INFORMATION SEEKING BEHAVIOUR OF VISUALLY IMPAIRED STUDENTS

The Case of University of Dar es Salaam

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By

Dotto Andrea Kabogolo

A Dissertation Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Arts (Information Studies) of the University of Dar es Salaam

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Dar es Salaam a dissertation titled: ***Information Seeking Behaviour of Visually Impaired Students: The Case of University of Dar es Salaam,*** in partial fulfilment of the requirements for the degree of Master of Arts in Information Studies of the University of Dar es Salaam.

…….

Dr. Faraja Ndumbaro

(Supervisor)

Date……..……

DECLARATION
AND
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I, **Dotto Andrea Kabogolo,** assert that this dissertation is my original work and that it has not been submitted and will not be submitted to any other University for a similar or any other degree award.

Signature…..……

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DEDICATION

I dedicate this dissertation to my lovely children; Danford, Dickson and Christabel, Kabogolo without forgetting my wife Grace G. Ruvugo for their tolerance and persistence at all time when I was out of the four walls of our lovely home.

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LIST OF ABBREVIATIONS AND ACRONYMS

CCTV	Closed Circuit Television
ICT	Information and Communication Technology
IRA	Institute of Resources Assessment
ISB	Information Seeking Behaviour
MAIS	Master of Arts in Information Studies
OCR	Optical Character Recognition
SOED	School of Education
TLB	Tanzania League of the Blind
UDSM	University of Dar es Salaam
UNESCO	United Nations Educational, Scientific and Cultural Organization
URT	United Republic of Tanzania
VIS	Visually Impaired Students
WHO	World Health Organization

ABSTRACT

This study examines the information-seeking behaviour of visually impaired students (VIS) at the University of Dar es Salaam (UDSM). The study was guided by the following specific objectives: determining information needs of VIS at UDSM; examining whether information sources used by visually impaired students meet their academic-related information needs and to find out challenges faced by VIS when seeking information. The study employed a qualitative research approach. Census sampling technique was used to obtain twenty-five VIS to participate in the study. Data were collected through semi-structured interviews, observations and documentary reviews. Data were analysed using thematic data analysis method. With regards to information needs of VIS the study found out that information on how to cope with modern technology in learning and how to move independently are the most dominant categories of information needed by VIS at UDSM. In case whether information sources available meet VIS academic-related needs, results shows that VIS depends much on students' group discussions. Information sources like books, e-resources and journals are less supportive for visually impaired students at UDSM to the extent that most of them. The following were the challenges faced by VIS when seeking information: time constraint, lack of modern and up to date facilities and less supportive infrastructures which impede their mobility. From the findings, it is concluded that visually impaired students' information-seeking behaviours vary from one student to another due to differences in their sight disabilities. The study recommended the following: Special Education Unit at SOED must have enough computers with advanced technology for VIS to access information easily. There should be adequate resources such as the materials and facilities, the unit must repack information sources to a format conducive to VIS; Lecturers have to give proper attention to offer them proper attention in lecturing process.

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CHAPTER ONE
INTRODUCTION

1.1 Introduction

This chapter presents an introduction about the status of Information seeking behaviour of Visually Impaired Students in Tanzania higher learning institutions while the University of Dar es Salaam was taken as case study. A chapter underpinned to the background to the problem of Information Seeking behaviours of VIS by determining information needs of students with visual impairment, also examined whether the information sources used by visually impaired students meet their academic-related information needs and to find out challenges faced by visually impaired students when seeking information. Other areas covered include; the statement of the problem, objectives of the study, significant of the study, definitions of key terms, scope limitations of the study and structure of the dissertation.

Information is indispensable to all persons regardless of whether they are young or old or have some physical disability. Every person has to receive the proper exact information at the exact time and in the right format. Bagandanshwa (2006) revealed that all human beings have rights to receive information, despite their disabilities. Bagandanshwa (2006) as cited in Majinge and Stilwell (2013:p.1) insisted that "information is power because it is the source of knowledge and facts". Likewise, UNESCO (2006) states that equal right to information entails that the requirements of each person is of equal significance and that those needs must be the basis for planning. UNESCO (2006) infers that all potential resources have to be used to make sure that every person benefits from equal opportunities for sharing including visually impaired students.

1.2 Background to the Problem

Globally the history of the visually impaired group in education field started in 17th Century (Miller, 2015). The first college for the blind founded in London in 1872 as the Royal National College of the Blind (RNCB). Although universities were not fully equipped with enough information sources and resources but they started to show the direction in recognising and pay concern to VIS. Before long, the same

schools were also established in England and throughout Europe (Nordstrom, 1986). This made educational turning point to the visual impaired people in the world.

In 2012 the number of people with a visual impairment problem in the world was about 285 million; 39 million blind and 246 million with low vision (WHO, 2012). It was predicted that 19 million children will have visual impairments (WHO, 2012). There are great differences between developed and developing countries, it is approximated that 90% of the world's visually disabled people live in third world countries and the majority are African countries. The most recent global statistics show that the number of people with visual impairment increased to 2.2 billion WHO (2019). This is a large number that needs much attention in different sectors including academic-related information needs and seeking behaviour to VIS. In African perspective, visual impairment is a major health problem, which around 80% of the entire population found in the African Region and the causes of vision impairment vary considerably from one area to another. For instance, WHO, (2019: para.11) stated that "In the third World countries congenital cataract is a leading cause, whereas in high-income countries it is more likely to be retinopathy of prematurity"

The lack of suitable and sufficient condition and consideration for visually impaired students at primary and secondary schools has a reflective effect on the number of visual impaired students who step forward to access higher education in many African countries (Seyama, 2010). Also, teaching and learning environment become a great challenge to students with visual impairment that hamper their information-seeking. This is just one factor among many that have historically limited access by students with visual impairment to higher education in Tanzania (Howell 2006).

According to the United Republic of Tanzania (URT, 2007), by 2006, there were 1281 pupils with visual impairments in primary schools, 74l of whom were males and 540 were females. Numbers of visually impaired students who are admitted to Tanzania universities are also so minimal while in some universities none is admitted. For instance, in 2016/17 intake, Mzumbe University main campus admitted 2772 students while Mbeya campus admitted 975 students. Among all 3747 students,

there was no visually impaired student who was admitted (Mzumbe facts and figures, 2017). But the University of Dar es Salaam is the only Government University that at least admits VIS, for instance in 2017 the University had only 25 VIS for undergraduate programs while in three years from 2014/15 up to 2016/17 a total of 67, 980 students were admitted (UDSM Annual Report, 2018).

Therefore a researcher thought that, UDSM is fully equipped with all necessary sources of information and equipment to support information seeking behaviour of visually impaired students to manage their studies in the University.

Studies have been undertaken on library services' provision for people with visual impairments and in wheelchairs in academic libraries (Majinge, 2014) and on problems faced by disabled students in general (Crous, 2004). Howell &Lazarus, (2003) examined the challenges experienced by VIS on identification and access to academic materials and limited human supports as among the major constraints to equitable participation in the academic programme of the universities. This study focused on visually impaired students' information-seeking behaviour in relation and response to academic-related information at UDSM to overcome such significant hurdles.

1.3 Statement of the Research Problem

Being aware of information seeking behaviour of university students with visual disabilities is very important to provide them with accurate, relevant and timely information. New students also, must adapt to a new environment and must select courses, prepare academic assignments and sit for examinations. Often, such information seeking can be done on their own or with minimal help (Seyama 2009:p.4).

So far, several studies have been conducted on different aspects of information seeking behaviour of university students in Tanzania (Elia, 2006, Ndumbaro, 2009; Majinge & Stilwell, 2013, Majinge, 2014, Luambano, 2016).

However, very little is discussed about the methods and technique used by the VIS in a rehabilitation setting like when seeking for information, the kinds of source formats

they like to use and how these are used, what obstacles they confront with, how they feel about the process, and how they can be helped to better exploit the information sources available so that they can smoothly manage their studies without complications as sighted students.

Academic related information needs form an integral part of every student's life. The research was on the effort to redress the imbalance underpinned to different behaviours on information seeking of VIS and rest of other students on information seeking to the visual impaired for easy access and use of a needed piece of information.

UDSM has vast amount of information sources and resources, but its format hamper its ease access by VIS, a format in which they are presented did not favour VIS to a full utilization of resources and lack of assistive technology to support easy access and use of the resources is the problem interfere their information-seeking behaviour of VIS, therefore, this calls for attention to conduct this study. This study, therefore, addressed research gap in information seeking behaviour by examining how visually impaired students at University of Dar es Salaam seek information to meet academic-related information needs.

1.4 Objective of the Study

1.4.1 General objective of the study

The general objective of this study was to examine information-seeking behaviour of visually impaired students of the University of Dar es Salaam (UDSM).

1.4.2 Specific objectives

i. To determine the information needs of students with visual impairment at UDSM.
ii. To examine whether the information sources used by visually impaired students meet their academic-related information needs.
iii. To find out challenges that they come across while visually impaired students seeking information.

1.5 Research Questions

This study was guided by the following research questions

i. What are the information needs of students with visual impairments at UDSM?
ii. Do the information sources available at the University meet academic-related information needs of visually impaired students?
iii. What challenges that they come across while visually impaired students seeking information?

1.6 Significance of the Study

The findings of this study aimed at contributing to a body of literature on information-seeking behaviour of students with special needs in general and VIS in particular. Also, findings of this study may be used as a foundation for identifying information-seeking behaviour of the blind and visual impaired students and a beginning for developing appropriate strategies to meet information needs of students with visual impairments in other related academic institution. In terms of practice, the findings of this study could be used by librarians, information services providers and educators fostering the provision of better information access and retrieval tools to the visually impaired students at the university level. Besides, the findings of this study may influence policymakers in the Ministry of Education Science, Technology and Vocational Training to come up with appropriate strategies to ensure that blind and visual impaired students are provided with access to information by the use of assistive technologies in classrooms. Finally, the findings of this study may create awareness for the universities Curriculum developers and reviewers to consider this special group.

1.7 Scope and Limitations of the Study

This study was conducted at the University of Dar es Salaam (UDSM) which is located in Ubungo District. The respondents were the Visually Impaired Students at UDSM in the academic year 2019/2020 the period when the study was carried out. The results of this study will therefore be applicable only to the respondents of this study and should not be used for generalization in other universities in Tanzania or elsewhere. This study was focussed on the VIS in terms of their information needs,

seeking behaviour and challenges they are facing at the UDSM. Any aspect apart from what is stated in the specific objectives of this study was not covered.

One of the major limitations which the researcher faced was the doubt and uncooperative respondents who suspected the study might have been conducted by the University for the reason of identifying those who habitually complain and thereafter victimize them. The researcher overcomes this limitation by explaining the purpose of the study to the respondents that it was purely for academic as shown in the letter granted to the researcher for perming the researcher to collect data at UDSM. The researcher additionally assured the respondents that issues related to research ethics will properly adhere.

Another limitation was the small population of VIS that forced the researcher to change from mixed method to purely qualitative research approach in order to proceed with data collection. To overcome the challenge further a researcher decided to use the census in data collection for this study hence to use the entire subjects to get the holistic views of the research problem at hand. For the sake of making the findings more scientific, the researcher employed triangulation methods by collecting study data through interview guide, observation and documentary review.

The researcher also encountered the following common research limitations which are time shortage, and financial constraints. To overcome this, the researcher put much effort in making a follow-up to the respondents by being flexible to their convenient, using little financial resources available economically.

1.8 Definitions of Key Terms

This section offers operational definitions of key terms as applied in the context of this study. The definition provided relied on the context of the study to support one

1.8.1 Information

Information refers to an idea, facts, and creative or imaginative works of the intellect and data which have value, potentially useful for making a decision (Kaniki, 2001). For this study, information means messages, ideas, data and facts that are received

and understood by VIS and use them for academic-related issues to make a sound workable decision and to remove uncertainty from their minds.

1.8.2 Information need

Information need is a condition that arises whenever individuals find themselves in a state requiring knowledge to deal with the situation as they believe it is appropriate (Irvall & Nielsen, 2005) or if someone has information deficit that needs to be fixed. For the sake of this study, information needs to be used to denote information required by visually impaired students to accomplish their studies successfully.

1.8.3 Information seeking

Information seeking is a purposive search for information to fulfil certain goals (Case, 2002). The concept described above is a conscious effort to acquire information in response to a need or gap in one's knowledge.

1.8.4 Information seeking behaviour

Information seeking behaviour is defined by Krikelas (1983), as cited in Seyama, (2010) as "a movement of a distinct person that is carried out to identify a message that satisfies an apparent need". For the case of this study, information-seeking behaviour is a result of a need perceived by visually impaired students, who to satisfy it, they are using formal or informal information sources which resulting in either success or failure to their need.

1.8.5 Information sources

Information sources are the various ways by which information is recorded for use by a person or an organization. A source is a residence or an individual that one can obtain something helpful or valuable (Walter, 2008). The place or thing or an object from where we retrieve information are termed as information sources and these encompass documents, humans, institutions as well as mass media like radio and television. Information sources are significant for information organisations and information users.

1.8.6 Visual impairment

Visual impairment is split into two categories: blindness and partially sighted (Kiomoka, 2014). Howell and Lazarus (2003) define visual impairment as the phrase used for a human being who has some ability to see, but who have, for example, imperfect range of vision and focus that cannot be easily removed with spectacles, who are crooked, who need special light to regain sight. In this study, the terms visual impairment is used as a broad term for the total blind and the students who have some degree of sight.

1.8.7 Students with visual impairments

In the context of this study, VIS refers to those university candidates who have eyes defections that they cannot use conventional print media. Visual impaired students read primarily through the medium of Braille and audio recordings and other devices (Ndijuye, 2009). This definition will apply to this study.

1.9 Structure of the Dissertation

This dissertation is prepared and written into five chapters. Chapter one provides an introduction of the study, background information on visually impaired students from global, Africa and Tanzanian perspectives. The chapter also provides a statement of the research problem, objectives of the study, research questions, and significance of the study, definitions of key terms used in the study and scope and limitations.

Chapter Two consists of a literature review where relevant empirical and theoretical literature has been reviewed and synthesized. The chapter also provides an overview of the research gap.

Chapter Three comprised the research design, area of study, population, data collection method and instruments used in data collection. The chapter also describes measures used to ensure quality control in the data collection process and analysis as well as adherence to ethical issues. The validity and reliability of instruments and data collection procedures are also described in this chapter.

Chapter Four dealt with the presentation, discussion and interpretations of the results obtained from the interviews with VIS, documentary review and observations made by a researcher.

Chapter Five offers a descriptive summary of key research findings**,** conclusions and recommendations to different stakeholders. These include recommendations to librarians, faculty members, University management and staff in Special Education Unit.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter discusses and analyses previous studies which focus on information seeking behaviour of VIS. The studies are drawn from different contexts. The chapter also covers concepts of visual impairment, the information needs of students with visual impairments.

The review also explored previous research that looked upon information-seeking behaviour; information use and challenges encountered by visually impaired students in information seeking. In detail it discusses literature basing on all research specific objectives; these are the determination of information needs of students with visual impairment at UDSM, examination to whether the information sources used by visually impaired students meet their academic-related information needs and To find out challenges faced by visually impaired students when seeking information.

2.2 Conception of Visual Impairment

Visual impairment is an umbrella phrase which includes partial or complete damage or absence of sight due to disease, injury or inherited defect (Mgumba, 2006). Blindness or visual impairment means that the person's sight or vision is reduced or completely lacked hence to cause uncomfortably to someone encountered with such a problem.

Visual impairment has highly gained substantial consideration by scholars, who tried to offer or produce numerous definitions, depictions and causes. Beverly, Bath & Barber (2011) portrayed numerous types and causes of visual impairment as glaucoma, cataracts and detached retina while the major causes are age and diseases. Beverly, Bath & Barber (2011) emphases about the age at which people start to experience visual impairment. They range from childhood to adult and that visual impairment is also recurrently caused or connected with other incapacities or diseases, some of these might be enduring, these diseases are arthritis, heart conditions, movement problems and deafness.

Visually impaired people generally are categorised into the different types of impairment like blind, partly sighted, and the low-vision people, this is according to Aramide, Lawal and Odunlade, (2018) as cited from (Nnadozie, 2006). Also, Osinuga, (2003) said that visually impaired students are the ones who met with visual inadequacies, those whose vision is rigorously imperfect and those who are blind. Therefore, by inference, this group of people need the assistance of being given supports to recognize what others usually perceive and grasp.

Moreover, in many cases, students with visual impairments have other inabilities that connected with visual impairment or numerous infirmities may have damages in sense organs, nervous and/or psychosomatic difficulties. As Rogow (2005:132) enlightens that, "numerous effects of one having many disabilities like sight and mobility cause numerous problems on VIS' capacity to manage their social and physical surroundings". This means that lacking correct eyesight will impede a VIS to manage environment easily somewhat they need much supports to have ability to manage their environments.

Students with visual disabilities are recognized as those with a rectified visual sharpness of 20/70 or less within the way better eye or field confinement of less than 20 degrees at its largest point or recognized as cortically outwardly impeded and working at the definition of legitimate visual impairment (Beaty, 1991). For most educational purposes, visually impaired people mostly must learn by the use of Braille or oral methods (Nasiforo, 2015).

Visual perception or acuity is also represented by a number which shows the vision ability. A person with 20/70 vision who is 20 feet distance from an eye chart realises and sees what a person with an unaffected vision can see from the far distance of about 70 feet (Ferris III, Kassoff, Bresnick & Bailey, 1982). Figure 2.1 gives a clear understanding of Visual acuity.

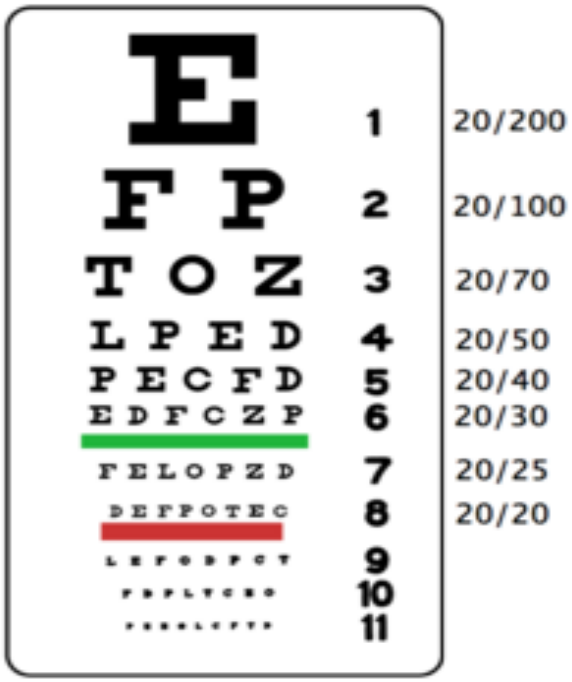

Figure 2.1: Snellen Eye Testing Chart

Source: Nsimbila, (2014)

NICCYD (2004) states that "terms partially sighted, low vision, legal blindness and total blindness are used in the academic setting to define VIS. "Low vision" in general refers to accurate visual impairment, not essentially bonded to distance vision". Low vision applied to all people that sees but are incapable of reading books or any information resources at a usual seeing distance, except by the use of the aid of eye spectacles or contact lenses (Nasiforo, 2015).

Therefore it very important to the academic stakeholders to prepare policies to make serious investigations soon after student report to their institutions to find out whether they have visual problems or not and help those who have problems by giving them requirements to support their needs.

Basing on the concept above a researcher is in the views that, VIS need much support on every aspect and circumstances that they may come across to overcome difficulties in their studies at the University. Even their information-seeking behaviour rely either on supports from fellow students or assistive technologies available within the campus.

2.3 Information Needs of students with Visual Impairments

Information plays a significant role in supporting and improving person's lives (Scotland & Scottish Government, 2013). It is a vital resource for every individual regardless of colour, race, gender, personality, religion or ability. In general, information contributes to the development of the nation. Also, information is energetic to successful business management, that information help to knowing what is happening now, tells a place and the time it happens while showing the output on the business whether positive or negative. This will be imperative only if the clientele's desires are clearly explained being understood so as can be analysed meet the required solution. But there are numerous obstacles empathetically connected with an understanding of the benefits of information together with how human seeking behaviour can cause a positive or negative impact on the one who wants to use. Castells and Cardoso (2006) point out that, information plays a fundamentals role for the development of knowledge is also the source for innovations and revolution, a resource for a well-versed citizen and it is an important production for society's development.

Lack of timely access to academic-related information to students with visual impairment impinges them to make a reasonable decision in quickest possible time, thus generating much trouble than solutions. However, the question was not whether everybody needs information, rather whether the information is available at the exact time and in the quantity required and is of acceptable accuracy (Seyama, 2010). For the visually impaired students, the simple fact that information exists is not enough, students must be able to access information through whatever valid information-seeking behaviour they choose to employ, and the information they discover must satisfy their general or specific needs.

Information need is a condition that rises at a time persons find themselves in a state of needing the knowledge to overcome some circumstances or situation or if a person has inadequacy of knowledge that needs to be covered (Nwobasi, Uwa, & Ossai-Onah, 2013). Concerning aspect of information curiosity, visually disabled scholars have a devastatingly wide range of needs especially information for their studies and relating to their condition.

Like other people, VIS needs the information to support their studies and daily life achievements. Moore (2000, 2002) gave out a functional model of social information needs of the VIS by revising several studies. Moore (2002) realized that visually impaired people, as information user, required information like other people with no challenge or visually advantaged. Moore (2002) made clear that VIS information needs to be grounded on Maslow's (1968) hierarchy of needs theory and Tester's (1992) life events assumption in order to be easily assisted in their information seeking behaviour.

Thus it is very important for information providers, librarians and lecturers to study behaviour of VIS information seeking as Rugeyasila (2013) emphasised that understanding information behaviour of students living with visual impairments is very important to provide accurate, relevant and complete information needed to visually impaired students.

In the context of Tanzanian higher learning institutions as far as The Tanzania Commission for Universities (TCU) rolling strategic plan 2015/16-2019/20 offered ten strategic goals to be followed or implemented these are, "Quality assurance management systems improved; issues on reasonable access, coordination of students' enrolment and programme fee charges improved.

Also tells about Research, development and innovation institutionalized; Internal and external linkages improved; ICT resources and university education management information systems Improved; TCU sources of funding diversified; Staff development, welfare and working environment improved; Prevention against the HIV/AIDS pandemic strengthened; Anti-corruption and good governance promoted and TCU capacities enhanced" (TCU, 2016). TCU remains silent on students with disabilities especially VIS who are increased in number to be enrolled in universities.

Very few nevertheless, the publications and information on sustainable services and facilities to Visually Impaired students, this is found in the paper of Mnyanyi, Bakari and Mbwete, (n.d:5, 7); they discovered that there are majour problems in procurement and training on the application of equipment to VIS. Mnyanyi (2011:3)

discovered that “there has been some improvement on skills and knowledge by involving of TEA and DAAT”.

This means that, although there are some problems in assistive technology procurement and training TEA and DAAT now are putting effort on supporting VIS by imparting skills among the people who live and support this disadvantaged group.

2.4 Information Sources Used to Meet Academic-Related Information Needs of Visual Impaired

Information sources categorically fall into two major groups which are print and non-print materials. All these types are used by visually impaired students to access what they could do with to meet their information needs. Information plays significant responsibility in helping, supporting and improving citizen's lives (Scotland and Scottish Government, 2013). For VIS, information needs to be made accessible and obtainable in a format that is suitable and friendly to them. For instance, information resources prepared using large prints, Braille and tactile materials, computerized format, audio strips, cell phone services, speaking messages, ease reach to websites to mention some. Also, due to advancement in communication technology, precisely supportive technological gadgets, such as computers which are installed with software for VIS, screen synthesisers to mention some, closed-circuit television (CCTV), Braille printer and embossing machines, character recognition software (OCR) and dialogue imputers, it is very important to offer information in easily reached and promising format that will attract visually impaired Students (Wales Council for the Blind, 2002).

Most, students with visual impairment have to obtain and possess more academic-related information to perform better in their studies. People receive information through all of the senses but seeing is the most important. It has been observed that people soak up a large amount up to 80% of the information in their surrounded area using seeing.

Schinazi, (2007) points out that vision is a major sense that people use in obtaining information about the world in which they live. Without it, they need special materials, devices and attention to gain knowledge and widen their full potential. All

students have to handle their responsibility as successfully as they can, but to students with visual impairment this can be much complex and overwhelming thus it requires well organisational skills and availability of facilities to assist them in learning (Nasiforo, 2015).

The needs of academic library patrons comprised a variety of information need, from use of introductory or simple equipment and instructional one to the need for resources that are highly needed by VIS to ease access their environment and information to support their learning (ACRL, 2006). Although nowadays VIS are admitted to universities but resources to support their life learning process are very few, these insufficient resources dwindle their access to information. Most of the academic libraries in Tanzania comprised with a big number of information sources for sighted students and a very limited number of information sources for visually impaired students this is because their materials need some equipment to access information in them while to universities which have some resources, many of them are out-dated, this creates problems to visually impaired students to smoothly perform their academic tasks properly (Majinge & Stilwell, 2013).

Rubina and Ramanand (2018) identified some information resources (equipment) which are highly needed by VIS to manage their learning. These include JAWS (Job Access with Speech) software which is a change of a normal computer into speaking computer to facilitate the VIS to access internet not only that but also to gain knowledge on computers application.

Magic Magnification software, this is suitable for increasing a computer screen to permit low sighted students to see the monitor display and being able to use the accompanying support tools for improving sight. The other one is Talking Typing Teacher Pro: this also is a Talking Typing tutorial which is designed specifically for the blind; it guides practising to use a computer keyboarding skills to key in data while learning to develop typing skills and speed accurately (Koganuramath & Choukimath, 2009).

Other resources as stipulated by Comisco, (2008) are Braille Scanning software – OBR (Optical Braille Recognition), this type of software permits VIS to read all

types of braille materials whether are single or typed in both sides when scanned on a regular A 4.Scanner, It scans Braille materials, makes an analysis of the contents by identifying dot form and provide meaning in conversational readings. Moreover, other resources to be used by VIS in learning and manage reading are SARA (Scientific and Reading Appliances). This one enables the Visual impaired students to have straight contacts to materials in printed format, SARA which is expected to be the next-generation which combines a number of the appliance for Visual impaired Students to support their reading (Rubina & Ramanand, 2018).

There is sufficient proof that, there is a possibly acute shortage of information resource available to VIS in many academic libraries this hampers smooth learning to VIS in our universities to the reason that affects their performance in higher levels. In many institutions offering information services to visually impaired people the information resources for them are inadequate for instance, they lack even white cane stick to support VIS mobility, sound recordings and Braille embossing machines, the consequence of it is least information exploitation levels for virtually impaired students (Adetoro, 2011).

2.5 Challenges Faced by Students with Visual Impairments in Information Seeking

VIS faces many problems when seeking information (Robertson, 2011). Without support and guidance, these tragedies can appear devastating through their lives in the university. Royal National Institute for Blind (RNIB, 2003) asserts that the inadequacy of textbooks in VIS accessing format causes information access to be a problem to a group of visually impaired students hence they to lag behind in every academic aspect. This unfavourable condition affects their academic performance. Besides that (Robertson, 2011) emphasises that “big number of students with visual impairments in the world today receive inadequate information services”.

ICT plays a fundamental part in education and knowledge enhancing of VIS. However, there are numerous kinds of obstacles to visually impaired students in using ICT in information access; these are high costs to purchase that majority did not afford, barriers associated with a minimum of training to VIS, technological

barriers linked to internet access to people with visual impairment, and a society's negative view of disability (Tilley, Bruce, & Hallam, 2007). Cost is an obstacle due to the sense that a larger number of VISs have inadequate incomes which impede them to purchase assistive technology to facilitate easy learning.

In Tanzania, University libraries have inadequate access to current and relevant resources to visually impaired students. According to Bangula (2005), there was a great scarcity of accessible materials and specialized equipment like braille materials, braille embossing machines, computer software specifically for VIS at the national level. Inaccessible materials hindered students with visual impairments from accessing academic-related information which affects their learning process. The shortage of foreign currency also is a limiting factor (Agesa, 2014). Ndumbaro (2009) reveals that library services and information delivery to visually disabled people rely on inadequate Braille materials. Libraries insufficiently offer reasonable and sound workable information services to VIS. Besides, staff lacks the necessary specialized skills to serve students with visual impairment adequately (Rayini, 2017). The study made by Ndumbaro (2009) discovered that "the lack of Braille text materials makes students with visual impairments rely upon hard copies read to them by sighted friends". Ndijuye (2009) in his study found that students with disabilities learn under difficult conditions because of information poverty.

Supportive technological equipment creates balance and plays an integral function in creating an equal chance for disabled in various ways without forgetting including learning, this technological advancement and use of sophisticated gadget simplifies and facilitate them to solve the limitation encountered in printed or digital materials (Koulikourdi, 2008).

On the process of creating library and information centres being reachable and accessible to VIS, information professionals sometimes get held in change brought by technology. The choices are devastating and many librarians lag by feeling that they are incapable of some the technical know-how to select relevant tools for Visual impaired Students (Cantor, 1996).

2.6 Theoretical Framework

The conceptual model for this study was adapted from Wilson's (1999) Model of Information Behaviour. This schematic model stresses the need to explore information seeking in context. The model permits people to be conceptualised as both dependable units and socially created individuals. Such conceptualization is appropriate in the study of information seeking of users with disability (VIS). Wilson's (1999) model comprehensively studies users from their information needs viewpoint, information seeking and information behaviour.

A model has been applied in the study as a framework to guide the assessment of appropriate literature, formulation of research objectives and discussion of research findings. The model found by the researcher to be more applicable to the visual impaired students because it portrays information-seeking behaviour arising as forced by a need. Information need is a problem or question recognised by an individual for which either information or services are needed. It surrounded understanding of what is missing, that takes someone in seeking information that will create understanding and provides solution while fulfilling users' need (Kuhlthau, 1993). To fulfil that requirement, in Wilson's (1999) expressions, "user makes demands on various ways, it can be recognised or informal information sources or facilities, which follow-on achievement or disappointment when the fight to find appropriate information". When succeeded, the client can put into use what he has retrieved.

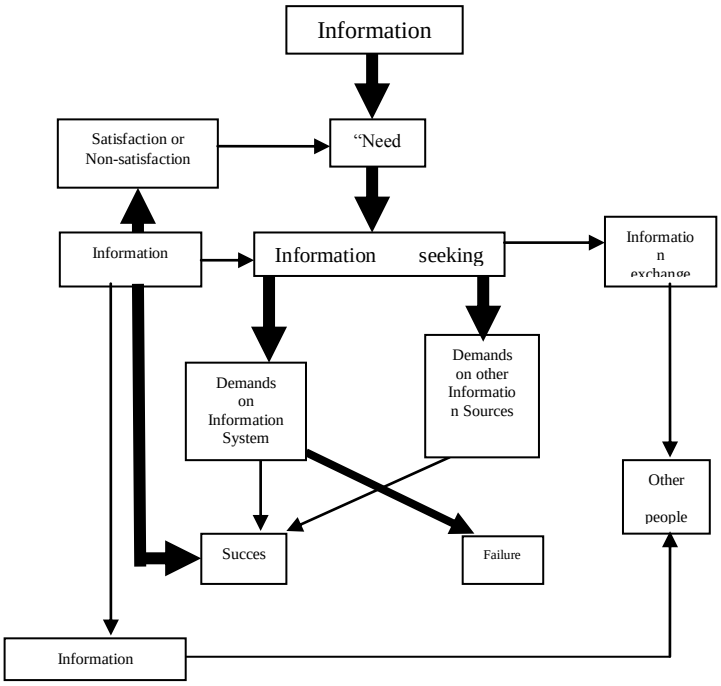

Figure 2.2: Wilson's (1999) model of information-seeking behaviour

2.7 Research Gap

Several studies have been conducted on visually impaired students in various aspects, this include a study by Majinge (2014), Majinge and Stilwell (2013), Msuya (2002) and Ndumbaro (2009) on library and information services. While Ndijuye (2009) and Rugeyasila (2013) studied on Information need and seeking behaviour of pupils in primary schools. Other researchers like, Mgumba (2006) focused on Social psychological problems, while Nsimbila, (2014) analysed the accessibility and acceptability of support services for VIS in higher learning institutions of Tanzania. Not only that but also Makoye, (2018) investigated challenges facing visually impaired students in accessing e-learning in secondary schools.

As it is shown above, none of the reviewed studies had focused directly on information seeking behaviour for VIS of higher learning institutions for the sake of seeking their views, perception and experiences on information seeking pattern.

Therefore, this is a pushing factor for conducting a study to fill the gap on information-seeking behaviour of visually impaired students of higher learning Institution in Tanzania.

2.8 Summary

This chapter presented the literature reviewed concerning the study that covered the major aspects of the study which are information-seeking behaviour and visual impairment students. The chapter also gives an impression of the VIS at UDSM, theoretical framework underpinning the study and research gap. The forthcoming chapter discusses research methods and approaches used in the study.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology used in this study. The chapter includes the following subsections: research design, study area, population and sample size, data collection and data analysis methods. The chapter also describes measures taken to ensure quality of data collection process and ethical consideration. Lastly, a summary of the chapter is provided.

3.2 Research Design

Kothari (2004) defines research design as a comprehensive plan of study to be undertaken to accomplish the research purposes. Research design comprised of a plan for the data collection, measurement of collected data and exploration of data. This study is based on a descriptive research design. Descriptive research is defined as a research method that describes the characteristics of the population or phenomenon that is being studied. This methodology focuses more on the "what" of the research subject rather than the "why" of the research subject (Silva, 2017).

The descriptive design, therefore, helped a researcher to obtain facts on information-seeking behaviour of students with visual impairment at UDSM. Descriptive research was effective and accurate because it deals with the situations that exist such as looking the nature of existing situation, practices and attitudes; feelings that are believed as a cause of the certain problem; procedures of on-going circumstances and trends that are created (Best & Khan, 1998).

Descriptive design is the more flexible if compared with other research designs, permitting a researcher to retain the holistic behaviour of realistic proceedings when examining realistic events (Sandelowski, 2010).

3.3 Area of the Study

Area of study is a geographical area where a research is conducted (Krishnaswami and Ranganathan, 2005). The research was conducted in Ubungo District- Dar es Salaam at the University of Dar es Salaam (UDSM). A researcher purposely selected UDSM as a study area because it is the oldest and biggest public university

in Tanzania that stands at the apex of all institution of higher learning started on July 1st 1961as an associate college of the University of London. This University also receives funds from the government and donor countries to support students with disabilities including VIS through their special education department.

3.4 Study Population

The population of the study is the group of people or a collection of items or things under which the investigation is taken (Dumay, 2009). The target populations for the study were all 25 students with visual impairment at UDSM.

Students with visual impairment were targeted because their information-seeking behaviour and strategies differ compared with the sighted students as they are very few compared to others at the University.

3.5 Sampling Techniques and Sample Size

Census method was used to include all 25 VIS. In census sampling method the researcher used the entire population in order to get detailed information on their information-seeking behaviour. To facilitate identification of VIS researcher used a student list given from Special Education Unit at School of Education (SOED) of the University of Dar es Salaam.

Data were collected in phase, because within project the University of Dar es Salaam completed a new library building which force a researcher to conduct some observations in a new constructed Library. Therefore the second data supplements the original data in order to capture changes.

3.6 Data Collection Methods

Data collection means assembling or gathering of information to address those serious inquiries that have been identified in the research. Data for this research were gathered through a mixture of first-hand data (primary) and secondary data collection methods.

3.6.1 Secondary data

These data are the second-hand information that passed through various stages including statistical process and is meaningful to the intended recipients. Therefore,

Secondary data are those that have already been gathered and processed by somebody else and had already been digested processed for the sake of attaching meaning (Kothari, 2004). For this study, secondary data were gathered through library research, books, journal articles (electronic and print), theses and dissertation, conference proceedings, research papers and government reports.

3.6.2 Primary data

Kothari (2004) defines primary data as that information which is gathered freshly from the subjects and observations hence are the first-hand data or information, and therefore these data are original in characteristics. Primary data for this study were collected from the sample using in-depth interviews and complemented by observations. The nature of this study which is qualitative, research objectives and nature of my respondents (VIS) were the factors that influenced the use of interviews and observation methods.

3.7 Data Collection Instruments

The following instruments were used to collect data to be used in the research to identify the exact problem and find to suggest a genuine solution of the researched phenomena that is information-seeking behaviour of visually impaired students.

3.7.1 Interview Guide

An in-depth interview guide was used in the study. This was more suitable for VIS to retrieve adequate and reliable data. According to Krishnaswami and Ranganatham (2005), interviews permit the researcher to institute relationship, enlighten the reason of the undertaken study and explain issues. By using an interview guide, the researcher got a chance to investigate burning disputes which arose and clarify questions for defendants who used in the study. For instance, issues like information-seeking behaviour, white cane stick and abacus; the researcher asked respondents about those issues to make sure VIS discussing the known concepts because some of them got their problems when they had completed primary school where some tools were used as an abacus.

3.7.2 Observation guide

Observation guide were respondents, information sources, assistive technology and roads from dormitories to classrooms and Library, also environment in library and special education unit if they favour information seeking behaviour of VIS. This included both seeing and hearing. The researcher observed the availability of information sources and resources used by VIS, what was going on in the university environment; how visually impaired students seek information in the library as well as in the classrooms.

3.8 Data Quality Control

Different approaches were used to ensure quality, valid and reliable data are obtained.

These comprised pre-testing of the interview guides for both students and staff furthermore the use of observation and interview assisted the researcher to get appropriate data. Measures to enhance data quality assurance also included the elimination of researcher's bias, this done by the use of some element of snowballing in identifying respondents.

3.8.1 Pre-testing of the interview schedule

To increase the validity of the instruments, the researcher pre-tested the interview questions. Semi-structured interview questions were tested two visually impaired students check whether instruments are correct and will easily be understood by the respondents. The reasons for doing so were to check the trustworthiness and legitimacy of the tools (instruments) of data collection. The validations of the instruments were done by seeking opinions from the researcher's supervisor. Krishnaswami and Ranganatham (2005) emphasize that pre-testing helps the researcher to identify ambiguities and questions which are not clear and are needed to be corrected.

3.8.2 Ethical issues

It is recognized that any research that engages human beings need to consider ethical aspects. The ethical elements of the research process involve obtaining the respondent's consent, observing their right to solitude and protecting VIS from any

harm which might arise as a consequence of their contribution to the research. Respondents were told about the nature and importance of the study and how they are going to benefit from it. Also, the researcher assured that information collected from respondents will only be used for academic function and be treated academic requirements.

Furthermore, a researcher showed a research clearance letter to respondents who have partial impairments in order to assure them that, a study is even permitted by the University.

3.9 Data Analysis

Data analysis comprised exploring, classifying, and describing data using a deductive approach. Data collected from the field were organized, described and analysed using qualitative methods, particularly thematic analysis. Qualitative data analysis was used to identify, examine and interpret prototypes and theme in textual data and determine how these patterns and themes help to answer the research questions to solve the at hand. Application of the qualitative method of collecting data reflects the nature of data gathered which in turn reflects the nature of the research problem and research objectives.

3.10 Chapter Summary

Chapter three presented a methodology applied to establish the visually impaired students' information-seeking behaviours. The research population and reason of the choice were discussed. The chapter further looked at data collection methods, pre-test details were shadowed by an explanation on how the studied phenomenon ensured reliability and validity of data. An overview of data analysis, measures are taken to ensure quality in data gathering and data analysis together with adherence to ethical principles are also provided. The next chapter deals with the presentation and discussions of research outcomes.

CHAPTER FOUR
PRESENTATION AND DISCUSSION OF RESEARCH FINDINGS

4.1 Introduction

This chapter deals with presenting and discussing the research findings regarding the ISB of visually impaired students at the University of Dar es Salaam. Presentation and discussion of results relied on three specific objectives of the research which are outlined in the first chapter. Also, the researcher organised a chapter along with the following subheading: first heading dealt with Information needs of students with visual impairment at UDSM; second is Information sources used by visually impaired students; third is all about challenges confronted by VIS when seeking information.

The main objective of the study was to examine the information-seeking behaviour of visually impaired students at the University of Dar es Salaam. A literature review on preceding studies offered the fundamental speculative outline of the study at hand while giving a clear path for defining key concepts used in the study, discussion and enlightenment for the key findings.

4.2 Demographic Characteristics of Respondents

Different demographic variables were included in the analysis. These include sex of respondents, level of visual impairments and degree program pursuing. Sex distributions of the respondents revealed that majority of the 25 interviewed students with visual impairment were male that is 18, while only 7 respondents were female. These VIS were admitted in only two programs, 1 interviewed student studied Sociology while the remaining 24 VIS studied in Education programs. Further to that in a case of their visual disabilities 5 were total impairment while 20 encountered with partial impairments. About 6 VIS had the problem since they were born and the rest 19 VIS happened in different stages of their life, for instance, some happened when they were in primary schools and other in secondary level while different reasons mentioned like eye High blood pressure, diabetes and pituitary gland disorders to mention few.

4.3 Information Needs of Students with Visual Impairment at UDSM

The first objective of this research wanted to determine the information needs of students with visual impairment at UDSM. The questions underlying this objective were: what information do you need to support your learning activities? What skills necessitate getting needed information to manage your studies? What equipment do you need to enable you to get information for you to learn? The same questions were asked to all participants.

From the findings of the interviews, it revealed that most of the visually impaired students pointed that, the common information which they demand in managing their studies is the information on how to cope with the modern information-seeking strategies plus the information on how to move independently and easily around UDSM compound, to easily manage their studies.

4.3.1 VIS Information need on how to support learning studies

The respondents were asked to describe instances where they needed information to solve a problem or make a decision. The study revealed that the students' most common needs were linked to academic matters, with the most demanding being where to find appropriate sources of information to solve their assignments to meet the deadlines of assignments submission. All visually impaired students, once received an assignment had first to be read to them by a volunteer from the special education department. The aim is to understand the assignment's requirements, then VIS approach the library to start searching relevant sources of information.

The end result was a backlog of assignments and missed deadlines. For example, one student said;

> *...lecturers give us an assignment and I either go to the special education department or to other sighted student to seek assistance for a needed piece of information.* [Interviewed VIS B from UDSM in April 2017].

The results agree with Seyama et al., (2014) who also found out that the VIS students have specialized information need that without repackaging of information they will never easily get exactly what they need.

Information needs to form a vital part of every student's life, while in this study most of the visually impaired students pointed that they need information on how to improve information searching skills plus the information on how to move independently and easily around UDSM compound, to easily manage their studies. One of VIS explained that:

> *...as you know the environment around University of Dar es Salaam is very large and complex……therefore, we need special orientation program to give us skills on how to manage the university environment and through which we can manage our studies.* [Interviewed VIS C from UDSM in April 2017]

The following pictures show some difficult areas used by VIS at UDSM main campus:

Plate 4.1: Stairs from the academic bridge to IRA, main Library and lecture rooms

Source: Field study, February 2017

Plate 4. 2: Stairs from the academic bridge to the Postal office, cafeteria and hostels

Source: Field study, February 2017

In the interviews with one of the visually impaired student had this to say with regards to their information needs:

> *...I mostly require effective computer application skills to easily manage my studies……and as you know, nowadays there are various specialized computer programs for visually challenged persons such as e-learning for visually impaired students, web-braille and many others that can assist us to get the information we need to supports our learning*. [Interviewed VIS A from UDSM in April 2017]

The researcher observed innovations in the new UDSM library building infrastructure which mostly support access to information needed by visually impaired students. The library furnished with sophisticated gadgets which facilitate VIS to retrieve information easily.

The current efforts to support VIS information needs in the new library are the availability of career-related information, current affairs, college-related activities information, politics/government information, and science-related information to mention some. All these are facilitated by the architectural design of the building and assistive technologies installed because the building is designed to allow VIS to navigate easily in the library hence simplify access to information. Also, the library layout provides supports which favour easy navigation in the library by installing a talking lift together with the Braille marks to help VIS. Therefore, from the above

observation, the researcher witnessed VIS using available technology to reach and access their information needs from different sections in the library.

Plates 4.3 and 4.4 show facilities and equipment installed in the UDSM new library that can help VIS navigate in the building to access needed information

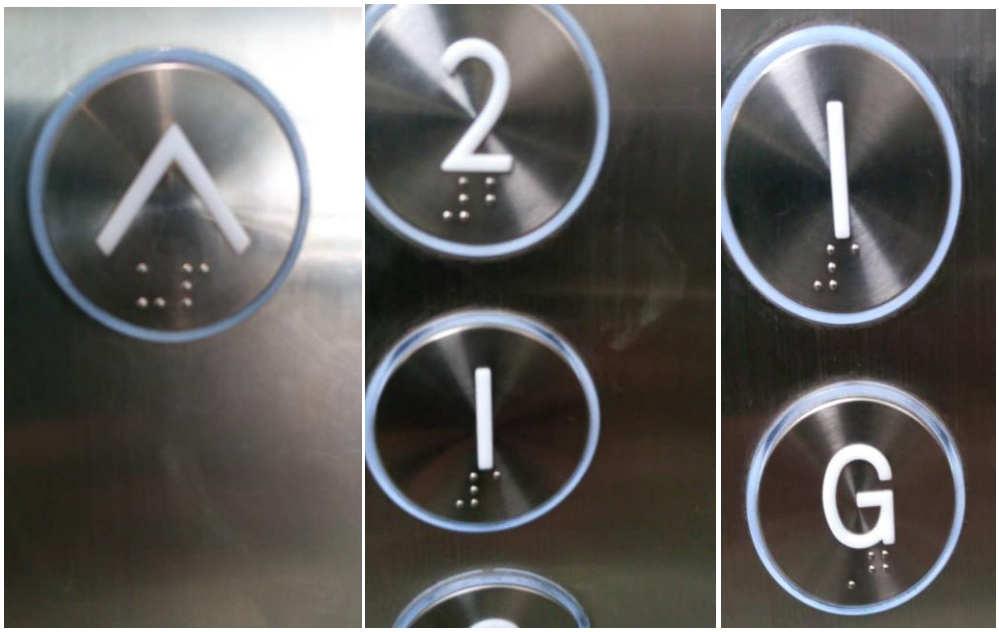

Plate 4.3: New Library building lift button attached with Braille signs

Source: Field study, June 2019

Plate 4.4: supportive technologies in the new library building

Source: Field study, June 2019

4.3.2 Information needs on how to use equipment to support information seeking and learning activities

VIS need information on how to use equipment to create awareness and being able to support them answer their information needs for learning. Also, their information-seeking behaviour depends much on supports of technological equipment to retrieve needed information for outstanding performance.

Findings show that the equipment commonly used by VIS at UDSM to attain their information needs are; Perkins braille, braille embosser, typewriters, long white canes and audio recorders. From the interview with visually impaired students, one student explained that;

> *Actually, "…We normally use audio recorders, perking braille, typewriters, A4 frame……..other equipment are desktop computers, smartphone ……..also, we use braille embosser and braille papers of which we are normally given for free,* [Interviewed VIS F from UDSM in April 2017]

The findings above indicate that there is a high range of equipment to support teaching and learning needs among visually impaired students at UDSM. The findings reflect that the university did at best to provide material supports for students to manage their studies and to fulfil their information needs. Through observation, a researcher witnessed some of the equipment used by VIS at UDSM department of special education. These equipment are EZ Thermoform machine for Braille duplication, this is a braille Duplicator machine used for making teaching aids and Braille copies from a single master and Brailon; Computer, machines used by some of the VIS in the Special education Department; Perkins Braille Machine, is a braille typewriter and Braille Embossing machine, is a very important machine that has a great impact to students with visual disabilities. This printer extracts conversational reading to tactile braille cells. The following pictures show some of them.

Plate 4.5: Basic Braille Embosser Printer

Source: Field study, February 2017

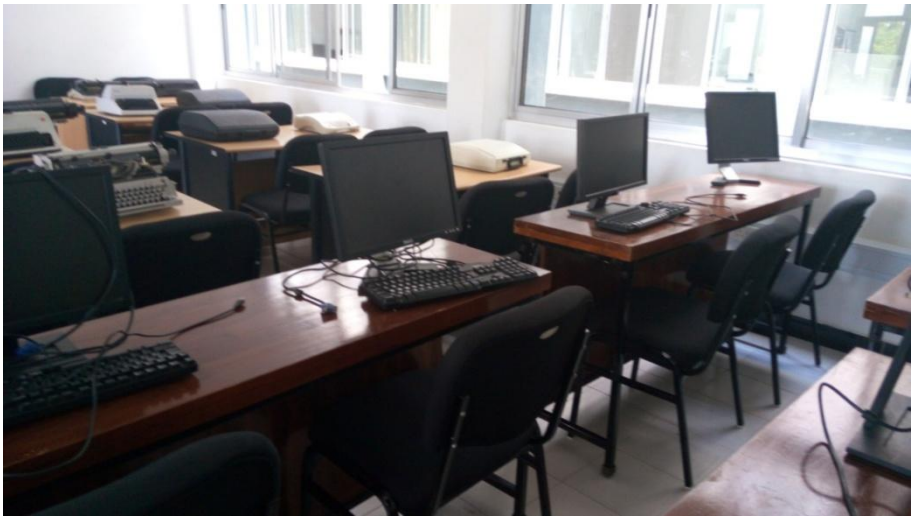

Plate 4. 6: Computer room at the Department of Special Education.

Source: Field study, February 2017

Further findings revealed that abacus and radio cassette is less applied by most of VIS at UDSM. One among the interviewed students explained that:

> *Abacus!!!....., we no longer use such device; there is no one who has taught us about it. …also, I did not use the radio cassette because there is an audio recorder*. [Interviewed VIS C from UDSM in April 2017]

The above quotation indicates that, despite the presence of a variety of equipment for supporting visually impaired students' learning demands, still there are some of the equipment which seems not be used by most the students. This might be attributed by numerous reasons such as lack of abilities and skills about the use of that equipment or unavailability of equipment. Based on this reason, VISs need also information on how to use those machines effectively.

Moreover, other findings show that most of the visually impaired students at UDSM indicated that they were in the high need of information on how to use personal computers and portable handsets devices to support their learning needs. One interviewed VIS explained that;

> *…. nowadays ICT is highly applied in education….. ….we would like to use personal computers and smartphones with special software and program designed for visually impaired students…..but the problem relies on low skills I have on computer application and availability of specialised computer application software for VIS at the university [Interviewed VIS H from UDSM in April 2017]*

Observation made in the new library building regarding facilities and equipment to support VIS learning needs, encountered the following; Firstly, the library has a computer cluster that contains about 150 computers connected to the internet. Among these computers, there were about 16 computers with adobe reading software installed that can assist VIS to access needed information in the library The VIS readers act as an intermediary that supports VIS to easily navigate to the computer room and helps to operate computer systems by searching for the subscribed materials to enable VIS easily listen to the materials via headphones hence access their needed information by listening and manage to take note to support their learning.

Secondly, a new library is having the Audition (multimedia) room which installed some machines that can assist VIS to retrieve needed information by using their flash discs, DVDs or CD that have the information they need. Not only that but also lecturers may use tutorials in a multimedia format to support VIS to access needed information.

Plate 4.7: Multimedia equipment in a new library building to support VIS

Source: Field study, June 2019

Grounded on the above results regarding first objective, the study establishes that, information needs and equipment needs among visually impaired students at UDSM differs from one student to another and vary in different aspects depending on the level of visual impairment. It is evident that there are some of similarities in their needs and demands. For instance, information on how to cope with the information seeking strategies plus the information on how to move independently and easily around UDSM compound seems to form a fundamental part to most of visually impaired students' academic life at UDSM. The results concur with those of Appiah

(2017) who also found out that at the studied universities, information needs of VIS varies, although type of such information differ from what has been found in this study.

4.4 Information Sources Used by Visual Impaired Students to Manage Studies

The second objective for the study aimed to examine whether the sources of information used by visually impaired students meet their academic related information needs. Data regarding this objective were mainly obtained through interviews. The research questions underlining the second objective were: what sources of information are available to support learning process among VIS? Did the available sources of information meet your academic needs?

The findings from the interviews when responding to the sources of information available depicted that, information sources mostly preferred by VIS to obtain relevant information for their learning needs are audio recordings, lecture notes in Braille format and discussion with colleagues. Further findings show that the lecture hand-outs which are assumed to be the main sources of information, found to be less effective to most of VIS. One of respondent explained that;

> *…although some of lecturers give us lecture hand-outs, but others refuse to do so and tell us to find possible alternatives such as audio recorders, braille texts, colleagues' assistance, and discussions with our colleagues.* [Interviewed VIS G from UDSM in April 2017]

Further findings from the interviews with VIS revealed that another source of information used by VIS to obtain relevant information for their learning needs is through asking the assistance from their friends. One among the visually challenged student claimed that,

> *… to the large extent I use my reading assistant as an important way during the personal study so as to well understand what I learned during lecture hour….. This is the main source we normally embark on, in which by about 50% of my information regarding learning I get from my readers, the remaining 50% I get from lectures and other sources*. [Interviewed VIS A from UDSM in April, 2017]

It is evident from the interview extract that, reading assistants play double roles; one is as sources of information and second as intermediary. As sources of information

they do provide information needed by VIS while like intermediary they act as a link between sources of information and the information need of VIS.

From the above findings extracted from VIS G, it is clear some lecturers did not give special consideration to the students with special learning needs, such as visually impaired students. This reflects how inclusive education system does not suite the learning needs of visually impaired students. This is because there is a diversified information seeking behaviour in the reality that, others students are using all sense organs but VIS used some of these senses this is because they don't see what is going on through power point presentations, gesture, postures and image displayed during lecture sessions, this make them inferior because VIS did not moving together with their fellow students.

From the interview with visually impaired student on a question to available information sources to meet academic related information needs it has been found that, most VIS at UDSM rarely visited the main library. This was partly attributed to library infrastructure and facilities which are not friendly to VIS. It was further noted that the library does not have employees who had specialised on offering services to VIS. One of the VIS had this to say:

> *I did not manage to use library catalogue as because the technology used is less friendly with my learning needs, unless otherwise by assistance from librarian of which very rare to get. …the library does not have supportive materials such as braille books.* [Interviewed VIS D from UDSM in April, 2017]

Furthermore, all interviewed VIS wailed on the available sources of information at the university that, the available sources do not exactly meet their academic related information needs. One of the VIS had these to say:

> *…the information sources in the department do not completely meet our information needs due to the sense that, a special needs department have only one Breille Embossing Machine for all VIS…this makes so difficult to get services timely* [Interviewed VIS J from UDSM in April, 2017].

More findings revealed that, although VIS are given an opportunity to convert the conversional readings into Braille format, but there are some limitations on number

of pages to be embossed and printed. Most of the interviewed VIS mentioned the problem as follows:

> *…mh! I, on my side I'm not fully satisfied because I may have an article in soft copy then want to emboss, but a Special need department may permit only to print some pages and not a whole article, therefore it causes much difficulties in my academic performance. As a result to get the article I need I have to convince other fellow students to go and print some other pages* [Interviewed VIS P from UDSM in April, 2017]

Another respondent said:

> *…my reader (student who supports me) sometimes is congested with his personal activities therefore, I fail to get his support hence not accomplish my assignment in time. I know that it is impossible for her to be with me all the time, but mostly she is supposed to be close to me so that she can offer maximum support because she is paid for that task but much of the time I stay alone or with my fellows of the same problems which sometimes we find it is difficult to help one another* [Interviewed VIS Q from UDSM in April, 2017]

The results suggest that, information sources available are less supportive to VIS at UDSM to the extent that most visually impaired students did not prioritize it as among of their important source of information. The result concurs with that of Majinge (2014:p.44) who reported that, "the information sources that existing in academic libraries are inadequate to for users' information needs". This reflects that, inadequate information sources in university libraries are a problem not only to challenged students but even normal students encounter such a challenge.

From the Wilsons (1999) model of information seeking behaviour, VIS like any other students need information to solve their academic related needs, but the problem comes when available sources of information do not suit their information needs due to the sources format. Therefore, needs on information systems and demands on other information sources provide minimum success rather than failure of retrieving needed information. Source format create difficulties in successful information access due to the sense that, the available information sources may have what is needed by VIS but a source format obstruct a success pattern which now need a repackaging of information to ensure maximum access of information in made so as VIS meet their academic related information as Seyama et al… (2014)

illustrated on the following model, which he modified Wilson's model of information seeking by adding a concept of Disability Department to have a Majour role to play, this means a success or failure of VISs on their information needs relied much to a department mentioned.

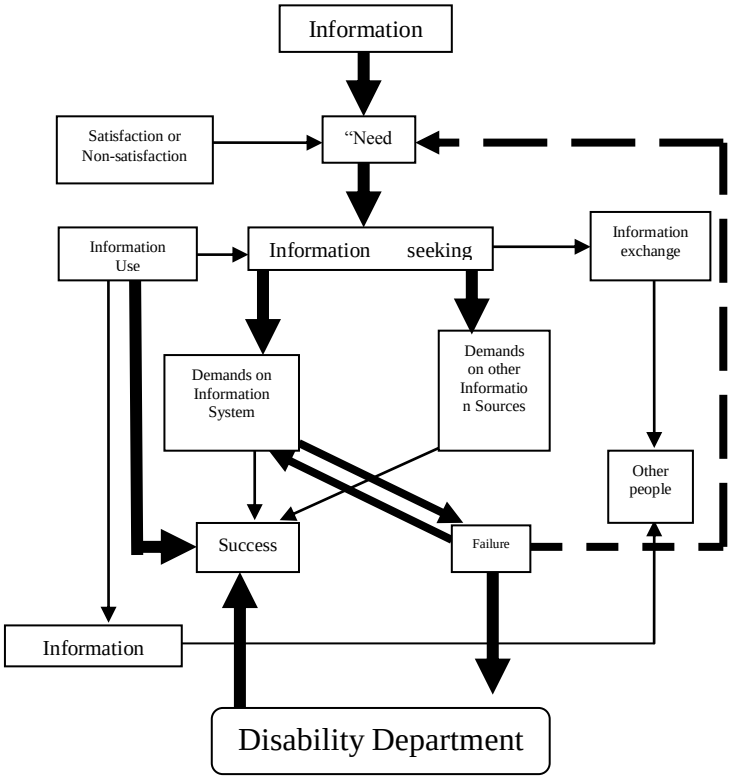

Figure 2.3: Wilson's model of information seeking behaviour (modified)

A model above, shows distinctive information behaviour of VIS in their information search to meet their academic related needs (Seyama et al., 2014)

In addition, Odini (1998:p.13) explained that, "most of libraries in the universities, colleges, and other academic institution stumbled in to scarcity of information materials. Many libraries are suffers a lot due to insufficient given budget by their parent organisation and mostly depends on donations, which are irrelevant and most unsuccessful". Although, to some extent the results contradict with those of Nishat and Kumari (2017) who found out in the studied universities, visually impaired students frequently use library materials for their information seeking needs. Such kind of disparity in the results might be attributed to either difference in sample size, methodology, and study area contextual factors.

Although VIS do not visit library frequently there is a possibility that they use library materials indirectly by consulting and discussion with their fellow students or reading assistants. It was noted during observation that VIS participate in group discussions with their fellow students hence having opportunities to share knowledge and some insights with those who have access to the library.

4.5 Challenges Faced by Visually Impaired Students when Seeking Information

Third objective was designed to purposely discover the challenges faced by the visual impaired students when seeking information. The underlining research question for this objective was: What challenges do visually impaired students face when seeking information? Findings from the interviews indicated that VIS are facing varied challenges depending on the levels of their sight, some have total impairments while others have partial impairments thus have different learning needs among them. From the interview with one visually impaired student, it was revealed that inclusive education does not suit the information seeking of VIS hence brings about a great challenge to them. One of the students claimed that:

> *In fact, during lecture hours we are combined with normal students of which their learning needs differ from our needs. This is not good…sometimes you can hear a lecturer say, "as you can see" or "see this one and this" while some of us don't see...it is very disappointing ....lecturers should really understand that they deal with students who have varied learning needs, so as to put possible extra consideration to us...* [Interviewed VIS K from UDSM in April, 2017]

It is true that, lectures presented in class are often in the form of PowerPoint presentations including information predominantly as images, charts and graphs that VIS can't see clearly or completely due to the problems they have for this reason deny their access to information like sighted students. The students' preferences, therefore, VIS have to be given information in the form that is friendly to their ability so that, they can easily access and utilize them.

Another student added that:

> *...we are normally attending lecture sessions together with other students. For my suggestion, it will be better if we will attend our own specialized lecture sessions and lecturers have to prepare braille hand-out and give to us before the start of lecture session*. [Interviewed VIS B from UDSM in April, 2017]

Above findings clearly justifies that, inclusive education system does not best fit to the physical challenged students who have special learning needs, particularly visually impaired students because their information seeking behaviour do differ.

Another interviewed VIS explained that;

> *…in a current technologically advanced world, computer plays a big role in facilitating information access and transfer. Although SOED in the special needs department there are few computers…computers are out-dated with no relevant applications software and in-depth training that can assist VIS access needed information for learning.* [Interviewed VIS B from UDSM in April, 2017]

Besides, findings from the interviews revealed that, lack of effective technology in the assessment of visually challenged students' achievement is also a big challenge in their academic life. Regarding this challenge one interviewed students claimed that;

> *...during the university examinations, we normally use typewriters in answering exam questions. But, for sure typewriters are very less effective for us to effectively attempt an exam, as because what you type in exam session you cannot pass through again and verify….* [Interviewed VIS E from UDSM in April 2017]

Another interviewed student said that:

> *…and most of the time I do not get appropriate support . . . then tried to figure out what to do next . . . you see this is unfair . . . by the time I start the actual doing of an assignment the submission time yet would be worn out.* [Interviewed VIS B from UDSM in April 2017].

From the above findings, it is obvious that a typewriter is not suitable equipment for enabling visually impaired students to manage their studies due to its limitations like, difficulties in editing a work, deleting something in a document if VIS think there are mistakes made.

Resources provided to VIS did not provide maximum support their learning thus much efforts are needed at the Special Needs Department to offer VIS with relevant assistive technology so as they can manage their learning easily, also VIS have to be given special training on how to use a computer then to give them laptops that are already installed JAW software that they can use in information access when seeking information. Further to that to use computers in doing their examinations.

Data from the observations also affirms that most of the available facilities for VIS are old fashioned with a slow rate of their replacement with the modern facilities for the VIS learning need. Plate 4.8 shows some of the available facilities for VIS at UDSM special need unit.

Plate 4.8: The available typewriter equipment at UDSM special need unit.

Source: Field study, February 2017

Further findings from the interviews revealed that there is a mobility challenge due to less supportive infrastructures. Findings from the observations give clear evidence, as it has been observed that, most of the infrastructures around UDSM are not supportive and friendly enough to supporting easily mobility of VIS from one place to another hence affect their information-seeking behaviour. Plates 4.9 and 4.10 illustrate.

Plate 4.9: Unsupportive building structures for VIS at UDSM

Source: Field study, February 2017

Plate 4.10: Unsupportive building structures for VIS at UDSM

Source: Field study, February 2017

Furthermore, findings from the observation affirm that, nowadays there are some improvements in supportive infrastructures for enabling visually impaired students to manage their studies at UDSM, as the newly constructed buildings tend to consider mobility requirements of VIS and other students with disabilities.

SOED building has provided with special pavements for people with disabilities as far as the study concerned. Visually impaired Students at SOED building can easily navigate through and they can easily reach the school resource centre to access their information sources, therefore some measures are being taken to solve some challenges as plate 4.11 demonstrate.

Plate 4.11: Supportive building structures for VIS at UDSM

Source: Field study, February 2017

4.6 Chapter Summary

Result of the study clearly presented according to the specific objectives. The information-seeking behaviour of VIS at Dar es Salaam University was identified and portrayed schematically using Wilson's 1999 model of information behaviour. Identification of the information-seeking behaviour of the students helped in identifying the gaps and barriers in the information sources available and infrastructures and to find a way of building their capacity to enable them to respond to expressed needs.

Information seeking behaviour shown by the visually impaired students in this study indicates that information is acquired in several ways other than the orderly number of stages that the models in the second Chapter indicated. The results of the study show that the students delayed in accessing needed information because of the barriers they were experiencing in the learning processes and provision of information services at the University. A modified Wilson's 1999 model used for this study successfully portrayed that, for VIS in order VIS successfully access their needed information, repackaging of information is inevitable as shown in chapter four figure 2.3

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Chapter five presents summary of the research findings, conclusion and recommendations about the research. The chapter also gives a reflection on what has discussed in the previous chapters. Moreover, the chapter provides conclusions and recommendations regarding the study on the information-seeking behaviour for visually impaired students at UDSM.

This study investigated the information-seeking behaviour for VIS at UDSM. The study was led by the three specific objectives, these include: To determine information needs of students with visual impairment at UDSM; To examine sources of information used by visually impaired students to meet academic-related information needs; and challenges faced by visually impaired students when seeking information.

5.2 Summary of Key Research Findings

The purpose of this study was to establish the visually impaired students' information-seeking behaviour at the University of Dar es Salaam. The following are the key research results presented in chapter four.

5.2.1 Information needs of visually impaired students

The information needs of VIS mainly spun around their academic information needs. The information needs that were portrayed by the 25 students' respondents were devastatingly centred on writing assignments and writing examinations. The study found out also that, information on how to cope with modern technology in learning and the information on how to move independently was the most information needed by the visually impaired students at UDSM.

5.2.2 Information sources used by VIS to meet academic needs

All interviewed VIS wailed on the available sources of information at the university that, the available sources do not exactly meet their academic-related information needs. Although VIS are allowed to convert the conversional readings into Braille format, there are limitations on a number of pages to be embossed and printed. The

results suggest that information sources available are less supportive for VIS at UDSM to the extent that most of the visually impaired students did not prioritize it as among their important source of information.

The findings show that there was not much disparity in information-seeking behaviour amongst respondents. This perception was based on the format, kind, skills and number of sources format needed by VIS to satisfy their academic information needs. In the students search for information, the study established that, despite hardship they met, all the respondents either directly or indirectly used the library using the intermediaries to search or access information for them.

5.2.3 Challenges faced by visually impaired students when seeking information

Furthermore, the study found out that, the common challenge that VIS face when seeking information for their learning is time constraint, lack of modern and updated facilities and mobility challenges due to less supportive infrastructures in some areas and constraint in assistive technology at UDSM except in the new library building where much efforts have been made to support the disabled especially VIS.

5.3 Conclusion

The following endnotes are made relying on the outcomes drawn from the specific research objectives.

5.3.1 Information needs of visually impaired students

The information needs of the VIS at UDSM mostly underpinned around their academic information needs. This means that information on how to cope with the modern technology in learning and the information on how to move independently was the road to academic information needs to support the VIS pursuing their study in the University.

The study therefore concluded that, despite their differences in behaviour of information-seeking, but their information needs are the same. VIS similar to other groups had similar academic information needs to meet to perform better in their studies.

5.3.2 Information sources used by VIS to meet academic needs

The study examined whether the information sources used by visually impaired students helped them to succeed in their academic-related information needs. All VIS defendants showed that available sources do not exactly meet their academic-related information needs. Results suggest that information sources available are less supportive for VIS at UDSM. Although through observation a researcher witnessed the university libraries and resource centres equipped with some relevant information sources for VIS but the problem come on format in which they are presented hence relevant skills needed to VIS. This is because format of information sources available, hamper its access and retrieval that is why VIS showed that, the available sources do not exactly meet their academic-related information needs.

For instance, new library building in the audition room, there are modern multimedia gadgets that VIS can use to access information, in the same building there is a computer room with about 16 computers installed adobe audition software with headphones to support VIS accessing electronic book and Journals subscribed by the university.

But students are lagging behind because of the little knowledge on operating machines, therefore there is a need to conduct training time to time to create awareness and equip VIS with skills in using these information sources.

5.3.3 Challenges faced by visually impaired students when seeking information

Results of the study above reviled that, VIS information-seeking behaviour is not different from the way other students seek information, but their challenges rely on their information-seeking process because they lack modern facilities, mobility challenges due to less supportive infrastructures at UDSM. This means they have to encounter barriers before their information needs could be met which made VIS using much time in information-seeking process hence delay in many ways.

Despite a lot of read made possible initiatives which have been made by UDSM in improving teaching and learning environment to VIS, but further improvements

needed like initiatives on the issues of information repackaging for visually impaired students.

5.4 Recommendations

The researcher came up with recommendations on what has to be done by different stakeholders:

5.4.1 Recommendations for the University

The findings from this study show that the University lacks adequate resources to be used by VIS and VIS hostels are located far from lecture theatres. Based on this reason a researcher recommend that The University should be equipped with the appropriate assets like information resources, space, services and ICT infrastructure for VIS.

The University must employ some staff with solid Braille literacy skills so that visually impaired students to be served successfully and efficiently.

The researcher advises that VIS hostels should be located very close to the library building and lecture rooms to favour the required needs of this disadvantaged group to easily reach those areas conveniently and smoothly to access needed information. This is because movement from one point to another need VIS to pass a hard way with supports from fellow students which put them in fear.

5.4.2 Recommendations for Librarians

It was found that the library did not have materials for VIS and some of the library staff are inferior to offer services to VIS. Based on this a researcher recommended that; UDSM libraries should be provided with proper sources and collection to meet up information needs of VIS.

Librarians should be equipped with special training programmes so as to be able ot handle the VIS properly.

5.4.3 Recommendations for a special unit

It was found that computers at the special unit are few and out-dated with no program installed for VIS. Braille materials are very few and not well organized to facilitate access and use.

Based on this it is recommended that; the special unit must have enough computer systems with advanced technology for VIS to improve their learning (e.g. Zoom Text Magnifier/Reader, JAWS and Braille Note Touch).

To enhance the learning of VIS, there should be adequate resources such as the materials and equipment and facilities. The unit must engage fully in information repackaging to facilitate access to information and use of information resources by VIS.

5.4.4 Recommendations for the University Academic staff

Basing on this study the researcher discovered that, there is limited receptiveness among lecturers on properly dealing with VIS. Based on this it is therefore recommended that;

Lectures have to be motivated to attend short courses training of special needs education while giving them special allowances for the same. Good payment will enable others to learn special needs education but failure to do that even specialized lecturers will not deliver properly.

Lecturers have to give proper attention to VIS to create a smooth environment in the VIS information-seeking behaviour.

5.4.5 Recommendations for further studies

The study examined information-seeking behaviour of visually impaired students of UDSM. Many significant outcomes resulted from the study.

Despite a lot of initiatives which have been made by UDSM in improving the academic environment for VIS in relation with information-seeking behaviour, but still, there is the need for further improvements like initiates on having appropriate sources of information for VIS to support learning.

In respect to the findings presented in this study, the researcher recommends, information repackaging for Visually Impaired Students as an area for further study.

REFERENCES

ACRL. (2006). Guidelines for University Library Services to Undergraduate Students [Text]. Retrieved from http://www.ala.org/acrl/standards/ulsunderg raduate/ on Thursday 5th January, 2017

Adetoro, N. (2011). Availability and use of information materials by persons with visual impairments in Nigeria. *Information, Society and Justice* 4(2):5-18.

Agesa, L. (2014). Challenges faced by learners with visual impairments in an inclusive setting in Trans-Nzoia County. *Journal of Education and Practice*, *5*(29): 185-192.

Appiah, D.K. (2017). Information Seeking Behaviour of Visually challenged students in public university. Lincoln: University of Nebraska

Aramide, K. A., Lawal, W. O. & Odunlade, R. O. (2018). Information Needs and Library Services Delivery for Students with Visual Impairment in Oyo State, Nigeria. IASL Conference Proceedings: International Association of School Librarianship

Babbie, E & Mouton, J. (2001). The practise of social research. Oxford: Oxford University Press.

Bangula, A.R. (2005). Factor Influencing academic performance of Students with visual impairments in Tanzania Primary schools. Master's dissertation, University of Dar es Salaam, Dar es Salaam.

Bagandanshwa, E.T. (2006). Technologies deployed by visually impaired and blind people in Tanzania to access information. *Journal of Issues and Practice in Education*, 1(1): 79 -87.

Beaty, L. A. (1991). The effects of visual impairment on adolescents' self-concept. *Journal of Visual Impairment & Blindness,* 85(3): 129-130.

Best, W. H., & Kahn, J. V. (1998). Research in Education. New Delhi: Prentice Hall

Beverly, A. C., Bath, A. P. & Barber, R. (2011). Health and social care information for visually-impaired people. *Aslib Proceedings: New Information Perspectives*. 63. (2/3): 256-274.

Cantor, A. (1996), The adaptable approach: a practical guide to planning accessible libraries. *Library Hi Tech*, 14 (1): 41-45.

Case, D. O. (2002). Looking for information: A survey of research on information seeking, needs, and behaviour. Amsterdam: Academic Press.

Castells, M. & Cardoso, G. (2006). The network society: From knowledge to policy. Johns Hopkins Center for Transatlantic Relations Washington, DC. Retrieved from https://www.researchgate.net/profile/Gustavo_Cardoso5/publication/301788885/ on Sunday 12th November, 2016.

Comisco, J. (2008) Electronics text and visually impaired users: Standards and the move towards universal accessibility. Scroll, 1(1), 62-70. Retrieved July 7, 2019, from htpp://fdt.library.utoronto.ca/index.php/fdt/article/.../4903/1760.

Crous, S. F. M. (2004). The academic support needs of students with impairments at three higher education institutions: research in higher education. *South African Journal of Higher Education*, 18(1), 228-251.

Dumay, J. C. (2009). Reflective discourse about intellectual capital: research and practice. *Journal of Intellectual Capital*, 10(4): 489–503.

Elia, E.F. (2006). Students Information seeking behaviour in the electronic environment: A case study of the University of Dar es Salaam, Master's Dissertation University of Dar es Salaam, Dar es Salaam.

Ferris III, F. L., Kassoff, A., Bresnick, G. H., & Bailey, I. (1982). New visual acuity charts for clinical research. *American journal of ophthalmology*, 94(1), 91-96.

Fox, W. & Bayat, M.S. (2007) "A Guide to Managing Research". Cape Town: Juta Publications

Howell, C. & Lazarus, H. (2003). Access and participation for students with disabilities in South African higher education: challenging accepted truths and recognizing new possibilities. *Perspective in Education* 21(3): 58-74.

Howell, C. (2006). Disabled students and higher education in South Africa, in *Disability and social change: a South African agenda*. Cape Town: Human Sciences Research Council Press: 164–178.

Irvall, B & Nielsen, G. S. (2005). Access to libraries for persons with disabilities: checklist. The Hague: International Federation of Library Associations. Retrieved from http://www.ifla.org/VII/s9/nd1/iflapr-89e.pdf. on Friday 10th November, 2016

Kaniki, A. (2001). Community profiling and needs assessment. In Stilwell, C (Ed) Knowledge, information and development: An African perspective, 187-198. Pietermaritzburg: University of KwaZulu-Natal

Kiomoka, D. (2014). Children with Visual Impairments in Tanzania. An investigation of the Challenges which Children with Visual Impairments face in Learning and Participation in Inclusive Primary schools. Retrieved from http://brage.bibsys.no/xmlui/handle/11250/278165. on Friday 21st October, 2016

Kothari, C.R. (2004). Research methodology: methods & Techniques. 2nd ed. New Delhi: New Age International Publishing.

Koulikourdi, A. (2008), Assistive technologies in Greek libraries, *Library Hi Tech*, 26(3): 387-397.

Krikelas, J. (1983). Information-seeking behaviour: Patterns and concepts. *Journal of Documentation,* 19(2):5-20

Krishnaswami, O.R. & Ranganathan, M. (2005), Methodology of in Social Sciences, 2nd rev. ed., Bombay: Himalaya Publishing House

Kuhlthau, C. C. (1993). A principle of uncertainty for information seeking. *Journal of Documentation*, 49(4): 339-355.

Luambano, I. (2016). Information seeking behaviour of distance learning students: a case study of the Open University of Tanzania, Arusha region

Majid, S., & Kassim, G. M. (2000). Information-seeking behaviour of international Islamic University Malaysia Law faculty members. *Malaysian Journal of Library & Information Science*, 5(2): 1–17.

Majinge, R. M & Stilwell, C. (2013). Library services provision for people with visual impairments and in wheelchairs in academic libraries in Tanzania.

Majinge, R. (2014). Library services provision for people with visual impairments and in wheelchairs in academic libraries in Tanzania. PhD thesis. University of KwaZulu-Natal, Pietermaritzburg.

Makoye, C. N. (2018) An Investigation of Challenges Facing Students with Visual Impairment in Accessing E-Learning: A Case of Tabora Municipality. Masters thesis, The Open University of Tanzania.

Maslow, A. (1968). Towards a psychology of being. New York, NY: Van Nostrand.

Meyen, E & Bui, Y. (2007). Exceptional children in today's life schools: What teachers want to know (4th ed.) Denver, CO: Love Publishing Company.

Mgumba, B.F. (2006). Social psychological experiences and problems affecting the visual impaired persons' interaction in the community: The case of Mpwapwa District. Master's dissertation. Dar es Salaam, University of Dar es Salaam.

Miller, B. R. (2015, February 11). History of the blind. Retrieved from https://www.britannica.com/topic/history-of-the-blind-1996241 on Tuesday 15th November, 2016.

Mnyanyi, C.B.F., Bakari, J. and Mbwete, T.S.A., (n. d). *Implementing e-learning i n higher open and distance learning institutions in developing countries: The experience of the open University of Tanzania.* Dar es Salaam: The Open University of Tanzania.

Moore, N. (2000). The information needs of visually impaired people: a review of research. London: RNIB.

Moore, N. (2002). A model of social information need. *Journal of Information Science, 28*(4), 297-303.

Msuya, J. (2002). Information Seeking Behavour of library Users in a changing library environment: The Case of Faculty of Law staff members, University of Dar Es Salaam. *University of Dar es Salaam Library Journal, 4*(1), 58-74.

Nasiforo, B. M. (2015). Academic impediments students with visual impairments encounter in the Colleges Of University of Rwanda. Kenyatta University. Retrieved from http://etd-library.ku.ac.ke/handle/123456789/14240. on Saturday 12th November, 2016.

National Bureau of Statistics. (2016). 2015 Tanzania in figures. Dar es Salaam: NBS

Ndijuye,M. 2009,"Information and seeking behavior of pupils with visually impaired case study of Buigiri Primary School in Dodoma Region, Tanzania". Masters of Arts Dissertation, University of Dar es Salaam, Tanzania.

Ndumbaro, R. (2009). Library and information services provision for people with visual impairment in selected university and public libraries in Tanzania. Masters' dissertation. Dar es Salaam, University of Dar es Salaam.

Nishat, F. & Kumari, D. (2018). Information Seeking Behavior of Visually Impaired Students in Maulana Azad Library, AMU: A Survey. *Library Philosophy and*

Practice. Retrieved from https://digitalcommons.unl.edu/libphilprac/1575/ on Tuesday 10th December, 2019.

Nnadozie, C. O. (2006). Information needs and information seeking behaviour of visually handicapped persons in Owerri, Nigeria. The Research Librarian: *Journal of the Nigerian Library Association Abia State*. 1 (1): 116-131.

Nordstrom, B. H. (1986). The History of the Education of the Blind and Deaf. Retrieved from http://eric.ed.gov/?id=ED309614

Nsimbila, A. M. (2014) *Analysis of Availability and Adequacy of Support Services for Students with Visual Impairments in Tanzania Institutions of Higher Learning*. Masters thesis, The Open University of Tanzania.

Nwobasi, R. N., Uwa, E. O., & Ossai-Onah, O. V. (2013). Information Needs and Seeking Behaviour of Students in two Universities in Imo State, Nigeria. Library Philosophy & Practice. Retrieved from http://search.ebscohost. com/login. aspx?direct=true&profile/ on Saturday 12th November, 2016.

Odini, C. (1998). An overview of recent library and information developments in East Africa. *Library Management,* 19 (1): 12-14.

Osinuga, M. A. (2003). The Need for inter library co-operation in providing services for the visually impaired in Nigeria. *Journal of Association of Libraries for the Visually Impaired,* 2 (1): 25-31.

Rayini, J. (2017). Library and information services to the visually impaired persons. *Library Philosophy & Practice*. *(e-journal), 1510*. Retrieved from https://www.semanticscholar.org/paper/Library-and-Information-Services-to-the-Visually-Rayini/ on Wednesday 18th April, 2018.

RNIB (2003), Educational provision for blind and partially sighted children in Scotland in 2002. Edinburgh; RNIB.

Robertson, D. S. (2011). Opportunities and Challenges for the Visually Impaired Patron in Academic Libraries. Retrieved from http://stu.westga.edu/~ drobert9/ midpoint/8484_researchplan_dsr.pdf/ on Sunday 13th November, 2016.

Rogow, S. (2005). A Developmental Model of Disabilities. *The International Journal of Special Education*, 20 (2): 132-135.

Rubina, A. & Ramanand, M. (2018). Electronic information resources and services use for visually impaired in the library. *International Journal of Library & Information Science (IJLIS)*, 7:(3): 1–8.

Rugeyasila, A.A. (2013). Information needs and seeking behaviour of pupils with visual impairments of Uhuru Mchanganyiko primay school in Dar es Salaam. Masters dissertation. Dar es Salaam, University of Dar es Salaam.

Sandelowski M. (2010). What's in a name? Qualitative description revisited. *Research in Nursing & Health.* 33(1):77–84. Retrieved from https://www.ncbi.nlm.nih.gov/ on Sunday 17th May, 2020.

Schinazi, V. R. (2007). Psychosocial implications of blindness and low-vision. Retrieved from http://discovery.ucl.ac.uk/3379/ on Saturday 12th November, 2016.

Scotland, & Scottish Government. (2013). The keys to life: improving quality of life for people with learning disabilities. Edinburgh: Scottish Government. Retrieved from http://www.nls.uk/scotgov/2013/9781782566366.pdf/ on Saturday 12th November, 2016.

Seyama, L. G. (2010). Information seeking behaviour of students with visual impairments: a case study of the University of KwaZulu-Natal, Pietermaritzburg.

Seyama, L., Morris, C. D., & Stilwell, C. (2014). Information seeking behaviour of blind and visually impaired students: A case study of the University of KwaZulu-Natal, Pietermaritzburg Campus. *Mousaion*, 32(1): 1–22.

Silva, C. (2017). Research Design - The New Perspective of Research Methodology. *British Journal of Education, Society & Behavioural Science,* 19 (2), 1-12. Retrieved from https://www.researchgate.net/ on Sunday 17th May, 2020.

Tanzania League of the Blind (TLB). (2010). Disabilities in Tanzania. Retrieved from www.tanzanialeagueblind.org/news.php/ on Saturday 22nd October, 2016.

TCU, (2009 October). *Rolling Strategic Plan 2009/10- 2013/14.* Dar es Salaam: URT.

Tester, S. (1992). Common knowledge: a coordinated approach to information giving. London: Centre for Policy on Ageing.

Tilley, C. M., Bruce, C. S., & Hallam, G. C. (2007). Adaptive technology for people with disabilities using information and communication technologies. Improving Library Services to People with Disabilities, 65–86.

UNESCO (2006). Guidelines for inclusion: Ensuring access to education for all. Retrieved from www.unesco.org/images/0014001402/14022e.pdf/ on Thursday 20th October, 2016.

United Republic of Tanzania (URT), (2007). Visual impaired pupils' National report. Retrieved from www.ieb.unesco.org/NationalReports/ICE2008/tanzania_ NR08.pdf/ on Friday 30th September, 2016.

University of Dar es Salaam (2018) Annual Report 2016 – 2017. Dar es Salaam: Dar es Salaam University Press. Retrieved from https://www.udsm.ac.tz/upload /20190126_031400_ANNUAL%20REPORT%202016-2017.pdf on Tuesday 18th February, 2020.

Walter, M. (2008). Lives of Diversity: Indigenous Australia. Academy of the Social Sciences in Australia Canberra. Retrieved from http://www.academia.edu/ download/31275199/Lives_of_Diversity.pdf/ on Saturday 12th November, 2016.

Wilson, T. D. 1999. Models of information behaviour research. *Journal of Documentation* 55(3): 249-270.

WHO. (2012). Global data on visual impairments 2010. Retrieved from http://www.who.int/blindness/GLOBALDATAFINALforweb.pdf/ on Friday 14th October, 2016.

WHO. (2019). Blindness and vision impairment. Retrieved from https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment on Monday 17th February, 2020.

APPENDICES

APPENDIX I

INTERVIEW GUIDE FOR VISUALLY IMPAIRED STUDENTS

Dear students,

My name is Dotto Kabogolo, a postgraduate student at the University of Dar es Salaam conducting research on Information Seeking Behaviour of students with Visual Impairments at UDSM. I am kindly inviting you to participate in this study by participating in the interview. Basically, the study is for academic purpose only. Remain assured that you will remain anonymous and the information collected will be treated as confidential and used for academic purpose only.

PART I: Personal Information

Sex……..

Class……..

Time of onset of visual impairments?

PART II: INFORMATION NEEDS OF STUDENTS WITH VISUAL IMPAIRMENTS

What information do you need to support your learning?

What skills do you need to cope with visual impairments to manage your studies?

What equipment do you mostly need to enable you to get information for you to learn effectively?

Is there enough equipment to enable you access information smoothly?

How do you search for information in the library?

PART III: INFORMATION SOURCES USED TO MEET ACADEMIC RELATED INFORMATION NEEDS

Are information sources available relevant to your needs?

Do the available sources of information meet your academic needs?

If you do not understand a certain concept when the teacher was teaching, what do you do?

Please explain how you go about meeting your information need or solving a problem.

PART IV: CHALLENGES IN SEEKING INFORMATION

What problems do you encounter when seeking for information?

How do you normally solve those problems?

What should be done to improve the situation?

THANK YOU FOR YOUR COOPERATION

APPENDIX II

OBSERVATION GUIDELINES (CHECKLIST)

The researcher used observation guidelines to guide observation and recording of facts and events in regard to information seeking behaviour of visually impaired students at UDSM

Is there a library for VIS?

Space availability?

Chairs?

Conducive environment for visually impaired students

Is it well equipped with all necessary facilities and resources?

Braille textbooks (student book ratio)

Braille reference materials (Dictionaries, maps, atlas, newspapers)

Mathematical equipment

Special tactile maps

How do visually impaired students search for information from Library catalogue?

Assistive Technical Facilities Devices Amount Required vs Available vs Shortage

Category	**Required**	**Available**	**Shortage**
Perkins Braille machines			
A4 frames			
Embosser			
Stylus			
Typewriters			
Tape recorders			
Radio cassettes			
Long white cane			
Abacus			

APPENDIX III

RESEARCH CLEARANCE LETTER

UNIVERSITY OF DAR-ES-SALAAM
OFFICE OF THE VICE CHANCELLOR
P. O. BOX 35091 ♦ DAR ES SALAAM ♦ TANZANIA

General: +255 22 2410500-8 ext. 2001
Direct: +255 22 2410700
Telefax: +255 22 2410078

Telegraphic Address: UNIVERSITY OF DAR ES SALAAM
E-mail: vc@admin.udsm.ac.tz
Website address: www.udsm.ac.tz

Ref. No: AB3/12(B)

Date: 23rd February 2017

Regional Administrative Secretary
Dar es Salaam Region

RE: REQUEST FOR RESEARCH CLEARANCE

The purpose of this letter is to introduce to you **Mr. Dotto Andrea Kabogolo** who is a bonafide MA student of the University of Dar es Salaam and who is at the moment required to conduct research. Our students undertake research activities as part of their study programmes.

In accordance with government circular letter Ref. No. MPEC/R/10/1 dated 4th July 1980, the Vice Chancellor of the University of Dar es Salaam is empowered to issue research clearances to staff members and students of the University of Dar es Salaam on behalf of the government and the Tanzania Commission for Science and Technology (COSTECH). I am pleased to inform you that I have granted research clearance to **Mr. Kabogolo.**

I therefore, request you to grant him any help that may enable him achieve his research objectives. Specifically we request your permission for him to meet and talk to the leaders and other relevant stakeholders in your region in connection with his research.

The title of his research is **"An Investigation of the Information Seeking Behaviour of Visually Impaired Students".**

The period of his research is from **February to May 2017** and the research will cover **Dar es Salaam Region.**

Should there be any restriction, you are kindly requested to advise us accordingly. In case you may require further information, please do not hesitate to contact us through the Directorate of Research, Tel. +255 22 2410500-8 Ext. 2084 or + 255 22 2410727 and E-mail: research@udsm.ac.tz.

Yours sincerely,

VICE CHANCELLOR
UNIVERSITY OF DAR-ES-SALAAM
P.O. BOX 35091
DAR-ES-SALAAM

Prof. Rwekaza S. Mukandala
VICE CHANCELLOR

QUOTATION OF REF. NO. IS ESSENTIAL

APPENDIX IV

INTRODUCTION LETTER FROM SOED

School of Education

University of Dar es Salaam

Dean's Office

Our Ref.: SoED/CERPD/GM/2/2017 DATE: 22nd March, 2017

All Staff and Students,
School of Education.

Re: Introducing Mr. Dotto Andrea Kabogolo

The purpose of this communication is to humbly introduce to you **Mr. Dotto Andrea Kabogolo** who is engaged in collecting data for a study titled **"An Investigation of the Information Seeking Behaviour of Visually Impaired Students"**.

Mr. Kabogolo is from the University of Dar es Salaam. He is currently conducting data collection as part of his M.A degree studies and has been permitted by UDSM management to conduct his research in our school.

Please give him your valuable assistance that he requires.

Thank you very much.

Yours sincerely,

Dr. G. Kahangwa
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