SOLENT UNIVERSITY SOUTHAMPTON

FACULTY of BUSINESS, LAW and DIGITAL TECHNOLOGIES

MSc Computer Engineering

2021/2022

Francis Ayodele Johnny

Create a website that can enable users to access walking mobility focusing on wheelchair

Supervisor: **Associate Professor Dr. Kalin Penev**

Date of presentation: September 2022

Acknowledgements

- Firstly, I would like to thank Almighty God for His Mercy's, Grace and Provision.
- Next, I would like to thank associate professor Dr. Kalin Penev whose technical knowledge and supervision proved invaluable whilst undertaking this project.
- And to all my lecturers thank you for sharing your knowledge and to all the staffs of Solent University and Southampton community especially my teammates (Solent Shark Wheelchair Rugby). you all welcome me and made this achievement a reality.
- A special thank you to My Pastor Olaoluwa Adesina, my brother from another mother Ibukun Odebode and the entire members of Mountain of fire and Miracles Ministries Southampton, church. You are an angel.
- My wife Timidi Stella, My son Pereowei Favour, and my daughter Frances Douye. we have all succeeded once again.
- My course mate you guys are overwhelming thanks everyone for supporting me achieve this milestone.

CONGRATULATIONS TO US!

Table of Contents

Table of figure:

Chapter 1:

1.0 Introduction:

By attracting visitors and clearly conveying its message, a great website design should achieve its intended goal. Consistency, colours, typeface, graphics, simplicity, and usefulness are just a few factors that affect how well a website is perceived, trusted to provide positive user experience. It's usability and how easy it is to navigate (functionality), an occupational therapy assessment on disability which affect movement both publicly and privately with walking mobility may recommend it for different level of disabilities needs. Although many people may resist using walking aids because they sometimes feel a stigma attached to needing one. However, finding an appropriate walking mobility has occasionally been challenging due to variables like availability, suitability, waiting time, etc. If these difficulties were addressed on this website, the negative effects on walking mobility users could be lessened. The main purpose of this dissertation was to create a website that can store queries on walking mobilities in a database. And enhance accessibility to walking mobility. Our responsive website aim being a helping hand for organizat ions and hospitals. during pandemics and diseases (Rai et al., 2021). Not forgetting that in some previous studies, older adults also seek the availability of walking mobilities, but sometimes it is difficult to get what is suitable. Familiarity with website and the different online tools for creating website in seconds is tricky. Here, we have used HTML, CSS, JavaScript and NODE.JS. MYSQL for creating the database and for the backends, we have used XAMPP server (Kaur, A., 2021).

1.1.Background:

The online database application will be designed. According to Gupta, the integration, setup and deployment of online software applications focus on the needs of disabled persons (Gupta et al., 2015). Wheelchair procurement is the process in which individuals get the equipment or designed to improve their wheelchair. The wheelchair is manufactured in developed nations. Still, it is found to be difficult to choose the appropriate one which could meet the needs of self-development. The pandemic has raised their demands even more. Therefore, Sharma believed that the health ministry has been keen on fighting diseases such as polio. The typical client and server–side are scripting technologies used in the building of a web application. The plan will be developed and tested accordingly to create a web application. The

website would be deployed with the help of the test servers' various tools (Hou et al., 2020). The main function of the website will be to evaluate the database-driven web application having Html CSS syntax critically. To accommodate users' practical demands for people with disabilities (Seriani et al., 2021).

1.2. Research Questions:

One researchers has observed that there have always been concerns with accessibility for people with mobility impairments, but they seem to have forgotten how to address this, given the dispersion of activity based on one's location (Ureta et al., 2008). There are some of the questions describe the present problem of walking mobility and what other things a person can use for it.

Q1) What challenges does a mobility user face regarding the accessibility of mobility with focus on available resources?

Q2) How can a good interface be created that is both accessible and usable on the internet navigation system for wheelchairs and other walking mobility?

1.2 Aims and Objective:

The aim of the dissertation is to design a website that will enhance access of wheelchairs and accessories for people with walking difficulties, creating a database (Selby et al., 2021) and filter out those sites which don't provide clear information on suitable wheelchairs. The Objective of this paper is to develop a database that drive a wheelchair from point to point quicker (M.M. Martins, et., al,. 2012).

- To design a website where users can find suitable walking mobility for short- or long-term purposes.
- To "Rent" or "sale" used/new walking mobility on demands be it short/long term requests.

1.3. Research statement/problem:

This research is particularly interested in designing a website that providing access to walking mobilities which recognizes.

- The struggles of people who seek information and support on accessing walking mobilities. The website and database with unreliable information on walking mobility, creating obstacles on renting, or buying walking mobilities (Alajarmeh, N., 2021).
- The problems faced by disabled people cannot be over emphasized in the present system especially during an emergency and pandemic situation.
- The hospitals and nursing homes sometimes also search for availability of suitable walking mobility for every patience.

1.4. Thesis overview:

1.4.1. Introduction:

The introduction is the first chapter of the dissertation and consists of an overview, where the aims and objectives of the research problem of walking mobility are discussed. The simple website consists of web development languages such as Html, CSS, JavaScript, PHP, and NODE.JS. On the other hand, SQL servers will come in handy for storing a user query.

1.4.2. Literature review:

The second chapter of this dissertation is a literature study, which compares the current state of knowledge with previous research conducted on already-existing websites. It also consists of a discussion of different methodologies by which a user can create a website and make some suggestions for future research. We would also consider those techniques which have made life easy for disabled persons to access mobility.

1.4.3. Methodology:

We have used Empirical research methodologies and Applied research methodology to design our website. Also, we employed the analytical methodology and the quantitative methodology to assess and then analyze the impact of our website. Additionally, the project management framework was created using the descriptive methodology and the waterfall project management methodology. There are several project management frameworks and methodologies that can be used. We'll discuss various project management strategies and how we choose the one that was most effective for this project. Although there are few other methodologies available for use depending on the project, the method could be descriptive methodology, qualitative methodology, applied methodology, quantitative methodology, and empirical methodology.

1.4.4. Findings and results:

The dissertation's analyzed the hypothesis using quantitative and qualitative methodology to analyze the data collected. The results shows that accessing the write information on walking mobility is difficult and undetailed online. Analysis and explains the number of people who are seeking access to walking mobility and some challenges encounter that may become unable to use the web. These findings identify the routes of the participants employed to free themselves from the discouraging cycle.

1.4.5. Discussion and Conclusion:

The discussion is the important which will be consisted of a formal discussion of the findings and results. The analysis will be provided to show whether the needs of disabled people regarding walking mobility have been sorted out. The discussion about website development flow and how it could interact with impaired people. The last chapter of this research thesis is the conclusion which refers to the result based. The recommendation and limitations of the present research will be considered, and future scope will be highlighted.

Chapter 2:

2.0 Literature Review:

The resolve of this research is to create a website that can store data from the user. There are generally two Web applications, such Static and dynamic. The first one is concerned with the elements which are in the form of static HTML pages. These websites somehow don't allow users to interact with them or change how the program behaves.

On the other hand, Dynamic web applications provide end users to interact with the application behavior. These web-based applications are highly based on the end users' input and requests in the client browser. For example, we need help from the client scripting languages to parse the information, and the client-side scripting language includes VBScript and JavaScript. The websites we create will be integrated in the HTML and CSS, which the browser will run, or they may be placed in a separate file that the web server will send when the browser requests it. Based on the capabilities granted in accordance with the user role, utilising server-side scripting to customise the data that the user accesses has a number of benefits. The client-side HTML page cannot display the server-side scripts due to security concerns. HTTP and FTP protocols are used to conduct client requests and server operations for secure service.

The database stores the data, and we had used SQL language. The three-tier application generally consists of the presentation, application, and data layers. The presentation layer represents data and graphical user interface to the end user. simultaneously, the application layer is independent of the upper layer. The application presentation layer loads multiple machines where the GUI doesn't manipulate the database. However, clearly defining each layer could be difficult to design and implement (Nurkholis, and Anggela., 2022). The NODE.JS is a lightweight and easily compatible developed framework. It increases efficiency and maximizes the development of the system. All the systems are services, devices, and appliances used by disabled people to improve their lives, make their activities easier and provide safe mobility are included under one Umbrella term: Assistive technology. (Timofei et al. 2014) have worked on a robotic wheelchair designed for patients with severe disorders of the musculoskeletal system and other body functions. The main idea of this project is based on the concept of BCI (brain-controlled interface). Another accomplishment, joystick control, was created by swapping out the controller for an onboard computer interface.

In addition, (Bin Hua et al., 2018). Had proposed a method in which several types of sensor data train the neural network used to control a wheelchair robot. In these wheelchairs, the data is used from the laser range finder (LRF) and a camera sensor to input the neural network. Another researcher (Sudipta Chatterjee et al., 2017) proposes a low-cost control method consisting of an Open CV system and a Pre-trained model to detect more than 80 objects in a video stream. The eye tracking device and facial expression recognition system are still developing compared to the previous theoretical studies. According to (Lee at al. 2014), a technique is developed to establish eye measurement in a virtual reality eye-tracking module. Sipatchin, a well-known analyst, explained the tracking restrictions of the typical VR headset with eye tracking for ophthalmic applications. (Fattori, L., 2022).

Many authors have designed various systems for people with severe motor impairments with an artificial interface based on the combination of command methods: tracking through the eye gaze, facial expressions, and position of the head. The results of the experiment are discussed to support the notion that drivers who are impaired must remove the constraint placed on them by only using one sort of driving method at a time. It has been noted that the alternation of the nervous system causes disabilities. The correct destination mapping system is needed through eye tracking systems. The researcher (Tsai et al., 2018) developed another effective system that quantitatively measures optokinetic Nystagmus (OKN) eye moment (Syahbana et al., 2016). created a technique for detecting pupils via pattern matching that approximates the pupil using a pattern resembling a Mexican hat. To aid in controlling their hands and feet, researchers hope to build and execute a smart wheelchair. The perception of disability, which highlights the variety of reactions and highlights the disparities between impaired individuals and other people, are two early instances. Many academics have also suggested that western countries still exhibit these ideals. (Finkelstein et al., 1993).

Many key thinkers and politically active figures within the UK advocated eugenics which were involved by Johan Maynard and many other researchers. Western societies failed to recognize the oppression of disabled people in an organization. The review articles presented by Lederer and Champagne in 2014 have examined the various definitions of disability used In the existing published literature. However, some of the definitions are being used for research purposes, political terms, and business. They also consider how disabled a person has been involved over time. One of the greatest researchers, Vedeler, argues that represented term that

literature is unable to understand the needs of disabled persons who do not have any shared review over them. This deficiency can lead to "regulatory, legislative and political rhetoric, but it becomes more vital when negotiating a manager. Vedeler and Lederer explain the importance of these different perspectives or analyzing the condition that can promote or inhibits participation in a working area. The medical understanding of disabled or impaired persons is targeted by well know n researchers like (Oliver and Barnes, 2012), who have stated that "the need of disabled persons in political and academic surroundings are publishing since many last years. They claim that there is a need to distinguish between impaired and disabled people, where impairment is defined as the absence of limbs or the presence of damaged limbs, and disability is defined as "the restriction of an organization is that it carries a small number of people who have physical impairments and excludes them from participation in the social activities". Most of the researchers are unable to criticize the organization for such behaviour. Over time, the need of understanding through medical has changed. One of the articles (Tossebro et al., 2010) has pointed out the specific city like Norway, where they demonstrate the research on impairments which focused on social problems and oppressions. In the early 90s, social science research emerged as a standardized area of research. Initially, it only consisted of studying impairments related to the body, but later on, it began to include all, such as sensory, cognitive, etc. Nowadays, medical understanding is used in the phenomenon caused by a functional limitation.

Relational understanding relates to the disability's interaction with the social, cultural, and physical environment. The bodily characteristics are signified from social conditions to the individual part of a human. The body and mental conditions are correlated, determined by how disabled persons still interact, which creates the actual disability. It would be vain if we could not understand the disability's needs. Literature review conducts the view on disability and work, which is impossible to include their information needs. The researchers have talked about many disciplines like economics, medicine, and sociology, making them difficult to understand (Roulstone, 2013.). According to WHO, the world's population is around two billion and one billion people face some kind of disability. Correspondingly, about 15% of the planet's population has disabilities (Syahbana et al., 2016). The number of ageing people is increasing throughout the world and their life spans; therefore, it gives rise to a higher risk of disability. In upcoming years, the diseases in elders like diabetes, cancer and heart diseases will increase, making them physically impaired. Therefore, they always search for suitable walking mobility according to their condition. In general, the people who have disabilities face difficulty while

reaching their education goals, economic deprivation, health issues, and many other kinds of aspects. These difficulties are even more diverse in low-and-middle-developed countries (WHO, 2011).

There is various web design search engine that usually does not crawl over the web pages, which lead to providing faulty information about disabled people. The purpose of creating a website is to develop a system which can give authentic information to the users. Whenever the NGOs are willing to get information about a number of disabled people, they usually fail to get it. The dynamic pages generated the parameters that provide the web search forms. The Graphical User Interfaces provide online access to the database on the web (Syahbana et al., 2016).The researcher has been addressing for several years the development and needs of disabled people with mobility disabilities through alternative or argumentative devices. The most convenient mobility is a wheelchair for disabled people as everyone can afford it. In some previous research, argumentative devices are developed for users with mobility capacities. The devices attached to the wheelchairs and walkers are important due to a large number of users. They usually don't use these devices in normal conditions. These devices were developed to make work easier for impaired people. Somehow, they are designed to improve pathological gait by providing the facilities to support for the upper and lower limbs. The technologies cover all major developments for incorporating sensors and actuators in conventional walkers. The devices enable the identification of the movement intentions of the users (Syahbana et al., 2016). The needs for wheelchairs are not necessary for disabled persons but also for patients and old ageing people.

Ferrucci and others had maintained that mobility is a sign of ageing and a crucial foundation for independence. (Ferrucci et al . 2016). According to (Cavazzana et al., 2018), as people get older, their sensory system gets worse. For balancing and control of environmental circumstances.

The previous research has shown different categories of assistive mobility devices, which can accumulate the purpose of using this as all mobility devices are not suitable for all people. The availability of the devices and the importance of selecting the best individual patients have evaluated the importance of its usage. Once the device is connected, it will be able to detect the heartbeat, pulses, blood pressure etc. The therapist will be able to make the appropriate pieces of equipment adjustments to meet the needs of patients and can provide training in the proper use of

devices. The therapist can assess the potential problems before using the device (Syahbana et al., 2016). The Robotic wheelchair was also developed to provide autonomous navigation wheelchairs by using human-machine interfaces like BCI, which is brain-computer interfaces and electromyography signals. The researcher also predicted that continuous use of automatic devices can lead to health problems that worsen over time, such as osteoporosis, blood vessel deterioration, skin sores, and a host of other conditions. Therefore, using it in an emergency is always advised by doctors.

The parallels bars are another mobility training device which is formulated to support individuals to recover strength, balance, and range of motion. Patients are allowed to have to recover from some injuries and debilitating conditions. Parallel bars are also used the regular exercise, which helps to improve the ability if walk on their own. These kinds of techniques produced better outcomes as compare to the rehabilitation of patients. The previous studies have shown the number of patients needed to be engaged in the procedure; otherwise, they can lose interest by time which can cause bad results and had no participation in rehabilitation. The automatic devices are provided to the therapist to allow the patients to complete the specific tasks. There is currently no shred of clear evidence that could support them for effective training assisted by the people. Employment and disability are related to each other (Saunders and Nedelec in 2014). According to the forges, a sense of self and takes part in community on a regular basis with other in daily life. The review stated that the disabilities of people don't mean that they are not interested in work. There is no scope for hiring disabled persons. According to Falkum and Solberg, disabled persons would give more valuable knowledge in the process of recruitment. These kinds of thought can enable people to move towards the insightful worth of experiencing over the employees. One of the remarkable structures of the research design includes the recruitment process of the employment as well as applicants. The services provided by the government is not remarkable; somehow, these approaches will help to identify the disability. The Madarasz proposed a model of another autonomous wheelchair having, tv camera, sensors etc. The data representing different models were stored in the compiled structures. Another model proposed by Rao which were based on the physical health problems present in an individual. The poor transportation system has led to accidents, and their transportation infrastructure is not isolated. Over the past years, the population has moved from rural to urban areas, which was noted by (Boyd, 2017). Estimated that the united nations have approximately eighty-three present of North America that live in urban areas with a high

population (Boyd, 2017). The research is based on the auto-centric nature of the communities present in America that have sedentary lifestyles and lack physical activity undergone by Americans. The number of older people in the United States who have increased by 70 million in 2030, according to the (Administration on aging, 2012). The number of hospitalized older adults having low physical mobility are considered to die more likely to have died 6 times faster than a normal person. According to the statistics, many hospitalized people's lives are in danger. They spend 80% of their time lying over the bed, and less than an hour they walk per day. Therefore, despite having all-day rest, patients and older people always need effective mobility services. Regular physical mobility during the period of hospitalization is critically prevents many diseases and decline in functional problems which are related to the body (Syn-Hershko, 2016). Furthermore, there is always a need for interventions of physical mobility. The people are promoted to take the feasibility training of integrating the interventions to improve physical mobility in older people (Ash et al., 2016). The researcher has noted that disabled peoples have the worst experiences which are affected by the stigma and reactions of other people. Same as the researchers predict over forty years ago that disabled people be developed to shape the attitudes and expectations of non-disabled people. Goffman's seminal work illustrated different terms of the attitude that deeply discredit stigmatization. Goffman considered how when people gathered for meetings, they make assumptions based on the physical differences. This reinforces the need to identify what exactly people perceive of themselves. Goffman has further explained the stigma of people when their stigmas are not visible, so to pass their stigma, they need to be discreditable rather than discredited.

Some previous study proposed a system to create smart electric wheelchairs which were easy to use and had a controlled interface and semi-autonomous navigation systems. It worked over the commands of a user by hand and eye gestures or tracking system. The user also had the option to develop or design the *direction* by choosing one of the mentioned commands on the wheelchair, let's say; Forward/ Backward/ left / right. These kinds of wheelchairs not only can make life easy for disabled persons but also it would help to gather the best approach to motivate themselves (Bjørnshagen, and Ugreninov, 2021). Some disabled persons cannot move, but can make reasonable eye control, these candidates can use eye tracking systems. These eye movement help to contrast people having different eye gestures. The mapping systems of the destination also require an eye-tracking system for both left and right eyes. There must be a need to correct the applied problems when reading the people's eye gaze. There are a number of

people having hinders to control all over the body and forces that a person can have while using a mobilities. Research has shown that not all people can use this device, but it can accommodate to define the problems present in walking mobilities. That is, the researcher and designer work together to make a suitable wheelchair that would be able to adapt to the proper consideration of a user. The survey was made relevant to the large-scale information on walking mobility usage. There are some important things that are highlighted in the surveys about the problems of the illness. It has been noted that only some people will be able to perform their daily tasks on their own they almost have full control over their body and therefore shows small deformations. Whereas the severely limited are dependent on other people or work to perform their tasks. At the same time, some people are dependent on the next person and have very less control over the body. They are the people who need an automatic wheelchair, which could work for them as an assistant. Because nowadays, people are busy that they can't live with their impaired people. Also, disabled persons are also tired of being a burden on somebody else, and they want to be independent as normal people. Somehow The disabled person's needs do vary from person to person and are dependent to the group of people for their specific requirements. These requirements also differ from one person to another.

The database system is called intelligent because of knowledge-based algorithms. These combinations are static facts to build authentic information of an intelligent database. According to the thesis, the definition of a model of the environment in which the wheelchair is confined to operate is through a relational database designed to keep the information safe. The second part of that thesis concentrated on finding the shortest path globally by using Djikstra's shortest path method. The third part was related to the development phase of implementing the image matching. designed of a wheelchair within the same building which is visited the most. The evaluation of the database is highly based on the accuracy of the path, which is nearly the success of the best match of the two images. The global path planning is implemented with a knowledge-based approach compared to the conventional graph method of hierarchical description of building a more intelligent power.

Those who have become disabled usually find their selves in a different world (Bjørnshagen, and Ugreninov, 2021). Where they no longer be responsible for their family, their personal and financial needs and for their behavior. The most important thing he had been responsible for was interacting in society as an adult. their demands for social equality and

acceptability as mature, responsible individuals. His participation in society would also be pursued by political rights and economic developments, including the right to access public facilities and programs, the right to employment and affiliations with businesses that provide private services and facilities, the right to sexual expression, and others. All these things have either disappeared or weakened. He also proposes a medical model where normal people are called sick people. Jim Derksen relates sick people in a very remarkable manner.

After World War II, people began to respect the medical approach. The professions emerged in developing nations in response to the disabled World War II veterans. They result to live longer with spinal cord injuries and other disabilities. Technical aids have been improved, which involve electric or smart wheelchairs and portable respirators, which means disabled people can live more independently than before also several agreements and models had been signed (Visuri, S., 2021). However, the individuals moving ultimately improve the overall health of communities. The studies show that the average person is willing to complete their journey less than a fourth of a mile on foot, whereas disabled persons are not able to do this due to their inability a walking. Many researchers have developed a different modes of walking mobility for walking mobility. Therefore, researchers have obtained a 3D virtual prototype for stimulating in Adams the wheelchair motion trajectory and study of dynamics. The virtual prototype provided a useful analysis of a design study to optimize the construction. Another important wheelchair that has been used by many impaired people is Bridge Motor controller module. In these wheelchairs, H bridges circuit, motor controller and direction. The PWM (Pulse Width Modulation) is also used here for the control the direction of an electronic pulse. This means if the pulses rate is high it will turn the wheel faster and the shorter the pulses are the shorter the pulses will be. This motor's wheelchairs will endure longer than any mortar, and PWM control makes it the most dependable. Microcontrollers based on Arduino, such as the Mega 2560 and ATmega 2560, are available. the power jack, ICSP header, reset button, and input and output pins with a USB connection for a 16 MHZ crystal oscillator. The researcher discovered that automatic wheelchairs are more crucial than manual ones. The rationale is that the relationships between wheels and ground are defined by a contact mechanics model that is based on variables like penetration depth, damping, and friction coefficients. The most current study examined the health and lifestyle modifications for people with disabilities as recommended by the World Health Organization. Participation with Susan Shore, the free Wheelchair mission is developed (Visuri, S., 2021) The main purpose of this survey was to identify the effect of the wheelchair on

a person's health and well-being, which the participants were informed of before. In a survey, the life questions are taken through participants and evaluate the level of difficulties while performing specific activities. In this mission, the Recipients reported less fatigue and illness, and the demand for wheelchairs has shown to increase.

Consequently, the surveys are considered the best evaluation where no effort was identified in a comparison group. This survey didn't provide a way of improvement for wheelchairs and failed to improve the quality of life in the year using the wheelchairs (Toro et al., 2012).

Moreover, Johan Borg is one of the greatest researchers who worked on the relationship between technical gadgets and human nature. focus of this study is to provide accessibility for walking mobility. There was found an interesting difference between the users and non-users of the wheelchairs (Visuri, S., 2021) Wheelchair users seemed to increased walking mobility, but it has been shown that there was little difference in mentally and physically healthy. A negative association was also seen between wheelchair usage and working status. Wheelchairs are considered to be the best walking mobility service because people faced less difficulty than as non-users. Improving these wheelchairs can produce effective outcomes while working in an organization. All the program's evaluation is different whether it refers to economic development or the improvement of the lives of disabled persons. Disabled persons always have to bear the range of costs and benefits, risks and diverse effects. The Shore did another survey by providing 188 wheelchairs in India and Peru that can use it for 33-month period (Toro et al., 2012). The beneficiary is asked about the feedback on wheelchairs. In 2008 the Shore reported that there are 31 percent of people who can use a wheelchair as independent persons. Over the past experiences, the out of 162.wheelchairs data is shown that 71.6 percent of wheelchairs were not sold nor used. The reason behind this survey has found the pain or fatigue while using wheelchairs. Even the persons who use wheelchairs occasionally are considered to face problems. There are some researchers whose main focus lies between the usage and non-usage of wheelchairs. The passive and negative effects have been seen in transferring wheelchairs to physically disabled persons. No clear consequences have been found in these literatures. The persons who are disabled hinder not only health outcomes but also mobility and time allocation. Talerico, another researcher, uses the data of previous surveys to investigate the characteristics of mobility. The average distance daily a disabled person travels is about 3,400 meters. The Pagan have worked over the time allocation of non-disabled counterparts for daily activities. By

using the micro-data there are about 20, 000 observations were made from Spanish Time Use Survey (STUS).

However, beyond surveying over wheelchairs or developing smart wheelchairs, there is another thing which a person can get information about his wheelchairs. It seems to be difficult, but the thing is, the researchers and designers developed the website according to the needs of people and previous surveys (Toro et al., 2012). The website backend will work with HTML and CSS. Moreover, this website is different from others because the queries of the student will be saved as a response and worked on. His query will be added to the database using SQL and NODE.JS languages. The surveys will be made for this research to find out how people are getting their wheelchairs by this website and how much it is effective. It has been found that the previous websites only work to provide a piece of information about walking mobility. Their information is fraudulent, and most people don't believe this. The companies like Amazon also have made accessibility for disabled people where they can easily find wheelchairs according to their needs and physical fitness. Moreover, the main purposes of all the surveys, thesis and research have shown that disabled individuals' personal needs are quite different from normal ones. Therefore the researchers are making and developing new approaches for them to make their personal and economic life easy. Moreover, the fairs about the low level of work in an organization are decreasing and trying to make disabled persons more courageous towards their economic and social life.

Chapter 3:

3.0. Methodology:

The Empirical research methodology and Applied research methodology is concerned with the different approaches that have been used for creating a website. However, these numerous methods and designing will always needs planning, testing and coding. Each step is made to develop a website should be the appropriate one. Visual representation is necessary as Eternal work for which different approaches are negotiated to choose the best.

Descriptive research methodology:

We had used the descriptive research methodology to carryout fact-finding on social media plate form using google form to design a questionnaire. Our purpose of descriptive research has description of the situation as it exists at present. The main characteristic of this method is that the researcher has no control over the variables; he can only report what has happened or what is happening. Like reporting the responses on the hypothesis from the questionnaires.

Applied research methodology:

Aimed at certain conclusions (say, a solution) facing a concrete social or business problem is an example of applied research. Research to identify social, economic or political trends that may affect a particular institution or the research to find out whether certain communications will be read and understood, or the marketing research or evaluation research are examples of applied research. Thus, the central aim of applied research is to discover a solution for some pressing practical problem, whereas basic research methodology is directed towards finding information that has a broad base of applications and thus, adds to the already existing organized body of scientific knowledge (Kothari, C.R., 2019).

Agile methodology:

The software development life cycle (SDLC) model will be used for developing a reliable and secure website without ambiguity. Is mostly preferable method used by many researchers, it allows entering the website in a market very quickly as compared to other methods. Generally,

the agile method works in the form of sprints whose duration lasts up to two weeks. Once the sprint is completed, the agile methodology asks for feedback to plan over the next phases.

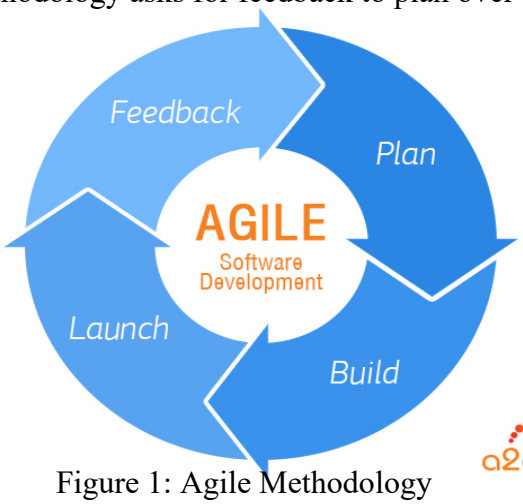

Figure 1: Agile Methodology

It allows adapting new discoveries from time to time, which is why it is considered very flexible. Agile is responsible for producing deliverables on time but requires feedback for each step which is quite hectic.

Waterfall project management model

Another big model for the development of a website is the Waterfall model. Creating a website is not easy it requires a lot of management for a smooth process. The waterfall development methodology is appreciated for overall software and web developers. Because it provides step-wise phases structure and documentation. It is quite challenging to select one from agile and waterfall models when both are good options. Well, choosing the best method is depends on the project.

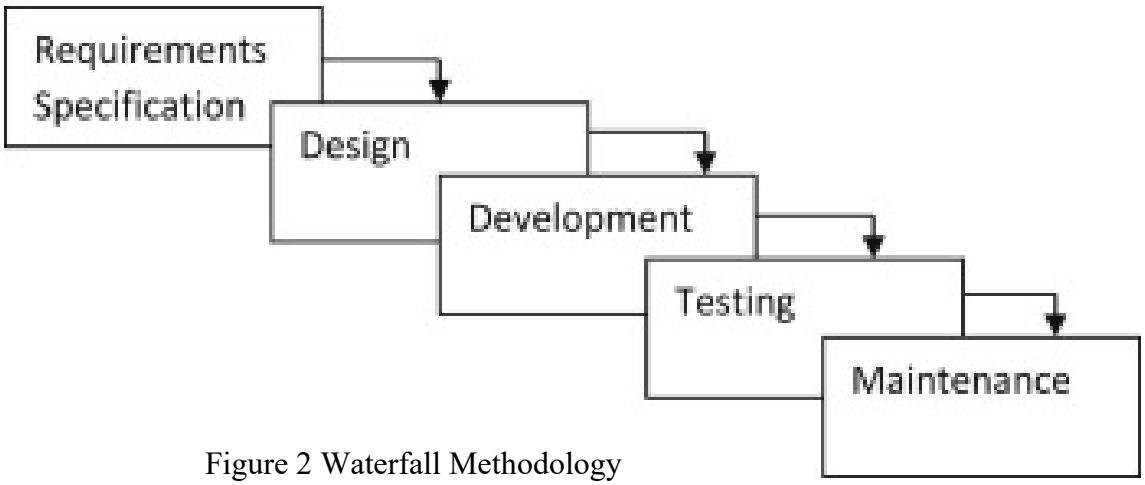

Figure 2 Waterfall Methodology

The waterfall is a good suit project having a pre-selected team, fixed scope, and a fixed budget. It doesn't require any feedback and inventions after each step. (Erica C., 2020).The waterfall model is finite and has a clear beginning with no room to change once the project is set out. unlike agile which is suitable for large and complex projects with virtually unlimited feedback and great adaptability. However, most developers also prefer to use a Hybrid approach using agile and waterfall models. Our website design is simple and has fixed events which will not change frequently. It is known among developers as a general model which is applicable to the development of a website. The process is divided into several stages in a sequence.

Conception:

Every project that has been made has proper reasons behind it same as this project has its own scope and pre-planned structure of how things would work. It determines the financially and technically feasibility of developing a website. While negotiating the drawbacks and benefits of the project, the strategies will be implemented.

Requirement Gathering:

The first phase in website development will understand the project's demands and needs and gather all the required information as had done in the pilot study.

Designing:

The main purpose of this phase is to describe the website design. Html and CSS language has been used to design the front-end. It is not only about the architecture of the software that is requires but also some coding to enable its responsiveness on all gadgets.

Coding and Unit testing:

The general designing phase is concerned to visual and eternal representation (Coding). The website development was done using HTML, CSS and Node.JS for its responsiveness and testing to find whether each module in the website is working correctly as intended or not.

Testing:

In this phase, after testing the different modules through unit testing, the integration testing for other modules is carried out in several steps. During each integration testing, previously planned

modules are added to partially integrated and resultant systems. It may have consisted of User testing, bug testing and repairs of the issues. Generally, at this stage, the website module is now ready. No significant changes will happen until a subsequent project is planned after all the modules are successfully integrated and tested. The overall system testing will be carried out in this phase for the website. Typically, system testing consists of testing activities such as Alphas testing used by the developer. On the other hand, the beta test is performed by the customers. Acceptance testing is used when the software has been delivered.

Maintenance:

The last and crucial step of SDLC is maintenance, where developers spend 60% of their efforts on developing a complete website. The care may be corrective, perfective and adaptive depending on the requirements of a website. The maintenance phase will be responsible for correcting the errors such as notification problems, Database loading problems. The second one, maintenance, is preferred to enhance the functionality of a system, and the last one is used when working in a new environment or computer.

The waterfall model is an idealistic model for developing a website or software. It is quite simple and reliable, which is why considered to be the basis of other life cycle problems. The developer cannot move to the next step if once the previous stage is incomplete. However, some other models like scrum, Lean and Bottom line are also used In the market for developing different websites.

3.2. Hypothesis:

Our research methodology comprises mainly hypotheses from the pilot study that where around the needs, satisfaction, and resolving issues. The statistical analysis and the quantitative questionnaires answered by the respondence, the feedback from using other websites recorded in the pilot study. A Qualitative analysis of questionnaires was designed using google form template was useful as well (Lecrosnier et. al., 2021). For example, the questionnaires and responses on the needs of wheelchairs and how difficult it is to assess these kinds of items by people. the results will be displayed as a pie chart. The analysis will be accompanied by the users and non-users. The level of satisfaction, strong, minimum, and high satisfaction, will act as a grade for which a chart will be developed. This website generally consists of one page so that the user would not need to visit another searching site for the same purpose (Karasuyama et al.,

2021). The hypothesis where designed to know the accessibility of the existing website that provides the same facilities. Their findings and results of these hypotheses will be discussed in the next chapters.

3.3. Reliability and liability:

The main objective of creating this website was to provide a site were disabled persons can get appropriate walking mobility. One single website had failed to get the requirements of disabled people in the past (Abutayeh, N. and García-Orosa, B., 2021) They usually get a great response from all over the world, but somehow, it had not find out how satisfied people are with the services provided. These services had failed to give comfort and satisfaction to people. Therefore, Our website will provide more considered reliable and liable services compared.

The structure of web applications is very simple and easy to use for everyone. It has a simple interface that is accessible to all users. When someone opens the website they are able to see the heading where we have navigation to all the services we have available. Then there comes the list of all walking mobilities. In the list, they can see the name of the walking mobility and their vendor. After that, there is an inquiry form given, by using the inquiry form they can inquire what is the best mobility available for them. Walking Mobilities is an online web application that helps users find the best walking mobilities products available on the market. Using our easy-to-use website, consumers can browse through a variety of different walking mobilities products and compare prices to find the perfect product that meets their needs and fits within their budget. Our aim is to provide an easy-to-use, informational resource for consumers looking to purchase a walking mobility device. Walking Mobilities is a web application that gives information about all walking mobilities available in the market and gives information about the vendors. It also enables users to inquire about walking mobilities.

Chapter 4:

4.1 Results and analysis:

The purpose of this section is to evaluate information gathered electronically by a google form template. The participants where done online to secure their data. There were 75 respondents, which was discussed in the methodology chapter where the Recipients ask about wheelchair accessibility (Mason et al., 2022 pp. 1-15). The bar graphs, pie charts and line graphs are used in this research analysis. The hypothesis "do they know someone that uses or needs a wheelchair?" According to the analysis, 34.7% responded No. while 65.3% responded Yes. knowing someone in need or use wheelchairs (Cha, J., 2021).

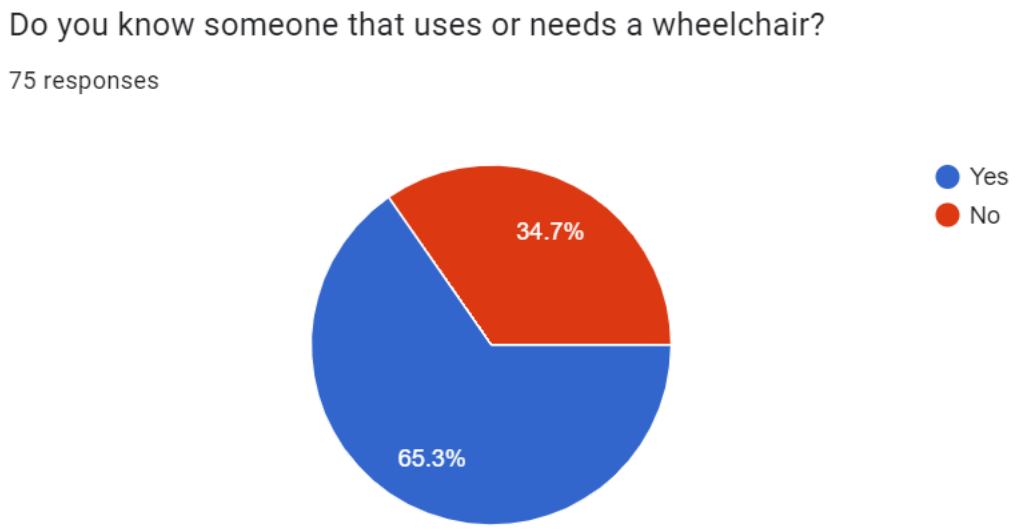

Figure 3: Wheelchair Users

The demographic analysis shows that the responses where the wheelchairs are needed for individual or other person usage have more yes answers. These responses confirm the request for wheelchairs (WeWebSmart, 2013).

The next hypothesis was where would you get the wheelchairs from? The hypothesis aims to emphasized the need for designing our website. Although 69 respondents were recorded, 34.8% would normally get the wheelchair online, while 65.2% would get the wheelchair from the physical shops (Giesbrecht et al., 2022). Their reasons could be speculations, ranging from online scammers others may consider receiving inappropriate wheelchairs and considering the effect of this mobility on the users, every inconvenience could have a very devastating effect.

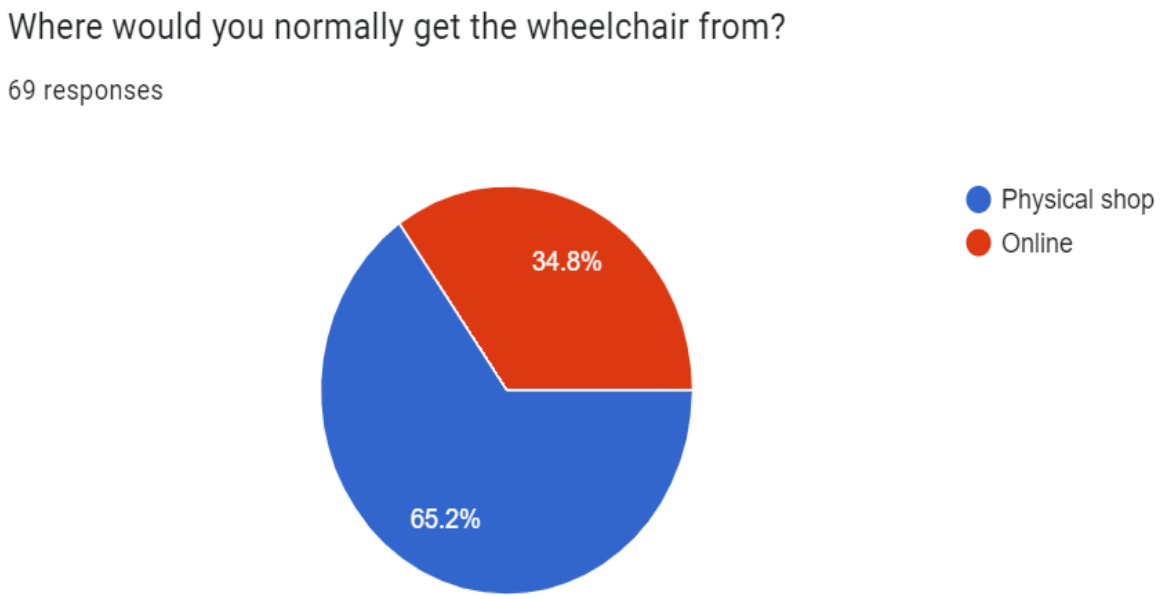

Figure 4: online and physical shop

After launching the website, we will let them know about the services it provides through feedback from their experiences. There would likely be 45 responses normally consisting of questions like do they find this website user-friendly? These responses have figured that about 50% of the people don't find anything special in this website, and 50% of people are those who find this website better and more user-friendly (Cha, J., 2021).

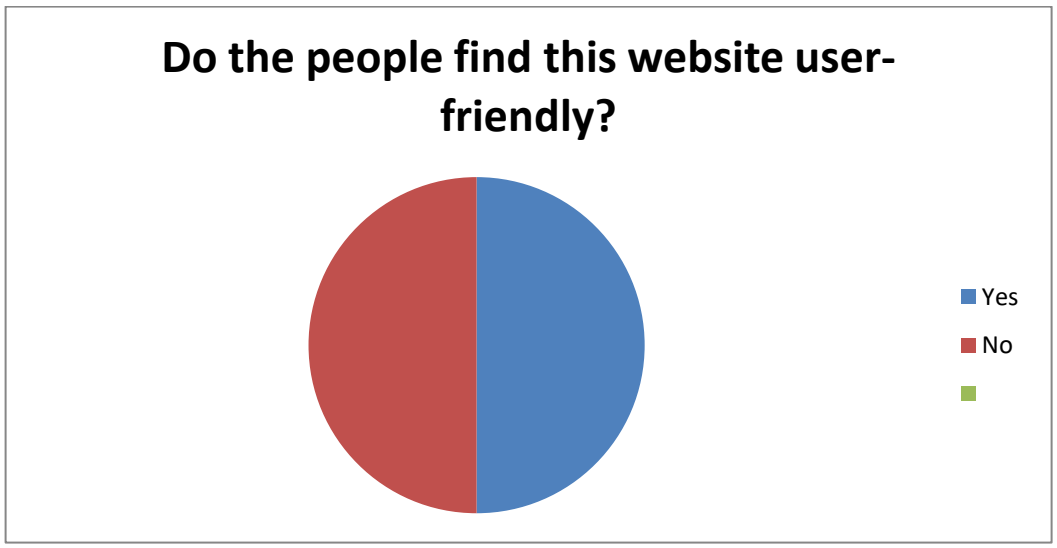

Figure 5: User friendly website

The responses are based upon the sample usage of Forty-one responses. In this research, the 16 responses are delayed but resolved to meet the needs of people (Giesbrecht et al., 2022).Twenty-two responded quickly to resolve an issue, whereas four reponses are needed to resolve the need. The questionnaire was adjusted grammatically because many of the questions were unclear. Nineteen of the responses are found for the Quickly resolved, and 13 responses were delayed but resolved by time. Only 2.4 percent of queries were delayed. This line graph shows that this website has helped people to purchase a wheelchair, and their queries are resolved.

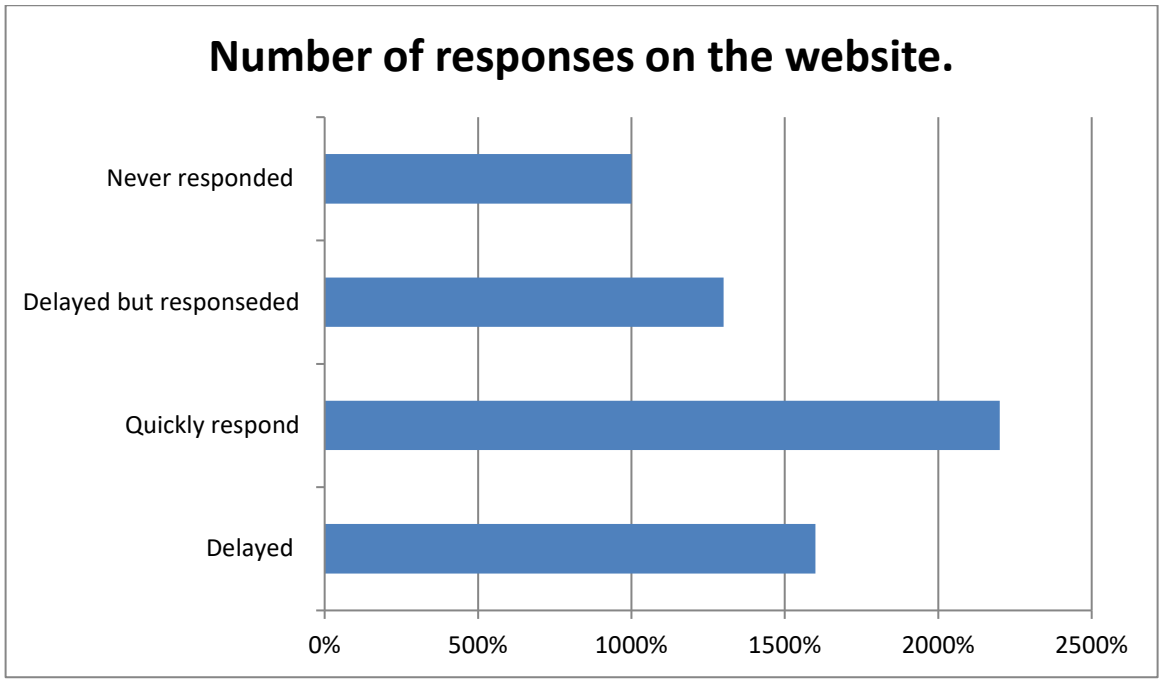

Figure 6: Number of responses

Website analysis questions are made to know people's experience using this website. There would ultimately be Forty-three responses to these questions. As the goggle forms ask the questions, it is not necessary for people to answer all questions. Somehow the question is ,are you confirm what you needed from the website? Most of the people replied "no," with a percentage is 60.5%. And "yes" is almost 32.6%. At the same time, some people also replied "somehow" (Visuri, S., 2021).

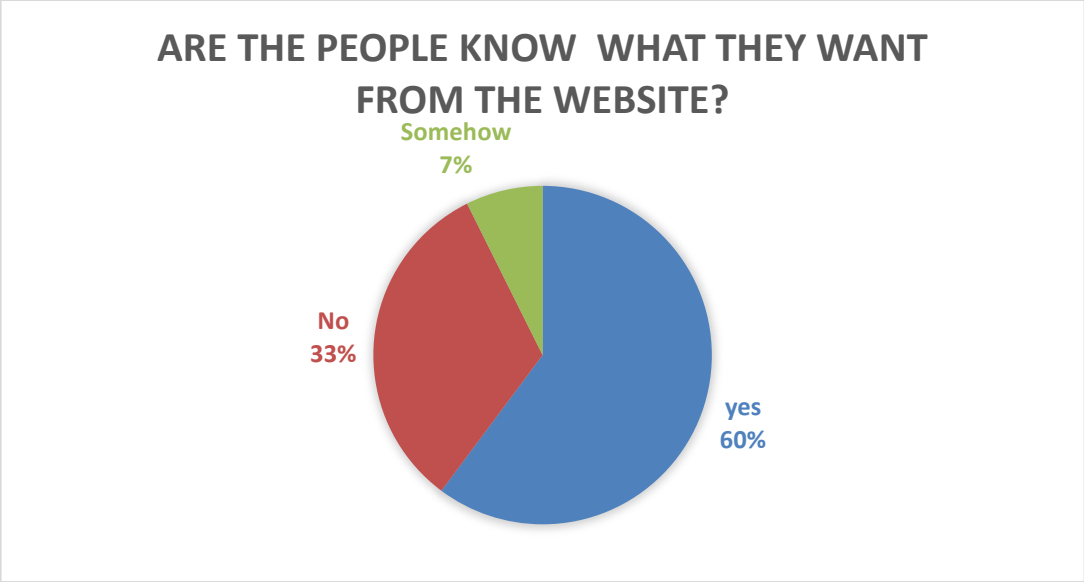

Figure 7: Confirmation

Just like google always asks for the experience by some emoji of satisfied and not satisfied, we would like to ask such questions too with the 38 responses with 52.6 people are not satisfied with this website. 26.3 people are satisfied, and a very small number are "Very satisfied," around 7 to 8 percent out of a hundred. Some people may or may not be satisfied.

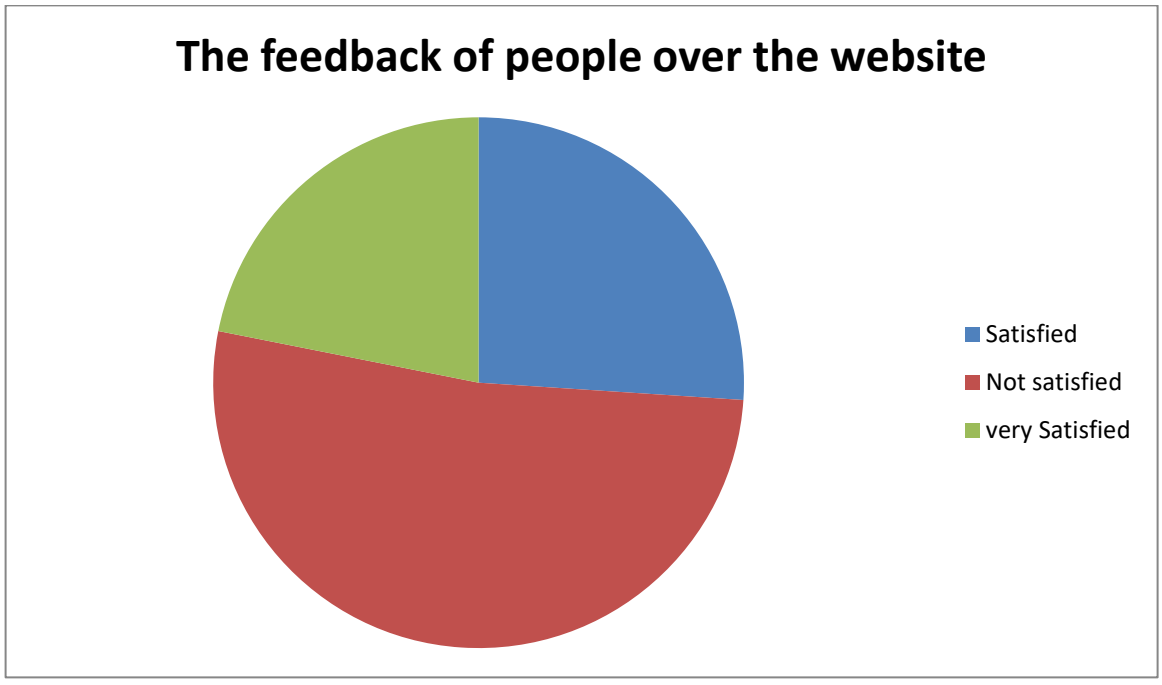

Figure 8: User Feedback

Previous research shows that 53.6 % of people like to buy wheelchairs online because they don't have physical interaction with people (Giesbrecht et al., 2022). We would like to know whether they know any wheelchair manufacturers or assembler shops and if "yes," the recipients ask another question related to this "how many shops." There 52.2% of people who responded were "No" on the other hand, 8.7 % of yes were 5% knew 3-4 shops and 23.9% known but "none or less than two".

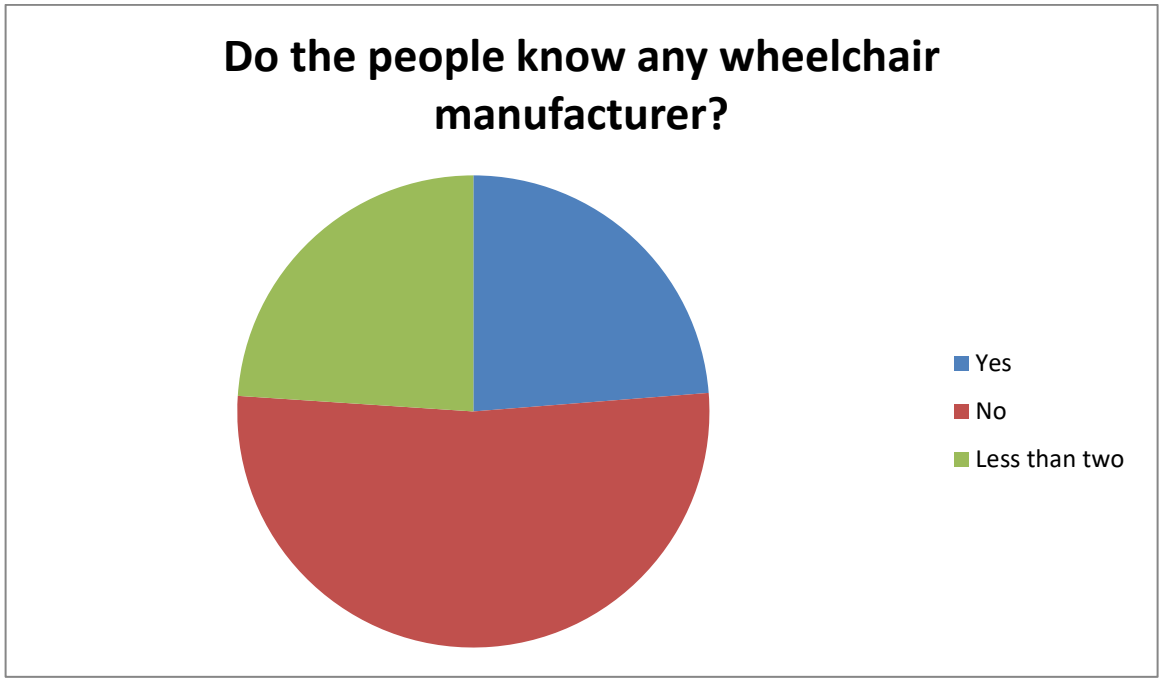

Figure 9: Wheelchair manufacturer

4.2 Interviews:

The interviews are formal and informal, and it will be taken from random people how they usually walk or use walking mobility (Cha, J., 2021). Some has shown that the managers of the company where disabled people work. According to the managers, they face difficulties with walking mobility. The semi-structured interview also took from the disabled person and asked if they were satisfied with the provided wheelchair or if they were willing to replace this with the advanced one. Some questions may be out of scope but will help generate a soothing connection between the interviewer and disabled persons.

5.1 Website Design:

This website is developed through the combination Of a different language such as Html, CSS and simple bootstrap for user interface and better user experience. This website's main page

will be the home page where walking mobility will be mentioned in the List, including their seller from various platforms like Amazon, Ebay, Walmart etc. These are all stored in the backend on the database of xampp. The purpose of this homepage is to provide disabled person information about the availability of wheelchairs. The List will be upgraded through TCP connection and SQL in the backend.

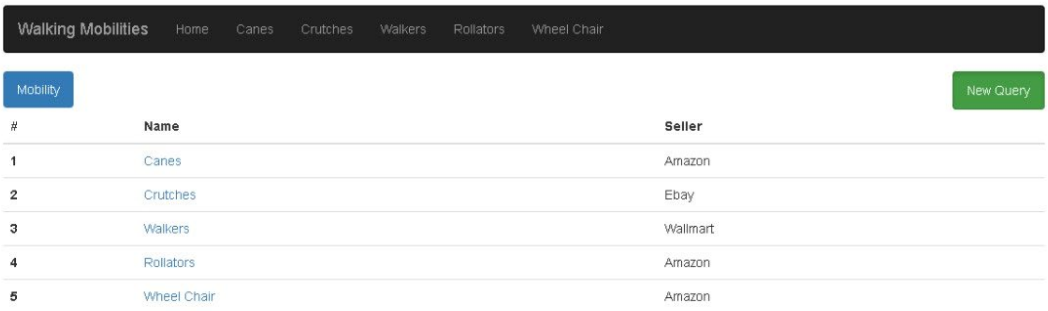

Figure 10: Home page

Another page of this website will be of wheelchairs only where a person can find them easily from their exact regions. There will be a variety of wheelchairs such as fiber, Carborn and Steel wheelchairs for disabled persons. Also, a user of the website can upload their brand's wheelchair at any time. The structure of this page is designed through Html, CSS and Node.js for better user experience and to increase the website response. At the top left of the page, the query

button is present and above this walking mobility Navigation bar.

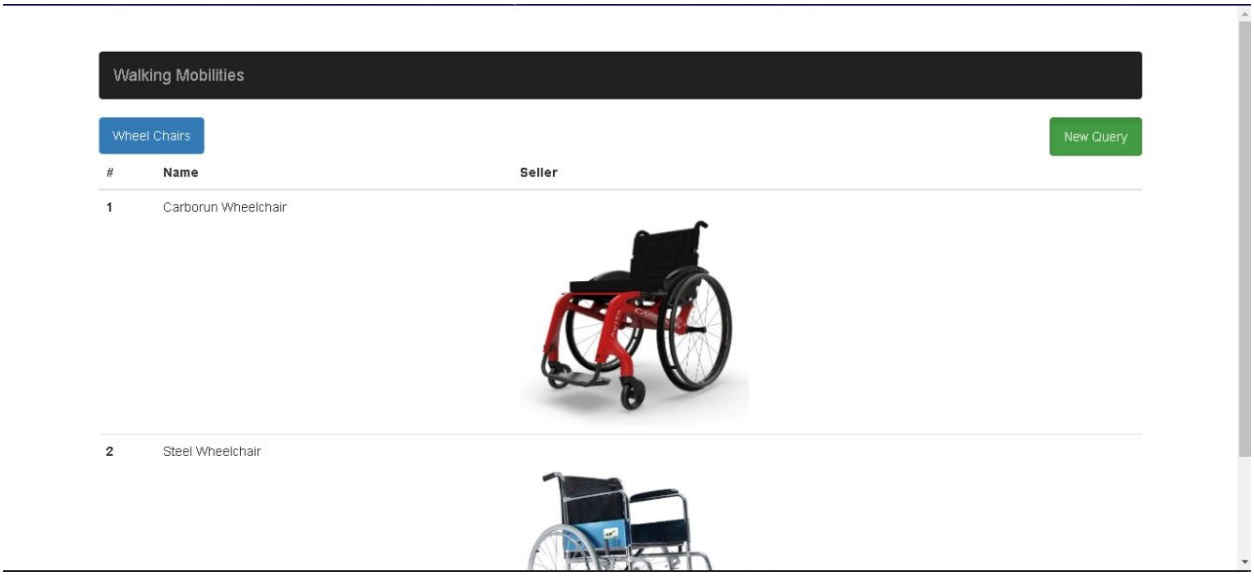

Figure 11: Wheelchair page

By clicking at the query box, a new page will appear where a person will enter their desired wheelchair descriptions if they don't find in the List. The structure of this page is also made by HTML, CSS and Bootstrap. Whenever the user enters the query, it will be submitted in the database and displayed on the main page.

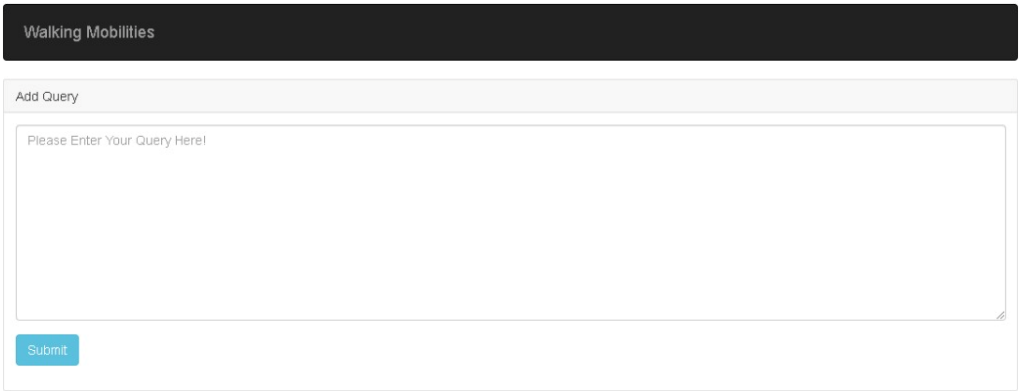

Figure 12: query page

The "Mobility "database in the Xampp has created a table with three entities: inquiries, List, and wheelchair. The xampp in the Node.js MyAdmin act as a server.

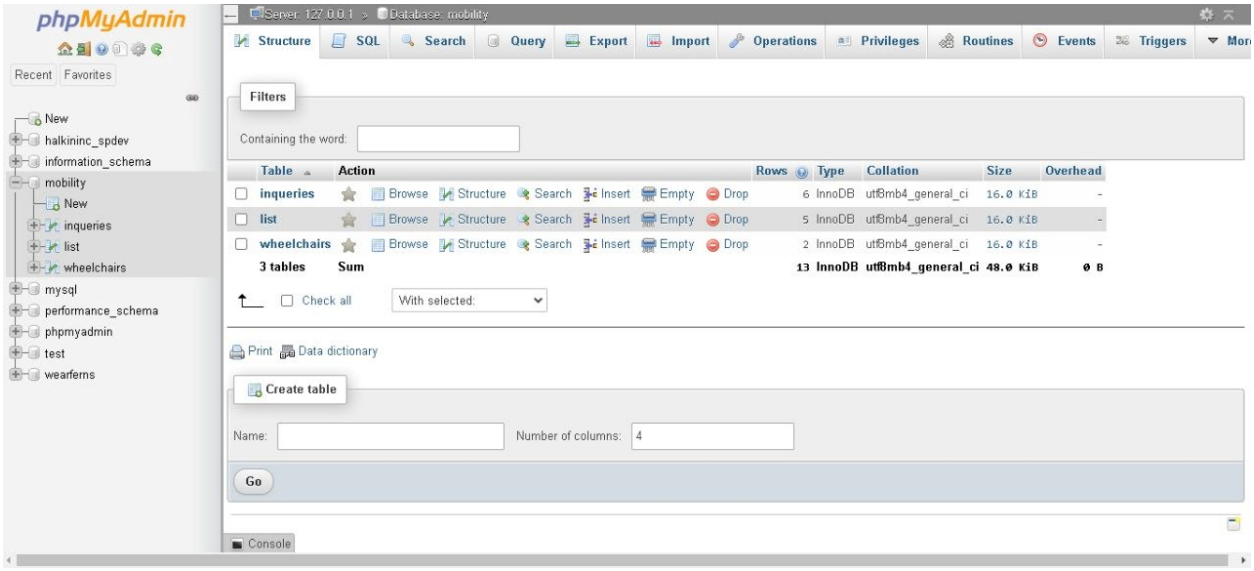

Figure 1: Main database page

All the person's queries have been entered in the inquiry table with their IDs and Inquery. This overall table will be considered an inquiry.

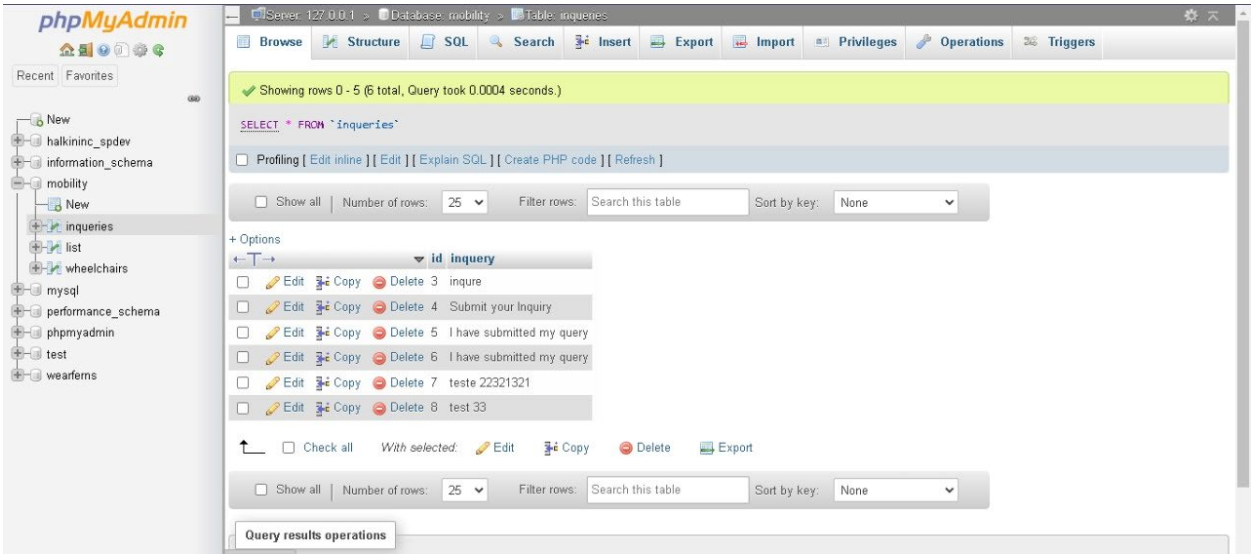

Figure 14: Inquiries table

The list table will provide the information of a seller with their id's and name. at the same time, wheelchair's item and item number is mentioned in the database table of wheelchairs.

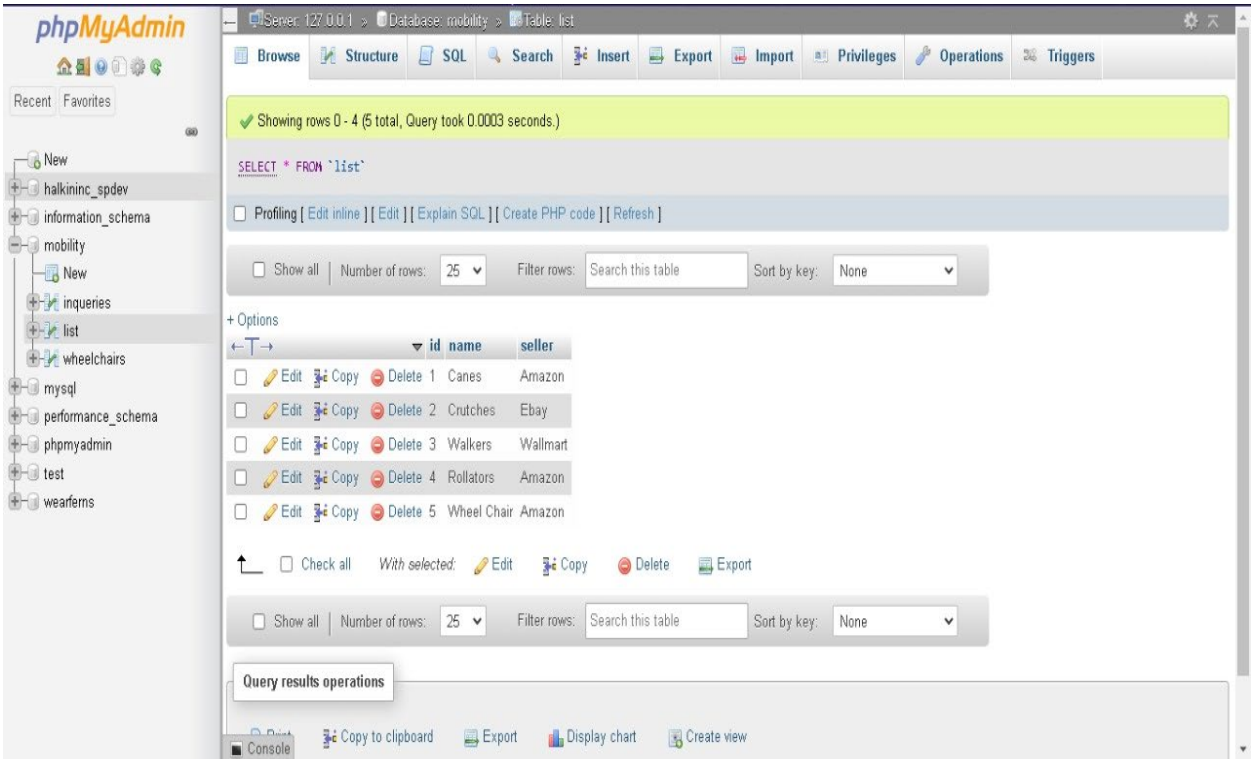

Figure 15: list table

4.3. Waterfall Charts:

The performance of a website is measured through waterfall charts. The waterfalls charts are generally diagrams describing the website resources downloaded and parsed by the engine. As previously discussed, every phase will acquire a specific time and sequence. These web charts will allow to see the progress of a website and describe the loading process.it analyses the developer to see the performance of their website, whether it is wrong or good. It shows where exactly the website is slowing down. For each phase of the waterfall methodology, several tasks correspondingly to analyse a website's overall performance. The waterfall development charts have different elements that come into existence to load a page. Some of the factors that are being used for loading the page of a website. Url, Browsers, connections, and number of test and test locations for secure networking.

Figure 16: waterfall chart

The element used in the waterfall charts have a first interactive slider, which acts as an indicator for the performance of each component. There is also Load Time Grid which shows how much time a page takes to load. The third element is the element grid or list, which is mainly HTML, CSS, PNG, JPG and GIF.

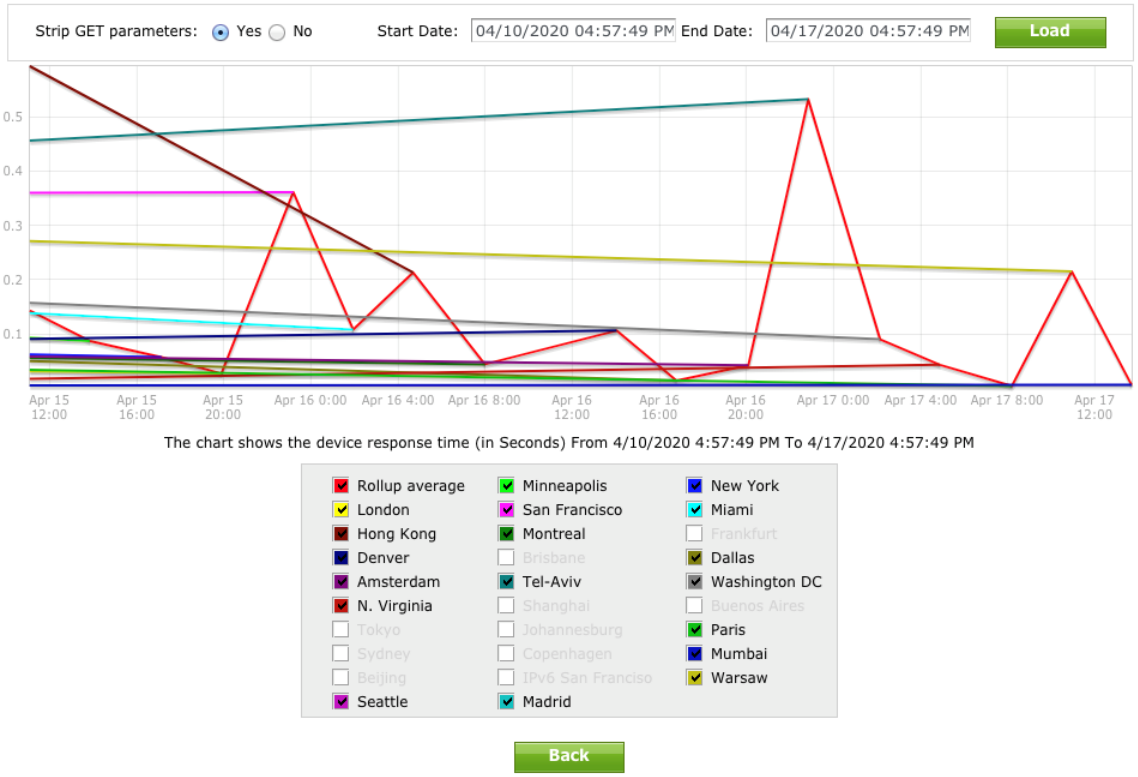

Figure 17: Waterfall graph

In the waterfall charts, the element performance is measured when the user clicks on the specific elements it could be as buttons, notes etc. shown below.

Figure 2: load time grid.

The connections through HTTP/HTTPS authentication and execution of a CSS or JavaScript and SSL connect time is an essential thing in the waterfall timeline. The servers and protocols work correspond through the XAMPP server, which provides the website a server and Local host for uploading the website on web page. However, the DNS server resolve the online issues.

4.4. Screening Questionnaires:

Bringing together two types of traditional research. The research-based investigation on the living conditions and disability studies. The disability studies will normally be a descriptive concept comprehending a wide and measurable range of diverse investigations that have brought awareness about the state of a mobility impairments as stated in the Washington Group Short Questions on Disability (WG, 2010). The second complete questionnaire will usually consist of close-ended questions designed to collect information on disability and prompt about the questions in which the mobility affected their lives (Bjørnshagen, and Ugreninov., 2021).

4.7. Ethical Consideration:

Before starting the data collection, ethical clearance was obtained from the ethics committee here in Solent University Southampton. The participants were gathered from various social media online, with the aim of protecting their data (Vitoonpanyakij, I., 2021). Only the informed Consent should participate more clearly aware the resolution of the study was to gather evidence on how walking mobility can be accessible on the web and to further build a website that will meet these needs. As a result, the Informed Consent was adjusted and deemed approved accordingly.

Another ethical consideration was to study the accessibility of walking mobility. During this research no personal data was required on the response form. This ensures the security of data protection laws were maintained (Gefen et al., 2022).

- It is evident from the above researched that disabled person had to face challenges of accessing information walking mobilities as confirmed in the Hypothesis.
- The website has been created to store query regarding walking mobilities like wheelchairs.
- As this website provide information where users can find walking mobilities online.

Chapter 5:

5.0 Discussion:

In the discussion, the chapter will define the findings and will surely compare with other literature. The different research methodology methods have included the fundamental, applied qualitative, and quantitative research methodology. This discussion is about accessing walking mobilities online (Remnant et al., 2021). The services, platforms, surveys, and data collection has been discussed in this dissertation in the findings and result chapter. The research was conducted with a specific goal in mind, allowing to learn more about the perspective of disabled people. The findings have pointed out what disabled persons view as important and the challenges, strategies and barriers faced (Burke, et al., 2021). In their places of work the problem, economy, and household Intimacy have been gathered on this research statement. The findings from this study also suggest that the participants usually use strategies influenced by the social and cultural environment they are operating within. The social and medical models of disability have been used for seeking jobs in a comfortable environment where there is little room. Issac newton's theory seems to be a wonderful illustration of this kind of investigation. The hypothesis is based upon "the falling of an apple," and this statement usually works for educational purposes. But in the research theory, we considered it as a goal for evaluating the research. The basic purpose of this research is knowledge rather than solving the problem of disabled persons. The researcher tests the hypothesis to see if there are any flaws and errors by which the theory may be fixed to strengthen (Shelton, S.S. and Waddell, T.F., 2021). The hypothesis made here might occasionally take while accessing walking mobilities. This research is carried to identify a solution to a current issue and is used to address the problems. The pandemic situation like covid 19, Malaria, and bacterial viruses have been identified for the treatment of Covid 19 to find the medication (Burke, et al., 2021).

5.2 Dialogue:

According to Hilnesik, some employee's appeals are in the demands of a person's adaptions without attempting to enter into a dialogue first. If a disabled person actively expresses their disabilities, it will be easy for them to guide against any behaviors towards them. The reaction of some employees is generally based on uncertainty. The feelings are not restricted and are insisted

on shared with an open mind about the impairments. To see how work influences them to show their impairments without hesitation. This might support them to accommodate the findings suggest that the disabled commented on the need to have a dialogue with the employer. One of the authors, Rusnes has suggested that openness about the disability can allow to a dilemma (Hortizuela, R.D., 2022.) Suppose one of the people tries to treat everyone equally. In that case, it explains the expression or impression that everyone has the same value in an organization, which can lead to a friendly environment where they would like to refrain from talking about the disability factor. But the main issue of dialogue is that there is no room for such kinds of talk about what it means to have a disability and the challenges that bring the individual to experience. Otherwise the facilities for disabilities needed to be integrated into the working environment, may sometimes making it impossible to get a good job (Visuri, S., 2021).

The study also demonstrated the inequality between people with, and without disabilities. These findings represent a step forward concerning the conditions and endorsement of human rights in favor of people with disability. This aims to provide knowledge of disabled people before and after visiting the website.

5.3. Evaluation of website and database:

The evaluation of the website and database is determined in this research noted that the relational database performance will be judged (Visuri, S., 2021). Somehow, The localization program has not to have been implemented in this thesis. The computer server implements the Relational database with the help of XAMPP. The connections were generally HTTPS which makes the environment a secure network. At the same time, it was connected to the website and run. The database works with markup languages and cascading language simultaneously as this website is working online. Therefore it doesn't require any installation of software. But this is a prototype of a website. NODE.JS saves the user's query if they don't find any desired wheelchair or other walking mobility (Akgüç et al., 2021). Else, the backend of a website will allow the developer to see the queries and developed database stored in the NODE.JS PHPMYADMIN. The query that the users wrote was automatically saved in the database. The design of the website is flexible and friendly, which doesn't rely upon one thing like providing a piece of information but in the future new things also be gathered and updates will occur such as; a new map, products enlist, contacts of the manufacturers, shipping worldwide instead of a single country (Tanatova, and Korolev ., 2021).

Moreover, the website and database work simultaneously to find the best suitable wheelchair according to the user's requirements. The user may be disabled or non-disabled. The reporters analyzed the launching of the website. The statistical data were collected on how much people are benefiting from this website and how much it is helping to give the right amount of information (Shelton. and Waddell., 2021).

The survey had been conducted on social media platforms. the finding and analysis chapter is being accommodated that number of people were not interested to be part of the survey. Another research (Morgan, C., 2021) question such as "How the selling and purchasing can be entered into a database after searching for suitable walking mobility example like a wheelchair?" This is quite direct as we considering this website does not allow for purchase but instead it allows users where they can purchase and sell appropriate wheelchairs and walking mobility. Although Walking Mobilities is a kind of web application that caters for your walking mobility needs. Whether you are looking for a vendor or want to know more about mobility (Jans et al., 2012). Walking Mobilities has you covered! With easy access to detailed product descriptions, pictures, and even customer reviews, you can be sure that you are making the best decision for your mobility needs.

5.4. Interview:

The responses recorded no personal data regarding ones identity, status, disability was requested. This means that not making any fuss might have certain implications for work and job interviews. In the previous chapter, some employers would providing accessible working environment for disabled employees (Morgan, C., 2021). This is the fact that the disabled person needs to work harder than a normal person, and simultaneously, they have to put forward their self-harder to seek a job as most companies would not even on merit give employment to disabled people (Jans et al., 2012). For example, if the person somehow embraces the strategy of not making a fuss, this may facilitate people in finding jobs.

Chapter 6:

6.0. Conclusion:

The last chapter is about concluding all analysis, findings, literature and aim, and objectives of this dissertation. The critical analysis of the assistive mobility devices that are now available in the literature emphasizes the need for the disabled person to have information on walking mobility through a website that has the capacity to hold hundreds of user-submitted inquiries. This research points out different models and strategies in the methodology chapter along with the formation of a website. The website was responsive and user-friendly, where it interacted with people all around the world. This website doesn't guarantee to provide you with good walking mobility as it is just an informational website that helps people to get suitable wheelchairs, canes, and rollators with minimum effort. Instead of adopting an evidence-based process for delivering wheelchair services, it is thought important to increase the fundamental freedoms and equitable opportunities of fitting wheelchairs for the benefit of those who are unable to move. Additionally, some administrations pledged to supply wheelchairs for their citizens. The user is provided by the assistance in the website that will help to achieve their tasks, this website aimed was to develop a strong system where only admin can access the important queries.

6.1. Limitations:

Generally, this website is a prototype that stores the query for walking mobility like a wheelchair, it could be comprised of questions and demands. This website has nothing to do with purchasing and selling it just provides the user information on how they can get their wheelchair and other walking mobility such as cane, rollators, etc. this is a simple website that people may not find user-friendly. Another limitation of this website would likely be not attractive to some people.

6.2. Future Growth:

With the advent of technology the online demands have been increasing everything related to the education, purchasing and selling are upgrated. These kinds of growth are not only can use by the disabled people but also by the people who are conscious to get the knowledge of market rate. All the outcomes gathered from the previous literature have been merged in the

advanced technology of the online structures. The growth factor of this specific research are marked up to. The main aim of the dissertation was it to design a website that will enhance access of wheelchairs and accessories for people with walking difficulties and filter all those sites which don't provide clear information of about suitable wheelchairs (Selby et al., 2021). Such kind of website has been developed but they need amendments as compared to the market demands. The growth is not related to the walking mobility only but also it is related to employment. Most of the rejections faced by disabled people are due to the organizations usually considering them as a burden and according to them they are not able to work hard like normal people. But the motivational websites or by providing the best opportunity by which they can buy wheelchairs with effective cost having high standard facilities. These things will grow the motives of the person itself and simultaneously will allow the user to do their work comfortably. With the updating of website, the users will allow to the advanced wheelchairs. The Researcher have to put their heads together for making new and advanced websites that only could not provide information but also could do some work.

References

ABUTAYEH, N. and GARCÍA-OROSA, B., 2021. Emerging services for the visually impaired in academic libraries. *Library Philosophy and Practice*, pp.1-12.

AKGÜÇ, M et al.,, 2021. Shaping return to work policy: current involvement and future potential of EU social dialogue. *REWIR Project No. VS/2019/0075, CEPS and CELSI, Brussels and Bratislava*.

ALAJARMEH, N., 2021. Evaluating the accessibility of public health websites: an exploratory cross-country study. *Universal access in the information society*, pp.1-19.

ASHFAQ, M., 2022. Review title and timescale Review title.

BARBARESCHI, G., Carew, M.T., Johnson, E.A., Kopi, N. and Holloway, C., 2021. "When They See a Wheelchair, They've Not Even Seen Me"—Factors Shaping the Experience of Disability Stigma and Discrimination in Kenya. *International Journal of Environmental Research and Public Health*, *18*(8), p.4272.

BJØRNSHAGEN, V. and UGRENINOV, E., 2021. Disability disadvantage: experimental evidence of hiring discrimination against wheelchair users. *European Sociological Review*, *37*(5), pp.818-833.

BURKE, S. L et al., 2021. Brief report: Improving employment interview self-efficacy among adults with autism and other developmental disabilities using virtual interactive training agents (ViTA). *Journal of Autism and Developmental Disorders*, *51*(2), pp.741-748.

CAMPISI, T., Ignaccolo, M., Inturri, G., Tesoriere, G. and Torrisi, V., 2021. Evaluation of walkability and mobility requirements of visually impaired people in urban spaces. *Research in Transportation Business & Management*, *40*, p.100592.

CANNATA, G., Nigro, M., Ljoka, C., Murè, M., Coluccia, G., Giordani, L., Crisalli, U. and Foti, C., 2021. Mobility scooters in Italy: the reason of a "missed revolution". A potential resource for individual mobility in the Covid-19 era needs legislation. *TeMA-Journal of Land Use, Mobility and Environment*, *14*(3), pp.343-366.

CHA, J., 2021. Micro-wheelchair: Assistive Micro-mobility Design for the People with Mild Physical Disabilities.

CHARBONNET, et al.,2021. Provision of paediatric wheelchairs in low resource settings: a scoping review. *Disability and Rehabilitation: Assistive Technology*, pp.1-19.

CHOUKOU, M.A. *et al.,* Propulsion aids for manual wheelchairs: a scoping review.

DEVI, E.S. and RAJAMOHAN, S., 2021. National institute for the empowerment of persons with intellectual disability (Divyangjan) in India training programme: A study. *Asian Journal of Management*, *12*(2), pp.157-163.

DUERK, D.P., 1980. No title. *Enabling environments: people, wheelchairs and standards,*

ERBAŞ, Ü et al., 2021. Leisure and recreation activities for disabled people. *International Journal of Disabilities Sports and Health Sciences*, *4*(1), pp.1-7.

FATTORI, L., 2022. Disability: Between Mobility and Organizational Inclusion. *puntOorg International Journal*, *7*(1), pp.22-28.

FERREIRA, A.F., Leite, A.D., de Freitas Pereira, L., de Jesus Neves, J.M., de Oliveira Pinheiro, M.G. and Chang, S.J., 2021. Wheelchair accessibility of urban rail systems: Some preliminary findings of a global overview. *IATSS Research*, *45*(3), pp.326-335.

FORTIN-BEDARD, N., de Serres-Lafontaine, A., Best, K.L., Rahn, C., Turcotte, E., Borisoff, J., Sweet, S.N., Arbour-Nicitopoulos, K.P. and Routhier, F., 2022. Experiences of Social Participation for Canadian Wheelchair Users with Spinal Cord Injury during the First Wave of the COVID-19 Pandemic. *Disabilities*, *2*(3), pp.398-414.

GALLAGHER et al., 2022. "Unknown world of wheelchairs" A mixed methods study exploring experiences of wheelchair and seating assistive technology provision for people with spinal cord injury in an Irish context. *Disability and Rehabilitation*, *44*(10), pp.1946-1958.

GARDINER, P., 2017. *Project management: A strategic planning approach.* Bloomsbury Publishing

GEFEN, N., et al., 2022. Pediatric powered mobility training: powered wheelchair versus simulator-based practice. *Assistive Technology*, pp.1-10.

GIESBRECHT, E.M., Rushton, P.W. and Dubé, E., 2022. Wheelchair service provision education in Canadian occupational therapy programs. *PloS one*, *17*(2), p.e0262165.

GIESBRECHT, E.M., Rushton, P.W. and Dubé, E., 2022. Wheelchair service provision education in Canadian occupational therapy programs. *PloS one*, *17*(2), p.e0262165.

GUDJONSDOTTIR, B. and GUDMUNDSDOTTIR, S.B., 2021. Mobility devices for children with physical disabilities: use, satisfaction and impact on participation. *Disability and Rehabilitation: Assistive Technology*, pp.1-8.

HORTIZUELA, R.D., 2022. Towards Web Equality: Efforts on Web Accessibility for Persons with Cognitive Disability. *International Journal of Research in Science & Engineering (IJRISE) ISSN: 2394-8299*, *2*(03), pp.1-16.

KARASUYAMA, M et al., 2022. Shoulder pain in wheelchair basketball athletes: A scoping review. *The Journal of Spinal Cord Medicine*, pp.1-7.

KARTAL, M.T., Ö DEPREN and S.K. DEPREN, 2021. The relationship between mobility and COVID-19 pandemic: Daily evidence from an emerging country by causality analysis. *Transportation Research Interdisciplinary Perspectives,* 10, 100366

KAUR, A., 2021. Wheelchair control for disabled patients using EMG/EOG based human machine interface: a review. *Journal of Medical Engineering & Technology*, *45*(1), pp.61-74.

KAUR, A., 2021. Wheelchair control for disabled patients using EMG/EOG based human machine interface: a review. *Journal of Medical Engineering & Technology*, *45*(1), pp.61-74.

KIRBY et al., 2021. Practices and views of wheelchair service providers regarding wheelchair skills training for clients and their caregivers: a global online survey. *Disability and Rehabilitation: Assistive Technology*, pp.1-8.

KOTHARI, C.R., 2019. *Research methodology : methods and techniques.* 4th ed. New Delhi: New Age International Publishers

KUMAR, R.M. *et al.,* 2012. Design of multipurpose wheel chair for physically challenged and elder people. *SASTech-Technical Journal of RUAS,* 11(1), 107-117

LECROSNIER, L et al., 2021. Deep learning-based object detection, localisation and tracking for smart wheelchair healthcare mobility. *International journal of environmental research and public health*, *18*(1), p.91.

LEDERER, V. *et al.,* 2014. Exploring the diversity of conceptualizations of work (dis) ability: a scoping review of published definitions. *Journal of Occupational Rehabilitation,* 24(2), 242-267

LEE, Y H., 2022. Mobility and life satisfaction among wheelchair users: A study using mobile phone data in Seoul, South Korea. *International Journal of Social Welfare*.

LESSY, Z., Kailani, N. and Jahidin, A., 2021. Barriers to employment as experienced by disabled university graduates in Yogyakarta, Indonesia. *Asian Social Work and Policy Review*, *15*(2), pp.133-144.

LIPERT, A., Wróbel, K., Spychała, M., Rasmus, P., Timler, D., Marczak, M. and Kozłowski, R., 2021. The Effectiveness of Active Rehabilitation Camp on Physical Performance of Disabled People Moving in Wheelchairs. *International Journal of Environmental Research and Public Health*, *18*(14), p.7572.

MARTINS, M.M. *et al.,* 2012. Assistive mobility devices focusing on Smart Walkers: Classification and review. *Robotics and Autonomous Systems,* 60(4), 548-562

MASHOLA, M.K., Korkie, E. and Mothabeng, D.J., 2022. The presence of pain in community-dwelling South African manual wheelchair users with spinal cord injury. *The South African Journal of Physiotherapy*, *78*(1).

MASON, L.,et al., 2022, April. Including the Experiences of Physically Disabled Players in Mainstream Guidelines for Movement-Based Games. In *CHI Conference on Human Factors in Computing Systems* (pp. 1-15).

MORGAN, C., 2021. The experiences of disabled people in the United Arab Emirates: Barriers to participation in higher education and employment. *Disability & Society*, pp.1-24.

NURKHOLIS, A. and ANGGELA, Y., 2022. Web-Based Geographic Information System For Lampung Gift Store. *Jurnal Teknoinfo*, *16*(1), pp.34-39.

PALUMBO, A., Gramigna, V., Calabrese, B. and Ielpo, N., 2021. Motor-imagery EEG-based BCIs in wheelchair movement and control: A systematic literature review. *Sensors*, *21*(18), p.6285.

PLANNING, G.T., MOBILITY AND TRANSPORT FOR ELDERLY AND HANDICAPPED PERSONS.

RAI, R., Singh, S.P. and Mohapatra, B., 2021. Smart wheelchair with fall detection provision: a telemedicine application. In *Smart Computing* (pp. 27-33). CRC Press.

RAMADHANI et al., 2022. Understanding Home Activity Challenges of Older Adults Aging with Long-Term Mobility Disabilities: Recommendations for Home Environment Design. *Journal of Aging and Environment*, pp.1-23.

REMILLARD et al., 2022. Transportation challenges for persons aging with mobility disability: Qualitative insights and policy implications. *Disability and health journal*, *15*(1), p.101209.

REMNANT, D. *et al.,* 2020. Gradual-onset surfing-related injuries in New Zealand: A cross-sectional study. *Journal of science and medicine in sport,* 23(11), 1049-1054

REMNANT, et al., , 2022. Disability inclusive employment in urban Malawi: A multi-perspective interview study. *Journal of International Development*.

RUM, L., et al., 2021. Wearable sensors in sports for persons with disability: a systematic review. *Sensors*, *21*(5), p.1858.

SANG, K., T. CALVARD and J. REMNANT, 2022. Disability and academic careers: using the social relational model to reveal the role of human resource management practices in creating disability. *Work, Employment and Society,* 36(4), 722-740

SANTINELE Martino, A. and Moumos, E., 2022. Dating in the Digital Age: A Content Analysis of Dating Websites Designed for Disabled People. *Sexuality and Disability*, pp.1-10.

SELBY, A et al., 2021. Policy Aims What is the purpose of the policy/function/strategy? What are its intended outcomes? The intended outcome is: To make changes to the recycling service to allow collections to be delivered in a way which are legally compliant, provide value for. *Policy*.

SERIANI, 2021. The impact of gap dimensions on passengers boarding and alighting using different mobility aids at railway stations by laboratory experiments. *International Journal of Rail Transportation*, *9*(2), pp.186-202.

SHELTON, S.S. and Waddell, T.F., 2021. Does 'Inspiration Porn'Inspire? How Disability and Challenge Impact Attitudinal Evaluations of Advertising. *Journal of Current Issues & Research in Advertising*, *42*(3), pp.258-276.

SHELTON, S.S. and Waddell, T.F., 2021. Does 'Inspiration Porn'Inspire? How Disability and Challenge Impact Attitudinal Evaluations of Advertising. *Journal of Current Issues & Research in Advertising*, *42*(3), pp.258-276.

SILVEIRA, S.L., Jeng, B., Cutter, G. and Motl, R.W., 2021. Diet quality assessment in wheelchair users with multiple sclerosis. *Nutrients*, *13*(12), p.4352.

SIMPSON, et al., 2021. Semi-structured interviews on disaster and emergency preparedness for people with disabilities in two states in Mexico. *Natural hazards*, *106*(1), pp.1037-1064.

SOORI, P.K., Abraham, K.M. and Osman, M.A.M.A.I., 2021. Smart and Sustainable Shopping Cart for the Physically Challenged. In *Intelligent Manufacturing and Energy Sustainability* (pp. 195-206). Springer, Singapore.

STROMQUIST, M.O., 2022. Developments in Website and App Accessibility Litigation and Compliance Under the Americans. *The Business Lawyer*, *77*.

TANATOVA, D.K. AND KOROLEV, I.V., 2021. Employment of the disabled: economic feasibility or social effect. In *Socio-economic Systems: Paradigms for the Future* (pp. 1147-1153). Springer, Cham.

TROJANOWSKA, J. and E. DOSTATNI, 2017. Application of the theory of constraints for project management. *Management and production engineering review,* 8

VISPUTE, S.B., 2021. The problems of differently-abled persons in india and remedies for the empowerment of their rights.

VISURI, S., 2021. Development of a city website: An analysis of users' perceptions.

VITOONPANYAKIJ, I., 2021. Guidelines for Designing Wheelchair-Accessible Houses for People with Disabilities. *Naresuan University Journal: Science and Technology (NUJST)*, *30*(2), pp.24-37.

YATES, S. and A. ROULSTONE, 2013. Social policy and transitions to training and work for disabled young people in the United Kingdom: neo-liberalism for better and for worse? *Disability & Society,* 28(4), 456-470

Appendix 1:

Copy of the google form Questionnaire used in social media

Website questionnaire

DESIGNING WEBSITE for WHEELCHAIRS ACCESSIBLE FOR DISABLE PEOPLE.

john2frances@gmail.com (not shared) Switch account

* Required

By filling this form you are giving your consent to be part of this survey *

- ◯ Yes, I will continue
- ◯ No, I exit

Do you know someone that uses or needs a wheelchair?

- ◯ Yes
- ◯ No

Where would you normally get the wheelchair from?

- ◯ Physical shop
- ◯ Online

Have you or someone you know had an emergency/need for a wheelchair?

- ◯ Yes
- ◯ No

If yes, On a scale of 1, 2, 3. How was the wheelchair need resolved?

- ☐ 1 = Delayed but resolved
- ☐ 2 = Quickly resolved
- ☐ 3 = Not resolved

Q15156851

- [ ] 1 = Delayed but resolved
- [ ] 2 = Quickly resolved
- [ ] 3 = Not resolved

Do you know a website to buy/rent wheelchairs?

- ◯ Yes
- ◯ No

If yes, where you able to find what you needed on the website?

- ◯ Yes
- ◯ No

How satisfied where you, after using the website(s)?

- ◯ Not satisfied
- ◯ Satisfied
- ◯ Very satisfied

How many website for wheelchair manufacturers or wheelchair assembling/repairs shops do you Know?

- [ ] None
- [ ] One or Two
- [ ] Three or More than Three

Submit Page 1 of 1 Clear form

This content is neither created nor endorsed by Google. Report Abuse - Terms of Service - Privacy Policy

Google Forms

Q15156851

Appendix 2

Ethics committee approval ethical form.

Actions

Ethics projects

Please read the FAQ on the guidance page **before** making an application. This page also includes sample participant consent forms, information sheets and other resources.

Get Help

Ethics Guidance Page

Projects

Create new project

Displaying 2 record(s).

ID	Investigator	Project name	Status	Last updated	Option	Download
26530	Francis Ayodele Johnny	DESIGN A WEBSITE FOR MOBILITY ACCESSORIES FOR PEOPLE WITH WALKING DIFFICULTY.	Approved	29/06/22 14:52	Edit	Download as PDF
26515	Francis Ayodele Johnny	DESIGN A WEBSITE FOR MOBILITY ACCESSORIES FOR PEOPLE WITH WALKING DIFFICULTY.	Awaiting supervisor review	24/06/22 12:34	Edit	Download as PDF

Ethics release checklist (ERC)

Project details

Project name:

Principal investigator:

School of Media Arts and Technology

School:

Postgraduate

Level:

Course: Computer En

MAA103

Unit code:

Supervisor name:

Other investigators:
Checklist

Question	Yes	No
Q1. Will the project involve human participants other than the investigator(s)?		
Q1a. Will the project involve **vulnerable participants** such as children, young people, disabled people, the elderly, people with declared mental health issues, prisoners, people in health or social care settings, addicts, or those with learning difficulties or cognitive impairment either contacted directly or via a **gatekeeper** (for example a professional who runs an organization through which participants are accessed; a service provider; a caregiver; a relative or a guardian)?		
Will the project involve the use of **control groups** or the **use of deception**?		
Q1c. Will the project involve any **risk to the participants'** **health** (e.g. intrusive intervention such as the administration of drugs or other substances, or vigorous physical exercise), or involve psychological stress, anxiety, humiliation, physical pain, or discomfort to the investigator(s) and/or the participants?		
Q1d. Will the project involve **financial inducement** offered to Are participants other than reasonable expenses and compensation for time?		
Q1e. Will the project be carried out by individuals unconnected with the University but who wishes to use staff and/or students of the University as participants?		

Q15156851

Q1b.

Q2. Will the project involve sensitive materials or topics that might be considered offensive, distressing, politically or socially sensitive, deeply personal, or in breach of the law (for example criminal activities, sexual behavior, ethnic status, personal appearance, the experience of violence, addiction, religion, or financial circumstances)?

Q3. Will the project have a detrimental impact on the environment, habitat, or species?

Q4. Will the project involve living animal subjects?

Q5. Will the project involve the development for export of 'controlled' goods regulated by the Export Control Organisation (ECO)? (This specifically means military goods, so-called dual-use goods (which are civilian goods but with a potential military use or application), products used for torture and repression, and radioactive sources.) Further information from the Export Control Organisation

Q6. Does your research involve: the storage of records on a computer, electronic transmissions, or visits to websites, which are associated with terrorist or extreme groups or other security sensitive material? Further information from the Information Commissioners Office

Declarations

I/we, the investigator(s), confirm that:

☑ The information contained in this checklist is correct.

☑ I/we have assessed the ethical considerations in relation to the project in line with the University Ethics Policy.

☑ I/we understand that the ethical considerations of the project will need to be re-assessed if there are any changes to it.

☑ I/we will endeavor to preserve the reputation of the University and protect the health and safety of all those involved when conducting this research/enterprise project.

☑

Q15156851

If personal data is to be collected as part of my project, I confirm that my project and I, as Principal Investigator, will adhere to the Data Protection Act (DPA) 1998. I also confirm that I will seek advice on the DPA, as necessary, by referring to the Information Commissioner's Office further guidance on DPA and/or by contacting freedom.information@solent.ac.uk. By Personal data, I understand any data that I will collect as part of my project that can identify an individual, whether in personal or family life, business or profession.

☑ I/we have read the prevent agenda.