E-commerce model for Visually Impaired Entrepreneurs

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Abstract: According to WHO there are around 280 million people who are visually impaired and out of them 246 million are low vision people and 82% are all blind as well as most of them are women. These people getting help from someone else for their each and every purposes. When turn into their entrepreneruship they have to go for customers to sell their products with the help of someone. Sometime they face lot of adversities when they met customers. Most of customers compassion on the their career because of their disability. According to above facts, there are no any specific system which can be used to sell their products and communicate with customers directly in online platform. To accomplish this task researcher developed E-commerce system for visually impaired entrepreneurs,as android and web application using android studio, angular and firebase. This system provides an online way of solving the problems faced by entrepreneurs who are with the visual difficulties by saving their time, communication cost other difficulties and satisfaction. So, system which helps visually impaired persons to sell their products by using automated speech recognition module, with deep learning method, through that written words were translated in to spoken words.Entrepreneurship development for visually impaired person system make employees to sell their products and easier to coordinate, monitor, track and resolve customer problems and other with an effective tool. Although system mainly consist with three sections such as Visual impaired person , Customer and the Coordinate assistant and system provide login, registration, complaint & comment and etc.

Keywords: Entrepreneurship, visually impaired, automated speech

Introduction

According to(Halvorsen and Morrow-Howell, 2017)WHO there are around 280 million people are visually impaired people and out of them 36 million are colour blind. So, these people are taking help from family member or friends each and every their needs. It is very difficult for these people to when they are doing self entrepreneurship. As well as they must go for the customers to sell their products and collect their payments. Researcher developed a system to assist visually impaired entrepreneurs to sell their products and maintain appropriate communication with customers by reducing entrepreneur's time, communication cost etc. And proposed a feature to assist colour blind people to working in that system. Mainly this system contains one database with several tables such as categorized products, employees, customers etc. According to the current situation they use screen-readers for their pc' s and google talk back and voice over for their phones. It provides text-to-speech information of folders, icons menus, dialog boxes and more. When apply another audio system for them is difficult to identify. So according to E-commerce system for visually impaired entrepreneur system developed online platform which is support with the keyboard. Because they mainly use keyboard for the navigate and scroll pages and there is

featured to describe button and images which is in the system.

E-commerce system for visually impaired entrepreneur system consist two separate web and android application ,one of most significant and many useful projects which developed system as well as encourage and assist customer sector and entrepreneurs can suggest possible solutions to the posted problems. The aim of this project is to develop an online entrepreneurship development for visually impaired entrepreneurs to sell their products as well as increasing their living standard who are neglected in the society by providing economic benefit to the country. Following shows the objectives,

•Planning the project in detail.

•Identify features of visually impaired e-commerce system.

•Design & Develop system with identify features.

•Review appropriate technologies and audio availability.

•Conduct testing,evaluation and improve the system to meet all requirements identified.

Literature Review

Out of previous work related to Entrepreneurship with disable people paper done by c(Vaziri, D., Schreiber, D., Wieching, R. and Wulf, 2014)onsider technologies with individual person perspective, an information society perspective and business organizational perspective. So according to that paper technology supports an individual to efficiently manage all three perspectives to become self-employed. . And, Vaziri, D., Schreiber, D., Wieching, R. and Wulf. V illustrate that the current IT-accessibility is insufficient and thereby does not support the inclusion of people with disabilities. And people who with disability they use technologies in different ways such as blind people can use brail keyboards or touch screens to scan digital screens. Mainly in this paper highlight key points regarding barriers for disable people in self-employment, such as business resources, general conditions, organizational structures and customer relationship.

(Raja, 2016)Deepti Saman Raja proposed way to understand opportunities presented by the internet and ICT for the full participation of person with disabilities. This paper reviews the main challenges to the realization of ICT-enabled inclusive development and presents cost-beneficial policy and practice recommendations for governments and development practitioners. And, that paper provide an important opportunity to break the traditional barriers of communication and interaction that persons with disabilities face and which hinder their full participation in society. A recent survey of 150 experts from over 55 countries ranked websites and mobile devices and services as the technologies that can contribute the most to the social and economic inclusion of persons with disabilities.

(Hussain et al., 2016) Sarwat Iqbal, Adnan Nadeem and Muhammad Sarim have done research on , this paper proposed a model based on the Nonaka Knowledge Spiral model to support business managers to capture knowledge about disabled person's online shopping behaviours supplement this knowledge into their website to support disabled persons. This also helps business managers to capture the un-attended population in their business net. Under that paper they mainly consider,

1)Disability, e-commerce and knowledge management:

(Alaedini, 2004)They have identified disabled persons face barriers in accessing services due to physical infrastructure and non-adoption of specialized ways proposed for them. Disabled and elder persons face

problems in shopping, and they need an environment that helps them to enable in carrying out shopping. Physical infrastructure of shopping store, proper signage, guiding ways, and cooperative sales persons are important factors that create the environment of shopping store. An enabled environment is the accessible environment that enables persons with disability to experience the shopping easily. E-retailing (online shopping) has emerged as an enabled environment for most of disabled and elder persons. They can browse the items, compare prices online with other e-retailers, pay online and enjoy home delivery option with little or no cost. They feel full control in making decisions and perform shopping related task full control thus shopping becomes a joyful experience for them.

(Chandra, 2018)U. S. S. Perera and D. N. Balasuriya mainly research on currency note recognizer which are used by the visual impaired persons. According to Sri Lanka until today they use traditional techniques for financial transactions. Only one feature available for visually impaired people to identify the denomination of various banknotes which is a series of embossed dots, which can be sensed by touch. In Sri Lanka, one currency note recognition device has been designed and implemented as a final year undergraduate project and this system employs a light dependent resister array located at various points over the bank note's area.

(Sohaib and Kang, 2017)Osama Sohaib and Kyeong Kang they proposed an e-commerce website is the central way an e-retailer communicates with their online consumers, and online shopping websites need to be accessible to all consumers of all ages, including those with disabilities. The inability to shop online because of such interfaces increases web inaccessibility of e-commerce websites for people with disabilities.

(Mohadikar and Nawkhare, 2017) Kunal Mohadikar and Rahul Nawkhare they developed to assist visual impaired persons that automatically recognizing clothing patterns and colours. It is camera- based clothing pattern recognition is a problematic due to many clothing patterns and corresponding large intra class variations. And, according to existing texture analysis methods focus on textures with variations in viewpoint and scaling and level of accuracy in clothing pattern recognition cannot achieve by texture analysis methods. Here they introduce a system a system to assist colour blind people to select different clothing colours along with different categories.Prevoius work is shown in table 1.

A.Summary

Here is the summary of the previous works. According to that most are web applications. When considering the following table can identify main drawback as language difficulty in screen reader. So proposed system will reduce this drawback. It will discuss in methodology chapter .

B.Questionnaire

Used questioner to identify what are the factors more effective for Entrepreneurship development for visual impaired entrepreneurs' problem. Have made a questionnaire distributed to 20 responds and collect the views and get the average calculation of the parameters. According to that take all the literature reviews and questionnaire have gathered what is the weight of that factors and how those factors influence to my case and in the above table it describes the final output of sample survey. It consists with 8 questions and percentage weight of each output. 90.5% responds response for first question. It is the main turning point for develop the system. This technique not based on the modern googled form mode questionnaire, because these special need community can not access the

google form mode. They only can access document-based things. So according to situation used word document to gather requirements. In questionnaires developer concern to avoid asking lengthy questions and it generally focused on close ended questions. Following table shows the summary of questionnaire,

Table 2. Questionnaire Evaluation

Factor	Questionnaire weight	Answers weight	Final weight
Does disability is disturbance for doing entrepreneurship?	Yes	77.8%	
	No	11.1%	
	It depends on the attitude	10%	77.8%
How is acceptance from the market?	Good	66.7%	
			66.7%
	Bad	33.3%	
Do you have good relationship with customers when communicate with them?		66.7%	
	Yes		
	No	33.7%	66.7%
Can solve those problems using technology?	Yes	66.7%	
	No	11.1%	
	Other	22.2%	66.7%
What is the preferred way for visually impaired entrepreneurs to use this system?	Screen reader	66.7%	
	Brail system	11.1%	66.7%
	Touch screen	10%	
	Other		
Have face difficulties with screen reader?	Yes	75%	
	No	12.5%	85%

	Language difficulties	85%	
Is proposed system useful for visually impaired entrepreneurs to sell their products?	Yes	90.5%	
	No	22.2%	
	Other	5%	90.5%
Do you have problems regarding payments?	Yes	75%	
	No	25%	75%

Methodology

A. System Overview

Proposed system was e commerce based online platform for visually impaired entrepreneurs to sell their products using speech recognition. System is the one of the most significant and many useful projects in which proposed system the entrepreneurs should not go for the customers to sell their products and users can get their problems solved through the system. The main aim of this objective based application is to enable the handicapped specially visually impaired persons to access the ecommerce-based platform which are most widely used for online selling of items or products nowadays. So, proposed system will develop an ecommerce based application using speech recognition to eliminates or reduces the various practical difficulties that the visually impaired persons come across. In ECSFE using speech recognition for login registration and other rest parts of the system and keyboard provide an extra advantage to visually impaired entrepreneur and allows them to use the application with more flexibility.

In proposed system provides facilities as follows,

•Registration is provided for both customers and employees. Mainly visually impaired persons navigate through system by using the audio technology.

• Complete information of employees with their name, product name, price, phone number, mail (if them have) and address.

• Products are categorized according to different sections. (ex-foods, clothes).

• Users can post comments and complaints.

• Users can request products from employees according to their choice.

• Users can request transport if they want (provide online location of employees).

• Employees Have facility to communicate with bank consultant regarding payment issues.

• Flexibility in the system according changing environment.

• Controlling redundancy in posting the same data multiple times.

• Provide orders with the constraint time.

• Notification will send to the employees when they have orders, messages, comments and other.

• Training feature available for new entrepreneurs to learn how to become self-entrepreneur.

Design

This section will give an inclusive idea about how the proposed system will be developed using analyzed client`s requirements. This section is mainly focused on requirements techniques and requirement analysis which includes a brief idea of the visual impaired entrepreneur's self entrepreneurship. And also about the existing manual process, available systems for entrepreneurship in Sri Lanka, gathered requirements, the techniques that were used to gather relevant information and how analyzed in different viewpoints such as functional, nonfunctional, usability requirements as well as technical requirements.The section elaborates how the gathered requirements will be applied and how the existing problem will be solved

with the use of newest technologies available in the proposed E-commerce system for visually impaired persons. This document is describing about all the modules to be developed in the proposed system.

Visually impaired entrepreneurs used this system to sell their products as well as through that they can communicate with customers directly. They can used web or android application to log or register to system independently by using the audio technology and each information will inform by using notification to employees, when they receive order as well as customers want to chat with them it will inform by using that notification using audio technology. And, they can contact responsible agent(admin) for their task. Then agent will do the requested task for that entrepreneur. And updated all related tasks in the system and failures. and inform entrepreneur regarding complains, comments, orders and other. Entrepreneurs are responsible to provide requested products according to the rules. And, response to the customer complains according to the rules and analysis actions and causes to get results. After that, come up with a satisfying solution for the complainer problem. If this solution is satisfactory for then the statement of the complaint is closed. So, entrepreneurship development system is needed to improve these workflows. Here is the diagram which shows how the system will work,shown in figure 2.

A. System architecture

Presentation layer – The presentation layer is where the user accesses the application. The interaction of the user with the system occurs at the very moment the user gets the access to the application. This layer holds the interfaces which satisfy the requirements of each user type. As shown above in the figure, there are different user levels in system. The user levels in the system are Visual impaired entrepreneur, customer and coordinate assistant. The presentation layer provides

access to the relevant user interfaces according to their authorization.

Business logic layer – There are two main applications in proposed system's business layer. They are the web application and android application. it contains the core of the system. Both application for both sides and web application mainly maintain and operate by coordinate assistant. And other main thing is with the support of API Web application and Android application connect in this layer to the Database layer. API is the most valuable part in proposed system because two application different languages connect with the API .

Data access layer – This layer is responsible for managing the database requirements of the system. Database layer constitutes database components as firebase database. firebase database will store the data which inserts to the system by the two main applications after the manipulation of the business layer.
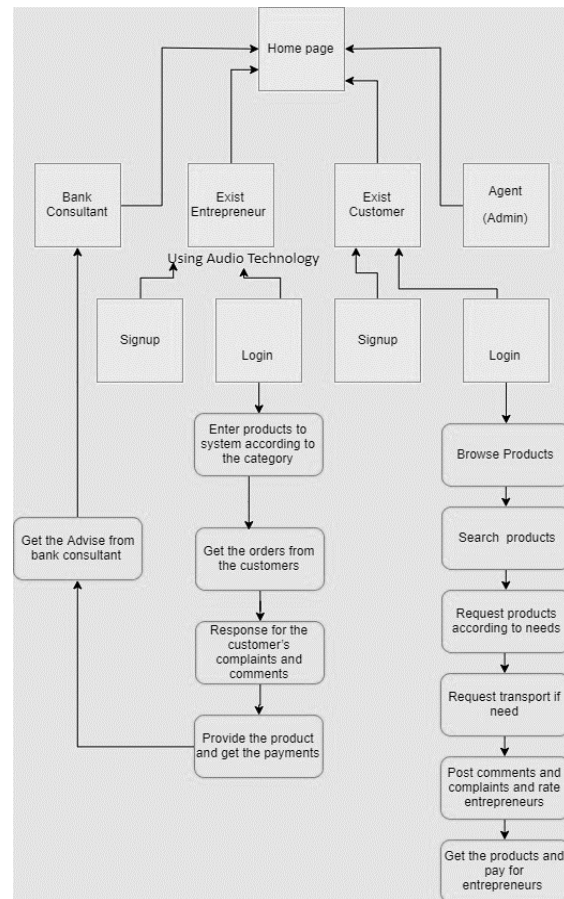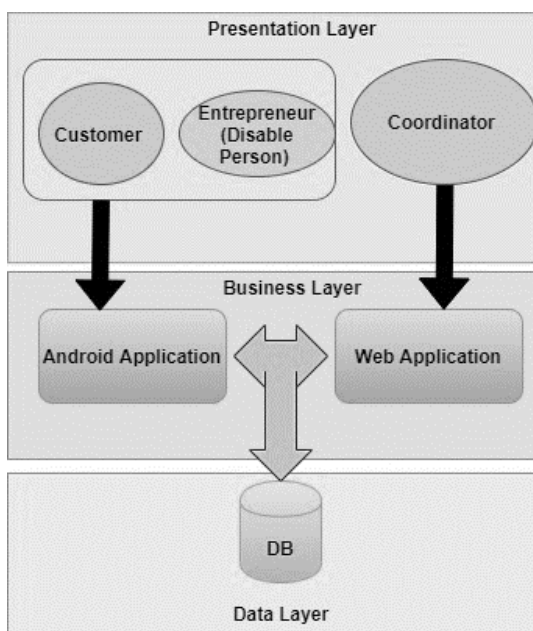

Figure 3 System Process Module

Figure 4: System architecture

Conclusion and Limitations

The researcher has highlighted what are the existing system, failures in existing situation and how is the new system, how the system works, who are the main users, services and how they can deal with the proposed system. And, this paper gives an overview of the system architecture and implementation of the E-commerce system of visual impaired entrepreneur system as android and web based. Entrepreneur is the valuable resource in the organization they mainly inspire successful social development through of those entrepreneurs visually impaired resource is special and important to provide great service and product to customers. To meet the new challenges and requirements of the market, the business owners need to think and make better decisions. Develop a system for visual impaired persons to sell their products online. The system accept speech convert it into text format and display

the desire result. This will help visually impaired person to lead an independent life. According to this research typical deep learning algorithms have been implemented for speech recognition, Global, local feature are used for identification and multilevel clustering is used to increase the accuracy of system.

This study has limitations online accessibility evaluation tools and expert evaluation may report diverse web accessibility errors. And there is language difficulty with language and screen reader. And also visually impaired persons can't' access dynamic web pages. Further enhancements are suggested to Provide a skip links option to let a user skip repetitive content and Design for device independence. As well as Use simple language on your website, and specify the language used. Suggest thinking about toning down the flashiness of your site in terms of graphics, as well as opting for a simplified and minimalist design.

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Acknowledgment

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