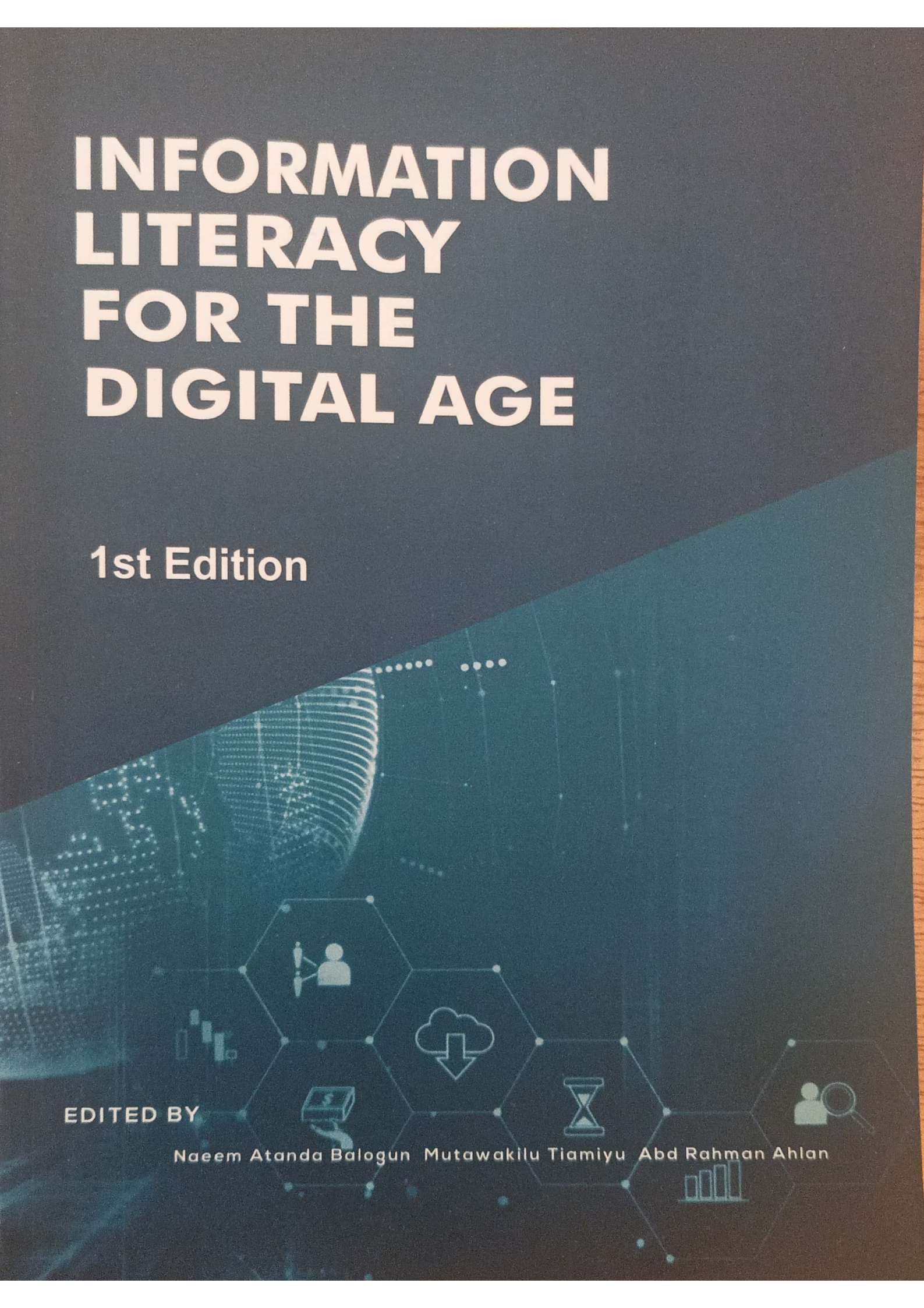


INFORMATION LITERACY FOR THE DIGITAL AGE

1st Edition

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INFORMATION LITERACY FOR THE DIGITAL AGE

A Book of Readings

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Mutawakilu Tihamiyu
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Foreword

Since the start of information age, *Information Literacy* has become the new literacy needed to be built on the foundation provided by basic literacy. As societies become more mature, the literacy requirement for individuals have gone beyond just the ability to acquire and use reading and writing skills, to include skills for knowing when information is needed and should be sought for to help solve the problems they encounter in various aspects of their lives. Scientific and technological developments have also led to the creation of and continuously improving access by people to the diverse information and services provided by the Internet and other virtual platforms. Individuals need to understand where to look and search for the needed information, and how to use digital technologies to search for the information and services. The quality of information available from various electronic sources also vary widely, making it important for people to be able to distinguish good from bad quality information, superior from inferior research findings and recommendations, and true news from fake news. In such a complex and rapidly evolving information and technological environment, an individual who lacks these information literacy skills would find it highly challenging to obtain and use good quality information for educational, work and living purposes.

This book on *Information Literacy for the Digital Age* is predicated on the need for a basic textbook on information literacy concepts, principles and requirements in all types of universities and specialized colleges of education, technology, agriculture, health etc. Unlike basic literacy skills, information literacy may not be part of compulsory curriculum in most secondary level schools in developing countries. Although entrants to tertiary level institutions in these countries might already be computer and smartphone experienced, they usually still lack knowledge of the tested and recommended principles and practices of information literacy they require to enable them relate most productively and efficiently with the diverse information and services on virtual platforms provided by the Internet and its interconnections of information sources and systems. There is clear need for carefully written teaching and learning textbooks that help motivate and improve the knowledge and skills to effectively and ethically manage relationships with information and technologies of the digital age for creating, accessing, using and communicating information in studies and in future lifelong activities. Helping to

address the students' inadequacies and meet the need is the primary motivation for this book.

The book is therefore structured and written to serve as the main or supplementary reading for any *Information Literacy* course as a standalone, or as component course of a General Studies curriculum. Thus, the book presents carefully written introductions to some of the most common taught in Information Literacy, courses. It is a compilation of chapters that helps to build understanding of information literacy related topics including basic information and digital literacy concepts, digital information technologies, resources, systems and services and strategies and techniques for searching, retrieving and evaluating online information. Provided also are reviews and discussions of information ethics issues such as plagiarism and copyright, and how to properly acknowledge and correctly reference consulted sources of information and ideas in research writing. Beyond these, it also provides guides to time management and how to make effective presentations.

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Preface

The idea of Information literacy began many decades ago in libraries under the label of 'library literacy', when public and academic libraries were the foremost places or institutions where people could search through large collections of printed documents for the factual, fictional, educational or entertainment information they need. The computer revolution that began about the 1950s has since brought great transformations of societies into being technology driven. It has also brought to limelight the importance of various other types of literacies, including information literacy, technology literacy, and digital literacy. Information Literacy is nowadays defined much more broadly than library literacy to include knowledge and skills in knowing what information to search for to solve various problems, where to search for needed information (which nowadays include library, non-library, printed and online sources), how to evaluate and use the information to solve problems, how to ensure compliance with ethical and legal requirements of information access and use, how to use digital technologies to search for, evaluate, use and communicate the information, and so on. Hence, this book and the range of topics covered in its thirteen chapters.

The book begins with the chapter *Understanding Information Literacy* by Afolayan. It explains some elemental concepts and a model of information literacy, as well as components of computer, which are embedded in and drive the technologies and systems of the digital age. Chapter 2, contributed by Ajiboye, dwells on the largely overlapping concepts and requirements of digital literacy, information literacy, technology literacy, media literacy, social literacy, communication literacy and digital citizenship. Chapter 3, contributed by Abdulrahman, discusses the features of the digital age and the role of information and communication technologies (ICT) in key aspects of digital societies, particularly health, education, business and government.

A key component of ICT is the Internet, which interconnects smaller computer, phone and satellite networks, as well as the World Wide Web (WWW or Web). The Internet facilitates access to and sharing of diverse resources provided or needed by various organizations and people in the form of computers, communication networks, services and information. These resources are massive and also growing rapidly. Thus, Chapters 4, 5 and 6 focus on the Internet and the Web and how to use software to effectively search for and find particularly needed

resources from them. Chapter 4, contributed by Balogun, Ahlan and Sulyman-Haroon, explain the various types of Internet and Web resources and their uses. Chapter 5, contributed by Bello, focuses on Internet Search Engines, which are software designed for use in searching for information on the Internet. Chapter 6, contributed by Nasiru, focuses on how to use web searching strategies and techniques to search for information effectively and efficiently.

Internet Search engines, as well as various search applications installed on personal computers, smartphones and other smart devices use information retrieval processes to ensure that they are able to very quickly search for and retrieve specifically needed information from massive quantities of stored information. Chapter 7, contributed by Tihamiyu, explains various concepts, strategies and techniques of information retrieval systems. Thereafter, Chapter 8, Sikiru and Tihamiyu elucidates concepts of recall, precision, accuracy and other ratios that are usually used to evaluate the effectiveness and efficiency of information retrieval systems and strategies.

An information literate person who needs some information and uses a search engine to search for the information is expected to be able to evaluate the quality of any information retrieved, using such criteria as relevance to need, accuracy, completeness, fit for use, and so on. Thus, in Chapter 9, Adedoyin and Oloyede explain the criteria and strategies that can be used to evaluate the quality of information obtained.

Information Literacy also include abilities, to integrate information into existing knowledge, and access and use information ethically, legally, socially and responsibly as global citizens. Accordingly, Chapters 10 to 13 explain how to ethically and responsibly acknowledge and present information from other sources in academic research write-ups. Chapter 10, contributed by Oyekunle discusses plagiarism and how to avoid it when writing about facts and ideas from other sources. Chapter 11, contributed by Sulyman-Haroon and Balogun explains how to list consulted information sources in a reference list at the end of, as well as cite the sources within a research paper or report. Chapter 12, contributed by Oladele and Ibrahim, explains key considerations, strategies and technique for presenting ideas in a talk to an audience, and exemplified using the Microsoft PowerPoint presentation graphics software.

The final Chapter 13 of this book is contributed by Mejabi, and focuses on *Time Management*. Time is a usually very limited

resource needed for every activity. Effective time management is crucial for an information literate person to be an effective and socially participative responsible citizen. In a student's life both during and after school life, effective time management is required: for preparing personal calendars and time tables for learning tasks; for using computer; for searching for information in the library or on Internet; for doing and submitting assignment and research reports; for engaging in leisure, entertainment, social and rest activities; for finishing school, searching for a job and building a career; for starting and raising a family, and so on. Time must be allocated to these and various other activities based on carefully considered personal and social priorities. So, the chapter elucidates how effective time management can be practiced by students to avoid wasted time.

This book was considered desirable about a decade ago, soon after the Department of Information and Communication Science of the Faculty of Communication and Information Sciences, University of Ilorin began to deliver an Information Literacy course as a faculty requirement for all first year students of the faculty. The many lecturers of the course modules quickly noticed the very low entry-level information literacy knowledge of the students and the need for a book of readings on Information Literacy that introduces key topics in the subject in short chapters and easily readable writing styles. The publication of the book was however consciously delayed until now in order to enable the lecturers and contributors to the book to enrich it with several years of content teaching experiences.

We wish to thank the contributors to this book who shared our collective vision for the book, for their effort in providing very readable manuscripts of high content quality. We also acknowledge the institutional and support of the Department of Information and Communication Science of the Faculty of Communication and Information Sciences, University of Ilorin during the preparation of the manuscript of this book. Also highly appreciated are various cohorts of the students of the Faculty whose regular feedback over several academic sessions of testing of the contents by the contributors in the Information Literacy course in the faculty has helped to improve the intellectual and language quality of the content of this book.

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Chapter 4

Internet Resources and Usage

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4.1 Introduction

Individuals and organisations in all sectors of human activity, including in business, education, banking, and the public sector are increasingly dependent on new technologies to perform their activities and enhance their communication and interrelationships toward achieving their various goals. These goals may be personal development, greater effectiveness and efficiencies, better products or services, or higher profits. At the same time there are growing concerns regarding the dangers of underuse, overuse or misuse of these technologies in the digital era. Therefore, in order to be able to use the new technologies to create desirable values for themselves and society, people need to adequately understand, and appropriately use and adapt the benefits the technologies offer, and also understand and protect themselves from the associated dangers.

4.2 The Internet

The Internet refers to the worldwide network of communications between network computers and servers which originated in a much smaller network known as ARPANET, which created by the United State Department of Defence in the 1960s. This first network was intended for social interactions among researchers in different research institutions based on the ideas in a series of writings by Licklider of MIT in 1962 on the "Galactic Network" concept (Licklider and Clark, 1962). Subsequently, in 1967, Roberts published his ideas for the computer network known as "ARPANET" (Roberts, 1967). ARPANET later developed into the Internet, which was brought

online in 1969 by interconnecting different computer networks in different locations, such that the interconnected networks can interact with one another and share resources.

The internet is now the largest network of interconnected computers that allow users to exchange information using multiple channels of communication. These networked computers communicate with one another in order to disseminate and process information. The networks and the information they processed became public and useful to other individuals when various easy-to-use software, known as Internet browsers, were developed for commercial use to access the Internet (Jerry and Alan, 2007). MOSAIC was one of the earliest of such browsers, after which came Netscape, and Internet Explorer. Internet Explorer was provided by Microsoft freely installed for new personal computers. Internet Explorer had a good graphic user interface (GUI) and this boosted the widespread use of the Internet. However, other software such as Mozilla and Google Chrome had helped to make Internet more accessible, more usable, and more enjoyable to use in recent times.

4.3 Internet Facilities and Resources

Internet facilities can be classified into the following two main categories:

(i) *Facilities that enable the Internet to work as information super highway:* These facilities comprise hardware, software and protocols. The hardware include: computer systems and mobile devices, which serve as either computer servers or clients; telecommunication network infrastructure such as satellites, masts, routers and switches, which enable worldwide communications; Local Area Network (LAN) cables, which interconnect computers within and between buildings. Software that support and are used for operating the Internet include various computer and network operating systems, as well as software that enable people to access and browse the Internet, such as web browsers, among which are Internet Explorer, Mozilla and Google Chrome. Protocols are standards and rules that are used to control how computers and software exchange information among themselves over the communication hardware links between them. There are many such protocols,

including the Transmission Protocol and Internet Protocol (TP/IP).

(ii) Facilities provided by the various services that can be accessed and used through the Internet: Among these facilities and services are the World Wide Web (also known as WWW or Web), File transfer, File download, e-mail, mailing lists, newsgroups, chat rooms, and social networks such as Facebook, Twitter, You Tube, instant messaging services such as Whatsapp and Yahoo Messenger, search engines such as Google and Yahoo, online news, online games, downloadable images, video and audio, web and organizational portals, e-banking and e-commerce (Balogun, 2012).

4.4 Usage of the Internet

Internet usage had become more interesting and sophisticated in the digital age, and is now very important to individuals for their personal purposes or in their work as employees of organizations. People and organizations now can hardly perform their activities well without the use of Internet. Some of the most common activities performed on the Internet include browsing, messaging, downloading, purchasing, entertainment, access to health and medical information, shopping and social networking (Thompson, 2001; Thompson and Vivien, 1997; Tim et al., 2007). Individuals use these activities to stay in touch with friends and family, access entertainment and news, surf the web for information and play online games.

Access to and use of organisational portals is also one of the major activities enabled by the Internet. Students and staff in educational institutions, and employees in other organizations make use of their organizational portals to access information or perform work related communication and transactions. The use of the internet has also changed organisations into more productive and pleasurable workplaces. An important aspect of Internet use in organizations is the deployment and use of web portals by organizations to facilitate their internal and external communication and work processes, which then ride on the Internet. An organisational web portal is a website developed and deployed by an organization to provide access to information and services of the organization to its various

stakeholders such as employees, suppliers and customers. The graphical user interface of the portal is usually organised for easy search and access (Milestone, 2009).

More generally, Arthur (2005), described a web portal (of which organizational portal is a special type) as a special Internet site designed to act as a gateway to give access to many other sites. According to Thomas (2000), no single model exists for what constitutes a portal, but all portals give access to online communication, online shopping, web searching, news and reference tools. Portals provide different user-friendly applications that are relevance to users such as e-mail, chat, forum, directory and news and all on a single webpage. A portal may also be designed to provide information, services and web links for specific groups of people, examples of which are employee portal, customer portal, student portal, human resource portal, or membership portal (Milestone, 2009), depending on the purpose and intended audience of the portal.

4.5 Role of Demographics, Personalities and Perceptions

Individuals often differ in their rate of use the Internet. Juznic et al. (2006) highlight the different and often unequal levels of access to and use of Internet among different categories of people. This creates gaps between the 'have' (those who have good access) and the 'have not' (who don't have adequate access), which often also lead to gaps between those able to 'use' and those not able. This causes what is known as "digital divide". Digital divide refers to persistent long term differences in the levels and effectiveness of usage of digital technologies such as computers, smart phones and Internet resources and services, between people who are rich versus poor, young versus old, are well educated versus not well educated, or live in urban versus or rural areas.

Research among people have revealed that various factors that can influence and explain such differences in the rate access and use of the Internet. Among these are demographic variables, personality traits and perception of the Internet.

Demographic variables and Internet usage: Among the important demographic variables that have been found to influence Internet use are gender, age and education level.

Gender: Thompson and Vivien (1997) found male individuals accepting to use Internet faster than their female counterparts. The study also found out that male individuals had more experience using PCs and used PCs for longer periods of time than the females daily. Males used the Internet to obtain information and get free resources such as software and product support more than females. Significant differences among males and females were also found on downloading and purchasing activities. Because male individuals were more active and thus more likely face and overcome challenges in Internet use, they tend to be more technically inclined and more versatile compared to females. On the other hand, according to Elder et al (1987) (cited by Thompson, 2001), female individuals are more likely to experience techno-stress (i.e. physical and emotional burnout caused by inability to adapt to new technology) compared to males. However, Thompson and Vivien (1997) found no significant differences between males and females on messaging and browsing activities on the Internet.

Age: According to Juznic et al., internet use decreases with the age, though citizens considered to be 65 and above by Tim et al. (2007) still believe they can learn ICT and make it useful, and are willing to spend time and effort to learn. Internet is believed to be a resource for senior citizens to educate themselves and communicate with people outside their environment, through internet chat rooms or by assisting grandchildren with school assignment and home-work study. A 'generation divide' was observed between younger and older generation of individuals, where it appears that senior citizens are not making adequate use of the internet, this could be as a result from lack of technical know-how and usage by senior citizens either at school or later on in their line of work, and during technological revolution, they had retired from service, and most of them that know how to use internet were taught by a family member or a friend.

Educational Level: Educational level is often not part of the main constructs and is measured as demographic characteristics or control variables in data analysis (Igbara et al., 1995). But in a recent research conducted by Thompson (2001) he use educational level as part of his variables in other to examine internet usage in Singapore and suggest that higher

educational level is likely to have positive relationship with internet usage and may result in greater knowledge about computers, thereby facilitating internet usage. According to Juznic et al. (2006), in their study, senior citizens with higher education are more likely to use Internet. Moreover, interest in further education among older people and senior can be an key strategy to help them learn new online technologies so as to keep up to date and improve their health life through using the Internet to communication with their peers and having themselves entertained without assistance by other people.

Personality traits and Internet usage: Personality traits of individuals sometimes explain why and how different individuals use of the Web (Lomax et al., n.d; Ahlan and Balogun, 2013). For instance, extrovert individuals might be more convinced of the benefits of the Internet than introverts. Openness individuals might also likely use the internet for information sharing more than secretive individuals (Ahlan and Balogun, 2013).

Perceptions and Internet usage: Researchers have found out that Internet use is often influenced by the perceptions of different people about the Internet, such as perceived ease of use, perceived enjoyment, perceive usefulness, perceived risk, and so on. These perceptions are often influenced by demographic variables and personality traits.

4.5 Benefits of the Internet

In this part of the chapter, some of the numerous benefits that can be derived from using the internet are briefly explained. These benefits are social interaction, education, work related uses, skill acquisition and improvement, and leisure promotion.

Social interaction: This could be refers to as computer mediated communication, where individuals communicate and interact with one another with the use of the internet. Interaction using the internet among youth has been a daily routine, where individual share, communicate and relate without face-to-face contact and have a healthy communication and relationship.

Education: Internet is seen as one of the major tools that aid education in the present world. With several educational outlets

and materials, internet serves as the gateway towards reaching to these numerous important material that could be useful for educational purpose. The use of e-learning, open and distance learning are achieved effectively with the use of internet. Students as well as researchers find it very easy and convenient to search for important educational material on the internet. Therefore, using internet for educational purpose is seen as one of the major achievement by spreading information as fast as possible to large audience and across the globe in just a matter of second.

Work: Internet is often important at work. Depending on the type of work individuals are involved in, it serves as a means for quick dissemination and retrieving information. The internet helps individual to get their work related information, it provide necessary expertise to which people learn in order to be relevant at their place of work.

Skill improvement: The acquisition and improvement of skills has been witness using the internet. The internet plays a vital role in allowing individual have access to the skills they require, learn and gain expertise without having to visit an institution or certification for the skill. These skill acquisitions are made possible due to the numerous manual, tutorials, audios and videos, and reference sources that are now available on the Internet for use in improving knowledge and skills in virtually any subject or work.

Leisure: The internet serves as a medium for individual take leisure. Some individuals while away their time using the internet by browsing some funny materials, watch movies, listen to music, play online games and connect with friends and family in an easy and lively manner.

4.7 Challenges of the Internet

Challenges of the internet include: inadequate access to the Internet due to poor Internet connectivity, especially by many people in developing countries; continuous overuse of the Internet resulting to Internet addiction; and misuse of the Internet for unethical and criminal activities which leads to fear of Internet technology. Some of these challenges tend to limit the strong positive perception that people have for the

technology. This section highlights these and other Internet challenges.

Addiction: Internet addiction is one of the challenges faced while utilizing the technology, according to Young and Rodgers (1998) who considered dependency on internet as addiction. Addicted internet users tend to be private individuals, vigilant, sensitive, and rank high in self-reliance, restrict social outlets, are abstract thinkers and emotional towards others. However, such individuals do not experience alienation when sitting alone for a long period. Non-addicted individuals have less involvement using internet and prefer face-to-face interrelationships, although they might also use the internet connect with others.

Internet addiction posed to be a serious health issue that affects the mental well-being of individuals and younger generations are at risk to this challenge faced using internet (Ling et al., 2011). Internet addiction refers to continuous use of the internet which might cause imbalance in lifestyle and affect the health of the user. This lifestyle imbalance affects the addicted person's behaviour and cause mental disorder (Ling et al., 2011). According to Ling et al. (2011) internet addictive behaviour include excessive gaming, online sexual preoccupation, and excessive e-mailing and chatting and texting.

False information: Information is one of the most importance reasons for which individual access the internet. Internet had become a source for information retrieval, and the authenticity of the accessed information had become an issue. However, false information or misinformation is now common on the internet. This ill-gotten information can cause critical problem to the information users. Though, to solve this menace, internet user need to verify and check the authenticity of the information that had been access before further action. This could help in order to rectify the problem of misinformation.

Immoral exposure: Internet had become a sort of avenue to people who want to perpetrate immoral behaviour. These behaviours are seen to be those that affect the user as well as other individuals. Behaviours such as pornography viewing, cyber bullying and cyber fraud have been having negative effect

on internet users. Pornography viewing can become addictive, with negative effects on the mental health of the viewers. Cyber bully might affect the personality of the other individuals that are being bullied online, sometimes leading to suicide. Cyber fraud can be used to defraud Internet users.

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