The Feasibility of a Speech and Language Therapy Application in India

Dissertation submitted in part fulfilment of the requirements for the degree of

MBA- Marketing

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Declaration

I, Malay Vaishnav, declare that this research is my original work and that it has never been presented to any institution or university for the award of Degree or Diploma. In addition, I have referenced correctly all literature and sources used in this work and this work is fully compliant with the Dublin Business School’s academic honesty policy.

Signed: Malay Vaishnav
Date: 21st August, 2015
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Abstract

The use of electronic devices seems to be a common practice for various medical purposes including the speech and language therapy application (app) industry. However, there was no evidence of any qualitative research done in this field. The topic thus aims at studying the feasibility of a speech and language therapy app in India. Considering the various technological advancements in India, the feasibility of shifting the paradigm towards digital rehabilitation is evaluated. The current ways of practicing therapies in India involving the key stakeholders is studied in order to do so.

A systematic research methodology has been followed that displays the background for selecting the research philosophy, research approach and the sampling for this research. This study is based on a stratified probabilistic data sampling method, with each sample indicating the domain it is a part of. The main sources of data collection used for this research are the case study and the qualitative interviews. The case study essentially provides a product view from a resourceful and developed geography. After gathering the data from the case study and the interviews, a detailed analysis of the data has been done using computer aided tools. In addition, the importance of ethics is identified and the research has been carried out well within the ethical context at all times.

The study reveals the challenges and possibilities related to the transition from the conventional ways of therapies to digital rehabilitation. Furthermore, it also highlights the role of the therapists as intermediaries in the entire supply chain. The report also draws the advantages and disadvantages out of the data collected from the interviews. Finally, the research provides certain strategic solutions to address the customer needs and demands pertaining to the speech and language therapy app.
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1 Introduction

Development of communication skills is significant to cognitive, emotional and social development which is critical for generating self-confidence. When this ability to communicate effectively reduces, the impact can often be immense. This may also have a negative impact on the person’s ability to perform the general activities of daily living. Speech impairment or disorder is defined as difficulty in articulation of words (NeuroHero, 2015). The main example would be stuttering or difficulties in producing specific sounds. Articulation pertains to the sounds and syllables. Language impairment basically is a problem in understanding and sharing thoughts and ideas which includes processing of linguistic information. Problems that may be experienced can involve the form of language and its functional aspects such as grammar, morphology, syntax. The main causes that lead to speech and language impairment are aphasia, dementia, stroke, brain injury and autism (NeuroHero, 2015).

Hence the therapy for people with communication and neurological difficulties must also involve ways to improve social companionship and increase the scope for better interaction. There are various applications, or ‘apps’ as they are commonly known as, available to monitor blood pressure or to find wheel chair accessible restaurants. In addition, there are apps available to help survivors of stroke and support their families. Such apps generally include support for communication disabilities. For example, a speech and language therapy app requires the patient to name an image / object on the basis of visual, audio and written cues. Progress reports can also be viewed to monitor improvement (Research and hope for stroke, 2015).

Benefits of Therapies:
According to Kolb, Neuroplasticity suggests that human brains have the capability to respond to the changes around the environment and mould its structure and function accordingly. Thus through active and frequent therapies it may very much be possible to stimulate recovery. Recovery time needed from speech and language disorder may vary from person to person. Experts at Neuroaid feel that the goal of rehabilitation of speech and language impairments is to restore a person’s confidence in communicating with others. It is
usual to recover basic language skill within the first 6 months of recovery (Research and hope for stroke, 2015). However the patients still show deficits in analyzing and understanding receptive language. This highlights the significant role of therapies in the rehabilitation process. Around 75% patients suffering from speech disorder feel that they cannot easily communicate with anyone outside their family (Toshniwal & Joshi, 2010). This highlights the significant role of therapies in the process of rehabilitation.

The sole aim of rehabilitation is to get the normal life back and to provide best level of independence possible.

- Regain skills and abilities
- Adapting to the possible limitation
- Finding social and emotional support

Rehabilitation also helps regain and balance mobility, regain speech and communication skills, and above all thinking and understanding (Stroke rehabilitation, Ireland, 2015).

Therapies by Apps:

App therapy may not provide with the comfort and the emotional support that can be provided by therapists but it certainly gives a cost effective solution and the freedom to practice anywhere. Historically, the therapy services were provided only in the clinical settings. There has been a progress in therapies from just linguistic based therapies to also considering the impact of the disorder (Banerji & Pauranik, 2012). The objective of therapies now is to help the patients adapt and accommodate from the social-life perspective rather than simply recovering to a pre-morbid state. Healthcare models that focus on social life participation are now followed for better results. One such model is to enhance the communication skills than just support speech and language (Banerji & Pauranik, 2012). Alternate and augmentative communication (AAC) plays a crucial role when it comes to enhancing communication skills. With the recent developments of iPads and other similar electronic devices, such services are getting efficient and cost friendly. Considering the ease of availability of the electronic devices, the ease of purchasing AAC apps and their comparatively inexpensive services, there have been substantial changes in the way the consumer now expects services related to communication disorders (McNaughton & Light,
In addition to providing visibility to the AAC in various communities, few researchers feel that mobile technology and smartphones are socially valued and accepted across the community (Kagohara, et al., 2013). According to the Journal of Research in Developmental Disabilities, with this wide acceptance of mobile technology comes greater adoption of speech therapy apps technology. Digital solutions and technologies provide a lot of benefits to the consumer. Once the patient recognizes and gets convinced that the service or therapy is self-directed, the sense and feeling of autonomy to the patients is also seemingly high (Marshall, 2015).

**Sustainability in providing Assistive Technology (AT) Services:**
In principle, sustainability in providing AT Services in speech and language therapy means to enable the people in need for it with services and technology that are timely and consistent. This general definition may be different in developed and underdeveloped economies (Cook & Polgar, 2015). For example, the spending on healthcare in developed economies may be higher than that in underdeveloped economies. Cook and Polgar further emphasize that sustainability for certain developed countries also includes contributing to the cost for any training required to people in AT. Clinicians and physicians contribute to sustainability by testifying the rights of the customer to the developers. In short, they advocate and ensure that the final product that is offered is purely evidence-based.

The meaning of sustainability however contradicts in the developing economies. In underdeveloped countries sustainability means establishing the very meaning of AT, its products and services and a secure environment for its use.

**Speech and Language Therapists (SLT’s) in India:**
Speech and language therapists form an integrated health care profession in India. According to the Journal of Indian Speech Language and Hearing Association (ISHA), speech and language therapists provide clinical services to individuals across the country. Currently SLT’s in India provide services to patients in collaboration with physicians and care-givers. They help the patients with making sounds, improving their voices and enhancing their basic communicative skills through various augmentative methods or sign language methods (Indian Speech and Hearing Association, 2011). They also provide counselling to family
members about how to cope with the behaviour and misunderstanding that is associated with the patient. Family members are also often trained with the communication-enhancing techniques that can be used with the patients at home (Indian Speech and Hearing Association, 2011).

Practice settings for Speech and Language therapists in India:
There are a variety of facilities where the SLT’s in India work. There are a lot of hospitals and clinics where the patients after diagnosis are referred to the speech and language therapists directly. This allows the therapists to work in collaboration with the doctors and hence transfer of patients happens relatively quicker. It is also common among the therapists to practice at rehabilitation centres. Rehabilitation centres are found in the urban as well as the rural parts of India too. Private practice is yet another typical form followed by therapists in India (Centre for Child Support, 2015). In addition, speech and language therapists also work in Non-Government Organisations (NGOs), State and Central Government agencies and institution, and many research centres (Indian Speech and Hearing Association, 2011). NGOs and Government agencies mainly aim at expanding the service reach to the rural parts.

1.1 Research Question:
*How feasible is the Indian market for a speech and language therapy application?*

1.2 Explanation of research question:
The main objective of this research is to understand the need and market of India for a speech and language therapy app. Hence the research question aims to address the following:

- To understand the scope of digitalisation in the Indian health industry
- To classify the challenges and opportunities involved in introducing a speech and language therapy app in India
- To valuate benefits and drawbacks of a speech and language therapy app in India
- To decide the role of intermediaries (doctors and therapists) for a speech and
India’s lifestyle and demographics are changing at an alarming rate. Annie Mathew, Director for Business Development & Alliances at BlackBerry India highlights the need for transformation in the healthcare industry. By emphasising on the shift of paradigm towards digital rehabilitation, this research focuses on suggesting the medical facilities in India to test and adapt to the new ways of rehabilitation (The Hindu Business Line, 2015).

Smartphones and tablets are becoming the easiest way to stay connected. Decreasing device and data costs is driving people in India to exchange their traditional cellular phones with the new smartphones. This research also addresses how this development in telecom service may be used to drive the initiative of speech and language therapy app (Nielsen, 2015). India’s medical services and healthcare market is quite unorganized. The shortage of doctors and therapists illustrates the growing pressure on the medical system. As a result, doctors are also looking for alternate solutions that could improve the doctor-patient relationship and enhance the quality of care (The Hindu Business Line, 2015).

Speech and language therapy application above all, provides rehabilitation and education for those living with speech and language difficulties. Rationally, the advantages and disadvantages pertaining to the research are evaluated. It is observed that India still practices the conventional ways of therapies i.e. by consulting therapists. Therefore this research also studies the role of therapists in product initiation.

Understanding the requirements from both the patient and the therapist perspective is again a key objective of this research. As suggested by Jessica Gosnell, while evaluating external evidence, it is imperative to evaluate the therapist’s level of confidence in the product (Gosnell, 2011). To put it simply, informed clinical opinion is a priority to evaluate the efficacy of such a service. It is also critical to keep in mind that the focus should always be on the patient’s needs, skills and strengths.

1.3 Research Limitations

Limitations are virtually found in every research. The biggest constraint for this research was the time constraint. Since the research had to be completed in 12 weeks, time was actually
an unaffordable luxury. Getting hold of professionals for interviews was a limitation. While the interviews of various professionals added a lot of credibility to the research, it would have been interesting to involve more number of participants.
Out of the 6 interviews conducted, 4 interviews were carried out through voice calls and 2 interviews by Emails. The data shared through emails deteriorated in terms of length towards the end of the interview questions. This shows the fluctuating level of interest of the respondents towards the interview questions. Considering the country’s diverse culture, banking upon a common language for the interviews was initially a struggle. A lot of follow up calls were made to decide the time of the call for the telephonic interviews. Since the interviews carried out were of considerable depth, the data analysis for the primary data was time consuming and required some amount of training. The tool (CAQDAS) used for data analysis was not known and hence had to be understood before applying it to the research.

1.4 Research Ethics
The research has been carried out in a moral and responsible way. There is always a possibility that as the research approaches the end, the researcher may lose patience and manipulate the data in order to get positive outcomes. Such unfair practices have been avoided at all cost for this research. The data collection and data analysis have been carried out in an ethical manner (Saunders, et al., 2009). A deontological view has been followed for this research in the sense that no deceptive measures have been used to get the right data at any time. To work in a rather professional manner, an info-consent sheet from college was shared with all the interviewees. This had assured the interviewees that the data that was collected will be strictly confidential and used for this research purpose only. The Company Security Clearance and Confidentiality form was shared with NeuroHero before exchanging dialogues with the company with respect to the research. The info-consent sheet and the company clearance form are available in Appendix 1 & 2. Incidentally, the patients were not directly contacted for this research, the sample app was made to test through one of the interviewee. The requirement of the patient to maintain absolute anonymity about their personal details has been strictly followed in this research.
2 Literature Review

2.1 Literature Introduction

Reviewing the literature is the foundation of this research. It was inevitable to judge or compare this research with other experts’ reviews (Saunders, et al., 2015). After spending a lot of reading hours, the literature has been divided into the following themes:

1) Scope of digitalisation for speech and language therapy in India
2) Growth in medical app industry in India
3) Lack of resources
4) Importance of the consumer behaviour in India

2.2 Literature theme one- Scope of digitalisation for speech and language therapy in India

Various operating services and device capabilities have made it easy for the consumers to get more access to the content and multimedia features. Tablets and smartphones are gradually transforming the consumer habits in India (Nielsen, 2013). A lot of researchers feel that even though the medical industry in India is underdeveloped, the solution may be easy. According to Annie Mathew, India is estimated to be the 2nd largest wireless market after China and hence digitalisation in the health care industry through smartphones and tablets may be an easy solution to provide cheaper and better services. Considering the increase in usage of electronic devices, Smartphone apps that serve as speech-support tools and therapies will create new and independent ways of recoveries (Mathew, 2015).

A study conducted by Nielsen revealed that approximately 93% smartphone users prefer their handsets to be the only source of infotainment. People use the internet on the handsets to diagnose the symptoms when they get ill. They prefer various operating systems such as Android, iOS and Blackberry which further shows their desire for a medium that offers better products at affordable prices. A rise in tablet ownership is also
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anticipated. In the same study carried out in 2012, the tablet ownership in the last quarter was 3% and an additional 11% showed interests in buying a tablet in near future. According to the telecom regulatory authority of India, the total number of mobile connections as on September 2014 is 930.2 million. With the increasing popularity of the smartphones, India has recorded an exponential growth in the number of smartphone users.

Figure 1: Mobile Internet users in India

213 million mobile internet users were registered in June 2015 as against the 173 million users in October 2014 (Livemint, 2015). A report by the Internet and Mobile Association of India and IMRB (market research firm) highlights a significant increase of 33% of smartphone users in the rural India from 49 million in October 2014 to 53 million in June 2015. The urban users in India on the other hand went up to 160 million in June 2015 from 143 million in March 2015. The strategic pricing model of Android seems to be working in the emerging countries like India. There is a sharp increase in the market share by Android to 56.4% in 2012 from 42% in 2011 (Tech-thoughts, 2012). Android seems to be positioning itself in the rural as well as the urban segment by collaborating with the major handset manufacturers of the country.
The pre-dominant Indian smartphones such as Micromax, Karbonn, Lava are all Android compatible phones and hence work well in the semi urban and rural market (Livemint, 2014).

According to Lee Ventola of Pubmed central, the introduction of smart electronic devices that serve as personal digital assistants (commonly known as PDAs) in addition to the smartphones, tablets and iPads could have a great positive impact on many fields, including medicine. Professionals in the healthcare industry now use smartphones and electronic devices to accomplish various functions. Smartphones and tablets combined have the potential of providing cumulative features related to computing and communication in a single device that can be easily carried in a hand, allowing easy access anytime and anywhere at the point of care (Ventola, 2014). Smartphones offer a lot of advanced features in addition to just voice and text services against any other feature phones. Smartphones also include services such as web searching, global positioning systems (GPS), sound recorders and high-quality cameras. The powerful processors and operating systems, large memories, and high-resolution screens that are supported by the smartphones have essentially made it comparable to handheld computers (Ventola, 2014).

In India, mobile technology can be used effectively to pass on the healthcare service to the masses. Medical apps can also offer patients to monitor their progress and can also ensure patient wellness.
Mohan and Naik feel that hospitals in India must identify the needs of future consumers and plan on delivering quality medical care. Health care industry in India is moving fast towards advanced hi-tech technologies and hence corporate hospitals must place them in a different and a unique manner to survive. The present healthcare scenario can be classified into 3C’s”

- Competition
- Consolidation
- Consumerism

Industry watchers point out that sophisticated hospitals need a lot of investment to acquire technology and doctors and therapists. Rudimentary practices have never been able to break-even the expected returns. Hence the hospitals must strive to provide services as wanted by consumers as cost effective and need based which will also provide financial benefits to them (Mohan & Naik, 2006).

According to Porter, digitally smart and connected products have immense scope of developing opportunities for new functionality. The new types of products aim at changing the industry and are thus pushing the stakeholders to revisit their technological initiatives. The recent transformations in Information technology may help unleash new and better products (Porter & Heppelmann, 2014). Smart and connected products have 4 main benefits viz:

1. Monitoring:
2. Control
3. Optimization
4. Autonomy

Figure 3: Capabilities of Smart, Connected products
2.3 Literature theme two- Growth in medical app industry in India

There seems to be no limit for the population in India. With the growing population, the expenditure on health care has increased drastically at a CAGR (Compound annual growth rate) of 10.3% (From $43.1 in 2008 to $88.7 in 2015). The private sector has been contributing a lot since there is a lot of scope for medical services in tier 2 and 3 towns. Mobile connectivity and the recent advancements in 4G network services are pushing mobile health market to a new extent. According to Neeraj, even though at present India’s digital health industry is rated weak when compared to other developed countries, the health care industry in India is going to be worth $1 billion by 2017. Start-ups and SME’s thus find this benchmark irresistible and are willing to come up with better technologies (Neeraj, 2015).

![Figure 4: Health expenses as % of GDP](image)

A recent article by Bill Yates from iMedicalapps highlighted that since 2007, the overall google search traffic in India was for specific keywords related to healthcare or medical apps. The subsequent growth is undeniable as the start-ups and SME’s will be using their analytics tools to make optimum use of these interests and finding a way to convert them into reality. In addition to this, the simplicity and ease of accessibility of mobile devices and apps creates a huge growth opportunity for patients, therapists and medical professionals. According to a business insider report, 90% of chronic patients would prefer prescriptions and therapies through apps over paper prescription and paying separately for physical
therapy sessions. Therapists and physicians too are looking for medical apps which will make their work-function easy (Kumar, 2014).

**Key takeaways:**

After carefully studying the report on Indian medical electronics industry by Deloitte the key takeaways that can be identified are:

- Patient profile is changing dramatically. They are well informed and prefer quality and affordable healthcare facilities.
- Middle-class families with higher disposable income demand for reasonable yet quality health care.
- Different national plans such as National rural health mission (NRHM), Rashtriya Swastha Bima Yojana (RSBY) are making efforts to provide quality and affordable health care to the rural India.
- The rise in mobile trend highlights the alternatives like telemedicine.
- Currently 24 million people have enrolled under RSBY.

The IMS Institute for Healthcare Informatics believes that with time the maturity model for app will see a development from being recommended on a rather *prototype* basis to a more organized use for individuals and health care industry.

![Figure 5: Time maturity model](image)

This transition can be broken down into 4 simple steps: 1) Recognition by payers and developers. 2) Security and privacy guidelines to put in place between patients and app developers. 3) Provide summarized content to physicians and patients that enables evaluation and curation of apps which in turn helps in decision making about the proper
The Feasibility of a Speech and Language Therapy App in India 2015

use. 4) Combine the app with other aspects of patient wellness (IMS Institute for Healthcare Informatics, 2013).

There is a direct link between the effects of digitally sound products on its industry competition and profitability (Porter & Heppelmann, 2014). Any shift in the 5 forces defined by Porter will highlight the changes in the industry structure because of various reasons like new technology or customer needs.

**Bargaining power of buyers:** Apps in general provide the opportunity for product or image differentiator in the health care sector. The app industry in particular is growing at such a phenomenal rate that there are opportunities for weak players too. However, as the industry matures, the weaker players will be ruled out (Frost, et al., 2012). In the app industry, a firm’s dependency on distributors also reduces which in turn helps capture more profit. On the other hand, Apps are available on various operating systems like iOS and Android for a fixed rate which allows the buyer to purchase the product from any of the competitors (Frost, et al., 2012). This increases the bargaining power of the buyers. Furthermore, having access to information like product data usage can also reduce the buyer’s reliance on manufacturer for advice or support.

**Rivalry among competitors:** Use of medical apps may open up various new opportunities to further enhance the differentiation. This creates a potential to shift rivalry and even customise the products as per the demands of individuals. Such products also enable companies to focus on a particular market segment which also enhances price realization (Sutherland, 2014). According to Health Care Marketing, use of such technologies also helps corporate hospitals to provide comprehensive and not costly healthcare services (Mohan & Naik, 2006).

However, considering the expansion capabilities and the adaptability associated with such products, a lot of companies can soon follow into entering the same market which can risk the profitability and erode the uniqueness of the industry.

**Threat of new entrants:** According to the Journal of Applied Management Accounting research, there are a lot of entry barriers to such a product. Firstly it needs many layers of IT infrastructure. Such developments also need a lot of fixed costs to create a product design. Early or First-entrants may make use of their presence and provide better service by
collecting product data thus using it to improvise their products and services (Suwardy & Ratnatunga, 2014). This further raises barriers to entry. However, the barriers may go down if the developers fail to embrace or invalidate the strengths and benefits of the absolute necessary features. This ultimately will give rise to new competitors.

**Threat of Substitutes:** Apps tend to enable better experience and customer value which reduces the overall threat of substitutes. In general apps are known to provide superior performance and can be customised as per individual needs.

**Bargaining power of suppliers:** In the case of an app, physical commodities are replaced with softwares. Hence the contribution of the typical suppliers to the total product cost will fall. This certainly reduces the bargaining power of the suppliers (Frost, et al., 2012).

2.4 **Literature theme three- Lack of resources**

Vijay Aggarwal, a speech pathologist at the All India Institute of Medical Sciences (AIIMS) in his article in the Hindustan Times states that 6% of India’s population needs services of speech and language therapists. NSSO (National sample survey organization) estimated that more than 1 million people suffer from speech and language disorders in India. Therapists see 15 new cases daily at AIIMS (Hindustan Times, 2010).

The lack of doctors and clinicians is generating more pressure on the Indian medical system. According to the Center for Health Market Innovations, India has only 700,000 doctors against a population which is more than a billion people. This number can be further filtered down by the limited number of therapists available to provide special care required by patients with speech and language disorders. Around 75% dispensaries, 60% hospitals are located in the urban areas. This makes quality health care a luxury for people in the rural areas.

Despite certain steps taken by the government on this issue, the fate of people in need for therapy hasn’t really changed. There should be significant emphasis given to the awareness of the need for rehabilitative support. Therapy services offered in India are often referred to as piecemeal that covers just one aspect of the several issues the patient may face. According to the Neurological Society of India, therapies are also carried out by student trainees who may not be able to deliver therapies as good as their superiors or clinicians.
Although there are various professionals and organizations that have been trying to find strategies and methodologies that can make the quality of life better for the needy, there is still a very distinct need for a more sophisticated globalised solution to identify an integrated multi-disciplinary style of working, highly efficient management of support, and an organized framework of rehabilitative services (Centre for Child Support, 2015), as a system like this will have the potential to make an impact on the multicultural nature of the Indian community. Poor public transport connectivity restricts the access to rehabilitation centers. If speech and language disabilities had to be compared with other disabilities, there is an absence of focus or advocacy groups (Banerji & Pauranik, 2012). The current unequal social and economic scenario in India is proving to be detrimental to the overall accessible resources for the society. The main reasons for this are the traditional biasness in terms of economy, gender, caste, religion plus the multi-cultural swirl and the unchecked ever growing population. Furthermore, India has 16 official languages. This makes communication and treatment difficult for the therapists (IMS Institute for Healthcare Informatics, 2013).

From the data mentioned above, it is evident that the lack of resources has an immense impact on the low-income Indians. Due to this limitation, any patient in the rural area may keep delaying his visit to the doctor or therapist ultimately making him complacent which leads to forced adjustment to the disorder. Rural healthcare services can be improved by providing portable, easy-to-use medical apps for diagnosis or therapy purposes. Even though the government is trying to introduce aforementioned initiatives such as NRHM and RSBY, the supply-demand gap is still wide. The government of India can make use of the growing economy of the country to attract technological innovations both from local as well as overseas companies. Healthcare facilities using technology may prove effective in the long run if it is developed by keeping patient well-being at the center. There is a need for the main figures like the physicians and medical associations to come together for this technological innovation. Dr. Pratibha Karanth, a nationally renowned speech pathologist states that the families of the patients do not receive post-recovery information adequately. Physicians do express the need of therapy services but they do so half-heartedly. This is mainly because they are not convinced if such services help or they may not have anyone to recommend (Banerji & Pauranik, 2012). A survey carried out by Neurological Society of India
on the issues of speech and language therapy in India revealed that the patients and their families listed their economically poor standards, insufficient family support, distant therapy centers, and a general lack of awareness as the main obstacles in accessing therapies and related services.

It is thus observed that there is an overall lack of confidence in optimally using therapy services. On the other hand speech therapists and clinicians believe that the lack of adequate time and inefficiency of therapy techniques further reduce the scope of making use of therapy services. There is definitely a need for a system that serves every individual’s needs and supports them in order to retain the communicative skills. Extended study done by Centre for Child Support suggests that every state of an individual be it physical, cognitive or emotional is interlinked which has further raised the need of a multi-disciplinary approach to intervene.

2.5 Literature Theme Four: Importance of knowing the consumer behaviour in India

It is extremely important to understand what the consumer really wants before entering any market segment. Previous research on consumer behaviour for healthcare sector has defined responsible consumption as a decision based on consumer health and society in general (Giesler & Veresiu, 2014). According to the Journal of Consumer Research, in the context of consumption, the consumer subject is shaped through 4 inter-related processes:

- Personalization: Personalization redefines the consumer behaviour by comparing the desires and choices of responsible consumer with the desires and choices of the irresponsible consumer.
- Authorization: This stage renders the development keeping in mind the economic and other scientific aspects of the products. The technical know-how of the product is contradicted with the consumer’s knowledge.
- Capabilization: An ethical management is created at the capabilization stage.
- Transformation: Draws conclusion after observing the consumer’s adoptability.
Consumer Behaviour in India:
The behavioural change in Indian consumers has already passed the transition phase. Patients today play a more Active role than a Passive role in the Indian Healthcare system. Firstly, the Indian economy has contributed immensely in creating this active role by increasing the spending power which has placed the patient in an informed decisive position. In a country like India, it is imperative to study both the urban and rural consumer. A well informed patient is asking more questions on the type of treatment, duration of treatment and cost of drugs. The days of Doctor Knows Best among the urban population is changing. According to a study conducted by Brandcare, a leading medical advertising and consultancy firm in India, 28% of the patients think their physicians and therapists may be recommending unnecessary treatments and therapies.

Choice of Physician:
Different clinical and non-clinical factors are taken into consideration by the patient/consumer to select the right therapist. These factors include experience with the therapist, goodwill and proximity to home. Patients today do not want to just walk out with a prescription instead they want their therapists and physicians to spend more time with them (Brandcare, 2013). Typically, around 59% of the patients in India prefer to visit their primary care physicians rather than a specialist.
Also, the level of self-awareness and concern in the 20-35 age group has gone up so high that even if they don’t need the service they still want to gather information on it (Brandcare, 2013).

Patient Satisfaction:
There are a lot of variables involved in determining patient satisfaction. Patient satisfaction is the underlining outcome expected by every clinician today. Research done by Brandcare Medical Advertising and Consultancy suggests that 1 in every 4 patients is not happy with the kind of personal attention he/she receives from the physician. In this era of modern medicine there is a visible shortage of personal attention and availability of therapists for the patients.

Out of the samples considered, 25% of the patients feel they are not getting personal attention, 21% think their therapists are charging too much for the sessions (Brandcare, 2013). The main reasons that lead to this dissatisfaction are:
The feasibility of a Speech and Language Therapy App in India

1. Not enough time with the therapist
2. Physician’s Lack of motivation to share extra information about the disease
3. Unclear understanding about the treatment followed
4. Patients have raised the bar due to a lot of information available online

Physicians, on the other hand also feel their respondents are not getting the information and attention they deserve. This is a concern as both the patients and professionals are an indispensable part of the healthcare delivery chain.

Patient-Physician Trust:
Traditionally in India, patients have high levels of confidence and trust in their physicians. This may be because of the high social stature and ethical values of the doctors. However, this image seems to be blurring. The trust in healthcare delivery is decreasing at an alarming rate. A survey conducted by AIIMS (2010), highlights that 55% patients think that unnecessary follow ups, too many diagnostics and tests plus expensive treatments are leading to this distrust between doctors and patients. 28% of the respondents believe the consultation charges are preferential and not standardised.

![Figure 9: Parameters affecting patient-physician trust]

Source: AIIMS, 2010
2.6 Literature Conclusion:

The literature reviewed above intends to display an in-depth scenario of the present and future prospects of the Indian health industry. The different themes outlined are meant to establish the foundation for the feasibility study. The literature review highlights the need for transition from a rather conventional way of services to a more digital standard of services to avoid the unequal distribution of healthcare facilities. Since the product in consideration is dependent on technological innovation through electronic devices, progress in the field of connectivity infrastructure and electronic devices in India has been underlined. The market share of the devices and smartphones has been displayed in the literature as per the popularity of the manufacturers and target consumers of India. Inexpensive and affordable smartphones and tablets with various features seem to be commonly used in India which indicates that people prefer financially reasonable solutions over expensive alternatives. In the same context, the health care industry in India must make use of the technological advancements in India to provide affordable and innovative solutions to the consumer. The spending on the smartphones further displays and links with the purchasing behaviour of the Indian consumer. The second theme aims to display the facts and figures of the medical app industry in India. The opportunity of converting the available developments in connectivity and electronic devices into smart and innovative solutions to the healthcare industry has been outlined using marketing based principles. The key stakeholders i.e. the patient and the therapist are very well informed and participate actively in the decision making process. The growth in medical app industry in India also demonstrates the need for Small and medium entities to come up with cost-effective solutions. Considering the high population of the country, the theme that covers lack of resources in the speech and language therapy industry intends to study the doctor-patient ratio of the country. In addition to the private institutions, the literature also captures the information related to the various programmes initiated by the government and their subsequent effect on the industry. Furthermore, the main challenges and the unequal distribution of services that is leading to the growing gap between the doctor and patient is also noted. The patient behaviour towards the existing speech and language therapy services is added in the consumer behaviour theme. This theme mainly constitutes of the
needs and demands of the patients and the relationship between the two stakeholders in the industry. Moving on to the socio-cultural factors, various limitations and constraints regarding culture have been noted down. It is also very essential to consider the purpose of using such a product. The need to enhance the communication and follow standard protocols by the healthcare providers in order to improvise has also been considered for this research. Hence the benefits and utility of the therapy app have been carefully studied. In addition to the literature, this research also aims at:

- The importance of external orientation of the app in line with the culture.
- The contribution of speech and language therapy app towards a patient’s recovery.
- Reviewing the opinions of therapists and medical institutions.

3 Methodology

3.1 Methodology Introduction

The purpose of this research is classified to be exploratory. According to Saunders, exploratory study is the best means to understand new insights, to understand what is happening and to explore new possibilities by asking questions (Saunders, et al., 2015). The 2 ways that will be used to carry out an exploratory research will be:

1) To find and scan the literature
2) To interview the experts (Doctors, therapists and medical institutions)

The content of the data is the most important irrespective of the background of any research. Hence it is vital to identify the best research methodology. Since the implementation of a medical app is purely based on evidence and facts, a qualitative framework is used for this research. This framework has allowed me to commence the research with an open and free mind without any preconceived ideas. Experts like doctors and therapists are interviewed to collect first-hand facts and to evaluate the general awareness among them about the possibility of a speech and language therapy app in India. This also elicits if the experts in this field feel the need for such a product. Few patients are also made to test the app. This is mainly to understand the requirements of the patients in India. Since the methodology is qualitative, a single data collection method Mono method is
used. Monomethod is basically a combination of a single qualitative data collection method such as in-depth interviews with qualitative data analysis procedure (Saunders, et al., 2015). DDA (Data Display Analysis) analysis is covered in-depth in the later section. The data analysis is later compared with the existing theories so that the new theory can be positioned within the discipline.

3.2 Research Philosophy

Research philosophy forms the basis of the research design hierarchy. The philosophy selected may very well reflect the intentions and thought process of the researcher. It is extremely important to know the philosophical commitments that the researcher has to abide to before selecting a specific research philosophy. The philosophy also highlights personal views of the researcher. It develops the relationship between the knowledge and the process by which knowledge is acquired. In simple words, the findings of the research will be influenced by the researcher’s views.
A clear philosophy has been understated before commencing the research. The ideologies that have been considered for a research like this which intends to recommend a new dimension to the health care industry are based on social actors and not just on various experimental subjects. Empathetic stance has been adopted for this particular research in the sense that it is a challenge to enter into the world of social actors (Doctors, physician, therapists and patients in this case) and understand their point of view (Saunders, et al., 2015).

Hence the research philosophy is based on Axiology and Interpretivism. Axiology has been selected because this study has direct relevance to the field of qualitative research as much as the ethical context. Following Axiology for this research has made it easy to convey the values possessed by the researcher. It has enabled the research to be ethically credible. According to Saunders, the research philosophy also justifies the data collection techniques down the line. The reliance on interviews for this research suggests that more importance has been given to personal interaction with respondents rather than collecting just views through questionnaires. In sensitive areas of healthcare, interacting personally with the respondents lets the researcher transfer as much information as possible.

Interpretivism is also the research foundation since this research is based on naturalistic methods such as in-depth interviews, observations and analysis of existing theories. In addition, social process is not captured in hypothetical deductions. Social factors are very crucial for this research as the respondents perspective needs to be interpreted. The situation of the end user or the patient using the app may not only be complex but unique as well. It is critical to interpret the data meaningfully before jumping to conclusions (Saunders, et al., 2009). Such philosophy leads to a value bound research.

### 3.3 Research Approach

The research approach selected for this research is Inductive. Easterby-Smith et al. (2008) suggests that the choice that is made about the approach is very important for 3 reasons. First, inductive approach allows the researcher to take a well-informed decision about the overall research design which is more than just the data collection techniques used or the data analysis methods used. It focuses on the kind of evidence gathered and the sources it is
gathered from, and if the evidence collected is doing justice to the initial research question or not. This can be related to the philosophy of Interpretivism mentioned in the earlier section. Secondly, it also lets the researcher carefully analyse the research choices and strategies that work for them and the ones that do not. For example, this research is more concerned with how is the Indian market feasible or not feasible. In such situations, it is appropriate to use an inductive approach over deductive. And lastly Easterby-Smith et al. (2008) also highlights that the research approach must also enable the researcher to take into consideration the constraints of the research design such as lack of respondent’s knowledge or not enough access to data. This may cause difficulties in framing a hypothesis. Deductive approach on the other hand is related to Positivism. Deductive approach demands building of a hypothesis first and then setting up a research strategy to test the hypothesis. The research approach selected for this research is inductive also because it is associated to qualitative research as well. There is a strong need to identify the problem for this research. The task after this was to make sense of the interviews by analysing the data gained out of them. The main strength of using this approach is that a cause-effect link has been developed after analysing the data (Saunders, et al., 2015). This has in turn helped making an informed decision rather than simply working the data collection techniques or the sampling methods.

Inductive approach is ideal also because, this kind of research moves from more specific level of focus such as gathering data to more general level of focus like developing a theory. So unlike the deductive theory which is based more on natural sciences without considering alternatives, the inductive theory always has an option to analyse the data and explore different possibilities. Continuous emphasis on ‘building theory’ is made as the aim of the research is also to find out what is holding back the much required technological transformation.

Figure 11: Inductive Theory approach
3.4 Research Strategy

The research strategy selected for this research is driven by the research question and its objectives, the level of existing knowledge, time constraints and other resources available. According to Saunders (2012), there is a clear distinction between inductive and deductive based research strategies. This clear distinction basically means that none of the strategies were superior or inferior to the other. Every strategy could be used for exploratory or explanatory research.

There are various strategies like experiment, survey, action research, case study and grounded theory (Saunders, et al., 2009). An experiment strategy can be used if there is a generic need to develop a theoretical hypothesis or when selecting samples from a known population. Using a captive population for a research may lead to problems pertaining to external validity. Saunders (2012) suggests that the survey strategy is associated with the deductive approach. Surveys are beneficial for the researches that aim at collecting data quantitatively. The bandwidth of the data that can be collected through surveys is less as compared to the other strategies. For example, a questionnaire can only contain a limited number of questions. Action research generally has 2 faces, one that aims at fulfilling the priorities of the samples and the second one undertakes the priorities of the researcher (Saunders, et al., 2009). This ultimately becomes a consulting activity. Both the faces talked about are not mutually exclusive which is not advisable for this research. The researcher needs to consider the views of the samples too. Grounded theory can be used for inductive as well as deductive approach. It can be used to develop theories after analysing the data (Saunders, et al., 2009). Ethnography, although related to positivism and an inductive approach is extremely time consuming. This strategy requires the researcher to immerse completely in the social world being researched over an extended time. On the contrary, time available for this research is limited and therefore following Ethnography strategy for this research is not considered. Another research strategy called Archival strategy relies on official administrative documents and records as their primary source of data (Saunders, et al., 2009). Since it relies on certain administrative documents the nature of the research
question can only be limited to those documents. Archival strategy is thus business oriented.

Case study is the most favourable for this research. Yin (2003) suggests that the nature of a case study is the opposite of an experiment where the research is carried out in a controlled environment. It also contradicts the survey strategy as the number of questions in a case study is not pre-defined. The case study strategy has the ability to provide answers for the questions like ‘why’?

It is inevitable to refer the journals and articles for this research but in addition to that qualitative research methods will be used mainly in the form of interviews. Furthermore, a case study is done on NeuroHero (NH).

3.5 Sampling - Selecting Respondents

Sampling in simple terms means the activity to collect data of a manageable size. According to Saunders, certain factors that were considered before selecting the sampling method for this research were:

- Is it practical to collect data from the entire population?
- Time constraint that limits the size of the sample
- Time required to analyse the data after collecting it

Even though this research is meant for a particular geography, it is not feasible to collect the samples from the entire population. In fact, it is not required to cover the entire population because in the end there has to be quality and content in the data. Also, this research demands the participation of just a certain number of people and professionals.

Stratified random sampling has been selected for this research. It is a probabilistic type of sampling which means that each case selected from the population is known unlike non-probabilistic sampling where the sample category and number is not known (Saunders, et al., 2015). Stratified random sampling makes it possible to justify the research question and subsequently allows the researcher to achieve the research objectives that may require statistical estimation of the characteristics. That is why often stratified random sampling is also referred as representative sampling (Saunders, et al., 2009). The entire process of
selecting stratified random sampling has been broken down into four simple steps for this research:

1. Probability sampling was first selected based on the research question and its subsequent objectives.
2. A suitable sample size was then determined.
3. The most relevant and appropriate sampling techniques i.e. the stratified random sampling, was selected out of all the other techniques under the probability sampling domain.
4. Finally, the samples selected were cross referenced to ensure a perfect match for the sampling technique.

According to Saunders, this type of stratified random sampling technique is possible only when the researcher knows the type of samples to be interviewed. Since the app being considered for this research is evidence-based the samples have been split proportionally mainly into 3 stratas: 1) 2 Doctors 2) 2 Speech and language therapists and 3) 2 representatives of medical institutions. Dividing the samples equally promises undivided representation (Saunders, et al., 2009). Samples have been determined on the basis of more than one characteristic. Literature findings were thoroughly read before dividing the samples. For example 2 representatives from the medical institutions were selected to check if the real time data obtained by the interviewees contradict or match with the literature.

In addition, this type of sampling also saves time and more time can be invested later in the analysis of the data. The figure below portrays the sampling technique which will be used:
3.6 Data Collection Instruments

The data collection instruments have been divided into primary and secondary data collection tools. As mentioned earlier, interviews have been used as primary data collection methods. Interviews have helped gather reliable and valid data which was required for this research. Interviews that were conducted were semi-structured. 6 semi-structured interviews were carried out since there were already a certain number of themes in place (Saunders, et al., 2015). As a result of this, questions for the interviews were pertaining to the context of these themes only.

In addition, these interviews were also non-standardised as the research is exploratory. According to Cooper and Schindler, non-standardised interviews allow changing the order of the questions depending on the flow of the interview. Non-standardised interviews had been selected as the interviews were conducted over the phones or through Emails (Cooper & Schindler, 2008).
A lot of research was done in order to prepare before interviewing the experts. To abide by the ethical context, credible data and evidence was provided to the interviewee to testify the app in consideration (Saunders, et al., 2009). Needless to say a considerable amount of secondary data collection tools like articles, journals and previous work by experts was read and referred. 3 patients were made to test the app developed by NeuroHero. This was mainly to understand the requirements of the Indian patients.

For secondary data, all the existing data was reanalysed. The secondary data for this research also includes Documentary secondary data. Books, articles, journals, magazines, research findings of experts mainly constitute documentary secondary data (Saunders, et al., 2009). Furthermore, Area-based and Survey-based secondary data was also referred for this research.

3.7 Data Analysis Procedures

According to Saunders, qualitative data analysis is used for non-numeric data or data that cannot be quantified. The interviews carried out were non-standardised and for a few of them there was also a change in order of the questions. As a result, few interviews had several pages worth of data. Hence the data analysis method used permitted to arrange the data before a conclusion could be made (Saunders, et al., 2009).

The one that was used for this research is Data, display and analysis method (DDA). The three important processes in DDA are:

1. Data reduction
2. Data Display
3. Drawing and concluding

Interviews may not directly provide in-depth insights or conclusions. Data reduction thus aims at getting the data down and filtering the data for easy analysis. Data display is generally highly time consuming. Data can be displayed and categorized either by converting it to matrices or network nodes. Network nodes is preferred in this case. The data spotted in the 2nd step was used to answer questions with the help of softwares like Computer Aided Qualitative Data Analysis Software (CAQDAS).
CAQDAS enables to quantify the qualitative data. As mentioned earlier, the interview transcripts may often have too many pages worth of data. Skimming and highlighting the relevant information manually can certainly get cumbersome and utilise too much of time. CAQDAS is a good tool to avoid all the manual work (Saunders, et al., 2009). The interview questions for this research were based on pre-defined themes and the same themes were used as nodes in CAQDAS to distribute the relevant information. The node formation using CAQDAS is available in Appendix 11. These nodes were common for all the interviews. The benefit of this is that all the information pertaining to a particular theme from all the interviews can be summed up and displayed. For instance, the answers to all the questions pertaining to Awareness of the Speech and Language Therapy app among professionals and patients can be added and displayed under one common node. To extract and analyse the information can thus become easy. The resultant data is displayed in form of reports or charts.

**Case study on NeuroHero:**

The company was extremely co-operative and helpful in extending support for this research. All the queries pertaining to this research were attended patiently by the company representatives. The interview questions with NeuroHero are available in Appendix 3. Coming from India and also as an intern with the company it was my role to conduct the
interviews with the doctors, therapists and medical institutions on behalf of NeuroHero. The main purpose of these interviews was to understand the views of professionals over possibility of such a service in India. Patients were requested to test the app developed by NeuroHero and subsequent feedbacks provided were noted down. The company also helped me connect with medical institutions like Indian speech and hearing association (ISHA). Feasibility study done on Spain and Ireland was also referred to understand the flow of research.

**Company profile:**

NeuroHero was founded in 2011 and operates out of Dublin. The company makes speech and language therapy apps and all their apps are tried and tested by speech and language pathologists. The apps developed by NH are available on various operating systems such as Android, iOS and Windows. Around 10,000 patients in Ireland and Spain are already using the apps developed by NeuroHero and the company is now seeking to expand in India (NeuroHero, 2015).

**Approach of the Company:**

The company’s primary focus is to enhance the patient’s communication skills to reinvent their social interaction through their speech and language therapy app. The company works closely with speech therapy professionals and develops the apps only after the evidence is approved and testified by the professionals (NeuroHero, 2015). According to Dr. Aviva Cohen, CEO of NeuroHero, the company never fails to involve the patient’s family and friends in the recovery or rehabilitation process.

The company firmly believes in Neuroplasticity which suggests that human brains can change its function according to the change in the environment (Colb & Gibb, 2011). This means that through social communication exercises it is possible to improve the quality of life of the patient.

To understand how NeuroHero evaluates its market, brief discussions and interviews were carried out with the staff of the company. The main participants include the CEO Dr. Aviva Cohen, Project Manager Roisin Carroll and the CTO Ian Kennedy.
Participants Profile:

Dr. Aviva Cohen- Founder and Chief Executive Officer
Aviva was a lecturer in various fields like Psychoanalysis, Communications theory and Philosophy. In addition to being the founder of NeuroHero she is also the founder of on-line magazines like Research and Hope Ltd and the Carers’ Sanctuary.

Ian Kennedy- Chief Technology Officer
Ian has won several awards for prop designing for theatres such as The Gaiety and The Olympia. He has more than 20 years of experience in the multi-media segment.

Roisin Carroll- Project Manager
Roisin holds a Post-Graduation Diploma in Digital Media and is an expert in fields like user experience, graphics and project management. She has an experience of more than 7 years.

How does the company evaluate its Market?
Since the apps made by NeuroHero are completely need based, the company states that their primary customers are speech therapists, health care professionals, friends and family of people with communication difficulties. When the company says healthcare professionals, they also mean ‘Care-givers’ or ‘Carer’. In Ireland, these professionals are paid by the government and also at times by the patient’s families (European Commission, 2015). Their prime responsibility is to provide special attention and care to the patients’ needs. With the ease of use and adaptability that the app provides, it is easier for the care givers to train the patients. The Total Addressable Market (TAM) for their English and Spanish language apps is around 10 million.

The Total Addressable Market is calculated as 25% of all those living with stroke, dementia, autism and brain injury. The company however wishes to highlight that this figure is a conservative figure as it could also include people with learning difficulties and numerous other conditions which could not be taken into consideration due to the difficulty of finding reliable statistics.
The market was segmented by looking at population numbers, access to internet, the health care professionals’ attitude to using apps in therapy and a detailed competitor analysis.

- **English speaking market** = 4.75 million
- **Spanish speaking market** = 5.25 million

Therefore the current TAM that the company aims at is 10 million.

**NH Marketing Strategy:**

**What is NeuroHero’s Marketing Strategy?**

Medical and health apps, including NH’s most popular and commonly used app *Talk Around It* are primarily distributed through online stores such as Google Play, Amazon and the (iOS) App Store. However, according to the company, the traditional healthcare channels such as hospitals, pharmacies, nursing homes and medical sales companies will become the market leader as the prevalence of therapeutic apps grows. NH is building relationships with hospitals and medical professionals in the US, UK, Ireland, Spain and India to raise awareness and drive sales.

**Interacting with Key Influencers:**

An important part of NH’s communications strategy is to interact directly with Speech and Language Therapists and medical professionals working in the therapy sector. The company pre-dominantly exhibits and delivers research papers on the efficacy of their apps at international conferences like Irish Association of Speech and Language Therapists, Dublin, Head First Conference, London and World SLT Student Meeting.

**Sales Channels:**

Much of the company’s **Lead Generation** has been through organic online searches. This shows that people are searching for mobile health solutions or services like NH’s. NH has a strong online presence through their website and social media that allow them to interact with influencers and target market on a wide range of issues.

Another factor that increases the app downloads is referrals: patients often buy the apps on the recommendation of their therapists. The company is continuously striving to work with
Speech and Language therapists, both in private practice and in rehab Centres and extending this network internationally through conferences and outbound marketing.

Sales Model:
Neuro Hero uses a Premium model; in other words, there is a ‘free’ version of the apps with limited features and an option to upgrade to the full version. This model allows them to acquire more users and it gives people the option to see if the app is of any benefit to them or not.

Marketing Actions:

Traditional Advertising:
The main tools used to generate leads are Banners, printed magazines and flyers. Flyers are often given out before or during conferences. This gives readers access to information about the company and also links to download the apps. Even the banners have all the information about the product and how it can be downloaded. The purpose of using banners is to expand the market reach. Banners are displayed outside hospitals, hospital bulletins and at the clinics of physicians or therapists. Magazines are circulated within the professional society on observatory days such as World Autism day or International Alzheimer’s day.

Newsletter:
The main aim of the newsletter is to connect directly with the target market. The company informs the target market about the latest news and updates from NH. Using newsletter also allows the company to build relationship and share content with respect to their product. Newsletters also enable the readers to avail of promotional discounts.

Instructional Video:
The company has posted an instructional video on the website that clearly explains the features and effectiveness of the app. This acts like a demo that facilitates ease in using the app once it is downloaded.
Online Marketing: Social Media and Web Trafficking

The company understands the power of online marketing and makes sure their product is talked about on Social media as well. NH shares relevant news about aphasia, stroke, mHealth and dementia on social media. For example on World Autism day they post information on their Facebook page about what people and associations are doing to promote it. This is also to make people aware of NH. They also use the social media to interact with the key influencers. Mediums like Twitter are used to connect with the key influencers. In addition to this the company also runs promotional campaigns. They run promotional campaigns like offer a discount on their product to engage more people and also to promote their product.

4 Data Analysis:

Data Analysis from the Case Study

In my view the company has a good understanding of the marketing mix. Although marketing scholars like Capon and Hulbert indicate that the 4P’s may require a change or modification if the focus has to be more on consumer’s needs and relationship management. Over time, there have been significant changes in the consumer’s needs due to various factors including technological advancements, social, economic and demographical changes. The new consumer is defined as existential and individualistic. This increase in consumer power is also because of the huge amount of information available online (Constantinides, 2006). Let us first organise NH’s marketing strategy into 4P:

Product: The company develops speech and language therapy apps for patients suffering from Autism, Aphasia and speech disorders as a result of stroke. The app provides word exercises including audio and visual cues. The image below is a sample word from the app:
As it can be seen in the image above, the app provides with written and audio clues to the patients. The patient can use various sound cues like the first syllable to the noise related to that word. For example, the word in the image above is Violin. If the patient wishes to understand what sound the instrument makes then the noise cue will playback the sound of the instrument which might help the patient in identifying the word.

**Price:** While the speech therapy sessions cost around 50€-100€/session depending on the length of the session, the apps developed by NeuroHero are marginally priced at around 20€ (Citizens Information Board of Ireland, 2015). According to Roisin Carroll, this cost effective pricing facilitates them to attract more customers and offer a breakthrough product to their customers in this particular field.

**Promotion:** NH uses a very interesting *Fremium* model to promote its product. This allows the patients to try and test the app before they eventually buy it. The patients can also test the free version with the speech therapists before they upgrade to the full version and start using it independently. The company embraces both the traditional and modern practices of marketing. Banners and flyers constitute their traditional marketing practices. In addition to sending the newsletters to the professionals they also use social media to talk about their product.
The Feasibility of a Speech and Language Therapy App in India

Place: A detailed list of events and places used for promotion can be found in the appendices but generally the traditional marketing tools like the banners and flyers are used at various conferences. Furthermore, magazines are also circulated among the focus groups of professionals.

As far as the online marketing is concerned the company sends out newsletters and uses organic ad campaigns on Facebook and Twitter.

According to Philip Kotler, SWOT analysis is a systematic planning method to evaluate company’s strengths, weakness, opportunities and threats (Kotler, 2006). Both internal as well as external factors can be taken into account.

Strengths:
Social isolation is a difficult and a very delicate problem to deal with particularly for people living with communication difficulties and their families. The resources available to overcome such difficulties are either limited or expensive. The main strength of NH is the reasonable and affordable way of providing home based therapies that could help people. It is available on several devices such as Android, iOS, and Windows, which is open to a large audience. Its simplicity also makes the app user friendly for children. So far the languages available are British English, American English and Spanish and the company has plans to launch the apps in different languages in the future. Other privileges of the app are that there is no need to have an Internet connection once the app is downloaded, so people can use it anywhere and anytime. NeuroHero provides a service useful in the best interest of the customer. Through the apps, they enhance the potential for interaction and help to avoid the depression or isolation.

Weakness:
In spite of the fact that NH provides a service for the people living with difficulties, it is not as efficient as a medical treatment provided by a doctor or specialist. Moreover the service is available in few languages, and requires the technology to use it, which could be a disadvantage for some people. In addition, concerning the medical aspect, people are more
reassured and confident when they can interact directly with a professional. They have questions, which can be appropriately answered by a professional, and they need to have a physical contact with a professional. NH may lack in reassuring human approach.

Opportunities:
NeuroHero has won awards such as a place on NDRC’s three-month Launchpad program, and a Guinness Fund award. This award encourages and supports emerging social entrepreneurs to develop their projects by providing them the resources they need to make a difference. In October of 2012 the company received the Impact award from Social Entrepreneurs Ireland (NeuroHero, 2015). This award helps high potential social entrepreneurs to refine their solution, become effective leaders and increase their impact. All these awards give credibility and opportunities to NeuroHero. With no main competitor in terms of material, NeuroHero has a huge advantage in the market.

Threats:
The medical area is complex and important; but still certain amount of people are not quite confident in trusting an app. When it comes to medicine, and significant difficulties such as brain injury, people tend to believe in doctors and specialists instead of apps. The main risk for NeuroHero is the lack of experience in reassuring people to trust its services. The traditionally firm position of the doctors and specialists pose a threat to NH’s credibility, as they have a competitive advantage of having medical licenses and experiences in the area.
### STRENGTHS

<table>
<thead>
<tr>
<th>Internal Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Affordable way to provide home based therapies that could help people</td>
</tr>
<tr>
<td>• Open to large audiences: available on several devices such as android, apple, and windows</td>
</tr>
<tr>
<td>• NeuroHero has won some awards such as a place on NDRC’s three-month Launchpad program, or a Guinness Fund award</td>
</tr>
<tr>
<td>• People can use it everywhere: No need of having an Internet connection to use it</td>
</tr>
<tr>
<td>• Help avoiding depression.</td>
</tr>
</tbody>
</table>

### WEAKNESS

| • Not as efficient as a medical treatment followed by a doctor or specialist |
| • The service is only available in a few languages |
| • Requires technology to use it |
| • No physical contact for the customers: They are more reassured and confident when they can speak and see a professional |

### OPPORTUNITIES

<table>
<thead>
<tr>
<th>External Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• International invitations to - Conferences &amp; events</td>
</tr>
<tr>
<td>• International interest from - Hospitals &amp; therapists</td>
</tr>
</tbody>
</table>

### THREATS

| • People tend to believe in doctors and specialists instead of apps |
| • Competition may emerge |
| • The main competitors of NeuroHero |

NH has its marketing objectives in place. They know how to segment its market. The company may consider including the final customer i.e. the patient in the process of their research. In the case of developing countries the end user may not be aware of such a technology. The company has established its presence in a few European countries and is now looking to expand in countries outside Europe. The way consumer behaves to such
initiatives need not be the same as the European countries. Hence it is advisable for the company to also consider the 4C’s that can replace or provide an extension to the existing use of 4P’s (Hanlon, 2015). Customers wants and needs, Cost to satisfy, Convenience to buy and Communication constitute the 4C’s. If the company intends to follow the 4C’s then they can enter any market as a product-led company. This model will set a chain in motion starting from making a product based on customer needs and finally launching it in the target market. Every stage in the model can be populated with data about where the company stands with respect to the current scenario.

*Source: Smartinsights, 2015*

![Figure 15: The 4Cs element](source)

If NH wants to enter into a new market then it can form its strategy based on the model above. Its main marketing strategy must have messages from all the 4 domains. Furthermore, as Annmarie Hanlon suggests, once the company feels it has successfully launched the product then it can gradually modify the 4C’s into Clarity, Consistency, Credibility and Competitiveness.
This model enables the company to use marketing communications and helps the company position itself well. The first 2 attributes can be achieved by getting feedback from the customers. To achieve clarity it is extremely necessary for the company to share the potential pros and cons with the customers. The customer feedback may be viable enough to address a certain negative aspects.

In addition to 4C’s, it is always a challenge to communicate with the customers in a way that will ultimately lead to a purchase. With the customers receiving so many messages from various sources, another challenge that the company may face is to create an accurate brand message at every opening leading to the customer (Harvard Business School, 2006). The solution to these challenges may be the use of Integrated Marketing Communications (IMC). IMC’s key objective is to use more than one mode of communications to inform consumers about the products and ultimately carry-forward them towards buying. As a result, the company must also bear in mind the 6 M’s (Harvard Business School, 2006).

**Market:** The market may even include final customers in addition to the intermediate customers. In the case of speech and language therapy apps the final customer is the patient and hence it is very important for the company to understand who they plan to address with the communication?

**Mission:** The company must have a very clear objective for communication.
**Message:** The main interest of the end customer may only be the benefits of the app. The intermediaries on the other hand may be interested in knowing the terms of trade and if they can rely on the company for a timely delivery.

**Money:** There may be a lot of innovative ideas that could be explored but the budget will tell a company how much they can actually afford for the effort.

**Measurement:** It is very important to evaluate the effect of the communication.

**Qualitative Data Analysis- Interview Findings:**

The interviews were carried out with 6 participants, 2 interviewees from each domain or strata. The interview transcripts are available in Appendix 4-9. The interviews were carried out in multiple Indian languages apart from English. The languages used for the interviews over the phone were Hindi and Gujarati. Hence the very first step in data analysis was to translate the interview transcripts into English. To get a wider prospect on the subject matter, the interviews were not region specific. The interviewees belonged to different states and cities of India, and the questions asked were completely unbiased so that quality first hand data could be acquired from the respondents.

**Participant’s profile:**

To ensure credible data was collected for the research, the participants were selected based on their work and years spent in their respective fields.

1. Dr. Hemakshi Ghoda: Dr. Hemakshi Ghoda is an Audiologist in Ahmedabad. Audiologists diagnose a patient’s hearing ability and assess the extent of the damage. Dr. Hemakshi is currently into her 23rd year of practice and is also associated with the Indian Speech and Hearing Association in Manipal. The profession of Audiologist demands Dr. Hemakshi to work with the speech and language therapists since both speech and hearing are interlinked and at times Audiologists have to co-ordinate rehabilitative programs with the therapists before recommending it to their patients.
2. Mrs. Kavita Sharma: Kavita is a special educator and also a member of Executive Council of Autism Society of India. Mother of 2 sons with Autism related disorder, Kavita currently heads PRAYAS which is a training centre in Bangalore that uses electronic devices for patients with speech and language disorders. PRAYAS is a carefully and relevantly selected Hindi name which means ‘to try’. The centre works towards contributing in the field of speech and language therapy and has developed an app called BOL (which means speak). This app is a simple app for communication with sounds and pictures.

3. Mrs. Ruchi Shah: Ruchi holds a Bachelor in Audiology and Speech Pathology certification which awards the rights to practice audiology as well as Speech Pathology. In addition to practicing in a private establishment named Krish Clinic, Ruchi also practices in government institution called V. S. Hospital for the last 12 years in Ahmedabad.

4. Mr. Milind Sonawne: Milind’s work in the field spans over 15 years across various practice settings in India and Asia Pacific. With a Masters in Speech Language Therapy & Audiology from the University of Mysore, India, Milind currently works as a senior Speech and Language therapist with the patients.

5. Ms. Gayatri Hattiangadi: Gayatri is the head of Audiology and Speech Therapy department at B.Y.L. Nair Charitable Hospital in Mumbai. She has over the years built up the acute care program in neurogenic communication disorders and swallowing disorders at BYL Nair Charitable Hospital from the perspective of an SLP. I have presented at various forums and conducted many workshops in the domain of swallowing disorders in children and adults.

6. Dr. Krishna Y: Dr. Krishna is the Honorary General Secretary of the Indian Speech and Hearing Association in Manipal. The main objectives of ISHA are to encourage scientific study associated with the speech, language and hearing and promote research related to speech and hearing disorders.
The Feasibility of a Speech and Language Therapy App in India

Figure 17: Sample of Nodes formation using CAQDAS

Awareness of the speech and language therapy app among professionals and patients

The content of data for the interviews was quite dependent on the responses pertaining to this particular field. It was observed that participants who were aware of the apps and its functionality had a lot of information to share on the way forward whereas the other participants provided insights on the need and possibilities of such apps. Overall the general awareness of speech and language therapy apps among the professional circle in India is now increasing. Although the awareness in terms of the knowledge about the app is still in its infancy, professionals certainly are aware of its existence. Majority of the participants
were aware of speech and language therapy apps. There were a few who knew about certain Indian vocational disorder apps such as Tiger speech and Doctor’s speech which is not related to deal with a patient’s communication skills. With the launch of BOL app, it is also evident that educators belonging to the IT (Information Technology) rich cities are not just aware but even striving to come up with disruptive techniques. The participants believe that the awareness of such apps among the patients however depends on the patient’s social and economic class. Patients belonging to the low social-economical background have no idea about the app. On the other hand, the participants did not miss to mention about a few curious patients who demanded for a technology which they could carry home and use it. This indicates that educated patients in India have already started enquiring about alternative solutions. It was interesting to discover that the patient today is getting smart and aspires to give attention to details. Certain patients that are using apps for therapy want to first experience the free trial version to find out if it is helpful or not before they actually make the purchase for the updated full version. The underlining meaning behind this is that professionals and patients feel that such initiatives have to be evidence based.

**Scope of digitalisation for Therapies in India:**

The main aim to include questions under this theme was to compare the literature data with the hands-on data provided by the interviewees. All the participants accorded to the positive prospects of using the electronic devices for therapies. Handheld devices such as smart phones and tablets were a few examples of electronic devices mentioned that could be used. Tablets were voted the most suitable tool or device for such a service but smartphones may be a feasible option too given its low price and ease of availability. The use of apps on smartphones by the medical professionals to prescribe treatments, medicines and maintain patient history seems to be a common practice in India. Speech therapists using apps with their patients believe that parents and care takers are also the major contributors in the entire process of patient rehabilitation and hence using electronic devices to communicate with the patients will certainly make their lives easy. This will ultimately lead to eliminating the need of a therapist on site. Furthermore, when the focus discussion shifted to the importance of technological initiatives in therapies,
The Feasibility of a Speech and Language Therapy App in India

Responses revealed that technological advancements may also encourage easy means of record keeping, feedback to clients, engagement and motivation. Analysis on this theme also suggested that there needs to be a lot of work done to ensure the potential outcomes of mobile and tablet technologies as the main concern should not be how to effectively use the technology but the content that goes in the technology. Hence to address this and to make sure the mobile and tablet technology is realized, detailed and substantial research and development is required.

Lack of resources:

As soon as the discussions pertaining to this theme started, all the respondents quickly reciprocated with a similar reaction. There was a unanimous agreement among all interviewees to the lack of resources in this particular field. The biggest worry was the uneven distribution of services in the country. It was also expressed that the patients anticipated the same concern. After establishing that all the stakeholders in this industry were aware of the lack of services, the intention of using this theme was also to find out the involvement of government bodies, therapists and professionals towards identifying and suggesting a solution for the disorganised resources in India. The professional bodies were unhappy with the involvement of medical institutions in this field. The specific respondents from Ahmedabad who also represented/worked with the medical institutions were very informative in providing insights on the medical institutions way of working. The patient inflow on a daily basis is extremely high and the government hospitals do not have enough therapists to treat the patients equally. It was further revealed that on an average just 10-15 minutes were spent with every patient and certain government hospitals have employed only part-time therapists available only for 3-4 hours/day which makes it even more difficult to cater the high patient inflow. Certain personal experiences shared by the respondents also indicated that therapists serving the rural segment of India are not aware of the correct ways to conduct therapies. The discussion also covered the internal orientation of the app such as the use of different languages. The respondents believe that although English is popularly used in India, the app cannot just be in English for all the parts of the country. The makers of the app BOL insisted to view the video of the app on YouTube and understand how the app deals with multiple languages. The link to the video is available in Appendix 6.
The app has an option to record the words and names of different images in different languages. This directly gives the user and the user’s supervisor an option to customize the app based on their regional requirements. Respondents aware of the app also insist that the therapists and care takers must be made fully aware of the functionality of the app before assisting or transferring the instructions to their respective patients. At the outset, it was clear that the interviewees had a lot of information to share on this particular field ranging from identifying the gap in the industry and the possible ways to bridge it.

Understanding the consumer behaviour in India:

Some of the methods used by the respondents to judge their patient’s behaviour were to monitor the frequency of visits to therapy sessions, willingness to pay for the sessions and the subsequent feedbacks. The respondents often had patients coming from towns and villages for therapies but the number of visits kept declining till the visits ultimately stopped. This is mainly because in addition to the consultation charges the patients even have to arrange the funds for the travel. The feedbacks that the therapists receive from their patients imply that the patients expect their therapists to spend more time with them. Using apps may give them the option to practice therapy anywhere and anytime. This also relates to the data from the earlier theme that states patients want a service that they can carry home. The interviewees also feel that at times their patients find the therapy sessions too monotonous and that the therapy through apps can be like games and the patient may respond well to that. It is evident from the interviews that using an app reduces the time and energy investment from the therapist’s end, and the financial investment from the consumer’s end. Therapy sessions in India cost around INR300-600 ($5-10) and hence the app which is only a one time investment can be a good solution for it. These are some of the benefits mentioned by the respondents. Besides the advantages, a few of the interviewees worried that the patients in India are emotionally attached to their therapists. This doctor-patient relationship could be at jeopardy if such a service was to enter in the main stream. Also, the level of independency that the app has to promise may vary from case to case and the severity of the case. Hence a very practical approach needs to be taken for the transition from the traditional to technological therapies.
The feasibility of a Speech and Language Therapy App in India

Figure 18: Sample of word tree from CAQDAS

The figure above shows an example of one of the word tree’s generated by using the qualitative data analysis software CAQDAS. This word tree clearly displays the different information linked to the word independent in all the interviews. The coded information from all the interviews will be reviewed and all the relevant relationship pertaining to the word independent will be displayed in the form of this tree. This makes it very convenient for the reader to understand the different views of the interviewees with respect to different themes.

Role of Intermediaries in Marketing the app:

The main purpose of emphasising on the role of intermediaries was to understand the existing and possible marketing techniques in this industry. While all the respondents agreed in unison that the therapists play a very important role in marketing such apps, it was also interesting to discover that the respondents were suggesting different ways to market the product. Patients in India are bound to have too much faith in their doctors and therapists and hence the purchase of the app will take place faster if the word is conveyed by the therapists. The responses that followed this suggestion indicated that therapists must first be efficient with the app before recommending it. So in simple words, word-of-mouth seems to be one way that justifies the role of therapists. One interesting way of spreading the word in the rural areas suggested in one of the interviews was that the names of the therapists with access to the app could be printed on flyers or hoardings and displayed publicly. This way it becomes possible for the patients to directly approach the therapists without much research. Word-of-mouth also includes recommendations by the patients. Apart from this all the respondents were very active on social media and followed a lot of
focus groups online to stay updated. The respondents voted Facebook and Twitter as the best social media tools to market the app online. In fact the app Bol has a Facebook page which shares useful content for the readers on a daily basis and also shares information about any special offers. The 2 respondents familiar with the speech and language app suggested that there must be an introductory video available online that can act like a tutorial or demo for the users. Newsletters are also welcomed by the professionals in India.

**Analysis after inputs from patients:**

The *Talk Around it* app developed by NeuroHero was made to test by 3 English speaking Indian patients. The app was made to test on an iPad, and since the app is in English and being used by the patients in the European countries, it was essential to seek inputs from the English speaking population of India. The objective behind this was to identify the certain common and uncommon needs among the patients in India and elsewhere. The app was tested under the supervision of Mr. Mlind Sonawne for a period of one month. The location and time of the trials were not always the same to understand the patient’s reaction to the app in various practice settings.

<table>
<thead>
<tr>
<th>Body Parts</th>
<th>Clothing</th>
<th>Random</th>
<th>Repetition</th>
<th>Repetition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finger- <strong>Hand</strong></td>
<td>Tshirt- <strong>Shirt</strong></td>
<td>Purse- <strong>Bag</strong></td>
<td>Finger- 4</td>
<td>Watch-2</td>
</tr>
<tr>
<td>Fist- <strong>Boxing</strong></td>
<td>Belt- <strong>Pant</strong></td>
<td>Showergel- Did not know</td>
<td>Eye- 2</td>
<td>Cap-5</td>
</tr>
<tr>
<td>Fingernails- <strong>Fingers</strong></td>
<td>Hat- <strong>Cap</strong></td>
<td>Briefcase- <strong>Bag</strong></td>
<td>Legs- 5</td>
<td>Shoes-2</td>
</tr>
<tr>
<td>Elbow- Hint had to be given</td>
<td>Runners- <strong>Shoes</strong></td>
<td>Deodorant- Perfume</td>
<td>Hair- 5</td>
<td>Helmet-2</td>
</tr>
<tr>
<td>Ankle- <strong>Foot</strong></td>
<td>Jumper- <strong>Coat</strong></td>
<td>Nose-5</td>
<td>Scarf-3</td>
<td></td>
</tr>
</tbody>
</table>

The table above shows the cumulative analysis of the data received from the patients. The table depicts a few common similarities among the patients in identifying the words. The *Talk Around it* app has words from different categories such as Body parts, Clothing and Random. The words marked in red are the words identified by the patients against the
target word. Like mentioned earlier, the target words are assisted with audio and visual clues that are meant to support the patients to identify the words. For certain words like finger and fist the image was misinterpreted for hand and boxing. All the 3 patients at the very first look could not identify the target words right. Similarly, the image for the word belt had a belt strapped on to a trouser and hence the patients judged the word as pants. This indicates that it is important to give attention to details before selecting a visual clue. If the target word is surrounded by one or more than one distractions the patients tend to get confused. In addition, there may be different terms used for certain words like deodorant and shower gel in India. For example deodorant was interpreted as perfume. The different classification of perfumes and deodorants may not be known to the general population in India. It was observed that a lot of words appeared more than just once.

One user was found to retain the effects of the trials and had improved in word finding skills during conversations. The other two showed improvement in using the app independently. Trial times could gradually be reduced by avoiding certain stimulus words. It was noticed that the patients found it difficult to see pictures on the screen when outside in the yard or outside the house. The level of co-operation from the patient’s end seemed to be higher in the mornings.

5 Discussion and conclusion:

The purpose of this research was to study the feasibility of the speech and language therapy app in India. The literature was structured in a way that could cover as many aspects as possible. The themes selected were responsible to provide answers to the research objectives. The first literature theme displayed the increasing popularity of smartphones, tablets and other electronic devices in India and the need to offer a new, innovative solution to today’s smart consumer. The second theme pertaining to the growth of the medical app industry in India revealed the scope of opportunity to enter into the Indian healthcare market based on certain facts and figures. The lack of resources in India further illustrated the current and future prospects of the speech and language therapy industry in India. The consumer behaviour was a part of the literature to capture the patient-therapist relationship in India and the factors that the existing customers encourage and the factors
that they discard. The purpose of this research was also to understand the main challenges pertaining to the speech and language therapy app in India. The common challenges identified from the literature and the interviews are:

- Making the app in multiple languages
- Lack of knowledge and availability of the technology among the speech and language therapists in India
- Lack of information in media
- The customer required to be convinced by the therapists to make the purchase

The qualitative data gathered by conducting interviews was mainly to test the literature in the field. The primary data from the interviewees testify that given the popularity of smartphones and tablets in India, electronic devices can certainly be used in therapies. This can be related to the study conducted by Nielsen that states, 93% of the population in India use their tablets and smartphones as a source of infotainment (Nielsen, 2013). Even the apps made by NH are used by patients on electronic devices with various operating systems. Similar to the literature which signifies wider spread of Android platform in India is also mentioned by the interviewees, which means that the cost effective devices that use Android is a good way to link the app with. The data from the interviews clearly points at the mutual consent among the professionals and patients about the lack of resources in this field. The main concern here is the uneven distribution of resources in the rural and urban parts. Lack of awareness, availability of doctors and the expensive therapy sessions further trigger the dissatisfaction level among the patients. There is a lack of contribution by the government institutions towards such a service since none of the interviewees have provided any reference of credible involvement. A recent article by Bill Yates from iMedicalapps highlighted that since 2007, the overall google search traffic in India was for specific keywords related to healthcare or medical apps. Also, a few examples shared by the respondents about the curiosity of the patients to ask for a service that they can use at home reiterates that the smart consumer today is willing to go the extra mile to find a cost effective solution. This shows that the digital market in India can certainly be tapped, and the need to develop the resources is an opportunity to bridge the gap between the resources and consumers. The country’s economy is growing rapidly and this has
simultaneously increased the need for better healthcare services. The consumer today has positioned itself in a very apprehensive situation. The patient’s expect developments and investments in the speech and language therapy fields as well. They are more informed and active these days, internet being the key source of all the information available to the patients. The literature based on the consumer behaviour suggests that patient satisfaction should be the key driver of the choice of healthcare provider. As mentioned earlier India is a culture rich country bound with various languages and religions. Therefore it is more feasible to configure the app in multiple Indian languages. There is no best way established to target this concern, however the makers of the app BOL are trying to include multiple languages by providing an option to use images from their devices and record their names in a language preferred by the patient. The inputs provided by the patients prove that if certain stimulus words were avoided then the practice sessions could be more effective. This means that the app needs to be updated intermittently based on the feedbacks received from the patients.

A study conducted by Brandcare highlights the main concerns of the consumers:

1. Not enough time with the therapist
2. Physician’s Lack of motivation to share extra information about the disease
3. Unclear understanding about the treatment followed
4. Patients have raised the bar due to a lot of information available online

In addition, patients also feel they may be charged extra for the services. The respondents also agree to the expensive therapy services that often range from $5-$10 per session. It may not be possible for every patient to spend an amount of around $10 for every therapy session and hence the patients that would have stopped attending therapy sessions because of the proximity and the financial issues could make use of this app. Considering the traditional therapy services in India, a strong emotional dependency is built between the patient and the therapist. This rapport between the two stakeholders could be disturbed with the introduction of this app. However, the level of independency the app provides to the patients varies and cannot be generalised. The reduction in cost and time that are associated with the app plus the simplicity that allows even the parents to use the
app can gradually reduce this over-reliance of the patients on their clinicians. It is very evident from the case study as well as the interviews that therapists play a huge role in transferring and marketing the product to the end user. However, the generic strategy used by NH to identify the Total Addressable Market based on the speakers of a particular language may not work in India. Instead, the customers could be identified through the therapists as Serviceable Available Market (SAM) or Share of the Market (SOM) (MIT, 2012).

It could be very helpful to understand the difference between TAM and SAM. SAM is the more realistic and smaller segmentation of TAM. SOM on the other hand is the sweet spot or the segment that is interested in buying the product (Ochtel, 2009). For example, if a speech and language therapy app for India is to be launched in Hindi then the TAM would be the Hindi speaking states and cities. SAM would be the Hindi speaking population throughout the country and SOM would be the number of people in need of the application. Furthermore, speech and language professionals in India are very active on the social media. Finally, the interviewees prefer keeping themselves updated and connected with each other through social media. Facebook and Twitter are the most common among all the social media platforms being used. This illustrates that online marketing of such apps on the social media platforms being used. This illustrates that online marketing of such apps on the social media platforms being used.
media can thus facilitate a wide reach. The online marketing strategy by NeuroHero further draws importance of marketing on social media.

6 Recommendations:

Due to the time constraints and the lack of reliable data available in the field, certain areas could not be explored. After the qualitative analysis of the data, it is quite evident that the role of therapists in the overall supply chain is extremely important. Therapists play the role of intermediaries in the marketing of speech and language therapy apps. The simple meaning of intermediaries here is that therapists are positioned between the developers and the end-users. The transfer of knowledge happens through them.

Hence further research can be carried out on understanding the ways to successfully use the therapists to market the app. It is highly unlikely that the patients will use such apps without consulting their therapists. They may use it only if it is recommended by their therapists. In addition, further research must be done to identify the requirements of the patients. The needs of patients form an integral part of the app and the developers must consider tapping the consumer’s interests at the research stage itself. In this case there are two types of stakeholders to convince. These stakeholders play a key role in validating the product innovation. That is why essentially there is a need for a structured framework for any service-provider to ensure delivery of their products to their end users.

According to an article by C2C solutions, a consulting firm, the customers can be categorised into two distinct types: 1) External customers 2) Internal customers. Therapists represent the external customers and the patients represent the internal customers. Both these types are mutually exclusive. The internal customers become difficult to address if the external

![Figure 20: Role of Intermediaries](image)
customers are not convinced and the internal customers may have requirements that may often overlap with the external customers or may even be unique.

1. CAGE Model
The CAGE model depicts the critical attributes that need to be included or excluded for a successful marketplace.

\[\text{HOW} \text{ a team foresees success by understanding requirements}\]

\[\text{WHAT} \text{ are the customer needs?}\]

\[\text{Sweet Spot: Customer requirements that will allow to gain a competitive market place}\]

Source: C2C Solutions, 2015
The region in yellow describes the company’s understanding of the customer requirements before starting any real research. Companies should engage into a detailed market research which includes formally talking to the external customers than just following their instincts and data gathered through research done over the desk. This process is definitely time consuming but it lays the foundation of your project (C2C Solutions, 2015). In the case of speech and language therapy apps the therapists must be interviewed and the inputs shared by them will be the evidence based on which the app could be developed. The region in blue represents the data provided by the internal customers i.e. the patients. The challenge developers may face here is that the needs provided by the patients may not be articulate enough (C2C Solutions, 2015). However, it can be useful to understand the needs of rural and the urban populations. For example certain piece of information that the urban patient can relate to may not be easy for the rural patient to relate to. Also, the religious aspects may vary from patient to patient. A patient pertaining to one religion can find it difficult to identify a piece of information linked with a different religion. Such requirements have to be taken into consideration to attract more customers. The region in green is the sweet-spot the company plans to hit. It is the company’s final goal. This can be the competitive position it wishes to receive in the market place.

In the figure above, the model further highlights the company must not have case D, B and F in their service offerings. According to (C2C Solutions, 2015), these 3 cases may lead to a poor service offering to the customer. Case D is extremely simple. It indicates where the company has gone wrong. Case B points out where the customer has gone wrong and Case F represents where both the customer and the company could have gone wrong. Offerings in Case D are the attributes customers do not enjoy. Example of this could be a bad feature or too much of one feature. Example of Case B will be when the customer asks for too many services or solutions that are neither viable to address their needs nor they are willing to pay for. It is the company’s responsibility to identify and discard such outcomes. Case F is rare but still possible when there is a mis-alignment in the customer’s needs.
The main objective of using the CAGE model is to assess the risk associated with the weak cases and the main challenge for the companies is to avoid assuming that they know everything about the customer’s requirement. CAGE constitutes of four systematic cases: Customer Insights, All, Given and Excitement (C2C Solutions, 2015).

Let us use this model in the case of a speech and language therapy app:

**Customer Insights:** The company will discover this after a brief time is spent over meeting and questioning both the internal and external customers. The evidence and approach followed to develop the app can be testified by the speech therapists whereas the patients can be contacted to understand how can their experience be made better. It may be difficult to directly communicate with the patients but it is a step which cannot be bypassed. The way around this could be to use the therapists as a part of this research. Customer insights will further assist in defining a **Servicable Available Market (SAM)** for the product.

**All:** This stage is when all agree upon certain facts. Certain facts that the company had in mind since the start of the project and are later verified by the customers. For example, it can be about pricing. If the company has assumed that the customers may demand an inexpensive app and that turns out to be true later after the research is completed.

**Given:** There are a few features that have to be added without expecting the customers to mention it. These are the obvious things. For example a ‘select language’ feature in the app for the Indian market. If certain obvious features are missed, the patient may get upset and decide not to use the product.

**Excitement:** This is the ‘wow’ factor of the company’s offering. This will be features the customers will not be in a position to share with the company simply because they are not aware of it. For instance the app can have a feature that allows the patients to take a test and monitor their progress. Such features act as differentiators and have the capability to increase the market share and gain a competitive position in the market place.
At the outset the main objective of following the CAGE model is to eliminate the weak spots. It indicates that reliance on evidence and research is far better than assumptions when it comes to providing an innovative service.

2. **Four strategies for an effective brand engagement:**

Once, the target customer is identified, it is essential for every service provider to engage with the customer. One way to do this is to follow the four strategies for an effective brand management. The product should have the potential to spread the message about the brand. For example, if the focus of the app is to deliver superior quality or customer centric results then the target market should recognise the brand in the similar fashion. In simple words brand engagement is successful when the customers start believing in the brand’s value system.

The business model pertaining to this particular service should not disrupt the country’s way of living and the culture. According to Robert Kozinets of Marketing Intelligence Review, the right mix of local and international knowledge is what this product needs. Social brand engagement is made up of connections and relationships. For this particular product, creative engagement practices depend on the endorsement attempts made by either the developers or the consumers. The engagement process should be unbiased and divided equally among the consumer and the company. The 4 main strategies of brand engagement are Customer Care, Co-creation, Communing and Listening, and Communication and sharing (Kozinets, 2014).
Customer Care: Customer care in today’s time includes the use of social media to register the customer complaints and allows the service provider to take necessary actions. Initiatives and provisions for giving a feedback should be provided in a way that makes the consumer feel comfortable in doing so (Kozinets, 2014). For example, in the case of speech and language therapy app the customer should be requested to rate the app or provide a feedback to help the service provider make the experience better. Likewise, this service could be used by the trainers and the clinical supervisors as well. Feedback and inputs in this context simply means getting information about the performance which then after the modifications allows the recipient to reflect and improve. Feedback by the trainers and the patients can be provided in a number of ways including written, face-to-face feedback and word based assessment tools (Gray, et al., 2015). Word based assessment tools require the recipient to fill up a form either online or hand written. Customer care and feedback play an important role in driving medical education. The barriers in providing feedback would be shortage in time and unclear mechanisms of feedback.

Co-creation: According to the Marketing Intelligence Review, the second strategy to use in social engagement process is co-creation. The under-line meaning of co-creation is to find and use the consumer-generated ideas that have the potential to add value and authenticity to the product. This strategy can discover new consumer insights by following the recent
methods of crowd-sourcing. There could be a medium set up which allows the users of the app to connect and share experiences. A cloud of secured focus groups could be created which can act as a method to collect suggestions and inputs in large numbers. The main requirements to achieve this is to carry out a research once the service provider feels that the consumers would have used the app enough to comment or share ideas about it. (Kozinets, 2014). For example if the occurrence of a particular feedback or suggestion about adding new words or improving the picture quality is high, then prioritizing the tasks becomes easy. There are many ways to connect the consumers. Focus groups can be created on Facebook or Twitter where people can exchange the challenges and ideas. If the consumers prefer a more private and secured way to exchange ideas then they can be connected internally with different users of the app (Hartzler A, 2011).

**Communing:** Robert Kozinets suggests that the third strategy focusses on understanding and listening to the consumer. This includes listening to the consumer talk about the product or what they have to tell about the product. The data compiled can be further broken down into big, medium and small sized data. The main focus of the service provider must be to research, understand, try to influence the influencers and finally advertise their product (Kozinets, 2014). Discovering and utilizing the ideas generated by the end user has the potential to develop authenticity and value to the product. It is clear from the research findings that the health care system in India is quite scattered. It is not possible for the health care professionals to visit every patient or personally interview every patient to understand what they want. As mentioned in the previous strategy, it is best to follow certain focus groups for viable information. The Stanford Medical School suggests that setting up podcasts channels can help patients and clinicians share data and at the same time it is also accessible to other patients and professionals.

**Communication:** Perhaps the final strategy in the brand engagement process is communication and sharing. The service provider needs to make sure that the techniques and content used for communication must be capable enough to promote and influence the buyers. It is a necessity to ensure that the content used should be exciting enough to grab the consumer’s attention and eventually give them a good reason to buy (Kozinets, 2014).
To achieve reach is one thing and to achieve quality reach is another. Profiles on popular social media platforms have a high possibility of overlapping and hence it is essential to step out of owned media and also consider investing in Paid media. The literature theme Growth in medical app industry in India in this research states that since 2007, the overall google search traffic in India was for specific keywords related to healthcare or medical apps, it is thus important to also consider paid media initiatives such as Google Adwords campaign (Hayes, 2014). One of the benefits of google analytics is that it helps in identifying how users discover the website. Google analytics allows the service provider to track the online campaign accurately, both from AdWords-generated campaigns and from other advertising sources (Google developers, 2014). Using google analytics will also help understand the average time spent by users on our website, average number of new visitors, bounce rate and also the goal value. Finally, the scientific laws of consumer behaviour must be applied to social media. For the product to meet sales, the product needs to be remembered by many and to be remembered, the product needs to be prominent and have a long lasting image in a consumer’s mind.

Reflections:

Since I come from a technical background, I did not have the expertise in finance, marketing or any other management related subject. I was quite curious and eager to encounter these modules as they would help me understand the management side of the business world meticulously. I had never imagined or rather planned to work for a good cause earlier on during my course. Just like any other international student, I was desperately in search of an internship/part time job which would add on to my experience whilst I was pursuing an MBA. Like mentioned earlier, I was well aware of the fact that I was making an unusual switch from a technical background to marketing and hence was looking for a marketing based internship. The interesting marketing modules at Dublin Business School and my internship at NeuroHero is what inspired me to work on this research topic. Conducting a research in the speech and language therapy app industry allowed me to deploy my marketing and communications skills that I developed during my internship. So essentially, this research is the reflection of the product of the internship experience and the marketing doctrines and principles learnt at DBS.
I personally feel that working according to the time plan for this research was the biggest learning curve for me. To make a plan is one thing and to obey the deadlines is another. I can say that my time management skills have enhanced through the course of this dissertation. Estimating the extra time required to follow up with the interviewees, tactically engaging the interviewees to get the best data out of them and optimising the time available for data analysis thereafter are a few challenges that had to be dealt with efficiently. Discussions and exchange of ideas on power of persuasion in the personal and professional development module helped to engage credible interviewees for this research. The qualitative methodology for this research enabled me to explore various attributes with a free and open mind. The unbiased, open ended interview questions for this research proved to be helpful in covering the overall bandwidth of the context of the literature.

Working on this elaborated qualitative research where a lot of factors depend on the external sources has made me understand the fact that when there are a lot of social actors involved in a research it may be difficult to follow the priorities set up at the beginning of the research. At such times it was important not to lose patience and regain the direction of the research. Certain workshops on the structure of the research during the research methods modules provided a clear understanding of how the research should be carried out. Working on this research has also provided me with the knowledge of effectively studying a particular market for developing a business or a product. It was interesting to discover the important role played by culture for the same product in 2 different geographies. Subsequently it was also informative to study about the product in a developed and a developing market.

There were a lot of projects and assignments in the curriculum that required me to work in teams and groups. Fortunately, I got a chance to work with students from different cultures and countries. In my 2 years of professional experience before MBA I certainly worked in teams but DBS gave me a cross-cultural exposure and it was a pleasant experience to work on different ideas and perceptions on a particular project. The lecturers at DBS made sure the students realised the importance of ethics while carrying out an academic research. The transfer of ethical knowledge took place by sharing a lot of case studies pertaining to the ethical context.
At the outset, I can say that the master level course at DBS was very fruitful for providing the much needed push my career required and working on this dissertation has let me use my learning outcomes effectively in a pragmatic and a realistic way.
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Appendices
Appendix 1: Info-Consent Sheet

INFORMATION SHEET FOR PARTICIPANTS

PROJECT TITLE
The feasibility of a Speech and Language Therapy Application in India

The main objective of this research is to study the Indian market for a speech and language therapy application. Aspects like the general awareness about the product in India, scope of digitisation in speech therapies, the current practice scenario in this field and the consumer behaviour are intended to be covered under this research. This research is a part of my MBA- Marketing program that I am pursuing at Dublin Business School.

WHAT WILL HAPPEN?
In this study, you will be asked to answer questions based on certain themes relevant to the research. You are requested to share your expert experience and knowledge in the field. The main themes identified for the interview questions are:

- Awareness of the speech and language therapy app among professionals and patients
- Scope of digitalisation for Therapies in India:
- Lack of resources
- Understanding the Consumer behaviour
- Role of Intermediaries in Marketing

METHOD:
One-on-one interview will be carried out with you. The conversation may be audiotaped to avoid missing out on the minute details.

TIME COMMITMENT
The importance of your time is highly valued and respected hence your dedicated participation is required for one qualitative interview only.
PARTICIPANTS’ RIGHTS
You may decide to stop being a part of the research study at any time without explanation required from you. You have the right to ask that any data you have supplied to that point be withdrawn / destroyed.

You have the right to omit or refuse to answer or respond to any question that is asked to you.

You have the right to have your questions about the procedures answered (unless answering these questions would interfere with the study’s outcome. A full de-briefing will be given after the study). If you have any questions as a result of reading this information sheet, please do not hesitate to ask any queries before the interview begins.

CONFIDENTIALITY
Please be informed and assured that the credible data shared by you will be used only for the purpose of this research. The results of this study will be presented in the dissertation, my supervisor and an external examiner will assess them. This dissertation may even be accessible to future students as reference.

FOR FURTHER INFORMATION
I Malay Vaishnav will be glad to answer your questions about this study at any time. You may contact me at malayvaishnav1@gmail.com or 10168776@mydbs.ie.
INFORMED CONSENT FORM

I………………………………………………………….. agree to voluntarily participate in Malay Vaishnav’s research of ‘The Feasibility of Speech and Language Therapy Application in India’

By signing below I agree that:

- The background and objectives of the study have been explained to me
- I am readily allowing Malay Vaishnav to record the interview discussion for his perusal.
- I reserve the right to withdraw from the study at any given time without any prior notice
- I have been informed about the fact that the results of this study may be published
- I am aware of the fact that my communication details may be attached with the interviews

_________________________________________  ________________________________
Signature                                              Date
Appendix 2: Company Security Clearance form

Dublin Business School
Company Security Clearance

Name: Malay Vaishnav
Student Number: 10168776
Dissertation Title: The Feasibility of a Speech and Language Therapy Application in India

Company Security Clearance

We agree that Malay Vaishnav may undertake a dissertation of the nature indicated above and that he will be given access to appropriate information sources within our Organisation. We agree that copies of the finished project will be made available for assessment by staff of Dublin Business School and External examiners.

Company Name: NeuroHero
Date: 04/06/2015
Appendix 3: Interview questions for NeuroHero:

1. How does the company evaluate its market?
2. What is NeuroHero’s marketing strategy?
3. How does the company create awareness of its products? What are the main stakeholders involved in the process of creating awareness?
4. What is the sales model used by the company?
5. What are the main sales channels used by the company to sell the apps developed by the company?
6. What are the promotional tools used by the company?
Appendix 4: Interview with Dr. Hemakshi Ghoda:
Source: Voice call
Duration: 45 minutes, 11 seconds

General questions
1. Could you explain what audiologists do?

Audiologists basically diagnose a patient’s hearing ability and determine the extent of damage. If I had to explain you in simple terms then we deal with a patient’s ear problems.

2. How long have you been practicing for?

Well I am in my 23rd year of practice and I have been practicing in Ahmedabad for most of the years. I am also associated with the Indian Speech and Hearing Association which is in Manipal.

3. Does your profession demand you to work with the speech therapists?

All the time Malay! We often have to work together because speech and hearing problems are linked. Speech and hearing are both communication disorders and at times we need to co-ordinate the rehabilitation programs.

Awareness of the speech and language therapy app among professionals and patients in India

4. Are you aware of a speech and language therapy app in India?

I am aware of a few apps for vocal disorders but not aware of speech and language therapy apps. There are a few apps like Tiger speech and Doctor’s speech which are mainly used by patients with vocal disorders. These apps came a while back and are really expensive around 1000 USD (100,000 Indian rupees). These apps can record function, activity and movement of vocal chords, and enable the patient to produce voice or sound since they may have problems associated with the vocal chords.

5. Do the patients know of any such apps?

Not many. A few of the therapists did have a couple of curious patients asking about such apps. I think the awareness would be very low among the rural, low social-economic class of the population. Educated patients coming from a higher social-economic class may know about such apps.
Scope of digitalisation for Therapies in India:

6. What are the prospects of using electronic devices for such apps?

Undoubtedly the prospects are very high. I think we are so much used to using electronic devices nowadays. I mean you can buy a smartphone for as cheap as 40 USD (2500 rupees). I personally use the app Epocrates on my phone to prescribe medicines to my patients and maintain the patient history.

7. What is the involvement/initiatives of medical institutions towards such an app?

Not too much work done here. Not too much advancement. Government institutions like B.J. Medical College, affiliated with the Civil Hospital of Ahmedabad, and other government colleges don’t even have full time therapists. They have part-time therapists who come for 3-4 hours in a day. Government institutions receive a lot of patients and thus the part-time therapists manage to spend just 10-15 minutes per patient. Private institutions on the other hand provide better services.

Lack of resources

8. Is there a need to connect doctors and patients in India?

The physicians and therapists must be made aware. Not just them, even the Neurologists, Paediatricians, Occupational therapists and even general practioners need to be made aware. If they are made aware, this need will automatically be taken care of.

9. What are the chances of this service overcoming the language issue in India? For example how well will the ‘select language’ option work for this app?

English is certainly a widely used language in India, given its use in schools, colleges and in the corporate world. However language is an issue when it comes to people from low social and economic parts of the country. There are around 28 states in India and many different languages. So I think a ‘select language’ feature can certainly be recommended.

Understanding the Consumer behaviour in India

10. What will be the effect of such a service on the doctor-patient relationship? (Pros and Cons)

Advantages:
The feasibility of a Speech and Language Therapy App in India 2015

- Therapy will be smooth. At times patients find the therapy sessions to be too monotonous. Therapies through apps can be like games and patient may respond well to that. Speech therapy apps can make the therapy experience quite interesting for the patients.

- Role of therapist becomes limited. Saves time and energy. Therapies on an average cost around 300-600 Indian rupees per session. So patients who may have left attending therapy session due to financial crisis can make use of such an initiative.

Disadvantages:

- Patients may feel emotionally disconnected from their therapists.
- Doctor-Patient rapport may go down.

11. How promising can this app be in making the patient independent with therapies?

Educated patients may do well with minimum or no supervision whereas the uneducated population may take time and need a lot of assistance.

**Role of Intermediaries in Marketing the app in India**

12. What is the best way to market such an app?

According to me speech therapy apps can be marketed by sending newsletters to the therapists. Every now and then I receive newsletters about different type of healthcare products. So that’s 1 way to go about it. Another way to promote such an app is to display the name and location of the therapists who have the app. The information could be put on hoardings, banners or flyers can be circulated too. Social media could also be used to talk about such apps. I personally am a frequent user of Facebook and Twitter.

13. What roles do therapists play in creating awareness of such an app?

Therapists play a major role in this. They are the only ones who can support this evidence based treatment through apps. Therapists play a major role in building confidence in the patients. Only they can assure or convince the patient to use the app. Therapists can also spread the word to the immobile patients or patients that belong to the rural places.
14. What are the challenges involved with speech and language therapy apps in India? Therapists may ask what is there for them in it? If they are not benefitted out of this then the subsequent transfer of information to the patient might slow down.
Appendix 5: Interview with Dr. Krishna Y:
Source: Email

General questions

1. Could you explain the objectives of ISHA?

The main objectives of ISHA are to encourage scientific study associated with the speech, language and hearing and promote research related to speech and hearing disorders.

2. How long is ISHA doing this for now?

For more than 40 years now, and our association has more than 2500 National and International members who are speech and language therapists and audiologists.

Awareness of the speech and language therapy app among professionals and patients in India

3. How is the awareness of speech and Language therapy app among professionals in India?

Above average. My observation is that the younger generation is more aware of such apps.

4. Do the patients know of any such apps?

I guess, at least a few of them.

5. Do they download such apps?

I am aware of a few private practioners who use apps with their clients but not sure if they recommend their patients to buy or not.

Scope of digitalisation for Therapies in India:

6. What are the prospects of using electronic devices for such apps?

The cost can be issue. With new devices coming in at affordable range it might be possible. Also, many speech apps are in apple format. In India, android platform is more widely used.

7. What is the importance of technological initiatives in speech and language therapy?

It is important. Especially in speech therapy and augmentative and alternative communication, there is lot of scope.

8. What is the involvement/initiatives of medical institutions towards such an app?
Once they are accessible and affordable I am sure, all medical institutions would promote in using them.

**Lack of resources**

9. Is there a need to connect doctors and patients in India?

I think managing the patients is an issue in this field. There are too many patients that need to be attended and it is clear that there are not enough therapists with adequate resources to address this need. Setting up technology enabled clinics may be a good option to consider.

10. What are the chances of this service overcoming the language issue in India? For example how well will the ‘select language’ option work for this app?

May resolve to a certain extent. However, for some specific therapy and assessment, the language structure may have to be adjusted since the language rules and style are not common for all the languages. By changing the language if those issues are also addressed, then it is ok.

**Understanding the Consumer behaviour in India**

11. What will be the effect of such a service on the doctor-patient relationship? (Pros and Cons)

Advantages:

It could have a positive effect. A caution or care should be taken on the amount of expectations with this service. It may not be taken for granted that patient will get all solutions on this platform.

12. How promising can this app be in making the patient independent with therapies?

I am not sure, if our society (both professionals and patients) are geared up for this. On a personal front, I feel it can be promising.

**Role of Intermediaries in Marketing the app in India**

13. What is the best way to market such an app?

Now there are many ways to do that. Talk about it online. Associations such as ours can also be used to spread the word. I think direct approach to end users maybe better.
14. What roles do therapists play in creating awareness of such an app?
   The therapists use it and then link it with the patient’s in their assessment and intervention.

15. What are the challenges involved with speech and language therapy apps in India?
   Since not many apps are available in India it may be difficult to comment. But in general, since ours is a multilingual country with many languages and dialects, and speech and language therapy is language sensitive, it is a major challenge. Socio-cultural differences is another issue that can play a role.
Appendix 6: Interview with Mrs. Kavita Sharma:
Source: Voice Call
Duration: 35 minutes

General Questions

1. Could you explain what special educators do?
   Well I personally am a member of Executive council of Autism Society of India but in general
   special educators specialize in vocational and pre-vocational programs for patients with
   Autism and other similar disorders. Special educators work in spreading the awareness of
   vocational intervention in therapies and we are also responsible in planning for vocational
   therapy programmes. These programs aim at training for improving communication and
   learning strategies not just for the patients but also for their parents.

2. How long have you been practicing for?
   I have been doing this for more than 20 years now and I am currently heading PRAYAS which
   is a training centre that uses electronic devices for patients with speech and language
   disorders.

3. Does your profession demand you to work with the speech therapists?
   Yes, basically all the programmes that we conduct have to be testified by the speech
   therapists.

   Awareness of the speech and language therapy app among professionals and
   patients in India

4. Are you aware of a speech and language therapy app in India?
   Yes, I am aware of a speech and language therapy app. This is mainly because Prayas has
   developed a few speech and language therapy apps. But even among the professional
   network I feel the overall awareness has grown in last four years.

5. Do professionals in India recommend such apps to their patients?
   We at Prayas certainly do as we have witnessed kids responding to apps and found their
   voices.
6. Do the patients know of any such app?

We at Prayas have developed an app called Bol and iKatha, our patients are aware of it. However, the word needs to spread to the other parts and population too.

7. (If Yes) Do they download such apps?

A few, who can buy the iPad or tablets. I think it will be feasible to use smartphones for such apps. Our training centres are equipped with the required devices but there are brands like Lenovo or Micromax that offer tablets for lower rates and are affordable than the Apple products.

8. (If Yes) Has it been useful to them?

Some have responded “yes” to us.

Scope of digitalisation for Therapies in India

9. What are the prospects of considering electronic devices for using such apps?

I think the prospects are very good. Like I mentioned earlier, smartphones are the most reasonable resource for this particular app. We are also using electronic devices for our patients.

10. What is the importance of technological initiatives in speech and language therapy?

Very important, as being able to communicate makes life easy for any one. This is not just for the patients but also for the parents. I am a mother of 2 Autistic children and I can say no parent is prepared or knows how to take care of children with special needs. So considering that, technological initiatives in this field also help the parents to understand how to effectively communicate with their children.

11. What is the involvement/initiatives of medical institutions towards such an app?

The medical institutions in India mostly look at the research aspect of the development or innovation. They may not get into the product development but can provide their views over the research.

Lack of resources

12. Is there a need to connect doctors and patients in India?
The Feasibility of a Speech and Language Therapy App in India

Of course but with a practical approach. I mean the scenario cannot be changed overnight. Even such initiatives will take enough time to be implemented. But there is certainly a need for a positive change which can reconnect the doctors and patients.

13. What are the chances of this service overcoming the language issue in India? For example how well will the ‘select language’ option work for this app?

Bol addresses this issue very well. Please visit the link- [https://youtu.be/kPCH8CfLiME](https://youtu.be/kPCH8CfLiME)

**Understanding the Consumer behaviour in India**

14. What will be the effect of such a service on the doctor-patient relationship? (Pros and Cons)

I can see only positives. Patients can practice therapies anywhere and anytime they want. There will not be any time constraint on the session. That’s a plus point too.

15. How promising can this app be in making the patient independent with therapies?

It completely depends on the severity of each case. Based on the severity some patients may need supervision for a long duration and patients with less severity may not need as much supervision.

**Role of Intermediaries in Marketing the app in India**

16. What is the best way to market such an app?

Perhaps through FB or parent/professional networks with a video demo.

17. What roles do therapists play in creating awareness of such an app?

A therapist needs to look at his patient being benefitted as soon as possible; he should be thorough in the knowledge about the usage of app and should know how to make his patients understood.

18. What are the challenges involved with speech and language therapy apps in India?

The main challenge is that a lot of people do not know about the apps. Hence creating awareness has to start from scratch.
Appendix 7: Interview with Dr. Mr. Milind Sonawne:

Source: Email

General questions

1. Could you explain what speech therapists do?
   Speech therapists work closely with patients suffering from speech disorders. Treatment is provided through interactive and communicative therapy sessions.

2. How long have you been practicing for?
   I have 15 years of experience in various practice settings in India and Asia Pacific.

Awareness of the speech and language therapy app among professionals and patients in India

3. How is the awareness of a speech and language therapy app among professionals in India?
   The awareness is extremely low in terms of knowledge about how apps can be useful.

4. Do the patients know of any such apps?
   Some parents of Autistic children have heard about bol app and Avaz & Meri Vaani.

5. Do they download such apps?
   Most want to download the free lite versions before they buy.

6. Has it been useful to them?
   They have been using them in conjunction with traditional therapy so difficult to predict the gains.

Scope of digitalisation of Therapies in India

7. What are the prospects of using electronic devices for such apps?
   App market in the rehabilitation field has been growing. Having a technology aid helping is a positive step. Also the independence of using the app by caregivers is a positive aspect eliminating the need of SLT on site.

8. What is the importance of technological initiatives in speech and language therapy?
The importance of technological initiatives is good record keeping, feedback to clients, increased engagement and motivation.

9 What is the involvement/initiatives of medical institutions towards such an app?
Educated families have good support from other members in promoting the use of technology. Medical institutions where speech and hearing courses are taught are better in awareness.

**Lack of resources**

10 Is there a need to connect doctors and patients in India?
Huge needs as doctors are the nodal contact for families in India. Patients would buy a technology aid much quicker when recommended by doctors.

11 What are the chances of this service overcoming the language issue in India? For example how well will the ‘select language’ option work for this app?
I think it will be an important factor as there are so many languages spoken in India an option to select language will be useful to cater to wider population.

**Understanding the Consumer behaviour in India**

12 What will be the effect of such a service on the doctor-patient relationship? (Pros and Cons)

Advantages:
- People will believe in rehabilitation using technology
- Doctors will refer the clients to SLT’s
- Progress can be recorded and measured; further investigation in clinical presentation can be carried out.

Disadvantages:
- Doctors may not have time and energy to spend extra time, patients will depend on doctors for working with technology
13 How promising can this app be in making the patient independent with therapies?

Very independent as cost can be cut by the decreasing over-reliance on clinician’s and family members can use the app, tele therapy can be implemented in rural areas where there is no internet.

**Role of Intermediaries in Marketing the app in India**

14 What is the best way to market such an app?

Word of mouth, from clinicians, doctor’s recommendations, Physiotherapist and other professionals.

15 What roles do therapists play in creating awareness of such an app?

A very important role as therapist can show the advantage of evidence based therapy using the apps and can also show how the data can be collected and progress be tracked.

16 What are the challenges involved with speech and language therapy apps in India?

The main challenges according to me are:

- Challenges are making the app - in multiple languages makes it difficult
- SLT’s unaware of the technology and app industry
- Understanding of the technology itself
- Lack of credit card usage facility
- Need to be convinced by someone to buy
- Marketing from special schools, hospitals and clinicians
- Lack of information in media
- Very few apps in India, literacy issue, lack of evidence based practices, lack of support on ground post app download, apps have to be providing more facilities than just one feature.
Appendix 8: Interview with Mrs. Ruchi Shah:
Source: Voice Call
Duration: 32 minutes, 34 seconds

**General Questions**

1. Could you explain what Audiologists and speech pathologists do?
   As an Audiologist and speech therapy pathologist, my job is to diagnose the damage of the patient’s communication skills and then provide the therapy services based on the severity.

2. How long have you been practicing for?
   I have been practicing since the last 12 years in Ahmedabad. I practice at a government hospital called V.S. Hospital and also have a private establishment called Krish speech and hearing clinic.

3. Does your profession demand you to work with the speech therapists?
   I hold a Bachelor in Audiology and Speech Pathology certification which means I can also practice as a speech therapist.

4. Awareness of the speech and language therapy app among professionals and patients in India
   Are you aware of a speech and language therapy app in India?
   Yes, I am aware of a speech and language therapy app. Although I have never used it but I have been getting to know about it from my professional counterparts.

5. Do the patients know of any such app?
   There are a few curious patients who ask for such assistance. They do not specifically mention speech and language therapy apps but they enquire for something that can help them extend their practice sessions. Something that can help them practice independently.

6. Scope of digitalisation for Therapies in India:
   What are the prospects of considering electronic devices for using such apps?
   Handheld devices probably are the best means for such apps. A lot of people have tabs at their homes now. So let’s say in the semi-urban places if there is just 1 smartphone with the
head of the family it is advisable to invest in a tablet which can help the patient practice even when the phone is not available.

7 What is the importance of technological initiatives in speech and language therapy?
If the technological initiatives aim at improving the services in this particular field, then yes. Technology is not a concern according to me; I think the developers must focus on the content of the app. Patients will only use the apps if they find the content useful.

8 What is the involvement/initiatives of medical institutions towards such an app?
Not that much. None in this state. The government and private institutions or the governing bodies that bind all the concerned professionals together in this country must contribute in finding out a better option over the traditional therapies. They also need to make sure that information about such services is cascaded to all the different state and regional bodies for proper distribution of services. By proper distribution I mean the general awareness of such apps may be more in cities like Mumbai, Delhi, Bangalore and other Tier 1 cities. But even people outside these cities need such services.

**Lack of resources**

9 Is there a need to connect doctors and patients in India?
There is a huge need. For example, I once came across a patient from the rural part. The patient had a therapist for a few months but there was no noticeable progress. After understanding the ways of therapy sessions that were practiced it was found out that the methodology was far away from right. So what I mean is that the therapists need to know the right ways to carry out therapies. A better option would be to streamline the entire process through apps.

10 What are the chances of this service overcoming the language issue in India? For example how well will the ‘select language’ option work for this app?
In India, the apps must have language options in Hindi and the other regional languages too.

**Understanding the Consumer behaviour in India**

11 What will be the effect of such a service on the doctor-patient relationship? (Pros and Cons)
I think most of the private therapists take good care of the patients even on an emotional front. The patients end up getting quite attached to their respective therapists. So the
patient-therapist relationship may get disturbed. But on the other hand, apps are a one-time-investment so the patients will rather find it an inexpensive option.

12 How promising can this app be in making the patient independent with therapies?
It can certainly make the patients independent at some point but initial supervision must be required by the therapists first and then the patients.

**Role of Intermediaries in Marketing the app in India**

13 What is the best way to market such an app?

I guess the best way to market such apps would be through newspapers and Facebook. Even I follow the Autism society of India and many other groups on Facebook. These groups are really informative and can deliver the message among the professional society.

14 What roles do therapists play in creating awareness of such an app?

They play a major role. As I mentioned earlier, the patients are bound to have too much faith in their therapists and hence they can be very helpful in recommending such apps to their patients.

15 What are the challenges involved with speech and language therapy apps in India?
There is definitely an opportunity to introduce a product like this in India. But there are a lot of factors that need attention. Factors like awareness, availability and literacy. In short to spread the awareness, to make it easily available and to literate the users are difficult tasks that have to be addressed.
Appendix 9: Interview with Ms. Gayatri:
Source: Voice Call
Duration: 40 mins, 48 seconds

General questions

1. Could you explain your role at B.Y.L. Nair Charitable Hospital?

I am the head of Audiology and Speech Therapy department at the Hospital. I have over the years built up the acute care program in neurogenic communication disorders and swallowing disorders at BYL Nair Charitable Hospital from the perspective of an SLP. I have presented at various forums and conducted many workshops in the domain of swallowing disorders in children and adults. I have taken this upon myself to spread the knowledge of dysphagia amongst Indian SLPs.

2. How long have you been working in this field for?

I am with B.Y.L. Nair Charitable Hospital since 1986. I have also guided more than 35 dissertations for graduate students pursuing their Master's Degree in Audiology & Speech Language Pathology.

Awareness of the speech and language therapy app among professionals and patients

3. How is the awareness of speech and language therapy app among professionals in India?

It is a new concept and is growing fast especially among the younger techno-savvy professionals. My experience is pertaining to Mumbai, India.

4. Do the patients know of any such apps?

The clientele who come to our hospital are largely from lower socioeconomic strata and hence are not aware of such apps.

Scope of digitalisation for Therapies in India:

5. What are the prospects of using electronic devices for such apps?

I feel the prospects are very good. I say this going by the experience of mobiles in India. A few years ago, there were no mobile phones and now we see every other person using a mobile, across all socioeconomic strata. Also, many have started downloading apps for various functions like railway time tables or for choosing eat out joints, for booking cabs or...
for tracking other services. Hence if such apps are made accessible through electronic devices such as mobile phones, I think the prospects could be very good.

6 What is the importance of technological initiatives in speech and language therapy?

Such technological initiatives are very crucial in speech and language therapy for engaging children with speech and language disorders as their interest can be captured using these devices, and for planning and implementation of AAC devices for children as well as adults with severe communication disorders.

7 What is the involvement/initiatives of medical institutions towards such an app?

As of now, to the best of my knowledge, there has been no involvement or initiative taken by any medical institution towards any speech and language therapy app. I can speak for sure about the same in the medical institution that I am working in. The reason may be that the SLPs working in such institutions may themselves not be well-trained in the use of such apps and hence may not have asked for them to be introduced therein.

**Lack of resources**

8 Is there a need to connect doctors and patients in India?

They need to be connected in a way to provide better outcomes. There needs to be reliable services that the patients can have faith in. Also for the professionals, I mean they cannot be present everywhere, every time. There should be link connecting the two positively.

9 What are the chances of this service overcoming the language issue in India? For example how well will the ‘select language’ option work for this app?

This I would say is the biggest challenge and needs careful planning as the ‘Select language’ option needs to work in all sentence structures.

**Understanding the Consumer behaviour**

10 What will be the effect of such a service on the doctor-patient relationship? (Pros and Cons)

Advantages:
I think such a service will have a price benefit over the traditional therapies.

11 How promising can this app be in making the patient independent with therapies?

Supervision by therapists can be scaled down by involving the parents and care takers in using the app.

**Role of Intermediaries in Marketing**

12 What is the best way to market such an app?

By spreading word in professional circles; having training seminars and workshops, webinars to propagate these apps across a large number of clinicians. To give some financial benefits such as giving a free app with the condition of that SLP giving regular feedback to the provider about the experience of using the same.

13 What roles do therapists play in creating awareness of such an app?

SLPs who are trained can help by spreading word in professional circles; having training seminars and workshops, webinars to propagate these apps across a large number of clinicians. The trained SLP’s can recommend their patients to download the app.

14 What are the challenges involved with speech and language therapy apps in India?

- Making them economically viable
- Apps will be language specific. In India, we have many languages with numerous dialects of each. To make apps which are language specific and dialect specific would be a huge challenge.
- Many SLPs are excellent clinicians but they may not be techno-savvy in the use of apps. There should be some training courses that are organised that empower SLPs to use these apps.
Appendix 10: Calendar events followed by NeuroHero for promotions:

**MARCH**
- Brain Injury Month
- 6th March-Competition on Twitter (Promo Codes)
- 10th March- TweetChat.
- 17th March to 22nd March. International Brain Awareness Week
- 25-28th March- Audiology Now 2015
- 26th March-Irish Heart Foundation. Stroke Conference. Dublin
- 2nd Spanish SLTs Newsletter

**APRIL**
- 2nd April- World Autism Awareness Day (75 % OFF 2nd April TAI NATURE USA)
- 23rd and 24th April. IASLT Annual Conference, DUBLIN
- 24th to 25th April- IX Spanish SLTs Conference
- 3rd Spanish Newsletter
- Start gathering feedback on the app idea from Hindi speaking SLTs
- Irish Autism Action User stories focus group

**MAY**
- 1st May- Brain Injury Conference: Mumbai
- 14th May- Head First Conference. Brain Injury and recovery. London
- 18th to 24th May- UK Dementia Awareness
- 21st to 23rd May- XXI SOMEF National Conference Spain
- 28th May- Newsletter to UK & USA, Latest News from Neuro Hero
- 4th Spanish Newsletter
- Engage Hindi soeakers to try the Hindi version of TAI Hindi

**JUNE**
- Launch TAI Hindi
- 7th to 13th UK British Heart Week
- Release of intro Video for TAI Hindi
The Feasibility of a Speech and Language Therapy App in India 2015

- Banners and Advertising in ASHA
- 5º Spanish Newsletter
- 1 Hindi Newsletter
- Start to interact with Portuguese speaking SLTs

**JULY**
- 6th to 11th 1st World SLT Student Meeting
- 6th Spanish Newsletter
- 2nd Hindi Newsletter
- Release of intro Video for TAI Portuguese
- Ongoing Banner Campaign in ASHA
- Banner Campaign Spanish Market
- Start beta version trial with Portuguese speaking SLTs

**AUGUST**
- Launch TAI Portuguese
- Release Intro Video for Portuguese Market
- 3rd Hindi Newsletter
- 7th Spanish Newsletter
- 1st Portuguese Newsletter
- Ongoing Banner Campaign for English and Spanish Market

**SEPTEMBER**
- 7th to 13th September. Australia National Stroke Week
- 2nd International Alzheimer´s Day
- Hindi, Spanish & Portuguese Newsletters
- Ongoing Banner Campaign for English and Spanish Market

**OCTOBER**
- 1st October. International Day of Older people
- 4th to 11th October. Mental Health Week Australia
The Feasibility of a Speech and Language Therapy App in India

- 2nd International Alzheimer’s Day
- 29th October. World Stroke Day
- 5th Hindi Newsletter
- 9th Spanish Newsletter
- 3rd Portuguese Newsletter

**NOVEMBER**
- Newsletter "Latest News from Neuro Hero"
- 6th Hindi Newsletter
- 10th Spanish Newsletter
- 4th Portuguese Newsletter

**DECEMBER**
- 3rd December. International Day of people w/ Disabilities
- Newsletters to Hindi, Spanish and English readers.
### Appendix 11: Sample of Data displayed on CAQDAS:

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**Nodes\Awareness of the speech and language therapy app among professionals and patients**

**Document**

**Internals\Interview with Dr. Hemakshi**

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I am aware of a few apps for vocal disorders but not aware of speech and language therapy apps.

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Not many. A few of the therapists did have a couple of curious patients asking about such apps.

**Internals\Interview with Dr. Krishna**

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Above average.

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A few of them.

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Few private practitioners who use apps with their clients but not sure if they recommend their patients to buy or not.

**Internals\Interview with Mr. Milind Sonawane**

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Extremely low in terms of knowledge.

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Some parents of Autistic children have heard about bol app and Avaz & Meni Vanni.
## Appendix 12: Research Timeplan

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**The Feasibility of a Speech and Language Therapy App in India**

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