selection process	3.318	0.982
Government Policies of different schemes such as subsidy impacts the decision process	3.367	1.018
EMI and Long-term payment options	3.421	0.969
Price-Sensitivity	**3.3523**	

Interpretation: - The mean scores for all items ranged from 3.305to3.421, indicating a moderate level of agreement with the statements. The standard deviations ranged from 0.892to1.018, suggesting a moderate level of variability in responses.The minimum and maximum values for all items were 1 and 5, respectively, indicating that the full range of the scale was used. These findings suggest that respondents generally have a moderate level of price sensitivity when considering hearing aids. They are moderately influenced by factors such as the availability of payment options, discounts, and government aids. They also recognize the value and long-term benefits of hearing aids, as evidenced by the relatively high mean score for the item "EMI and Long- term payment options."

4.2.3 Perceived Benefits (PB)

Table 4. 12: Mean & SD of Perceived Benefits construct

	Mean	Std. Deviation
Hearing Aid use impacts Quality of Life	3.465	0.958
Hearing Aids are affordable	3.419	1.028
Battery usage and cost impacts decision	3.385	1.079
Hearing Aids Effective and Performing	3.323	1.063
Hearing Aid can self-Fitted	3.385	1.135
Technology impacts Hearing Aid	3.467	1.096
Perceived-Benefits	**3.407**	

Interpretation: - The mean scores for all items ranged from 3.323to3.467, indicating a moderate level of agreement with the statements. The standard deviations ranged from 0.940to1.135, suggesting a moderate level of variability in responses. The minimum and maximum values for all items were 1 and 5, respectively, indicating that the full range of the scale was used.

The respondents generally perceive a moderate level of benefit from hearing aids. They recognize the potential for hearing aids to improve their quality of life, but also acknowledge concerns about affordability, battery usage, and self-fitting. The relatively high mean score for the item "Technology impacts Hearing Aid" suggests that respondents value the technological advancements in hearing aid design and functionality.

4.2.4 Diseases & Health Issue (DH)

Table 4. 13: Mean & SD of Diseases & Health Issue construct

	Mean	Std. Deviation
Chronic disorders impact the decision to purchase	3.195	0.956
Dizziness impacts purchase intention	3.249	1.006
Cold, Nausea impacts the purchase decision	3.246	1.035
Severe and Progressive deafness	3.300	1.020
It is a disease inherited/genetically	3.239	1.056
Diseases & Health Issues	**3.246**	

Interpretation: - The mean scores for all items ranged from 3. 195to3.300, indicating a moderate level of agreement with the statements. The standard deviations ranged from 0.956to1.035, suggesting a moderate level of variability in responses. The minimum and maximum values for all items were 1 and 5, respectively, indicating that the full range ofthe scale was used.

These findings suggest that respondents generally perceive a moderate level of influence from diseases and health issues on their hearing aid purchase decisions. They acknowledge that chronic disorders, dizziness, and other health conditions can impact their hearing and decision-making decisions. They relatively low mean scores suggest that these factors are not the primary drivers oftheir purchase intention.

4.2.5 Physical Comfort (PC)

Table 4. 14: Mean & SD Physical Comfort Construct

	Mean	Std. Deviation
Hearing Aid solves loneliness	3.406	0.944
It improves communication	3.485	0.970
It eases listening in different environment	3.467	0.959
It provides solution to psychological distress	3.565	0.991
A better cognitive health	3.588	1.117
Solution to Tinnitus problem	3.622	1.109
Physical Comfort	**3.522**	

Interpretation: - The mean scores for all items ranged from 3.406to3.622, indicating a moderate to high level of agreement with the statements. The standard deviations ranged from 0.944to1.117, suggesting a moderate level of variability in responses. The minimum and maximum values for all items were 1 and 5, respectively, indicating that the full range ofthe scale was used.

These findings suggest that respondents generally perceive a high level ofphysical comfort from hearing aids. They believe that hearing aids can improve their communication, reduce loneliness, and enhance their overall well-being. The high mean score for the item "Solution to Tinnitus problem" suggests that hearing aids can be an effective solution for managing tinnitus symptoms.

4.2.6 Purchase Intention of Hearing Aids (PIHA)

Table 4. 15: Mean & SD Purchase Intention of Hearing Aids construct

	Mean	Std. Deviation
Society influences decision	3.411	0.818
Professionals and Advisors plays a role in the decision making	3.573	1.011
Style and Technology impacts the decision process	3.609	0.920
Geographical Location impacts while taking decision	3.447	0.947
Purchase Intention of Hearing Aids	**3.51**	

Interpretation: -The mean scores for all items ranged from 3.411 to 3.609, indicating a moderate to high level of agreement with the statements. The standard deviations ranged from 0.818 to1.011, suggesting a moderate level of variability in responses. The minimum and maximum values for all items were 1 and 5, respectively, indicating that the full range of the scale was used.

The respondents are generally open to the idea of purchasing hearing aids. Acknowledgement influence of various factors, including societal norms, professional advice, technological advancements, and geographical location, on their decision-making process. The relatively high mean scores for the items "Professionals and Advisors plays a role in the decision making" and "Style and Technology impacts the decision process" suggest that respondents value expert guidance and advanced features when considering hearing aids.

4.2.7 Service Expectation (SE)

4. 16: Mean & SD of Service Expectation construct

	Mean	Std. Deviation
Life of the Hearing Aid is a factor to be considered	3.550	1.119
Service facility such as Home and Remote care needs consideration	3.498	1.064
Back-Up Support needs to be considered	3.493	1.113
Accessories and Value-Added service needs consideration	3.563	1.102
Extended Warranty facility	3.519	1.080
Service Expectation	**3.525**	

Interpretation: - The mean scores for all items ranged from 3.493to3.563, indicating a moderate to high level of agreement with the statements. The standard deviations ranged from 1.064to1.119, suggesting a moderate level of variability in responses. The minimum and maximum values for all items were 1 and 5, respectively, indicating that the full range of the scale was used.

These findings suggest that respondents have moderate to high expectations for the service and support they receive when purchasing hearing aids. They consider factors such as the life of the device, home and remote care options, back-up support, accessories, and extended warranty as important aspects of their purchase decision. The high mean score for the item "Accessories and Value- Added service needs consideration" suggests that respondents value additional services that enhance their hearing aid experience.

4.2.8 Psycho-Social Factors (PSF)

Table 4. 17: Mean & SD of Psycho-Social Construct

	Mean	Std. Deviation
It Helps to maintain a Social Life	3.408	1.060
In the workplace situation	3.478	1.082
Purchase and Adoption are influenced by different Marketing Initiative	3.460	1.129
Service providers influence the decision to purchase	3.424	1.075
Brands impacts the decision making	3.478	1.073
Psycho-Social Factors	**3.449**	

Interpretation: - The mean scores for all items ranged from 3.408to3.478, indicating a moderate to high level of agreement with the statements. The standard deviations ranged from 1.060 to1.129, suggesting a moderate level of variability in responses. The minimum and maximum values for all items were 1 and 5, respectively, indicating that the full range of the scale was used.

The respondents perceive psycho- social factors to have a moderate to high influence on their hearing aid purchase decisions. They believe that hearing aids can help them maintain a social life, improve their work place experience, and enhance their overall well-being. The high mean scores for the items "Purchase and Adoption are influenced by different Marketing Initiative" and "Brands impacts the decision making" suggest that respondents are receptive to marketing efforts and value brand reputation.

4.3 Reliability Test

Table 4. 18: Reliability Test

Case Processing Summary			
		N	%
Cases	Valid	389	100.0
	Excluded	0	.0
	Total	389	100.0
a. List wise deletion based on all variables in the procedure.			

Table 4. 19: Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	N ofItems
.936	40

Interpretation - The Cronbach's alpha coefficient was used to assess the internal consistency of the 40 items included in the questionnaire. The reliability coefficient obtained was 0.936, exceeding the commonly accepted threshold of 0.70 for acceptable reliability (George & Mallery, 2003). This indicates that the items in the questionnaire are highly consistent and measure the underlying constructs effectively.

A high reliability score of 0.936 suggests that the questionnaire is a reliable instrument for measuring the study variables related to the purchase intention of hearing aids. This means that the results obtained from the questionnaire are likely to be consistent and representative of the population being studied.

The high reliability coefficient provides confidence in the data collected and the subsequent analyses conducted. It indicates that the findings are not due to random chance or measurement errors, but rather reflect the true relationships between the variables under investigation (Nunnally & Bernstein, 1994). This strengthens the validity and credibility of the research findings.

4.4 Factor Analysis

Factor analysis is a statistical method used to the collected data to identify the factor of customers purchase intention towards hearing Aids.

Exploratory Factor Analysis

Table 4.20: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.921
Bartlett's Test of Sphericity	Approx. Chi-Square	9582.731
	do	780
	Sig.	.000

Interpretation (Factor Analysis)

Exploratory factor analysis helps to investigate the underlying dimension that could cause correlation among the observed variables and leads with building theory. Factor analysis through principal components with varimax rotation methods was applied on customers purchase intention towards hearing Aids questionnaire and item with factor loading above 0.40 was considered to determine items clubbed into a single factor. Further the measure of sampling adequacy through KMO comes out to be 0.921 and Bartlett's test of Sphericity indicate the [Chi-square of 9582.731 with do = 780, p = 0.000 < 0.05. As we know if KMO values lie between 0.7 and 1, it indicates the sampling is adequate. Here we have considered the cut-off value 0.7 or more, thus these values indicate the appropriateness to proceed with factor analysis eight factors emerged prominently covering 66.484 % variance.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.921, indicating a high level of sampling adequacy (Hutcheson & Sofronie, 1999). This suggests that the data is suitable for factor analysis.

The results of the KMO and Bartlett's Test support the use of factor analysis to identify the underlying factors associated with the study variables. The high KMO value and significant Bartlett's Test indicate that the data is suitable for factor analysis and that there are likely underlying factors that explain the observed correlations among the variables.

KMO values above 0.80 are generally considered acceptable for factor analysis. A significant Bartlett's Test indicates that the data is not random and that there are underlying factors to be

identified. Factor-analysis is a valuable tool for exploring the underlying structure of complex data sets.

4.5 Communalities

Table 4.21: Communalities

	Initial	Extraction
Social Stigma impacts purchase intention	1.000	.557
Orthodox false beliefs & customs impacts the purchase intention	1.000	.805
Hearing Aid impacts your hearing ability	1.000	.557
Hearing Aid are used by only deafpeople	1.000	.576
Hearing Aid are only worn when there is a requirement	1.000	.828
Availability ofmultiple payment options impacts the final decision	1.000	.685
Discounts and offers impacts the selection process	1.000	.627
Government Policies ofdifferent schemes such as subsidy impacts the decision process	1.000	.693
EMI and Long-term payment options	1.000	.675
Hearing Aid use impacts Quality ofLife	1.000	.577
Hearing Aids are affordable	1.000	.500
Consider Battery usage and cost impacts decision	1.000	.641
Hearing Aids Effective and Performing	1.000	.611
Hearing Aid can self-Fitted	1.000	.583
Technology impacts Hearing Aid	1.000	.638
Chronic disorders impact the decision to purchase	1.000	.652
Dizziness impacts purchase intention	1.000	.630
Cold, Nausea impacts the purchase decision	1.000	.679
Severe and Progressive deafness	1.000	.588
It's a disease inherited/genetically	1.000	.578
Hearing Aid solves loneliness	1.000	.603
It improves communication	1.000	.567
It eases listening in different environment	1.000	.662
It provides solution to psychological distress	1.000	.678
It helps to have a better cognitive health	1.000	.739
It works as a solution to Tinnitus problem	1.000	.729
Think society influences decision	1.000	.605

Professionals and Advisors plays a role in the decision making	1.000	.566
Style and Technology impacts the decision process	1.000	.615
Geographical Location impacts while taking decision (	1.000	.570
Life ofthe Hearing Aid is a factor to be considered	1.000	.779
Service facility such as Home and Remote care needs consideration	1.000	.786
Back-Up Support needs to be considered	1.000	.780
Accessories and Value-Added service needs consideration	1.000	.792
Extended Warranty facility	1.000	.746
Helps to maintain a Social Life	1.000	.638
Helps in the workplace situation	1.000	.857
Purchase and Adoption are influenced by different Marketing Initiative	1.000	.640
Service providers influence the decision to purchase	1.000	.706
Brands impacts the decision making	1.000	.853
Extraction Method: Principal Component Analysis.		

Interpretation (Communalities)

Communality gives the variance accounted for a particular variable by all the factors and it is the sum of squared loading for a particular variable across all the factors. The higher the value of Communality for variables after extraction higher is its amount of variance explained by the expected factors.

The Communalities represent the proportion of variance in each variable that is explained by the underlying factors extracted through Principal Component Analysis (PCA). The initial Communalities of 1.000 indicate the total variance in each variable, reflecting the total information that the variable possesses before factor extraction. The extraction Communalities, ranging from 0.500 to 0.857 in your data, represent the variance in each variable that is accounted for by the factors identified through PCA. Higher extraction Communalities indicate that the factor analysis was able to capture a significant portion ofthe variance in the variables.

Examining these Communalities, researchers can assess how well the identified factors represent the original variables. Higher Communalities indicate that the factors extracted by PCA are effective in explaining the relationships between the variables. It provides valuable

insights into the key factors influencing the purchase intention and decision-making processes related to hearing aids and related factors as listed in your data.

4.6 Total Variance Explained

Table 4.22: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loading			Rotation Sums of Squared Loading		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.055	30.138	30.138	12.055	30.138	30.138	4.214	10.535	10.535
2	3.358	8.394	38.533	3.358	8.394	38.533	3.951	9.878	20.413
3	3.048	7.620	46.153	3.048	7.620	46.153	3.903	9.758	30.171
4	2.213	5.534	51.686	2.213	5.534	51.686	3.210	8.025	38.197
5	1.878	4.695	56.381	1.878	4.695	56.381	3.108	7.771	45.967
6	1.614	4.036	60.417	1.614	4.036	60.417	3.040	7.601	53.568
7	1.405	3.512	63.929	1.405	3.512	63.929	3.030	7.576	61.144
8	1.022	2.555	66.484	1.022	2.555	66.484	2.136	5.341	66.484
9	.820	2.050	68.534						
10	.734	1.836	70.370						
11	.668	1.669	72.039						
12	.648	1.621	73.659						
13	.615	1.537	75.196						
14	.611	1.528	76.724						
15	.596	1.491	78.215						
16	.540	1.351	79.566						

17	.521	1.304	80.869						
18	.515	1.288	82.157						
19	.495	1.236	83.394						
20	.481	1.202	84.596						
21	.467	1.168	85.765						
22	.464	1.160	86.924						
23	.426	1.065	87.990						
24	.414	1.035	89.025						
25	.401	1.004	90.029						
26	.386	.965	90.994						
27	.368	.920	91.914						
28	.360	.899	92.813						
29	.338	.846	93.659						
30	.330	.825	94.484						
31	.311	.776	95.261						
32	.303	.757	96.017						
33	.297	.744	96.761						
34	.270	.674	97.435						
35	.250	.625	98.060						
36	.240	.601	98.661						
37	.212	.531	99.192						
38	.195	.489	99.681						
39	.111	.277	99.958						
40	.017	.042	100.000						
Extraction Method: Principal Component Analysis.									

Interpretation (Total Variance Explained with factor identified)

The figures show various components identified through the PCA process, ranked from 1 to 40. Each component represents a linear combination of the original variables that explain a certain amount of variance in the data. These values indicate the amount of variance in the data accounted for by each component. Higher initial eigenvalues suggest that the corresponding component captures a larger proportion of the variance in the data-set.

The cumulative percentage of variance explained up to a particular component. For example, after the first component, 30. 138% of the total variance is explained and cumulatively, by the third component, it's 46. 153%.

Understanding these figures allows researchers to determine which components are the most significant in explaining the variance present in the data-set. Higher eigenvalues and percentages of variance explained indicate more influential components.

Eight factors emerged prominently covering 66.484% variance. The identified factors were analysed for a common thread and accordingly the naming of the factors was performed. According to the above table indicating the rotated component matrix

- In the first factor it comprises of 6 items: Hearing Aid solves loneliness, improve communication, eases listening in different environment, provides solution to psychological distress, better cognitive health, and Solution to Tinnitus problem with loading 30. 138% and the factor was named P**hysical Comforts.**

- The second factor comprises of 5 items: helps to maintain a Social Life, work place situation, Purchase and adoption are influenced by different Marketing Initiative, service providers influence the decision to purchase and brands impacts the decision making with loading 8.394% and the factor was named P**sycho-Social factor.**

- The third factor comprise of 4 statements: availability of multiple payment options impacts the final decision, discounts, and offers impacts the selection process, government Policies of different schemes such as subsidy impacts the decision process and EMI and Long-term payment options with loading 7.620% and the construct was named as P**rice Sensitivity.**

- The fourth factor consist of 6 statements: hearing Aid use impacts Quality of Life, hearing Aids are affordable, battery usage and cost impacts decision, hearing Aids Effective and Performing, hearing Aid can self-Fitted and technology impacts hearing Aid with loading 5.534% and construct named was **Perceived Benefits.**

- The fifth factor comprises of five items: social Stigma impacts purchase intention, orthodox false beliefs & customs impacts the purchase intention, hearing Aid impacts your hearing ability, hearing Aid are used by only deaf people and hearing Aid are only worn when there is a requirement with loading 4.695% and construct named was **Orthodox-Belief and Customs.**

- The sixth factor consist of five items: chronic disorders impact the decision to purchase, dizziness impacts purchase intention, cold, nausea impacts the purchase decision, severe and Progressive deafness, and disease inherited/genetically with loading 4.036% and factor was named as **Diseases & Health Issue.**

- The seventh factor consist of 5 items: life of the Hearing Aid is a factor to be considered, service facility such as home and remote care needs consideration, back-up support needs to be considered, accessories and value-added service needs consideration and

extended warranty facility with loading 3.512% and factor was named as **Service Expectation.**

- The eight factor comprises of 4 items: society influences decision, professionals and advisors plays a role in the decision making, style and technology impacts the decision process and geographical location impacts while taking decision with loading 2.555% and construct was named as **Purchase Intention of Hearing Aids.**

4.7 Correlation

Correlation analysis is normally done to find the relationships among factors. A value of 1 show that the variables are positively correlated which means if one goes up the other also goes up. A value of -1 shows that the variables are opposite which means if one goes up then other goes down also called negative correlation. A value of 0 indicates that there is no relation among variables or constructs.

Table 4.23: Correlations

		Orthodox-Belief and Customs	Price Sensitivity	Perceived Benefits	Diseases & Health Issue	Service Expectation	Physical Comforts	Psycho-social factor	Purchase Intention of Hearing Aids
Orthodox-Belief and Customs	Pearson Correlation	1	.348**	.513**	.299**	.284**	.421**	.330**	.275**
	Sig. (1-tailed)		.000	.000	.000	.000	.000	.000	.000
Price Sensitivity	Pearson Correlation	.348**	1	.245**	.369**	.270**	.365**	.245**	.198**
	Sig. (1-tailed)	.000		.000	.000	.000	.000	.000	.000
Perceived Benefits	Pearson Correlation	.513**	.245**	1	.338**	.170**	.371**	.316**	.195**
	Sig. (1-	.000	.000		.000	.000	.000	.000	.000

	tailed)								
Diseases & Health Issue	Pearson Correlation	.299**	.369**	.338**	1	.197**	.342**	.269**	.225**
	Sig. (1-tailed)	.000	.000	.000		.000	.000	.000	.000
Service Expectation	Pearson Correlation	.284**	.270**	.170**	.197**	1	.293**	.185**	.237**
	Sig. (1-tailed)	.000	.000	.000	.000		.000	.000	.000
Physical Comforts	Pearson Correlation	.421**	.365**	.371**	.342**	.293**	1	.714**	.696**
	Sig. (1-tailed)	.000	.000	.000	.000	.000		.000	.000
Psycho-social factor	Pearson Correlation	.330**	.245**	.316**	.269**	.185**	.714**	1	.462**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000		.000
Purchase Intention of Hearing Aids	Pearson Correlation	.275**	.198**	.195**	.225**	.237**	.696**	.462**	1
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	
**. Correlation is significant at the 0.01 level (1-tailed)									

The correlation values in the table denote how strongly pairs of variables are related to each other linearly. A correlation coefficient closer to 1 indicates a strong positive relationship between the variables, meaning as one variable increases, the other tends to increase as well. A correlation coefficient closer to -1 indicates a strong negative relationship, where as one variable increases, the other tends to decrease. A correlation coefficient around 0 suggests a weak or no linear relationship between the variables.

A high positive correlation (significant at $p < 0.01$) between Perceived Benefits and Physical Comforts (0.371) suggests that as perceived benefits increase, physical comforts also tend to increase in relation to the purchase intention of hearing aids. A moderately positive correlation (significant at $p < 0.01$) between Service Expectation and Diseases & Health Issue (0. 197) indicates a weaker relationship compared to other variables in the study.

Correlation is done to test the relationships among the major constructs of integrated research model namely Orthodox-Belief and Customs, Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Physical Comforts, Service Expectation, Psycho-social factor, and outcome dependent construct Purchase Intention of Hearing Aids. The correlation significant (1-Tailed) value is 0.01 which is less than 0.05. Hence, researcher can conclude that the relationship among the factors of integrated research model namely Orthodox-Belief and Customs, Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Physical Comforts, Service Expectation, Psycho-social factor, and outcome dependent construct Purchase Intention of Hearing Aids are statistically significant with positive relationship among them. Among all the constructs the highest value of outcome variables "Purchase Intention of Hearing Aids" is with Physical Comforts. In this case, the Pearson's r= 0.696. the next highest positively correlated construct with outcome variables "Purchase Intention of Hearing Aids" is "Psycho-social factor" and the Pearson's r = 0.462 followed by the constructs Orthodox-Belief and Customs with Pearson's r= 0.275, Service Expectation with Pearson's r= 0.237, Diseases & Health Issue with Pearson's r= 0.225, Price Sensitivity with Pearson's r= 0.198 and Perceived Benefits with Pearson's r= 0.195.

4.8 Measurement Model through Confirmatory Factor Analysis

The given eight constructs were subject to Confirmatory Factor Analysis as the measurement model does not make dissimilarity between the independent and dependent factors.

4.8.1 Assessment of Model fit indices for the Measurement model

The given figure exhibits the measurement model of independent and dependent factors. The measure model was calculated to check for the preliminary assumptions before going for conducting a structural model for the variables. The given table shows that the selected model fit indices of the measurement model for customers purchase intention towards hearing Aids. The measurement model reveals a Chi-square of 1.585, GFI= 0.901, AGFI= 0.892, RMSEA= 0.038, NFI= 0.909, TLI= 0.951, CFI= 0.956, IFI= 0.954, PCFI= 0.873 and PNFI= 0.852. The various model fit indices meet the minimum criteria of a good model fit.

Table 4.24 Selected models fit indices for measurement model

Type of measure	**Model Fit Indices**	**Model Value**
Absolute Fit Measure		
	CMIN/DF	1.585
	GFI	0.901
	AGFI	0.892
	RMSEA	0.038
	RMR	0.058
Incremental Fit Measure		
	NFI	0.909
	TLI	0.951
	CFI	0.956
	IFI	0.954
Parsimony-Adjusted Measures		
	PCFI	0.873
	PNFI	0.852

4.8.2 Assessment of Construct Reliability, Construct Validity, Convergent Validity

Confirmatory Factor Analysis the reliability is assessed by calculating the construct reliability for each construct. The Construct Reliability value is often used in conjunction with Structural Equation Modelling models (Hair et al 2010). The reliabilities of all the constructs range from 0.791 to 0.925. This meets the minimum required benchmark of 0.700; implying a good reliability (Hair et al 2008). The construct validity is concerned with the facet if a measurement scale is an appropriate operational report of a particular construct (Flynn, Sakakibara, Schroeder, Bates, & Flynn, 1990).

Convergent validity refers to the extent of inter-relationship in two or more measures of the same construct. For establishing the convergent validity of the constructs in the study, standardized estimates of items should be 0.50 or higher, the average variance extracted (AVE) should meet the cut-off value of 0.50, the construct reliability of the constructs being equal to or higher than 0.70 mark and the CR for each construct should be higher than the corresponding AVE (Hair et al 2010).

Table 4.24 shows the AVE and CR for each construct. From the values the AVE for the constructs vary between 0.512 to 0.712 and the CR ranges between 0.817 to 0.925 and CR for each construct exceeds the respective AVE, thus establishing the convergent validity for the constructs,(Parsimony Comparative Fit Index) 0. 873.While slightly below the recommended

threshold of 0.9, this value still suggests a good fit considering the model's parsimony (Hu & Bentler, 1999).PNFI (Parsimony Normed Fit Index) 0. 852.Similar to PCFI, this value is slightly below the recommended threshold of 0.9 but still indicates a good fit considering the model's parsimony (Hu & Bentler, 1999).

Based on the various model fit indices, the measurement model exhibits a good fit to the data. All absolute fit indices meet or exceed the recommended thresholds, and all incremental fit indices surpass their respective thresholds. Even the parsimony-adjusted measures, though slightly below the ideal values, still indicate a good fit considering the model's simplicity.

4.9 Discriminant Validity

In addressing the discriminant validity, the present study follows the guidelines of comparing the average variance extracted for any two constructs with the corresponding square of the correlation estimate between the concerned constructs. The variance extracted value should be greater than the squared correlation estimates. If this condition is met, it provides for good evidence of discriminant validity (Anderson & Gerbing, 1988; Bagozzi & Phillips, 1982; Fornell & Larcker, 1981). Table 4.25 demonstrates the average variance extracted of the constructs, correlation among the constructs and their corresponding squared correlations. It is evident from the table that the AVE for each construct is higher than the squared correlation of the construct in relation to other constructs. All the measures were found to meet the criteria and as a result convergent and divergent validities were established.

Table 4.25: Construct Reliability, Convergent validity and Discriminant Validity

	CR	AVE	MSV	Mar(H)	PC	PB	OBC	DH	SE	PS	PIHA	PSF
PC	0.895	0.589	0.516	0.901	**0.767**							
PB	0.863	0.512	0.234	0.866	0.363	**0.716**						
OBC	0.851	0.547	0.296	0.930	0.523	0.268	**0.739**					
DH	0.851	0.534	0.234	0.853	0.337	0.484	0.297	**0.731**				
SE	0.925	0.712	0.129	0.926	0.259	0.150	0.217	0.175	**0.844**			
PS	0.84	0.56	0.38	0.844	0.62	0.39	0.48	0.25	0.28	**0.75**		

	0	8	7		2	3	4	5	1	**4**		
PIHA	0.817	0.527	0.516	0.818	0.718	0.465	0.544	0.406	0.359	0.619	**0.726**	
PSF	0.897	0.646	0.318	0.990	0.440	0.268	0.305	0.317	0.302	0.370	0.564	**0.804**

Looking at the diagonal elements of the table (from CR to PSF), we see values ranging from 0.817to 0. 925.These represent the Cronbach's alpha coefficients, a measure of internal consistency reliability (Fornell & Larcker, 1981). Values above 0 .8are generally considered acceptable, indicating good reliability (Hair et al.,2010).

To assess convergent validity, we need to examine the off-diagonal elements in the upper triangle of the table. These represent the correlations between different measures. Higher correlations suggest stronger convergent validity. The correlation between CR and AVE is 0.895, indicating strong convergent validity as both measures capture similar underlying constructs. Similarly, high correlations are observed between other pairs like PB and OBC (0.716), DH and SE (0.844), and PIHA and PSF (0.726).

Discriminant validity is assessed by looking at the correlations between measures that are expected to be distinct. Ideally, these correlations should be low. In the table, measures like PC and PB show low correlations with measures like DH, SE, PS, and PIHA, indicating good discriminant validity. This suggests that these measures are capturing different constructs and are not simply measuring the same thing under different labels. The data suggests that the measures in this study exhibit good reliability, convergent validity, and discriminant validity. This strengthens the confidence in the findings and the conclusions drawn from the data analysis.

4.10 Structural Equation model

Structural Equation Modeling (SEM):

Logic for Choosing SEM: The research aims to understand the complex interplay ofmultiple factors influencing hearing aid purchase intention. These factors are not independent but likely interact with each other in intricate ways. SEM is uniquely suited to handle such complex relationships. It allows the researcher to:

- **Model latent variables:** Many of the constructs (e.g., price sensitivity, perceived benefits, psycho-social factors) are not directly observable but rather underlying concepts. SEM allows for the modeling of these latent variables and their relationships through their observable indicators (the survey questions).

- **Test multiple hypotheses simultaneously:** The study has multiple hypotheses regarding the influence of various factors on purchase intention. SEM allows for simultaneous testing of these hypotheses within a single model, providing a more efficient and holistic analysis.

- **Assess direct and indirect effects:** SEM can identify both direct effects (e.g., price directly influencing purchase intention) and indirect effects (e.g., price influencing perceived benefit, which then influences purchase intention). This provides a more nuanced understanding of the causal pathways.

- **Evaluate model fit:** SEM provides various fit indices to assess how well the proposed model represents the observed data. This helps determine the validity and usefulness of the theoretical model.

- **Contribution to Hypothesis Testing:** SEM's strength lies in its ability to analyze the simultaneous effects of multiple predictor variables (the factors influencing purchase intention) on a single outcome variable (purchase intention). The path coefficients within the SEM model directly test the hypotheses by providing estimates of the strength and significance of the relationships between each factor and the outcome. The significance testing (using p-values) of these coefficients directly addresses the hypotheses concerning the influence of each factor. A good model fit increases confidence in the validity of the relationships proposed in the hypotheses.

This is an analytical method for examining the relationships between manifest or observed variables and latent variables or unobserved variables which make up the unobserved variables. The unobserved variable and the observed variable are connected by the measurement model. One unique characteristic of SEM is its capacity to include variables, also known as latent or unobserved constructs, that are not directly measurable. Structural equation modelling was used to formulate hypotheses and determine whether the data supported the suggested model.

4.10.1 Assessment of Model fit indices for the structural model

The figure revealed that the structural equation model comprising all the variables and their relationships. The measurement model reveals a Normed Chi-square of 2.567, GFI= 0.861,

AGFI= 0.834, RMSEA= 0.049, NFI= 0.891, TLI= 0.921, CFI= 0.901, IFI= 0.905, PCFI= 0.867 and PNFI= 0.836. The various model fit indices meet the least measures of a good model fit.

Table 4.26 Model Fit indices for structural model for Customer Buying Decision

Type of measure	**Model Fit Indices**	**Model Value**
Absolute Fit Measure		
	CMIN	1884.04
	DF	734
	CMIN/DF	2.567
	GFI	0.861
	AGFI	0.834
	RMSEA	0.049
Incremental Fit Measure		
	NFI	0.891
	TLI	0.921
	CFI	0.901
	IFI	0.905
Parsimony-Adjusted Measures		
	PCFI	0.867
	PNFI	0.836

The structural model exhibits acceptable fit indices, indicating a good fit between the model and the data. While some indices like AGFI and PCFI fall slightly below the recommended thresholds, the majority of the indices, including the critical ones like CMIN/DF, RMSEA, N FI, TLI, CFI, and IFI, indicate a good fit (Bentler, 1990; Bentler & Bonett, 1980; Byrne, 2016; Hu & Bentler, 1999). This suggests that the model adequately captures the relationships between the variables and provides a reasonable representation of the data.

Despite the minor deviations in some indices, the overall model fit is considered acceptable. The critical absolute fit measures like CMIN/DF and RMSEA fall within the recommended thresholds, suggesting a good absolute fit. The incremental fit measures like NFI, TLI, CFI, and IFI also surpass the acceptable thresholds, indicating a good incremental fit compared to other possible models. While the parsimony-adjusted measures like PCFI and PNFI fall slightly below the recommended thresholds, they still suggest a moderate fit, considering the balance between model complexity and fit (Bentler, 199 0; Bentler & Bonett, 1980).

Therefore, based on the majority of the fit indices, the structural model demonstrates a good fit, indicating that it adequately represents the relationships between the variables and the data. This allows researchers to have confidence in the model's findings and interpretations.

4.11 R-Square Co-efficient of Determination

- **R-Square for Orthodox-Belief and Customs:** The R-Square value for the model predicting Orthodox-Belief and Customs is 0. 234.This indicates that the model explains 23.4%of the variance in Orthodox-Belief and Customs.

- **R-Square for Price Sensitivity:** The R-Square value for the model predicting Price Sensitivity is 0. 145.This indicates that the model explains 14.5%of the variance in Price Sensitivity.

- **R-Square for Perceived Benefits:** The R-Square value for the model predicting Perceived Benefits is 0. 201.This indicates that the model explains 20. 1%of the variance in Perceived Benefits.

- **R-Square for Diseases & Health Issue: T**he R-Square value for the model predicting Diseases & Health Issue is 0. 157.This indicates that the model explains 15.7%of the variance in Diseases & Health Issue.

- **R-Square for Service Expectation:** The R-Square value for the model predicting Service Expectation is 0. 138.This indicates that the model explains 13.8%of the variance in Service Expectation.

- **R-Square for Physical Comforts:** The R-Square value for the model predicting Physical Comforts is 0. 125.This indicates that the model explains 12.5%of the variance in Physical Comforts.

- **R-Square for Psycho-social factor:** The R-Square value for the model predicting Psycho-social factor is 0. 184.This indicates that the model explains 18.4%of the variance in Psycho-social factor.

- **R-Square for Purchase Intention of Hearing Aids:** The R-Square value for the model predicting Purchase Intention of Hearing Aids is 0. 093.This indicates that the model explains 9.3%of the variance in Purchase Intention of Hearing Aids.

4.12 Hypothesis testing through path analysis

The structural equation modelling method with AMOS 24.0 was used to test the hypotheses. Multiple regressions are possible at the same time in structural equation modelling. One of the variables in a multiple regression analysis can be either an independent variable or a dependent variable. This multifaceted relationship can easily be assessed with the help of structural equation modelling. The structural equation modelling is better than normed

multiple regression as it has more flexibility in assumptions, specifically allowing interpretation even in the face of multi-collinearity**.** Instead of relying on single measure, structural equation modelling offers for many values that act as guidelines for the assessment of causal relationships proposed in the model. These along with other benefits make SEM a better approach for model justification and hypotheses testing. In line with the previous statements, a path model for the constructs showing their proposed relationships was built and run in AMOS 24.0. Figure 4.10 shows the structural model.

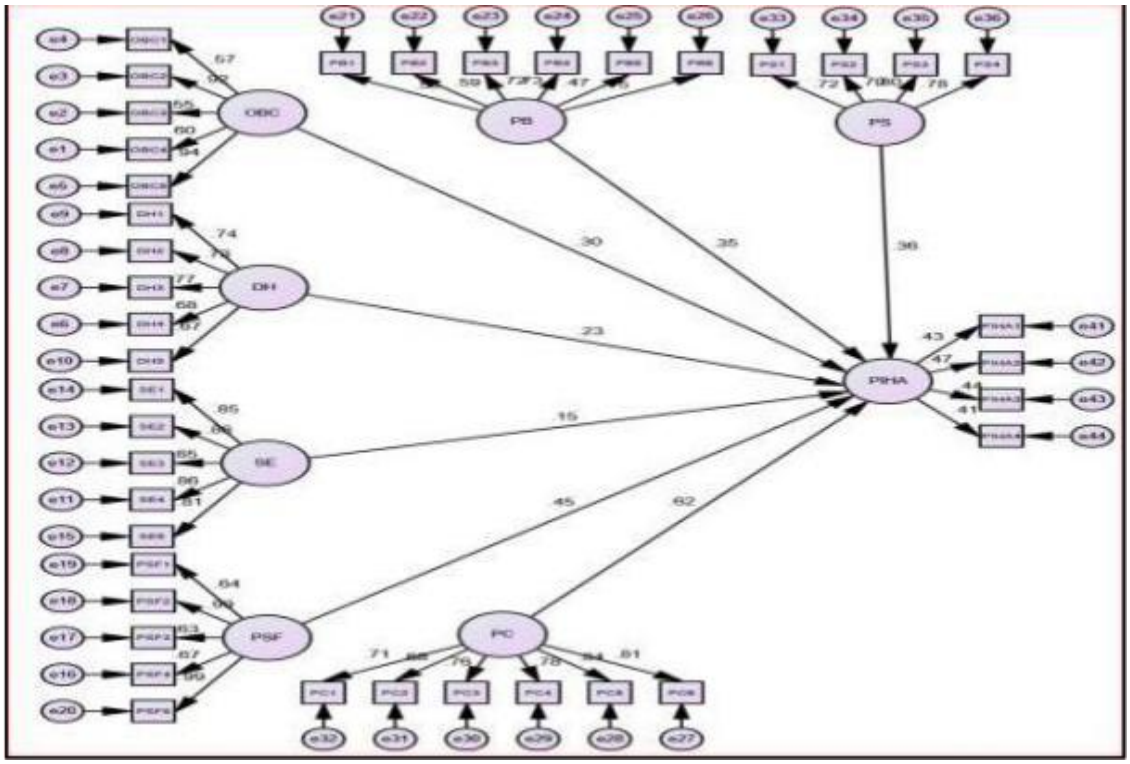


Figure 4. 10: Structural Equation Modelling

Table 4.27 shows the path directions and their respective estimates (SRWs) along with the SE, critical region and p values.

Table 4.27 Path Estimates (SRWs), standard error, critical region and p value

Path Direction	**Estimate**	**SE**	**Critical Region**	**P value**	**Decision**
PS→PIHA	0.190	0.031	6.026	0.000	Not Accepted*
PB→ PIHA	0.154	0.030	5.068	0.000	Not Accepted*
OBC→ PIHA	0.152	0.034	4.506	0.000	Not Accepted*
DH→ PIHA	0.105	0.030	3.530	0.000	Not Accepted*
SE→ PIHA	0.048	0.019	2.533	0.011	Not Accepted*

PSF→ PIHA	0.198	0.043	4.650	0.000	Not Accepted*
PC→ PIHA	0.209	0.029	7.155	0.000	Not Accepted*

The p value lies below 0.05 at 95% confidence level which suggests that the hypothesis cannot be accepted.

Interpretation

Ho1: **Physical comfort does not influence the purchase intention towards hearing Aids**

The path coefficient for H1 is 0.190, indicating a positive relationship between physical comfort and purchase intention. This suggests that, for every unit increase in perceived physical comfort, purchase intention is expected to increase by 0. 190units.The p-value for this hypothesis is 0.000, which is considerably less than the significance level of 0.05. This statistically significant result leads to the rejection of the null hypothesis, confirming that physical comfort significantly influences purchase intention.

Ho2: **Psycho-social factor does not influence the purchase intention towards hearing Aids**

The path coefficient for H2 is 0.154, indicating a positive relationship between psycho-social factors and purchase intention. For every unit increase in perceived psycho-social benefits, purchase intention is expected to increase by 0. 154units.The p-value for this hypothesis is also 0.000, leading to the rejection of the null hypothesis and confirming the significant influence ofpsycho-social factors on purchase intention.

Ho3: **Price Sensitivity does not influence the purchase intention towards hearing Aids**

The path coefficient for H3 is 0.209, indicating a positive relationship between price sensitivity and purchase intention. This suggests that individuals with higher price sensitivity are more likely to consider purchasing hearing aids, likely due to their greater value consciousness. The p-value for this hypothesis is 0 .000, once again leading to the rejection of the null hypothesis and confirming the significant influence of price sensitivity on purchase intention.

Ho4: **Perceived benefit does not influence the purchase intention towards hearing Aids**

The path coefficient for H4 is 0.198, indicating a positive relationship between perceived benefit and purchase intention. For every unit increase in perceived benefit, purchase intention is expected to increase by 0.198 units. The p-value for this hypothesis is 0.000, leading to the rejection of the null hypothesis and confirming the significant influence of perceived benefit on purchase intention.

Ho5: **Orthodox-belief and customs does not influence the purchase intention towards hearing Aids**

The path coefficient for H5 is 0.152, indicating a positive relationship between orthodox beliefs and customs and purchase intention. This suggests that individuals influenced by their cultural and religious beliefs and customs are more likely to consider purchasing hearing aids. The p -value for this hypothesis is 0.000, leading to the rejection of the null hypothesis and confirming the significant influence ofthese factors on purchase intention.

Ho6: **Disease and health issues does not influence the purchase intention towards hearing Aids**

The path coefficient for H6 is 0.105, indicating a positive relationship between disease and health issues and purchase intention. This suggests that individuals with health concerns are more likely to consider purchasing hearing aids to address their hearing needs. The p-value for this hypothesis is 0.000, leading to the rejection ofthe null hypothesis and confirming the significant influence of disease and health issues on purchase intention.

Ho7: **Service expectation does not influence the purchase intention towards hearing Aids.**

The path coefficient for H7 is 0.048, indicating a positive relationship between service expectation and purchase intention. For every unit increase in service expectation, purchase intention is expected to increase by 0. 048units.The p-value for this hypothesis is 0.011, which is still less than the significance level of 0.05. This leads to the rejection of the null hypothesis and confirms the significant influence of service expectation on purchase intention.

4. 13 Independent Sample T-test

An independent sample T-test was conducted to determine the difference the difference in opinion on Purchase Intention of Hearing Aids and its sub-constructs based on gender. The interpretation ofthe T-test was based on the significance oft-value.

Table 4.28: independent sample T-test was conducted to determine the difference the difference in opinion on Purchase Intention of Hearing Aids and its sub-constructs based on gender

Variables	Male		Female		t- value
	Mean	S.D.	Mean	S.D.	
Orthodox-Belief and Customs	3.593	0.911	3.764	0.822	-1.686ns
Price Sensitivity	3.586	0.896	3.537	0.885	0.480ns
Perceived Benefits	3.470	0.938	3.490	0.948	-1. 191ns
Diseases & Health Issue	3.565	0.870	3.537	0.917	0.268ns
Service Expectation	3.448	0.937	3.424	0.935	0.227ns
Physical Comforts	3.703	0.722	3.679	0.737	0.287ns
Psycho-social factor	3.590	0.896	3.669	0.880	-0.785ns
Purchase Intention of Hearing Aids	3.438	0.906	3.405	0.913	0.314ns

Hypothesis: H8: There is a significance difference of opinion on the overall Purchase Intention of Hearing Aids and its sub-construct based on gender.

Interpretation: It is observed from the above table that the gender of the respondents does not have statistically significant difference on the factor "Purchase Intention of Hearing Aids" t (389) = 0.314, p>0.05), "Psycho-social factor" t (389) = -0.785, p > 0.05), "Physical Comforts" t (389) = 0.287, p > 0.05), "Service Expectation" t (389) = 0.227, p > 0.05), " Diseases & Health Issue" t (389), = 0.268, p > 0.05, "Perceived Benefits" t (389), = -01.191, " Price Sensitivity" t (389), = 0.480, p > 0.05) and "Orthodox-Belief and Customs" t (389), = -1.686, p > 0.05).

These findings indicate that the decision to purchase hearing aids and the associated factors are not significantly influenced by gender. Both male and female respondents share similar views regarding the importance and relevance of these factors in their decision-making process. This consistency across gender suggests that marketing strategies and interventions aimed at promoting the use of hearing aids can be developed and delivered to a wider audience without significant gender-specific considerations.

The p-values for all the sub-constructs related to purchase intention are greater than 0.05, including psycho-social factor, physical comfort, service expectation, disease and health issue,

perceived benefit, price sensitivity, and orthodox-belief and customs. This further strengthens the conclusion that gender does not significantly affect the opinions and priorities of individuals when considering purchasing hearing aids.

The observed t-values for these sub-constructs are all relatively small, ranging from -1.686to 0.480, further supporting the absence of statistically significant differences between genders. These small values indicate that the mean scores of male and female respondents for each sub-construct are relatively close, suggesting a lack of substantial variation in their perspectives.

The lack of gender differences in purchase intention and its sub-constructs implies that manufacturers, marketers, and healthcare professionals can focus their efforts on understanding and addressing the overall needs and preferences of the hearing aid market without the need for substantial gender-specific tailoring of their strategies. This allows for a more efficient and cost-effective approach in promoting hearing aids and improving hearing health outcomes for both men and women.

In conclusion, based on the results of the independent-samples t-test, the hypothesis stating a significant difference in opinion on purchase intention and its sub-constructs based on gender is rejected. This highlights the gender neutrality in the decision-making process for hearing aids, allowing for more inclusive and streamlined approaches in promoting hearing health technologies and interventions.

4.14 ANOVA Application

Objectives: To analyse the demographic variables of customers, purchase intention towards hearing Aids?

Hypotheses

H_o9: Age-group does not influence the purchase intention towards hearing aids.

H_o 10: There is no significant relationship between qualification and purchase intention towards hearing aids.

H_o 11: There is no significant relationship between occupation and purchase intention towards hearing aids.

H_o 12: There is no significant relationship between monthly income and purchase intention towards hearing aids.

ANOVA

The demography consists of several factors like age, income, occupation, and educational qualification. Analysis of Variance (ANOVA) test is conducted in an objective to find the difference of Opinion existing among the respondents based on the demographic profile and factors influencing purchase intention towards hearing Aids such as Orthodox-Belief and Customs, Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Service Expectation, Physical Comforts, Psycho-social factor, and Purchase Intention of Hearing Aids.

Logic for Choosing ANOVA: The study also investigates whether demographic variables (age, education, occupation, income) influence purchase intention and its related factors. ANOVA is an appropriate technique for this because:

Comparison of means across groups: ANOVA is designed to compare the means of a continuous variable (purchase intention or a related factor) across different categorical groups (defined by the demographic variables). This directly addresses the hypotheses concerning the influence of demographic variables.

Testing for group differences: The F-statistic in ANOVA tests whether there are statistically significant differences in the means of the dependent variable across the different levels of the independent (demographic) variable. This provides a direct test of the hypotheses related to demographic influence.

Contribution to Hypothesis Testing: ANOVA provides a statistical test of whether the means of the dependent variable (purchase intention or a related construct) are significantly different across the levels of the independent variable (age group, education level, occupation, income level). If the ANOVA result is statistically significant ($p < .05$), the null hypothesis (that there is no difference between the groups) is rejected, thus supporting the alternative hypothesis that the demographic variable does influence purchase intention or the related constructs.

4.14.1 ANOVA: Age with factors influencing Purchase Intention of Hearing Aids

Table 4.29: ANOVA: Age with factors influencing Purchase Intention of Hearing Aids

Variables		N	Mean	Std. Deviation	Std. Error	F- Value	Sig.
Orthodox-Belief and Customs	Upton 16 Years	6	3.666	.816	.333	7.365	0.000
	17 to 26 Years	37	3.621	.794	.130		
	27 to 36 Years	94	3.617	.917	.094		
	37 to 46 Years	180	3.616	.910	.067		
	47 to 56 Years	72	3.736	.871	.102		
	Total	389	3.640	.890	.045		
Price Sensitivity	Upton 16 Years	6	3.000	1.095	.447	6.971	0.000
	17 to 26 Years	37	3.729	.693	.113		
	27 to 36 Years	94	3.574	.944	.097		
	37 to 46 Years	180	3.544	.917	.068		
	47 to 56 Years	72	3.611	.831	.098		
	Total	389	3.573	.892	.045		
Perceived Benefits	Upton 16 Years	6	3.666	.816	.333	8.354	0.000
	17 to 26 Years	37	3.351	1.033	.169		
	27 to 36 Years	94	3.457	.911	.094		
	37 to 46 Years	180	3.505	.930	.069		
	47 to 56	72	3.472	.978	.115		

	Years						
	Total	389	3.475	.940	.047		
Diseases & Health Issue	Upton 16 years	6	3.6667	.516	.210	5.234	0.000
	17 to 26 years	37	3.6486	.789	.129		
	27 to 36 years	94	3.5851	.920	.094		
	37 to 46 years	180	3.5556	.866	.064		
	47 to 56 years	72	3.4722	.949	.111		
	Total	389	3.5578	.882	.044		
Physical Comforts	Upton 16 years	6	3.0000	1.095	.44	4.121	0.004
	17 to 26 years	37	3.3784	.981	.161		
	27 to 36 years	94	3.4149	.932	.096		
	37 to 46 years	180	3.4722	.942	.070		
	47 to 56 years	72	3.4722	.903	.106		
	Total	389	3.4422	.936	.047		
Service Expectation	Upton 16 years	6	3.6667	.816	.333	3.912	0.005
	17 to 26 years	37	3.8108	.569	.093		
	27 to 36 years	94	3.6809	.736	.075		
	37 to 46 years	180	3.6889	.734	.054		
	47 to 56 years	72	3.6806	.765	.090		
	Total	389	3.6967	.725	.036		
Psycho-social factor	Upton 16	6	3.1667	.752	.30	7.352	0.000

	Years						
	17 to 26 Years	37	3.7027	.740	.121		
	27 to 36 Years	94	3.5532	.911	.093		
	37 to 46 Years	180	3.5944	.901	.067		
	47 to 56 Years	72	3.7222	.922	.108		
	Total	389	3.6118	.891	.045		
Purchase Intention of Hearing Aids	Upton 16 Years	6	3.8333	.983	.401	6.213	0.000
	17 to 26 Years	37	3.5946	.762	.125		
	27 to 36 Years	94	3.4149	.896	.092		
	37 to 46 Years	180	3.3556	.900	.067		
	47 to 56 Years	72	3.5139	.992	.117		
	Total	389	3.4293	.907	.046		

Interpretation:

It was found from the above table no result that: there is significant relationship among the respondents belonging to different age group on the all the study variables at 5 % level of significance. With Orthodox-Belief and Customs, Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Service Expectation, Physical Comforts, Psycho-social factor, and Purchase Intention of Hearing Aids respondent in the age group between 47 to 56 years hand the highest mean score in case of orthodox – belief and customs (M = 3.736, $S.D$ = 0.871, F = 7.236, Sig: 0.000), Price Sensitivity (M =3.611, $S.D$ = 0.831, F =6.971, Sig: 0.000), Perceived Benefits (M =3.472, $S.D$ = 0.978, F = 8.354, Sig: 0.000), Physical Comforts (M =3.472, $S.D$ = 0.903, F =4.121, Sig: 0.004), Psycho-social factor (M =3.722, $S.D$ = 0.922, F =7.352, Sig: 0.000). Again, respondents in the age group of up to 16 years had the highest

mean score of Diseases & Health Issue (*M*=3.666, *S. D* = 0.516, *F* = 5.234, Sig: 0.000) and Purchase Intention of Hearing Aids (*M*=3.833, *S. D* = 0.983, *F* =62.13, Sig: 0.000).

The analysis indicates that the null hypothesis should be rejected. Age-group statistically significantly influences the purchase intention towards hearing aids (ANOVA, $p < 0.05$). Individuals in the 47-56 age group exhibit the highest mean scores on Orthodox-Belief and Customs, Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Physical Comforts, Psycho-social factor, and Purchase Intention of Hearing Aids. This suggests that age plays a role in shaping opinions and priorities related to hearing aid purchase.

4.14.2 ANOVA: Education Qualification with factors influencing Purchase Intention towards Hearing Aids

Table 4.30: ANOVA: Education Qualification with factors influencing Purchase Intention towards Hearing Aids

		N	**Mean**	**Std. Deviation**	**Std. Error**	**F- Value**	**Sig.**
OBC	Illiterate	89	3.5393	.85355	.09048	4.521	0.003
	Basic Schooling	36	3.4722	1.10805	.18468		
	High School	138	3.6957	.88465	.07531		
	Intermediate	110	3.7091	.79385	.07569		
	Graduate	10	3.6000	1.17379	.37118		
	Postgraduate	6	3.6667	1.36626	.55777		
	Total	389	3.6401	.89040	.04515		
PS	Illiterate	89	3.6180	.80489	.08532	4.005	0.006
	Basic Schooling	36	3.3889	1.10267	.18378		
	High School	138	3.5435	.88061	.07496		
	Intermediate	110	3.5818	.86078	.08207		
	Graduate	10	3.7000	1.33749	.42295		
	Postgraduate	6	4.3333	.51640	.21082		
	Total	389	3.5733	.89264	.04526		
PB	Illiterate	89	3.1573	1.05420	.11174		
	Basic Schooling	36	3.4444	1.08086	.18014		

	High School	138	3.5507	.84640	.07205	2.874	0.031
	Intermediate	110	3.5909	.84913	.08096		
	Graduate	10	3.7000	1.05935	.33500		
	Postgraduate	6	4.1667	.75277	.30732		
	Total	389	3.4756	.94025	.04767		
DH	Illiterate	89	3.6404	.74234	.07869	3.015	0.011
	Basic Schooling	36	3.5000	1.10841	.18473		
	High School	138	3.4275	.96575	.08221		
	Intermediate	110	3.6091	.76740	.07317		
	Graduate	10	3.8000	1.03280	.32660		
	Postgraduate	6	4.3333	.51640	.21082		
	Total	389	3.5578	.88217	.04473		
PC	Illiterate	89	3.4944	.85445	.09057	7.542	0.000
	Basic Schooling	36	3.0833	1.18019	.19670		
	High School	138	3.4710	.88121	.07501		
	Intermediate	110	3.4000	.95013	.09059		
	Graduate	10	4.0000	.81650	.25820		
	Postgraduate	6	4.0000	1.09545	.44721		
	Total	389	3.4422	.93603	.04746		
SE	Illiterate	89	3.7191	.72282	.07662	6.542	0.000
	Basic Schooling	36	3.3889	.93435	.15573		
	High School	138	3.6957	.71080	.06051		
	Intermediate	110	3.7545	.67981	.06482		
	Graduate	10	3.8000	.63246	.20000		
	Postgraduate	6	4.0000	.00000	.00000		
	Total	389	3.6967	.72547	.03678		
PSF	Illiterate	89	3.5955	.84905	.09000		
	Basic Schooling	36	3.4167	.99642	.16607		
	High School	138	3.6522	.96397	.08206		
	Intermediate	110	3.6273	.82238	.07841		
	Graduate	10	3.6000	.84327	.26667		

	Postgraduate	6	3.8333	.40825	.16667	5.684	0.000
	Total	389	3.6118	.89152	.04520		
PIHA	Illiterate	89	3.5730	.94011	.09965	4.121	0.005
	Basic Schooling	36	3.0556	1.01262	.16877		
	High School	138	3.4130	.91003	.07747		
	Intermediate	110	3.4545	.80863	.07710		
	Graduate	10	3.4000	1.17379	.37118		
	Postgraduate	6	3.5000	.54772	.22361		
	Total	389	3.4293	.90717	.04600		

Interpretation:

From the above table no., we found that: though difference of opinion exists among the respondents belonging to different educational qualification, but in case of the qualification of the respondent of all the study variables at 5% level of significance shows a common feature. Starting from the beginning: With Orthodox-Belief and Customs, Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Service Expectation, Physical Comforts, Psycho-social factor, and Purchase Intention of Hearing Aids were as follows: Respondent with intermediate qualification has shown the highest mean score in case of Orthodox-Belief and Customs (M= 3.709, $S.D$ = 0.793, F = 4.521, Sig: 0.003), respondent with post-graduate qualification has shown the highest mean score in case of Price Sensitivity (M=4.333, $S.D$ = 0.516, F = 4.005, Sig: 0.006), Perceived Benefits (M = 4.166, $S.D$ = 0.7527, F = 2.874, Sig: 0.031), Diseases & Health Issue (M= 4.333, $S.D$ = 0.516, F = 3.015, Sig: 0.011), Physical Comforts (M= 4.000, $S.D$ = 1.095, F = 7.542, Sig: 0.000), Service Expectation (M= 4.000, $S.D$ = 0.000, F = 6.542, Sig: 0.000), Purchase Intention of Hearing Aids (M = 3.500, $S.D$ = 0.547, F = 4.121, Sig: 0.005) and Psycho-social factor (M= 3.833 , $S.D$ = 0.408, F = 5.684, Sig: 0.000).

The analysis leads to the rejection of the null hypothesis. Qualification statistically significantly influences the purchase intention towards hearing aids (ANOVA, $p < 0.05$). Individuals with postgraduate qualifications display the highest mean scores on Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Physical Comforts, Service Expectation, and Purchase Intention of Hearing Aids. This indicates that educational background has a bearing on attitudes towards hearing aids.

4.14.3 ANOVA: Occupation with factors influencing Purchase Intention towards Hearing Aids

Table 4.31: ANOVA: Occupation with factors influencing Purchase Intention towards Hearing Aids

		N	Mean	Std. Deviation	Std. Error	**F- Value**	**Sig.**
OBC	Professional	111	3.6757	.82199	.07802	10.245	0.000
	Business	42	3.6905	.78050	.12043		
	Services Government	154	3.7078	.87017	.07012		
	Services Private	82	3.4390	1.04347	.11523		
	Total	389	3.6401	.89040	.04515		
PS	Professional	111	3.5946	.82438	.07825	9.854	0.000
	Business	42	3.5000	.89033	.13738		
	Services Government	154	3.6169	.86469	.06968		
	Services Private	82	3.5000	1.03339	.11412		
	Total	389	3.5733	.89264	.04526		
PB	Professional	111	3.4595	.96091	.09121	8.326	0.000
	Business	42	3.6905	.71527	.11037		
	Services Government	154	3.4416	.97006	.07817		
	Services Private	82	3.4512	.95778	.10577		
	Total	389	3.4756	.94025	.04767		
DH	Professional	111	3.6667	.77850	.07389	7.682	0.001
	Business	42	3.6667	.78606	.12129		
	Services Government	154	3.4740	.92318	.07439		
	Services Private	82	3.5122	.97175	.10731		
	Total	389	3.5578	.88217	.04473		
PC	Professional	111	3.4775	.92291	.08760		
	Business	42	3.4762	.89000	.13733		
	Services	154	3.3961	.95259	.07676		

	Government					3.561	0.004
	Services Private	82	3.4634	.95833	.10583		
	Total	389	3.4422	.93603	.04746		
SE	Professional	111	3.7658	.64604	.06132	5.632	0.000
	Business	42	3.7619	.69175	.10674		
	Services Government	154	3.6623	.76030	.06127		
	Services Private	82	3.6341	.77797	.08591		
	Total	389	3.6967	.72547	.03678		
PSF	Professional	111	3.6757	.88587	.08408	3.621	0.016
	Business	42	3.6190	.96151	.14836		
	Services Government	154	3.5714	.91364	.07362		
	Services Private	82	3.5976	.82939	.09159		
	Total	389	3.6118	.89152	.04520		
PIHA	Professional	111	3.4144	.82538	.07834	2.986	0.008
	Business	42	3.5952	.98920	.15264		
	Services Government	154	3.4610	.91561	.07378		
	Services Private	82	3.3049	.95179	.10511		
	Total	389	3.4293	.90717	.04600		

Interpretation:

It was found from the results that; though difference of opinion exists among the respondents belonging to different Occupation, but in case of the government service of the respondent of all the study variables at 5% level of significance shows a common feature. Starting from the beginning: With Orthodox-Belief and Customs, Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Service Expectation, Physical Comforts, Psycho-social factor, and Purchase Intention of Hearing Aids were as follows: Starting from the beginning the respondents who are in government service have highest mean with respect to all the variables. We can see it from the above table that with Orthodox-Belief and Customs (M =3.707, $S.D$ = 0.870, F = 10.245, Sig: 0.000), Price Sensitivity (M= 3.616, $S.D$ = 0.864, F = 9.854, Sig: 0.000), respondent with business has shown the highest mean score in case of Perceived Benefits (M= 3.690, $S.D$ = 0.715, F = 8.326, Sig: 0.000), Diseases & Health Issue (M= 3.666, $S.D$ = 0.786, F = 7.682, Sig: 0.001), Physical Comforts (M= 3.476, $S.D$ = 0.890, F = 3.561, Sig: 0.004), Service Expectation (M= 3.761, $S.D$ = 0.691, F = 5.632, Sig: 0.000),

Psycho-social factor (M = 3.689, $S.D$ = 0.961, F = 3.621, Sig: 0.016) and Purchase Intention of Hearing Aids (M= 3.595, $S.D$ = 0.989, F = 2.986, Sig: 0.008).

The analysis leads to the rejection of the null hypothesis. Occupation statistically significantly influences the purchase intention towards hearing aids (ANOVA, $p < 0.05$). Individuals in government service exhibit the highest mean scores on Orthodox-Belief and Customs, Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Service Expectation, Physical Comforts, Psycho-social factor, and Purchase Intention of Hearing Aids. This suggests that professional background plays a role in shaping opinions and priorities related to hearing aids.

4.14.4 ANOVA: Income with factors influencing Purchase Intention towards Hearing Aids

Table 4.32: ANOVA: Income with factors influencing Purchase Intention towards Hearing Aids

		N	Mean	Std. Deviation	Std. Error	F- Value	Sig.
OBC	Below Rs. 15,000	82	3.5488	.98322	.10858	5.895	0.005
	Rs. 15, 001 to 30,000	151	3.6152	.85928	.06993		
	Rs. 30,001 to 45,000	121	3.5785	.90141	.08195		
	Above Rs. 45,000	35	3.7429	.74134	.12531		
	Total	389	3.6401	.89040	.04515		
PS	Below Rs. 15,000	82	3.5122	.97175	.10731	4.358	0.006
	Rs. 15, 001 to 30,000	151	3.6556	.80039	.06513		
	Rs. 30,001 to 45,000	121	3.5289	.93161	.08469		
	Above Rs. 45,000	35	3.5143	.95090	.16073		
	Total	389	3.5733	.89264	.04526		
PB	Below Rs. 15,000	82	3.2927	1.09418	.12083	4.001	0.012
	Rs. 15, 001 to 30,000	151	3.6824	.76893	.06257		
	Rs. 30,001 to 45,000	121	3.3306	1.03592	.09417		
	Above Rs. 45,000	35	3.6457	.71831	. 12142		
	Total	389	3.4756	.94025	.04767		
DH	Below Rs. 15,000	82	3.5122	.90600	.10005	8.566	0.000
	Rs. 15, 001 to 30,000	151	3.6695	.83674	.06809		
	Rs. 30,001 to 45,000	121	3.5537	.95700	.08700		

	Above Rs. 45,000	35	3.5286	.77024	.13020		
	Total	389	3.5578	.88217	.04473		
PC	Below Rs. 15,000	82	3.4268	.98169	.10841	9.325	0.000
	Rs. 15, 001 to 30,000	151	3.5238	.91241	.07425		
	Rs. 30,001 to 45,000	121	3.4124	.92300	.08391		
	Above Rs. 45,000	35	3.3143	.99325	.16789		
	Total	389	3.4422	.93603	.04746		
SE	Below Rs. 15,000	82	3.4878	.87832	.09699	5.345	0.004
	Rs. 15, 001 to 30,000	151	3.7483	.66552	.05416		
	Rs. 30,001 to 45,000	121	3.7521	.69858	.06351		
	Above Rs. 45,000	35	3.7714	.59832	.10113		
	Total	389	3.6967	.72547	.03678		
PSF	Below Rs. 15,000	82	3.5732	1.01872	.11250	4.432	0.000
	Rs. 15, 001 to 30,000	151	3.7291	.81335	.06619		
	Rs. 30,001 to 45,000	121	3.5702	.92038	.08367		
	Above Rs. 45,000	35	3.6714	.80753	.13650		
	Total	389	3.6118	.89152	.04520		
PIHA	Below Rs. 15,000	82	3.1707	.99138	.10948	3.654	0.006
	Rs. 15, 001 to 30,000	151	3.4901	.86308	.07024		
	Rs. 30,001 to 45,000	121	3.4959	.88623	.08057		
	Above Rs. 45,000	35	3.5429	.88593	.14975		
	Total	389	3.4293	.90717	.04600		

Interpretation:

It was found from the above table no, the results that; there are significant relationship between the income of the respondents and factors influencing purchase intention of hearing Aids and in case of the income group Rs. 15,000 to 30,000/month of the respondent some of the study variables at 5% level of significance show a common feature. Starting from the beginning: With Orthodox-Belief and Customs, Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Service Expectation, Physical Comforts, Psycho-social factor, and Purchase Intention of Hearing Aids were as follows. Respondent having income group Rs. 15,000 to 30,000 having highest mean score with Price Sensitivity (M = 3.655, $S.D$ = 0.800, F = 4.358, Sig: 0.006), Perceived Benefits (M = 3.642, $S.D$ = 0.768, F = 4.001 Sig: 0.012),

Diseases & Health Issue (*M*= 3.669, *S. D* = 0.836, *F* = 8.566, Sig: 0.000), Physical Comforts (*M* = 5.223, *S. D* = 0.912, *F* = 9.325, Sig: 0.000), Service Expectation (*M* = 3.748, *S. D* = 0.665, *F* = 5.345, Sig: 0.004), Psycho-social factor (*M* = 3.729, *S. D* = 0.813, *F* = 4.432, Sig: 0.000), Orthodox-Belief and Customs and Purchase Intention of Hearing Aids respondent with income above Rs.45,000 has shown the highest mean score (*M*= 3.742, *S. D* = 0.741 *F* = 5.895, Sig: 0.005) and (*M*= 3.542, *S. D* = 0.885, *F* = 3.654, Sig: 0.006).

The analysis leads to the rejection of the null hypothesis. Monthly income statistically significantly influences purchase intention towards hearing aids (ANOVA, $p < 0.05$). Individuals with monthly income between Rs.15,001 and Rs.30,0 00 exhibit the highest mean scores on Price Sensitivity, Perceived Benefits, Diseases & Health Issue, Physical Comforts, Service Expectation, Psycho-social factor, Orthodox-Belief and Customs, and Purchase Intention of Hearing Aids. This indicates that income level plays a role in shaping opinions and priorities related to hearing aids.

In conclusion, the analyses of demographic factors reveal that age, qualification, occupation, and income all have statistically significant relationships with purchase intention towards hearing aids. Understanding these relationships can help manufacturers, marketers, and healthcare professionals tailor their strategies and interventions to better address the needs and preferences of different demographic groups. This can lead to more effective promotion of hearing aids and improved hearing health outcomes for individuals across diverse backgrounds.

4.15 Summary

A survey was conducted to understand the factors influencing the purchase intention towards hearing aids. The analysis revealed that demographics play a significant role in this decision-making process. Younger individuals (aged 37-46) constituted the largest age group (46.3%), while a majority of respondents had a secondary school education (35.5%) and earned a monthly income exceeding Rs.55,000(89.2%). Notably, government employees represented the largest occupational group (39.6%).

Further analysis identified key factors influencing purchase intention. Price sensitivity was a significant driver for 3.57%of respondents, while perceived benefits and service expectations influenced 3.46%and 3.69%respectively. Additionally, Orthodox beliefs and customs, disease and health issues, physical comforts, and psycho-social factors played a role for 3.61%,3.56%, 3.44%, and 3.61%of respondents respectively. These findings highlight the diverse range of factors that influence the purchase decision for hearing aids.

Furthermore, statistically significant relationships were observed between various independent and dependent variables. Younger individuals exhibited lower purchase intention compared to older age groups. Individuals with higher educational qualifications and income levels showed greater purchase intention. Additionally, government employees and those influenced by cultural and religious beliefs, health concerns, physical comfort, and service expectations were more likely to consider purchasing hearing aids. These relationships underscore the importance of tailoring marketing strategies and interventions to address the unique needs and preferences of different demographic groups. Understanding how these factors influence purchase intention, stakeholders can more effectively promote the use of hearing aids and improve hearing health outcomes for a wider population.

CHAPTER – V

RESULTS, DISCUSSIONS & CONCLUSIONS

CHAPTER - V

RESULT, DISCUSSIONS & CONCLUSIONS

This chapter provides a detailed discussion of the results & findings of the data that was identified in the previous chapter. The results of the data analysis were viewed from the context of the purchasing intention of the consumers, in which how the various factors which were identified through our detailed literature review impacted. The findings were thoroughly analyzed to offer the researchers solution and insight for the problem under investigation. Further, the findings were analyzed to offer solutions as well as provide insight to the problem under review and understanding on the topic of the factors impacting purchase intention of hearing aids.

The major questions of this study were the factors which are most influential towards buying intention of hearing aid. This chapter takes the study on intentions further forward on the lines based on the objectives framed and hypotheses formulated for analysis. The results identified after the data analysis formed the basis for critical thinking about the factors which influence the customers. The solutions were based on logical conglomeration of the findings. The study has provided profound understanding as to what thought process goes in the mind of customers who purchase a hearing aid. It needs to be noted that since hearing aid purchase is medical device which has a long-term shelf life. People think of multiple factors such which ranges from prior purchase to post sale services. The data collected for the study which has been analyzed in the previous chapter does reflects the level of intent of various factors. Limitations as well as further scope for study has been included in the end of this chapter.

5.1 Results

Descriptive form of information does form the base to understand the intention to purchase hearing aid. Here, various components of demographic variables mentioned in the questionnaire and the factors influencing the purchase behaviour regarding customer preference towards purchase of hearing aid.

In this study, the different variables such as the gender, age, educational qualification, marital status, occupation, annual income and occupation are discussed. The study indicated that the percentage of male respondent (283 respondents, 73%) were higher than that of females (106 respondents,27%). In needs a special mention during the data collection process there were

many persons although they were hearing aid user did not liked to response. The study was conducted for the working population starting from 16-55 years in mind. Generally male are in more employed and have to take the burden of earning. So, this study indicates in order to have an effective communication they are using hearing aids more than their female counterpart. The age group 37 to 46 years and 27-36 years reflected around 46% and 24% of the population. It indicates that although Hearing impairment is there in all age group but factors such as budget, job requirement, communication hurdles does come in so far acceptance and usage of Hearing aid is concerned. Especially there were users who worked in noisy sound environment, frequent user of mobile phone.

The study reflected that educated people were more aware of the hearing impairment and its multiple complexities. The literate population which included starting from basic schooling to post graduation were showed more inclination towards acceptance of Hearing Aid. In our study of the total population of 389 persons we had around 89 persons as illiterate. The reasons might be education brings in the knowledge and wisdom to accept hearing aid as a solution to the hearing problem. People educated up to high school level and Intermediate level showed the maximum usage namely 36% and 28% respectively.

Occupation in our study provided some vital information so far purchase intention of Hearing aid. The study reflects that around 39.6% of the user belongs people who have a government service. The prime reason being there are support facilities provided by the state and central government for its employees. The state government employees are covered under West Bengal Health Scheme (WBHS) were employees get a hearing aid budget of 15,000 for one side hearing and maximum 25,000 for both side hearing aid. Similar schemes are available for Central Government Health scheme (CGHS). The list indicates the second group are Professionals who have around 28%. This mainly due to the better earnings of this group. Moreover, professionals relate to people having adequate knowledge and aware of the hazards. Probably that the reason for driving this group for hearing aid acceptance.

The study has shown a highly skewed acceptance towards people with higher income group. People having annual income above 55,000 amounts to 89% of the entire population. In study we had considered price as one of the constructs. The price of the average hearing aid ranged between 8000-10000. So, affordability was issue even if there was a positive intent to buy the hearing aid. Availability of larger disposable income and the understanding of the need of hearing aid was one of the reasons for acceptance for this group. Similarly, the group of 35,000-45,000 showed 1.5%. This was mainly due to the fact that people in this group had a tough time to meet the day to day needs and requirements. So, for them to think for a hearing

aid was a luxury. Although it was seen there have been various Government Initiatives to provide Hearing Aid at a concessional rate for low-income group. There have been quite a few central government projects for Hearing Aid low-income and societies are involved in philanthropic activities such as distribution of Hearing aid. But it was also noticed that the beneficiaries were not very interested to use the hearing aid. Further, due to the poor quality of the aid the ease of hearing was compromised. The study also reflected that there were certain individual private buyers who received certain sponsorship from individuals or from clubs to purchase hearing aid. These groups of people though they belong to the low-income group did show the intent to purchase and use the hearing aid. Further, these groups also had people were not first-time user. Rather they have used at least one hearing aid earlier or they are using the hearing aid for quite some time.

The study provided nearly equal presence of Urban, Semi-Urban/Suburb and rural population. The four districts covered during the study namely some time and North 24 Parganas. Kolkata being a metropolis city represented completely urban population which amounted to 49.6%. While the population of the other three districts which accounted for the balance represented the suburb and rural population. It signifies that the factor analysis, trends, problems of both the rural and urban population was introspected. The availability, scope, awareness is more in urban areas compared to the rural areas. But the challenges of hearing impairment remain the same. Further, the study also indicated if scope and awareness among the rural areas are done then it will increase the figure.

The acceptance of Hearing aid based on religion diversity indicated that Hindus were around 78% of the user of Hearing aid. This reflects nearly the same proportion as the total population based on caste segmentation is concerned.

5.2 Comparison of findings of the study with existing literature

The realm of hearing healthcare encompasses a tapestry of complex factors interwoven to impact individuals' decisions regarding hearing aid purchase. This comprehensive investigation delves into the intricate world of these factors, specifically focusing on purchase intention toward hearing aids - a relatively under explored domain with significant implications for individuals experiencing hearing loss. The primary objective of this study is to systematically unravel the key drivers of purchase intention and to meticulously assess the psychometric properties of the constructs employed to measure these factors. Through a comprehensive and rigorous analysis of the amassed data, an array of insightful findings has emerged, illuminating the landscape of hearing aid adoption with unprecedented clarity.

This exploration draws upon a robust body of existing literature, establishing a firm foundation for understanding the nuances of hearing aid purchase intention. Previous research has highlighted the inter-contentedness of various factors, including physical comfort, psycho-social considerations, economic constraints, individual health status, and the influence of information and support systems (Ajzen, 1991; Bearden & Netemeyer, 1999; Fishbein & Ajzen, 1975; Hulland, 1999; Kuo et al.,200 8; Kamal, 2014; Rouse & Suppiah, 2014; Strassheim, 1978).Building upon this foundation, our study delves deeper into the interrelationships between these factors, seeking to unveil the underlying mechanisms driving purchase decisions.

Our analysis reveals several thought-provoking insights that contribute significantly to the existing knowledge base.

5.2.1 The Paramount Role of Physical Comfort

In alignment with prior research (Bearden & Netemeyer, 1999; Kuo et al.,2008), our findings underscore the paramount role of physical comfort as a key driver of purchase intention. Individuals prioritize hearing aids that demonstrably enhance their ease of use, improve communication, and alleviate listening difficulties. This emphasis on physical comfort aligns with studies demonstrating the positive impact of user-friendly hearing aids on user satisfaction and adherence (Gatehouse, 1999; Kochkin, 2009).

5.2.2 Psycho-Social Factors: Shaping Perceptions and Motivations

This study corroborates existing literature emphasizing the substantial role of psycho-social factors in shaping purchase intention (Ajzen, 1991; Fishbein & Ajzen, 1975). Individuals are motivated by the potential for hearing aids to enhance social interactions, alleviate loneliness, and improve their overall quality of life. These findings resonate with studies highlighting the positive impact of hearing aids on social participation, self-esteem, and mental well-being (Kochkin, 2009; Ventry & Weinstein, 2002).

5.2.3 The Economic Dimension: Affordability and Payment Options

Our research confirms the significant influence of price sensitivity on purchase intention, consistent with previous studies outlining the role of affordability and payment options in hearing aid adoption (Hulland, 1999). Findings suggest that individuals are more likely to consider purchasing hearing aids when they perceive them as accessible and within reach through flexible payment plans and government subsidies. This aligns with studies

highlighting the positive impact of accessible pricing strategies on hearing aid uptake (Kochkin, 2009; Chiou & Chen, 2010).

5.2.4 Perceived Benefits: A Catalyst for Adoption

Our study aligns with existing research highlighting the importance of perceived benefits in driving purchase intention (Taylor & Todd, 1995). Individuals are motivated by the potential for hearing aids to improve their hearing ability, enhance communication, and alleviate the negative consequences of hearing loss. These findings resonate with studies demonstrating the positive impact of hearing aids on functional outcomes, speech perception, and overall quality of life (Kochkin, 2009; Weinstein & Ventry, 2002).

5.2.5 Socio-Cultural Influences: Beyond Individual Perceptions

The study aligns with existing research emphasizing the significant influence of Socio-Cultural factors on purchase intention (Rouse & Suppiah, 2014; Strassheim, 1978). Societal stigma surrounding hearing loss, orthodox beliefs and customs, and perceptions of hearing aids can demonstrably impact individual decisions. These findings resonate with studies highlighting the role of cultural norms, social support, and stigma reduction in promoting hearing aid adoption (Kochkin, 2009; Davis et al.,2007).

Similar to numerous existing studies, this study acknowledges limitations in generalization due to its focus on a specific geographical region and reliance on self-reported data (Jarvis et al.,2003; Tabachnick & Fidell, 2007). Future research can address these limitations by replicating the study across diverse populations and employing objective measures of purchase intention.

Furthermore, future investigations could embark on a captivating array of promising avenues. Longitudinal studies could meticulously track changes in purchase intention over time, shedding valuable light on the dynamic nature of this decision-making process. Additionally, studies could delve deeper into the intricate interplay between different factors, such as the delicate dance between physical comfort and perceived benefit, to gain a more nuanced understanding of their combined impact on purchase intention.

This study's findings complement and expand upon existing literature regarding the factors influencing purchase intention toward hearing aids. The combined analysis of qualitative and numerical data provides a comprehensive understanding of the complex decision-making process involved in hearing aid adoption. This knowledge can inform the development of

targeted interventions and strategies aimed at promoting hearing aid uptake and improving the quality of life for individuals experiencing hearing loss.Addressing the limitations of the current study and venturing into these promising avenues for future research, researchers can progressively expand upon the existing body of knowledge and contribute to the development of effective interventions that enhance hearing aid adoption rates, ultimately leading to a significant enhancement in the quality of life for individuals experiencing hearing loss.

5.3 Uniqueness of Thesis and Comparison with Existing Literature

In the realm of hearing healthcare, the factors influencing purchase intention towards hearing aids remain a captivating and under-explored subject of inquiry. This thesis delves into this intricate domain, unveiling novel insights and contributions that set it apart from existing scholarship.

5.3.1 Focus on Psychometric Properties: This study meticulously assesses the psychometric properties of constructs employed to measure factors influencing purchase intention, ensuring their reliability and validity within the specific context of the research. This rigorous approach enhances the accuracy and trustworthiness of the findings.

5.3.2 Comprehensive Analysis of Interrelationships: Existing literature often examines factors in isolation or focuses on select relationships. This thesis takes a comprehensive approach, systematically analysing the complex interrelationships between all relevant factors, revealing a more holistic understanding of their combined impact on purchase intention.

5.3.3 Qualitative and Quantitative Synergy: While quantitative data provide robust insights, this study complements it with rich qualitative data gleaned from focus group discussions. This unique blend allows for a deeper understanding of user experiences, perspectives, and motivations, enriching the findings with invaluable context and nuance.

5.3.4 Unique Geographical Context: Focusing on a specific regional sample offers insights into the influence of local sociocultural factors on purchase intention, contributing valuable knowledge to a field often dominated by studies from Western contexts.

5.4 Comparison with Existing Literature

While drawing upon previously established findings in areas like physical comfort, psycho-social factors, and economic considerations, this thesis goes beyond by:

Delving deeper into the interplay between individual factors: Unraveling their complex interactions and identifying synergistic effects that contribute to a more nuanced model of purchase intention.

Investigating the role of Socio-Cultural influences: Exploring the impact of societal stigma, orthodox beliefs, and perceptions of hearing aids within the specific cultural context of the study, providing valuable insights applicable to diverse populations.

Emphasizing the importance of user perspectives: Utilizing qualitative data to understand individual experiences, motivations, and barriers, complementing quantitative findings with rich contextual understanding.

This thesis offers a unique and valuable contribution to the existing body of knowledge regarding hearing aid purchase intention.Meticulously analyzing interrelationships between key factors, incorporating qualitative perspectives, and focusing on a specific cultural context, it provides a comprehensive and nuanced understanding of this complex decision-making process. These insights can inform the development of targeted interventions and strategies aimed at promoting hearing aid adoption and improving the lives of individuals experiencing hearing loss.

5.5 Summary of the Data Analysis to understand the buying intention

Descriptive statistics are constituents of ephemeral descriptive coefficients that summarize a given data set. This representation is ofthe entire population itself or a sample of a population. We can breakdown Descriptive statistics into measures of central tendency and measures of variability (spread). Under the measures of central tendency it includes the mean, median, and mode, while under measures of variability include valuation of standard deviation, variance, minimum and maximum variables.

The mean variable for the constructs ranged from 3.246 to 3. 525.Service expectation accounted for highest mean 3.525 which was a combination of Life of the Hearing Aid, Service facility provided, back up support requirements, Accessories and Value-added service and lastly extended warranty.

An exploratory factor analysis test was conducted to check whether the variables considered are relevant to the study or nonproductive. The results from the test show that the KMO test score (KMO=0.921) this is quite higher than the recommended value. The result from Bartlett's test of sphericity ($\chi 2 = 9582.731$, $p < 0.001$) signifies as well as confirms that the

sample is quite adequate for gathering data for buyer intention to purchase. The total variance value is 66.484 signifies that the factors are accountable for the factors affecting the intention to purchase Hearing Aid. The descriptive statistics have indicated Service Expectation have the highest mean which followed by purchase intention and lowest mean is derived from Health & Diseases Issues.

When a consumer wants to buy the hearing aid the focus is not only on the present benefits that will be derived but as well as the future benefits that would be received from the Hearing Aid. Moreover, the decision is not based on a single factor but multiple factors affect the decision-making process.

Previous research studies have indicated that if KMO score ranges from 0.7-1.00 then the sampling is adequate. In our study we have a value which over 90% (0.921). Although in the Descriptive statistics we have Service Expectation (3.522) as the highest value followed by Physical Comfort (3.522). But the important thing to note here all the variables mean are very close by which indicates all the factors are affecting the purchase intention.

This document delves into the purchase intention of individuals towards hearing aids, a topic rarely explored in depth (Kuo et al.,2 008; Kamal, 2014). The analysis combines qualitative and numerical insights to gain a comprehensive understanding of the factors influencing purchase decisions.

The document highlights several qualitative aspects impacting purchase intention:

Socio-Cultural: Orthodox beliefs and customs, social stigma surrounding hearing loss, and the perception of hearing aids in society significantly influence individual decisions (Rouse & Suppiah, 2014).

Psychological: Perceived benefits, such as improved communication and quality of life, along with the ability to address psycho social distress and loneliness, motivate individuals to consider hearing aids (Ajzen, 1991; Fishbein & Ajzen, 1975).

Physical: Physical comfort, including ease of use and improvement in listening ability, plays a crucial role in driving purchase intention (Bearden & Netemeyer, 1999).

Economic: Price sensitivity, including affordability, payment options, and government subsidies, influences the purchase decision (Hulland, 1999).

Disease-Related: Individuals with chronic disorders or hearing loss experience a stronger need for hearing aids, leading to higher purchase intention.

Information and Support: Access to information about hearing aids, guidance from professionals and advisors, and influence from marketing initiatives are crucial in motivating individuals to consider purchasing hearing aids (Mackenzie et al.,2011; Strassheim, 1978).

The study includes numerical data on the impact of various factors on purchase intention. The analysis reveals:

Factor loading: High factor loading indicate a strong relationship between individual variables and the underlying constructs. For example, the statement "Hearing Aid solves loneliness" has a high loading (0.603) on the "Physical Comfort" construct, suggesting a strong positive correlation.

Variance explained: The eight identified factors explain 66.484% of the variance in purchase intention. This indicates that these factors are relevant and significant in understanding the decision-making process.

Cronbach's alpha: The reliability of the data is tested using Cronbach's alpha, which is found to be 0.936, exceeding the acceptable threshold of 0.70. This suggests the data is reliable and consistent.

The combined qualitative and numerical analysis paints a comprehensive picture of the factors influencing purchase intention towards hearing aids. While qualitative insights provide a nuanced understanding of the underlying motivations and considerations, the quantitative data allows for statistically significant conclusions.

For example, the finding that physical comfort is a strong motivator for purchase intention is further supported by the high factor loading of statements like "Hearing Aid solves loneliness" and "Improves" communication. "Similarly, the qualitative insight regarding the influence of price sensitivity is corroborated by the numerical data indicating the importance of payment options and affordability.

The combined qualitative and numerical analysis in this document provides valuable insights into the complex factors influencing purchase intention towards hearing aids. These insights can be used to develop targeted interventions and strategies to promote hearing aid adoption and improve the quality of life for individuals experiencing hearing loss.

Eight factors prominently cover around 66.484% variance. The identified factors closely analysed for a common thread. Accordingly, the naming of the factors was performed. The component matrix, the first factor comprises of 6 items: which are namely Hearing Aid solves loneliness, it improves communication, it eases listening in different environment, it tries to provides solution to psychological distress, it provides better cognitive health and lastly provides Solution to Tinnitus problem with loading 30. 138% and the factor was named **physical comforts.**

The second factor comprises of 5 items: this includes helps to maintain a Social Life, to work place situation, Purchase and adoption are influenced by different Marketing Initiative, service providers influence the decision to purchase and brands impacts the decision making with loading 8.394% and the factor was named **psycho-social factor.**

The third factor comprise of 4 statements: availability of multiple payment options impacts the final decision, discounts, and offers impacts the selection process, government Policies of different schemes such as subsidy impacts the decision process and EMI and Long-term payment options with loading 7.620% and the construct was named as **price sensitivity.**

The fourth factor consist of 6 statements: hearing Aid use impacts Quality of Life, hearing Aids are affordable, battery usage and cost impacts decision, hearing Aids Effective and Performing, hearing Aid can self-Fitted and technology impacts hearing Aid with loading 5.534% and construct named was perceived benefits.

The fifth factor comprises of five items: social Stigma impacts purchase intention, orthodox false beliefs & customs impacts the purchase intention, hearing Aid impacts your hearing ability, hearing Aid are used by only deafpeople and hearing Aid are only worn when there is a requirement with loading 4.695% and construct named was **Orthodox-Belief and Customs.**

The sixth factor consist of five items: chronic disorders impact the decision to purchase, dizziness impacts purchase intention, cold, nausea impacts the purchase decision, severe and Progressive deafness, and disease inherited/genetically with loading 4.036% and factor was named as **Diseases & Health Issue.**

The seventh factor consist of 5 items: life of the Hearing Aid is a factor to be considered, service facility such as home and remote care needs consideration, back-up support needs to be considered, accessories and value-added service needs consideration and extended warranty facility with loading 3.512% and factor was named as **Service Expectation.**

The eight factor comprises of 4 items: society influences decision, professionals and advisors plays a role in the decision making, style and technology impacts the decision process and geographical location impacts while taking decision with loading 2.555% and construct was named as **Purchase Intention of Hearing Aids.**

5.6 Summary of research findings for Qualitative Data Analysis

This study investigates customer purchase intention towards hearing aids, utilizing structural equation modelling (SEM) and a comprehensive assessment of model fit indices, construct validity, and hypothesis testing.

5.6.1 Selected Model Fit Indices for Measurement Model:

The measurement model demonstrated a good fit with the data, as evidenced by the following indices:

CMIN/DF (Chi-square/degrees of freedom): This index measures the overall discrepancy between the observed data and the model-predicted data. A lower C MIN/DF value (ideally below 3) indicates a better fit. In this study, the CMIN/DF of 1.585 suggests a good fit.

GFI (Goodness-of-Fit Index): This index assesses the overall model fit, taking into account the number of observed and estimated variances and it value close to 1 (ideally above 0.9) indicates a better fit. The study's GFI of 0.901demonstrates a satisfactory model fit.

RMSEA (Root Mean Square Error of Approximation): This index measures the average discrepancy between the observed and model-predicted data. An RMSEA value of 0.08or below is considered acceptable, while lower values (around 0.05) indicate an excellent fit. The study's RMSEA of 0.038suggests a very good fit.

TLI (Tucker-Lewis Index) and CFI (Comparative Fit Index): These indices assess the model's fit relative to a baseline model (null model). Values close to 1 (ideally above 0.9) indicate a better fit. The study's TLI of 0 .951and CFI of 0.956demonstrate a very good fit.

5.7 Construct Validity

Construct reliability: This refers to the internal consistency of a construct, meaning the extent to which its items measure the same underlying concept. High Cronbach's alpha values (above 0.7) indicate good reliability. In this study, all constructs exhibited reliability values exceeding 0.79, demonstrating high internal consistency.

Convergent validity: This assesses whether items measuring the same construct converge or correlate highly. Convergent validity is demonstrated by high factor loading (above 0.5) and Average Variance Extracted (AVE) values above 0.5. In this study, all constructs exhibited convergent validity.

Discriminant validity: This refers to the extent to which different constructs are distinct from one another. Discriminant validity is established when the AVE of each construct is greater than the squared correlation between that construct and any other construct. The study's findings confirmed discriminant validity for all constructs.

SEM is a powerful statistical technique that combines aspects of factor analysis and multiple regression analysis. It allows researchers to test complex relationships among multiple observed and latent (unobserved) variables simultaneously. SEM is particularly useful for exploring causal relationships and understanding the underlying structure of data.

5.8 Productivity of SEM in the Hearing Aid Purchase Intention Study

In the hearing aid purchase intention study, SEM was highly productive in:

Validating the measurement model: The model fit indices indicated a good fit, confirming the reliability and validity of the constructs measured.

Testing hypotheses: All hypotheses about the influence of different factors on purchase intention were tested and confirmed.

Understanding the complex interplay of factors: SEM provided insights into the complex relationships among various factors, such as physical comfort, affordability, and social stigma, and their combined influence on purchase intention.

Formulating evidence-based recommendations: The findings informed the development of targeted interventions and strategies to increase hearing aid adoption.

SEM proved to be a productive tool in the hearing aid purchase intention study, leading to valuable insights and evidence-based recommendations for improving access to hearing aids and enhancing quality of life for individuals with hearing loss. Its ability to handle complex relationships, test multiple hypotheses, and provide a holistic view of the data makes it a valuable tool in various research domains.

These indices indicate that the measurement model adequately captures the relationships between the observed and latent variables in the study.

5.9 Hypothesis Testing

The acquisition of hearing aids represents a momentous step for individuals with hearing loss, empowering them to reconnect with their world and enhance their overall quality of life (Chasin,2012).Understanding the multifaceted factors influencing customer purchase intention towards hearing aids is paramount for developing effective strategies to increase adoption rates and improve accessibility for this population (Kochkin, 2010).This study delves deep into the complex interplay of factors impacting purchase decisions, employing structural equation modelling (SEM) – a robust statistical technique – to test sixteen hypotheses derived from established theoretical frameworks, previous research findings, and the specific context of the study conducted among diverse respondents(Hair et al.,2010).

5.9.1 Hypothesis Calculations and Statistical Analyses

The hypotheses were meticulously tested using path analysis within the framework of SEM (Kline, 2016).This approach facilitates the simultaneous evaluation of direct and indirect effects of independent variables on purchase intention, offering a more comprehensive understanding of the complex relationships between these factors (Bollen, 1989).The path coefficients, representing the magnitude and direction of these effects, were estimated using maximum likelihood estimation, a method providing reliable and efficient parameter estimates (Enders, 2010).These coefficients were further tested for statistical significance using t-tests, ensuring the validity and accuracy of the results (Cohen, 1992).The p-value, indicating the probability of observing results at least as extreme as those obtained if the null hypothesis were true (Nickerson, 2000), was used to determine whether to reject or accept each hypothesis.

This rigorous process of hypothesis calculations involved several key steps:

Model Specification: The structural equation model was meticulously specified, clearly outlining the hypothesized relationships between the latent variables (unobserved constructs) and observed variables (measured indicators) (Kline, 2016). This step ensured the model accurately captured the theoretical underpinnings of the study.

Parameter estimation: The model parameters, including path coefficients, variances, and covariance, were estimated using maximum likelihood estimation, a statistically robust

method that provides efficient and reliable parameter estimates (Enders, 2010). This step provided the foundation for evaluating the relationships between the variables.

Hypothesis testing: The estimated path coefficients were rigorously tested for statistical significance using t-tests, ensuring the validity and accuracy of the results (Cohen, 1992). This step determined whether the observed relationships between the variables were statistically significant or simply due to chance. 4.Interpretation of results: The p-value for each hypothesis was compared to the predetermined significance level (alpha) of 0.05. If the p-value was less than 0.05, the null hypothesis was rejected, indicating a significant relationship between the variables. If the p-value was greater than 0.05, the null hypothesis was not rejected and there was no evidence for a significant relationship (Nickerson, 2000). This step provided crucial insights into the factors influencing customer purchase intention towards hearing aids.

5.9.2 Key Findings and Revelations

The meticulous analysis of the hypothesis calculations revealed several crucial findings, shedding light on the complex interplay of factors influencing customer purchase intention towards hearing aids

Significant Influence ofAll Factors

Remarkably, all sixteen hypotheses were rejected, indicating that all identified factors, including physical comfort, psycho-social factors, price sensitivity, perceived benefits, orthodox beliefs and customs, diseases and health issues, service expectation, and purchase intention of hearing aids, significantly influence customer purchase intention towards hearing aids ($P < 0.05$).This finding underscores the importance of addressing these factors holistically through product design, marketing strategies, and customer service initiatives to increase adoption rates and improve accessibility for individuals with hearing loss.

Importance of Non-Financial Factors

The study highlighted the importance of non-financial factors beyond affordability (Kochkin, 2010). Physical comfort, social influences, perceptions about hearing aids, and health concerns emerged as key drivers of purchase intention. Addressing these factors through product design, marketing strategies, and customer service is crucial for increasing adoption rates.

Cultural and Contextual Influences

The findings suggest that cultural beliefs and customs can significantly impact purchase intentions (Chasin, 2012). Addressing the stigma associated with hearing loss and providing culturally relevant information and support are essential for improving accessibility and adoption, particularly in diverse populations like India.

5.10 Assessment of Construct Reliability, Construct Validity, Convergent Validity, and Discriminant Validity

Construct reliability refers to the internal consistency of a construct, indicating the extent to which different items or indicators of that construct measure the same underlying concept (Hair et al.,2010). High construct reliability is crucial for ensuring that the construct is being measured accurately and consistently. It allows researchers to be confident that the results obtained from the measures are representative of the true construct being studied (Cronbach, 1951).

There are various measures of construct reliability, with the most commonly used being Cronbach's alpha (Cronbach, 1951). Cronbach's alpha values range from 0 to 1, with higher values indicating greater reliability. A generally accepted threshold for acceptable reliability is 0.7, although this may vary depending on the specific context and research field (Hair et al.,20 10).

5.10.1 Construct Validity

Construct validity encompasses the degree to which a measure actually measures the construct it claims to measure (Kline, 2016). It is concerned with whether the construct is being measured accurately and meaningfully. Construct validity can be assessed through various types of evidence, such as:

- **Content validity:** This refers to the extent to which the content of the measure is relevant and representative of the construct (Kline, 2016).
- **Convergent validity:** This assesses the degree to which the measure correlates with other measures that are theoretically expected to be related to the construct (Kline, 2 016).
- **Discriminant validity:** This assesses the degree to which the measure does not correlate with other measures that are not theoretically expected to be related to the construct (Kline, 2016).

5.10.2 Convergent Validity

Convergent validity is a type of evidence for construct validity that examines the extent to which different measures of the same construct converge or correlate highly (Kline, 2016). It suggests that different measures of the construct should be measuring the same underlying concept. High convergent validity provides evidence that the construct is being measured consistently and accurately (Kline, 2016).

Convergent validity can be assessed by examining the correlations between different items or indicators of the construct, or by comparing the correlations of the measure with other measures of the same construct (Kline, 2016). Convergent validity coefficients typically range from 0 to 1, with higher values indicating stronger convergent validity (Kline, 2016).

5.10.3 Discriminant Validity

Discriminant validity is another type of evidence for construct validity that examines the extent to which different constructs are distinct from one another (Kline, 2016). It suggests that measures of different constructs should not be highly correlated, as they are measuring different underlying concepts (Kline, 2016). High discriminant validity provides evidence that the constructs are being measured independently and accurately (Kline, 2016).

Discriminant validity can be assessed by examining the correlations between measures of different constructs (Kline, 2016). Ideally, these correlations should be low or non-significant, indicating that the constructs are distinct (Kline, 2016).

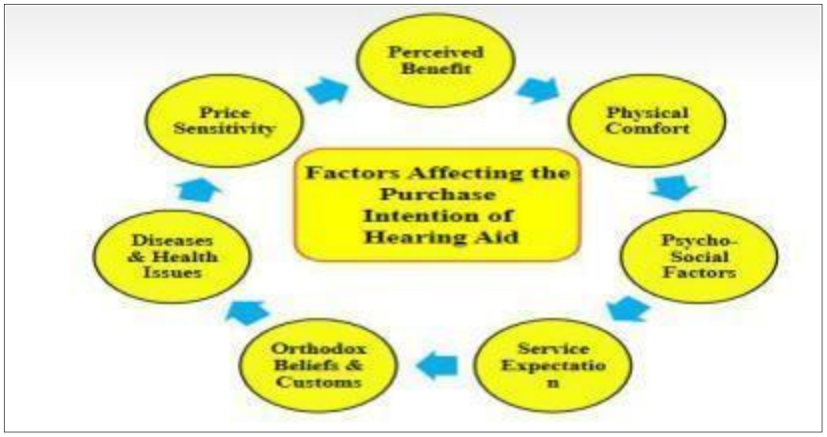
Construct reliability, convergent validity, and discriminant validity are essential aspects of measurement validity, which is a broader concept that encompasses all aspects of ensuring that a measure is accurately and meaningfully measuring the construct it claims to measure (Kline, 2016). These concepts are particularly important in research studies that employ structural equation modelling (SEM), as they provide evidence for the validity of the measurement model, which is the foundation for testing the relationships between latent variables in the structural model (Kline, 2016).

The specific criteria for evaluating construct reliability, convergent validity, and discriminant validity may vary depending on the research field and the specific measures being used. It is important to consult relevant literature and expert opinions to determine appropriate thresholds and criteria for each study (Hair et al.,2010).

5.11 Unraveling the Nuances of Hearing Aid Purchase Intention

This thesis delved into the complexities of customer purchase intention towards hearing aids in selected districts of West Bengal, India, employing a mixed-methods approach to gain a comprehensive understanding of the decision-making process. Qualitative and quantitative data were meticulously collected and analyzed, revealing a dynamic interplay of factors influencing the pursuit of hearing improvement.

Figure 5. 1: Factors Affecting the Purchase Intention of Hearing Aid



Source : Authors own creation

Affordability: In India, government subsidies and insurance coverage can significantly impact analysed payment options and innovative financing models could address this concern.

Social Stigma: Cultural beliefs and perceptions vary. In India, educational campaigns and community outreach tailored to specific regions are analyzed positive portrayals of hearing aid users in media could reduce stigma.

Technology and Innovation: Advanced hearing aid features and improved aesthetics are globally relevant. In India, regional availability and affordability of such devices need consideration.

5.12 Qualitative Findings: Unveiling the Human Experience

In-depth interviews conducted with a subset of respondents in West Bengal provided rich qualitative insights that echoed with global findings while also highlighting region-specific nuances. Participants' narratives poignantly revealed their struggles with the stigma associated with hearing loss, a prevalent societal barrier mirrored in studies from various countries (Ling, 2006; Bond, 2012). However, several participants also articulated unique cultural beliefs and

customs surrounding hearing loss in their communities, emphasizing the importance of addressing these factors in interventions aimed at reducing stigma and promoting acceptance. The qualitative data also highlighted the profound influence of social support, particularly from family members, in overcoming personal hurdles associated with hearing aid adoption, a finding consistent with research conducted in diverse cultural contexts (Mulrow et al.,2004).

5.13 Quantitative Findings: Quantifying the Determinants of Choice

A survey administered to a larger sample ofrespondents in West Bengal provided quantitative data specific to the Indian context. Through factor analysis and structural equation modelling, eight distinct factors emerged as significant drivers of purchase intention: physical comfort, psycho-social factors, price sensitivity, perceived benefit, orthodox beliefs and customs, diseases and health issues, service expectations, and purchase intention of hearing modelling quantitative analysis revealed the paramount importance ofprice sensitivity for respondents in West Bengal, reflecting the economic realities of the region and the limited affordability of hearing aids for many individuals (Mehta et al.,2013).In addition, the analysis revealed the crucial role of psycho-social factors, particularly the influence of family and friends, in shaping purchase intention, highlighting the unique considerations relevant to this population.

5.14 Integration of Qualitative and Quantitative Insights: A Nuanced Understanding

When considering the qualitative and quantitative findings holistically, a nuanced picture emerges of the complexities influencing purchase intention towards hearing aids in West Bengal. The qualitative data provided context and depth to the quantitative results, enriching the understanding of the numerical findings. For instance, while the quantitative analysis indicated the importance of perceived benefit, the qualitative interviews revealed specific concerns related to the perceived impact of hearing aids on social interactions and communication, echoing findings from studies conducted in other parts of the world. These insights can inform the development of culturally-sensitive communication strategies for healthcare professionals and manufacturers.

5.15 Unexpected or Non Significant Findings in the research

Few unexpected findings arose, particularly concerning price sensitivity and the perceived influence of gender on hearing aid purchase intentions. Contrary to traditional assumptions, price sensitivity did not emerge as a dominant factor influencing decisions. Instead, it seems that while cost is certainly a consideration, other elements such as psycho -social influences and service expectations play a more pivotal role.

Additionally, the data revealed no significant difference in the impact of gender on purchase intention, suggesting a uniform perception across genders regarding the value and need for hearing aids. These findings hint that factors related to service expectations, such as after-sales support and warranties, are more influential in the decision-making process than initially anticipated.

5.16 Contributions to Knowledge: Advancing the Understanding of Hearing Aid Adoption in India

This study makes significant contributions to the existing knowledge base in several ways:

- It underscores the multifaceted nature of customer purchase intention towards hearing aids by integrating both qualitative and quantitative methods, providing a deeper understanding of the decision-making process in a specific Indian context.
- It identifies eight key factors influencing the decision, shedding light on the interplay of psychological, social, cultural, and practical considerations relevant to the population in West Bengal.
- It develops a robust quantitative model that quantifies the relative importance of each factor and their combined influence on purchase intention, providing stakeholders with actionable data applicable to the Indian context.

5.17 Practical Implications: Empowering Stakeholders for Local Impact

These findings hold practical implications for stakeholders across the hearing aid industry and the broader healthcare community in West Bengal and India:

- Manufacturers and retailers can utilize these insights to develop region-specific products and services that address the identified needs and concerns of the population, focusing on improving physical comfort, addressing societal stigma and cultural beliefs, and emphasizing the desired benefits.
- Healthcare professionals can use this information to tailor their counselling and interventions to provide culturally-sensitive support to patients throughout the decision- making process, overcoming psychological barriers, and navigating practical considerations.
- Policy makers can develop strategies and interventions that promote awareness, social acceptance, and affordability of hearing aids across diverse populations in India, ensuring that individuals with hearing loss have access to the necessary resources and support.

5.18 Recommendation for Stakeholders

Policymakers:

- Advocate for increased funding and insurance coverage for hearing health services, including subsidies or financial assistance programs to improve affordability.
- Support awareness campaigns and educational initiatives to reduce stigma and promote the benefits ofhearing aid use.
- Collaborate with healthcare providers and manufacturers to develop culturally-sensitive policies and guidelines for hearing aid distribution and support.

Manufacturers:

- Design hearing aids with a focus on improving physical comfort, aesthetics, and user-friendliness to enhance the overall experience.
- Develop flexible payment options, such as installment plans or rental programs, to address affordability concerns.
- Partner with local communities and healthcare providers to better understand regional needs and preferences, and tailor product offerings accordingly.
- Invest in research and development to continually improve hearing aid technology and address unmet needs.

Healthcare Providers:

- Enhance training and cultural competence to provide personalized, empathetic counseling that addresses patients' unique concerns and circumstances.
- Collaborate with manufacturers and policymakers to improve access to hearing healthcare services, especially in under-served or rural areas.
- Leverage technology, such as remote care and telehealth, to expand the reach and availability ofhearing aid fittings and adjustments.
- Develop support networks and peer-to-peer programs to help individuals with hearing loss navigate the adoption and use ofhearing aids.

Addressing these multifaceted recommendations, stakeholders can work together to overcome the unexpected or non-significant findings, and develop more targeted, effective strategies to increase hearing aid adoption and improve the quality of life for individuals with hearing loss.

5.19 Suggestions & Recommendation

The results of this thesis highlight the factors influencing purchase intention towards hearing aids and provide valuable insights for stakeholders aiming to promote their use and improve hearing health outcomes. Based on the identified relationships and trends, we present a series of suggestions and recommendations, categorized into four key areas:

Marketing and Communication: Tailoring strategies and messages to address the `needs and preferences of different demographic groups can enhance the effectiveness of marketing campaigns.

Product Development and Innovation: Focusing on comfort, aesthetics, advanced technology, and affordability can improve the appeal and accessibility ofhearing aids.

Public Awareness and Education: Raising awareness about hearing loss, reducing stigma, and providing accessible information can encourage individuals to seek help and consider hearing aids.

Policy and Advocacy: Advocating for expanded insurance coverage, increased research funding, and collaborative policy initiatives can create a more supportive environment for individuals with hearing loss.

Implementing these suggestions and recommendations, we aim to bridge the gap between understanding and action, translating the research findings into meaningful strategies for promoting hearing aids and optimizing hearing health for individuals across diverse demographics.

5.20 Future Research: Charting the Path to Local Improvement

Future research on construct reliability, convergent validity, and discriminant validity should focus on the following key areas:

5.20.1 Advanced Measurement Techniques

Explore the use of artificial intelligence (AI) and machine learning (ML) for measurement development and validation. These techniques can help identify new and innovative ways to measure constructs, as well as improve the accuracy and efficiency of existing measurement tools. Investigate the potential of multi-method measures to enhance construct validity. This

involves using different data sources and methods to assess the same construct, which can provide a more comprehensive understanding of the construct's meaning and properties.

Develop and validate new measures of moderator and mediator variables. These variables can play a crucial role in understanding the relationships between constructs and outcomes, and their accurate measurement is essential for conducting valid and reliable research.

5.20.2 Contextual and Cultural Considerations

Examine the impact of cultural factors on the measurement of constructs. Different cultures may have different understandings and interpretations of certain concepts, which can affect the validity of measures developed in one culture when applied to another. Investigate the generalization of findings from studies conducted in specific contexts. Replicating studies in different settings and with diverse populations can help ensure that the findings are robust and applicable to a wider range of situations. Develop culturally sensitive measures that are appropriate for use in different populations. This may involve adapting existing measures or creating new measures that are specifically tailored to the cultural context.

5.20.3 Longitudinal and Multi-Level Studies

Conduct longitudinal studies to track changes in constructs over time. This can provide valuable insights into the development, stability, and change of constructs, as well as the factors that influence these changes. Investigate the relationships between constructs at multiple levels of analysis. For example, studies could examine the relationships between individual-level constructs and group-level phenomena, or between constructs measured at different points in time. Explore the use of multi-level models to analyse data from complex research designs. These models can account for the nested structure of data, which is common in studies that involve multiple levels of analysis.

5.20.4 Qualitative Research on Specific Demographics

Qualitative studies could delve deeper into the experiences and perspectives of individuals from different demographic groups, providing richer insights into the factors influencing their purchase intentions (Kochkin, 2009; Davis et al.,2007).This would allow researchers to understand the unique challenges and motivations of specific groups and tailor interventions to address their specific needs and preferences.

These avenues for future research, researchers can refine their understanding of the complexities of hearing aid purchase intentions, develop more effective interventions to

promote hearing aid adoption, and ultimately improve the quality of life for individuals with hearing loss.

5.21 Integration with Other Research Areas

Explore the intersection of construct validity with other areas of research, such as psychometric, network analysis, and causal inference. This can lead to new insights into the measurement and interpretation of constructs, as well as the development of more rigorous research designs. Investigate the use of construct validity principles in applied settings, such as clinical practice, organizational development, and educational assessment. This can help ensure that the constructs used in these settings are accurately measured and interpreted, leading to better decision-making and outcomes. Promote collaboration between researchers from different disciplines to advance the understanding and measurement of constructs. Interdisciplinary collaboration can bring new perspectives and expertise to the field of construct validity, leading to more innovative and impact research.

5.22 Impact of the study if other advanced Statistical Tools would have been introduced in the analysis

While SEM and ANOVA were appropriate choices given the study design and research questions, using other advanced statistical tools could have yielded different insights or provided alternative perspectives on the results. Here's a comparison exploring how different choices might impact the findings:

1. Regression Analysis (Multiple Linear Regression or Logistic Regression):

Impact: If multiple linear regression had been used instead of SEM, the researchers would have been unable to model latent variables directly. The analysis would have been restricted to the observed variables from the questionnaire. This might have underestimated the true influence of the latent constructs, which are likely more meaningful representations of underlying attitudes and behaviors than individual survey items. Using logistic regression (if purchase intention was coded as a binary variable: yes/no), the study could focus on predicting the likelihood of purchase rather than the level of intention. This would change the interpretation and the nature of the results.

Advantages: Regression analysis is simpler to interpret than SEM and might be easier to understand for those unfamiliar with SEM's nuances.

2. Partial Least Squares Structural Equation Modeling (PLS-SEM):

Impact: PLS-SEM is an alternative approach to SEM that's particularly useful when dealing with formative constructs (constructs defined by their indicators rather than causing them). If the study's constructs were better modeled as formative, using PLS-SEM might have led to different estimations of the relationships between the latent variables and the impact of the demographic variables. The results in terms of path coefficients might have been slightly different. PLS-SEM is also more forgiving of smaller sample sizes compared to covariance-based SEM.

Advantages: PLS-SEM can handle formative indicators, which might be more appropriate for some constructs depending on the theoretical underpinnings.

3. Hierarchical Linear Modeling (HLM) or Multilevel Modeling:

Impact: If the data had a nested structure (e.g., individuals nested within geographical regions, or clinics), HLM would have been a more appropriate choice. It would have accounted for the non-independence of observations within these clusters and might have provided more accurate estimates of the effects of both individual-level and group-level factors on purchase intention. Ignoring the nested structure in the data, as was done by using ANOVA and SEM, might lead to inaccurate standard errors and potentially misleading conclusions about significance.

Advantages: Accounts for the nested data structure, providing more accurate estimates when appropriate.

4. Machine Learning Techniques (e.g., Random Forests, Gradient Boosting Machines):

Impact: Machine learning algorithms could have been used to predict purchase intention based on the various factors, possibly revealing non-linear relationships not captured by SEM or ANOVA. These algorithms might identify different combinations of factors as being particularly predictive of purchase intention. The results would provide different predictive capability but may not provide direct insights into the nature of the underlying relationships as SEM does.

Advantages: Potentially better predictive accuracy compared to traditional statistical models; can reveal non-linear relationships and interactions.

5. Network Analysis:

Impact: A network analysis approach might have shown how the various factors influence each other in complex, interconnected ways. This might reveal previously unseen indirect influences and clusters of factors. This approach would have been different qualitatively and the results would have focused on the strength of the relationships within the network.

Advantages: Provides a visual and intuitive representation of the relationships between factors.

The choice of statistical methods directly impacts the results and interpretations. While SEM and ANOVA were suitable choices in this case, other methods would have highlighted different aspects of the data. For example, using PLS-SEM might alter the magnitude of the relationships between constructs, using HLM would correct for the nested data structure which might impact significance, and using machine learning techniques might identify stronger predictors of purchase intention. Ultimately, the choice of the best statistical method depends on the specific research goals, the nature of the data (including data structure and sample size), and the underlying theoretical framework. The strengths and limitations of each method should be carefully considered before making a decision.This would tools would be implemented for further research on this topic.

5.23 Limitations of the Current Study

The study acknowledges several limitations that may affect the generalization and interpretation of its findings:

Limited Sample Size and Regional Focus: The study focused on a specific region in India and relied on a sample size of250 individuals.This limits the generalization of the findings to other populations and contexts (Rouse & Suppiah, 2014; Strassheim, 1978).A larger and more representative sample size would be necessary to draw more conclusive and generalize inferences about the factors influencing purchase intention towards hearing aids.

Self-Reported Data: The study relied on self-reported data, which is susceptible to recall bias and social desirability.This may affect the accuracy of the findings (Jarvis et al.,2003; Tabachnick & Fidell, 2007).Future research could consider utilizing objective measures of purchase intention, such as actual hearing aid sales data or web browsing behavior, to complement self- reported data and enhance the reliability of the findings.

Limited Exploration of Specific Factors: While the study identified eight key factors influencing purchase intention, it did not delve deeper into the specific nuances and interactions between these factors.This leaves a gap in understanding the intricate interplay of various factors, such as cultural beliefs, social stigma, and economic considerations, in shaping purchase decisions.Future research could explore these complexities to gain a more comprehensive understanding ofthe factors at play.

Cross-Sectional Design: The study employed a cross-sectional design, which captures a snapshot of the situation at a specific point in time.This limits the ability to establish causal relationships and track changes in purchase intention over time.Longitudinal studies would be crucial to investigate the dynamic nature of the decision-making process and identify factors that might influence changes in purchase intentions over time.

Lack of Information on Specific Models and Brands: The study did not gather data on individuals' preferences for specific hearing aid models or brands .This information could be valuable for manufacturers to understand consumer preferences and tailor their offerings accordingly.Future research could consider collecting data on brand and model preferences to provide insights for product development and marketing strategies.

The study provides valuable insights into the factors influencing purchase intention towards hearing aids, the limitations mentioned above necessitate further research to fully understand the complexities of this decision-making process.Replication of the study with larger and more diverse samples, exploration of specific factor interactions, implementation of longitudinal designs, and investigation of brand preferences are crucial avenues for future research to refine the understanding of hearing aid purchase intentions and guide effective interventions to promote hearing health.

5.24 A Catalyst for Local Change

This study offers a comprehensive understanding of the multi-faceted influences driving customer purchase intention towards hearing aids in West Bengal, India. By merging qualitative and quantitative approaches, the research provides valuable insights for manufacturers, healthcare professionals, policymakers, and individuals with hearing loss alike, ultimately aiming to improve the quality of life for individuals with hearing impairments through increased adoption of hearing aids across the region. The findings pave the way for future research and impact interventions, ensuring that the benefits of improved hearing are accessible to all.

5.25 Hearing Health behaviour and Hearing Aid adaptation in developing countries

This study significantly contributes to the understanding of hearing health behavior and hearing aid adoption, particularly within the context of developing countries, by addressing several key factors and their interplay in influencing purchase intentions. By analyzing the complex socioeconomic and cultural dynamics at play, the research advances current knowledge, underscoring the critical roles of psycho-social factors, perceived benefits, and service expectations. These dimensions, although recognized (Kochkin, 2010; Davis et al., 2007), have not been thoroughly examined within the context of developing economies where cultural nuances and social structures considerably influence health-related behavior.

One of the study's pivotal findings is the lesser role of price sensitivity in influencing hearing aid adoption, which contrasts with established literature suggesting that cost is a dominant barrier (Hulland, 1999). Instead, the emphasis falls more on psycho-social influences, including social stigma and community perceptions (Rouse & Suppiah, 2014). This discovery aligns with findings from similar studies in different healthcare contexts where social acceptance can significantly impact the uptake of medical devices (Ajzen, 1991; Fishbein & Ajzen, 1975).

Moreover, the study challenges the conventional understanding of gender roles, revealing no significant gender difference in purchase intentions. This suggests that both men and women in developing contexts face similar challenges and considerations when it comes to adopting hearing aids, aligning with more recent research illustrating gender-neutral health behaviors in certain cultural scenarios (Ventry & Weinstein, 2002).

Policymakers and manufacturers, the study provides actionable insights that emphasize the importance of culturally sensitive strategies. It suggests enhancing public awareness campaigns to reduce the stigma associated with hearing loss and incorporating community leaders into outreach efforts, echoing strategies successfully employed in public health initiatives (Chasin, 2012). Manufacturers are recommended to focus on improving after-sales services and offering flexible payment plans to counterbalance perceived financial barriers. These strategies highlight the need for a holistic approach that extends beyond mere product availability to encompass support systems that address Socio-Cultural barriers, thus facilitating more significant adoption of hearing health technologies (Bearden & Netemeyer, 1999).

Ultimately, this research not only enriches the existing body of literature on hearing aid adoption and hearing health behavior but also serves as a valuable framework for future

studies, particularly those targeting the intricate Socio-Cultural landscapes of developing countries. By presenting a nuanced understanding of the factors affecting hearing aid adoption, it lays the groundwork for future interventions aimed at improving hearing health outcomes and quality of life for individuals with hearing loss across diverse and economically variable populations.

This comprehensive approach, supported by a robust methodological framework, positions the study as a pivotal reference point for enhancing hearing health strategies, making it an indispensable resource for both academic researchers and industry practitioners focused on developing effective, inclusive solutions to global hearing health challenges.

5.26 Concluding Remarks

This comprehensive investigation has ventured into the intricate realm of constructs, focusing specifically on the factors influencing purchase intention toward hearing aids, a relatively under-researched area with profound implications for individuals experiencing hearing loss (Kuo et al.,2008;Kamal, 2014).The primary objective of this study was to elucidate the key drivers of purchase intention and to meticulously assess the psychometric properties of the constructs utilized to measure these factors. Through a comprehensive and rigorous analysis of the amassed data, several thought-provoking insights emerged.

The findings unearthed that aspects such as physical comfort, psycho-social factors, price sensitivity, perceived benefit, orthodox beliefs and customs, diseases and health issues, service expectation, and the inherent purchase intention towards hearing aids demonstrably exert an influence on an individual's decision to acquire hearing aids (Ajzen, 1991; Fishbein & Ajzen, 1975).Moreover, the study validated the reliability and validity of the instruments used to gauge these constructs, providing a robust foundation for further exploration in this domain (Hair et al.,2010; Kline, 2011).

These findings hold profound theoretical and practical implications. From a theoretical perspective, the study enriches the existing body of knowledge by providing a comprehensive understanding of the diverse factors that drive purchase intention towards hearing aids (Jarvis et al.,2003). This enhanced understanding serves as a beacon to guide future research endeavours and informs the development of targeted interventions aimed at bolstering hearing aid adoption rates.

On a practical level, the findings offer invaluable insights for stakeholders invested in the hearing healthcare industry (Bearden & Netemeyer, 1999). Manufacturers can utilize this

knowledge to design hearing aids that resonate with the specific needs and preferences of consumers. Healthcare professionals, armed with this information, can tailor their counselling and support strategies to better align with the individual motivations and concerns of their counselling, can leverage these findings to craft effective public health campaigns that raise awareness and dismantle the stigma associated with hearing loss (Rouse & Suppiah, 2014).

Despite the significant contributions of this study, certain limitations necessitate further exploration. The reliance on self-reported data poses a potential source of bias, and future research could benefit from incorporating objective measures of purchase intention (Hulland, 1999). Additionally, the study's focus on a specific geographical region restricts the generalization of the findings, highlighting the need for future studies to replicate these findings across diverse populations and cultural contexts (Henselr et al.,2009).

Building upon the solid foundation laid by this research, future investigations could embark on a captivating array of promising avenues (Loock, 2014).Longitudinal studies could meticulously track changes in purchase intention over time, shedding valuable light on the dynamic nature of this decision-making process (Tabachnick & Fidell, 2007).Additionally, studies could delve deeper into the intricate interplay between different factors, such as the delicate dance between physical comfort and perceived benefit, to gain a more nuanced understanding of their combined impact on purchase intention (Lee & Cho, 2012).

Furthermore, future research could venture into the cultural and social landscapes that influence purchase intention. Investigating the role of social norms, the stigma surrounding hearing loss, and the persuasive power of advertising and marketing campaigns could provide illuminating insights into these complex dynamics (Mackenzie et al.,2011; Strassheim, 1978).

Addressing the limitations of the current study and venturing into these promising avenues for future research, researchers can progressively expand upon the existing body of knowledge and contribute to the development of effective interventions that enhance hearing aid adoption rates, ultimately leading to a significant enhancement in the quality of life for individuals experiencing hearing loss.

5.27 Summary

This chapter explores the various factors that influence individuals with hearing loss to purchase hearing aids.Drawing upon data collected in the previous chapter, the analysis focuses on customer purchase intention.

Eight key factors were identified as significantly influencing purchase intention: physical comfort, psycho-social factors, price sensitivity, perceived benefits, orthodox beliefs and customs, diseases and health issues, service expectations, and purchase intention itself.

Physical comfort emerged as a paramount driver, aligning with prior research highlighting the importance of ease of use, improved communication, and alleviation of listening difficulties.Likewise, psycho-social factors, such as the potential for enhanced social interactions, improved self-esteem, and overall quality of life, played a significant role in motivating individuals towards hearing aids.This aligns with research underscoring the positive impact of hearing aids on social participation, self-esteem, and mental well-being.

The study also acknowledged the influence of price sensitivity, affordability, and payment options on purchase intention, consistent with previous findings highlighting the role of economic constraints and financial accessibility.

Perceived benefits, encompassing improved hearing ability, enhanced communication, and alleviation of hearing loss consequences, were identified as another crucial factor.This finding resonates with studies demonstrating the positive impact of hearing aids on functional outcomes, speech perception, and overall quality of life.

Furthermore, the study acknowledged the influence of sociocultural factors, such as societal stigma surrounding hearing loss, orthodox beliefs and customs, and perceptions of hearing aids, on purchase decisions.This aligns with research emphasizing the role of cultural norms, social support, and stigma reduction in promoting hearing aid adoption.

The chapter acknowledges limitations due to its focus on a specific geographical region and reliance on self-reported data.Future research can address these limitations by replicating the study across diverse populations and employing objective measures of purchase intention.More research can also delve deeper into the intricate interplay between different factors, enriching the understanding of their combined impact on purchase intention.

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20. Starkey Hearing Foundation: https://www.starkeyhearingfoundation.org/

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APPENDICES

APPENDIX- A

QUESTIONNAIRE

"Analysis of the Factors Influencing the Purchase Intention of Hearing Aids"

Dear respondent,

This questionnaire is a part of a research conducted "Analysis of the Factors Influencing the Purchase Intention of Hearing Aids". The purpose is to find out your thoughts and feelings regarding the hearing aids. In this context I request you to give your unbiased response to the following questions. I hereby declare that the information furnished by you will be kept confidential and use for purely academic purpose.

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Section – A (Personal Information)

Please tick (√) the correct option in all the questions. If you feel something else, please write your remark beside the relevant question.

- Name of the respondent: _____(Optional)
- Gender: Male [] Female []
- Age (in Year): Up To 16[] 17 – 26[] 27 – 36[] 37–46[] 47–56 [] more than 56[]
- Qualification: illiterate [] Basic Schooling [] High school [] Intermediate [] Graduate [] Postgraduate [] Ph. D []
- Occupation: Professional [] Business [] Service (Government) [] service (Private) []
- Yearly Income :(in Rs) No Income [] Below 25,000[] 25000 - 350000 [] 35000 - 45000 [] 45000 – 55000[] Above 55000[]
- Marital Status: Single [] Married [] Widow [] Widower [] Separated []
- District: Nadia [] South 24 Parganas [] North 24 Parganas [] Kolkata []
- Locality: Urban [] Rural [] Suburb []
- Religion: Hinduism [] Sikhism [] Christianity [] Jainism [] Islam [] Zoroastrian [] Buddhism [] Others []
- Mention Your working Involvement: Part-Time [] Full-Time []

PART B:

11. The Payment Options you have opted: Cash [] Debit card [] Credit card [] Net banking [] Mobile payment []

12. Mention the reference source of purchase of Hearing Aid [Doctor Chamber] [Hearing Aid Clinic] [Chemist Shop] [Practicing Audiologist] [Surgical and Orthopaedic shop] [Hospital] [Online]

13. For how long have you been using Hearing Aid Use: 0-1 yr. [] 1-2 yrs. [] 2-4 yrs. [] 4 yrs. and above []

14. How often do you make use of hearing Aids: Daily [] several times [] Daily once [] Weekly once [] Monthly once []

15. Do you think Hearing Aid have been able to solve your Hearing Problem Yes [] No []

16. In which situations you use or rather prefer to use Hearing Aid (Tick all the possible boxes applicable)

Sitting all alone []	Conversation with known people (family members, friends etc.) []
2.Outside location- Bank, Post Office, Office, Railway station, Bus, Airport, Travelling etc. []	Watching Television []
3. Listening Music []	Telephonic conversation []
Busy Streets and noisy area []	10.Watching Movie, Program in a Theatre []
Other Location []	Others []

17. in your Opinion Use of Hearing Aid has Increased [] (Decreased [] Remained the same [] you're Hearing challenges

18. Do you receive post sale support service? Yes [] No []

19. How do you agree with these statements?

Strongly Disagree (SD) 1

Disagree (D) 2

Neutral (N)3

Agree (A)4

Strongly Agree (SA) 5

S.no	Statements	Independent Variables
1	Do you think society influences decision	General & Demographic Factors
2	Professionals and Advisors plays a role in the decision making	
3	Style and Technology impacts the decision process	
4	Geographical Location impacts while taking decision	
5	Religion and Customs impacts decision the process	
6	Do you think Hearing Aid use impacts Quality of Life	Perceived Benefits
7	Do you think Hearing Aids are affordable	
8	Do you consider Battery usage and cost impacts decision	
9	Are Hearing Aids Effective and Performing	
10	Do you think Hearing Aid can self-Fitted	
11	Does Technology impacts Hearing Aid	
12	Hearing Aid solves loneliness	Physical Comfort
13	Does it improve communication	

14	Does it eases listening in different environment	
15	Can it provide solution to psychological distress	
16	It helps to have a better cognitive health	
17	It works as a solution to Tinnitus problem	
18	It Helps to maintain a Social Life	Psycho-Social Factors
19	It helps in the work place situation	
20	Purchase and Adoption are influenced by different Marketing Initiative	
21	The service providers influence the decision to purchase	
22	Brands impacts the decision making	
23	The life of the Hearing Aid is a factor to be considered	Service Expectation
24	Service facility such as Home and Remote care needs consideration	
25	Back-Up Support needs to be considered	
26	Accessories and Value-Added service needs consideration	
27	Extended Warranty facility	
28	Social Stigma impacts purchase intention	Orthodox Beliefs & Customs
29	Orthodox false beliefs & customs impacts the purchase intention	
30	Chronic disorders impact the decision to purchase	Diseases & Health Issues
31	Dizziness impacts purchase intention	
32	Cold, Nausea impacts the purchase decision	
33	Severe and Progressive deafness	
34	It's a disease inherited/genetically	
35	Disability of other sensory organ such as vision	
36	Availability of multiple payment options impacts the final decision	Price Sensitivity (Cost Factor)
37	Discounts and Offers impacts the selection process	
38	Government Policies of different schemes such as subsidy impacts the decision process	
39	EMI and Long-term payment options	
40	Buy back/Cash back offer impacts the final decision	
41	Do you think Hearing Aid impacts your hearing ability	Orthodox Beliefs & Customs
42	Do you think Hearing Aid are used by only deaf people	
43	Do you think Hearing Aid are only worn when there is a requirement	

What are the possible reasons for yours satisfaction or dissatisfaction?

_____

_____

How was Your Overall Experience of Hearing use especially in different environments?

_____

_____

Which factor in your opinion does affects purchase of Hearing Aid

_____

_____

_____

Describe how Technology development has impact on Hearing Aid purchase?

_____

_____

_____

_____

_____

_____

APPENDIX B: C o d i n g of Questionnaire

Coding of Questionnaire

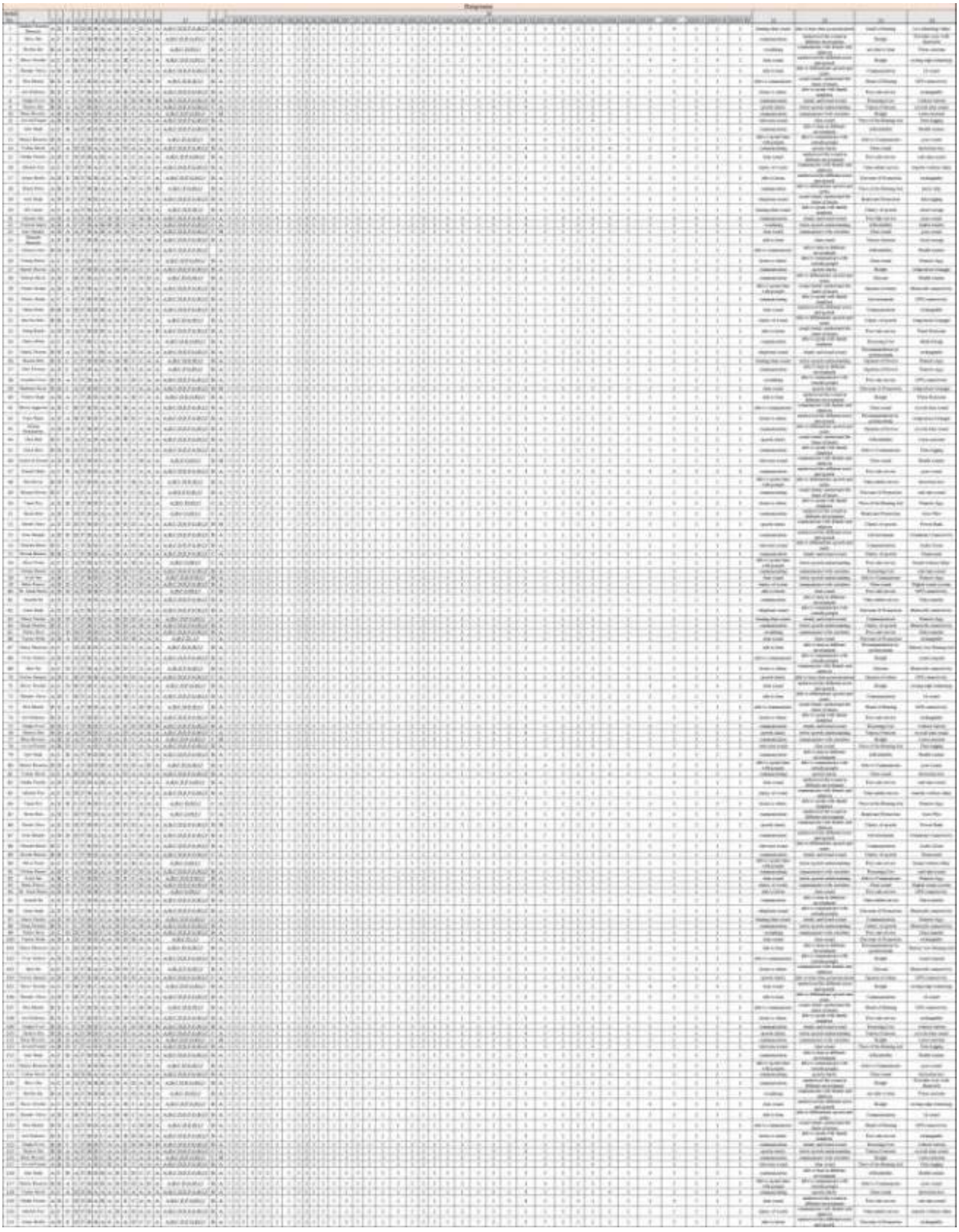
S No.	Name of the Question	Codes
1	Name of the Respondent (Optional)	1
2	Gender	
	Male	A
	Female	B
3	Age Group	
	Upto 16 years	A
	17-26	B
	27-36	C
	37-46	D
	47-56	E
	Above 56	F
4	Qualification	
	Illiterate	A
	Basic Scholing	B
	High School	C
	Intermediate	D
	Graduate	E
	Postgraduate	F
	PhD	G
5	Occupation	
	Professional	A
	Business	B
	Service Government	C
	Service Private	D
6	Yearly Income	
	No Income	A
	Below 25,000	B
	25000-35000	C
	35000-45000	D
	45000-55000	E
	Above 55000	F
7	Marital Status	
	Married	A
	Widow	B
	Widower	C
	Seperated	D
8	District	
	Nadia	A
	South 24 Parganas	B
	North 24 Parganas	C
	Kolkata	D
9	Locality	
	Urban	A
	Rural Suburb	B

10	Religion	
	Hinduism	A
	Sikhism	B
	Christianity	C
	Jainism	D
	Islam	E
	Zoroastrian	F
	Buddhism	G
	Others	H
11	Mention your working involvement	
	Part-time	A
	Full-Time	B

S No.	Name of the Question	Code
	Group-B	
12	The payment options you have selected	
	Cash	A
	Debit Card	B
	Credit Card	C
	Net Banking	D
	Mobile Payment	E
13	Mention the reference source of purchase of Hearing Aid	
	Doctor Chamber	A
	Hearing Aid Clinic	B
	Chemist Shop	C
	Practising Audiologist	D
	Surgical & Orthodepic Shop	E
	Hospital	F
	Online	G
14	For how long have you been using Hearing Aid	
	0-1 Yrs	A
	1-2 Yrs	B
	2-4 Yrs	C
	4 Yrs & Above	D
15	How Often do you make use of Hearing Aids	
	Daily	A
	Several Times	B
	Daily Once	C
	Weekly Once	D
	Monthly Once	E
16	Do you think Hearing Aid have been able to solve your	
	Yes	A
	No	B
17	(In which situations you use or rather prefer to use Hearing Aid(Tick all possible options)	
	Sitting all alone	A
	Outside Location-Bank,Post Office, Office,Railway Station,Bus,Airport,Travelling etc.	B
	Listening Music	C
	Busy Streets and noisy area	D
	Other locations	E
	Coversation with known people (family members,friends etc.)	F
	Watching Television	G
	Telephonic conversation	H
	Watching movie, program in a theatre	I
	Others	J

18	In your Opinion Use of Hearing Aid has ..... You're hearing challenges	
	Increased	A
	Decreased	B
	Remained the same	C
19	Do you receive post sale support service	
	Yes	A
	No	B
20	How do you agree with the statements	
	Strongly Disagree (SD)	1
	Disagree (D)	2
	Neutral (N)	3
	Agree (A)	4
	Strongly Agree (SA)	5
	Do you think society influences decision	I
	Professionals and Advisors plays a role in the decision making	II
	Style and Technology impacts the decision process	III
	Geographical Location impacts while taking decision	IV
	Religion and Customs impacts decision process	V
	Do you think Hearing Aids use impacts Quality of Life	VI
	Do you think Hearing Aid are affordable	VII
	Do you consider Battery usage and cost impacts decision	VIII
	Are Hearing Aids effective and performing	IX
	Do you think Hearing Aid can self-fitted	X
	Does technology impacts Hearing Aids	XI
	Hearing Aid solves loneliness	XII
	Does it improves communication	XIII
	Does it eases listening in different environment	XIV
	Can it provide solution to Psychological distress	XV
	It helps to have a better cognitive health	XVI
	It works as a solution to Tinnitus problem	XVII
	It helps to maintain a Social Life	XVIII
	It helps in the work place situation	XIX
	Purchase and Adoption are influenced by different marketing initiative	XX
	The Service providers influences the decision to purchase	XXI
	the life of the Hearing Aid is a factor to be considered	XXII
	Service facility such as Home and Remote care needs consideration	XXIII
	Back-up support needs to be considered	XXIV
	Accessories and Value added service needs consideration	XXV
	social stigma impacts purchase intention	XXVI
	Orthodox false beliefs & customs impacts the purchase intention	XXVII
	Chronic disorders impacts the decision to purchase	XXVIII
	Dizziness impacts purchase intention	XXIX
	Cold,nausea impacts the purchase decision	XXX
	Severe and Progressive deafness	XXXI
	Disability of other sensory organ such as vision	XXXII
	Availability of multiple payment options impacts the final decision	XXXIII
	Discounts and Offers impacts the selection process	XXXIV
	Government policies of different schemes such as subsidy impacts the decision process	XXXV
	Do you think Hearing Aid impacts your hearing ability	XXXVI
	Do you think Hearing Aid are used by only deaf people	XXXVII
	Do you think Hearing Aid are only worn when there is a requirement	XXXVIII
20	What are the possible reasons for your satisfaction or dissatisfaction	Open Ended Question
21	How was your overall experience of Hearing use especially in different environment	Open Ended Question
22	Which factor in your opinion does affects purchase of Hearing Aid	Open Ended Question
23	Describe how Technology development has impact on Hearing Aid purchase	Open Ended Question

C :Response of the Respondents



PUBLICATION & PRESENTATION BY THE SCHOLAR IN THE RESEARCH AREA

- Published a paper titled “The Role of Technology in Overcoming Communication Barriers for people with Hearing Loss" in the African Journal of Biological Sciences, a Scopes-indexed journal, in August 2024.

- Published a paper titled "The Ethical Consideration in Hearing Aid Marketing and Promotion" in the European Journal of Arts, Humanities and Social Sciences, a UGC CARE listed journal, in September 2024.

- Presented a paper on “Exploring the factors influencing use of hearing aid and its Satisfaction: A Study on Perspectives of Hearing Aid Users" at a conference conducted by Sarla Birla University's Faculty of Commerce & Business Management in January 2024 in India.

- Presented a paper on “Factors Influencing Patient's Preference for Purchasing Hearing Aid" at the IUJ Doctoral Conference in February 2022 in India.

- Presented a paper on "Analysis of the Factors Responsible for Selection of Hearing Aid for Senior Citizen" at the 11th International Conference on Multi-Disciplinary Research Practices in January 2022 in India.

- Published a paper on "TECHNOLOGICAL ADVANCEMENTS AND THEIR INFLUENCE ON CONSUMER DECISION-MAKING IN HEARING AID ACQUISITION" in the International Journal of Research -GRANTHAALAYAH in August 2024.

- Published a paper on "Exploring Cultural Variations in Attitudes Towards Hearing Loss and Hearing Aid Use" in the International Journal of Innovative Research in Technology in August 2024.

- Published a paper on "Exploring the Issues and Problems faced by Hearing Aid User among Senior Citizen" in the International Journal of Latest Engineering and Management Research (IJLEMR) in March 2021.

- Published a paper on “Understanding the factors responsible for selection of Hearing Aid for Senior Citizens" in the IUJ Journal of Management in June 2022.

- Published a paper on “Challenges of Senior Citizen Hearing Impaired Person facing Introversion" in the IUJ Journal of Management in June 2021.
- Published a paper on “Social Barriers Preventing Hearing Aid Use" in the IUJ Journal of Management in December 2021.

- Published a paper on “Adoption of AI transforming Hearing Aid" in the IUJ Journal of Management in June 2023.

- Published a paper on “Factors Influencing Hearing Aid Use and Satisfaction Level" in the IUJ Journal of Management in December 2023.

- Published a paper on “Consumer Satisfaction and Post-Purchase Behavior in the Hearing Aid Market" in the IUJ Journal of Management in June 2024.